# Altech Corp.®

Quality System Quality Endorsed

Company

Serving the Automation & Control Industry since 1984

DIN Rail Power Supplies

### **DIN Rail Power Supplies**

Since 1984, Altech Corporation has grown to become a leading supplier of automation and industrial control components. Headquartered in Flemington, NJ, Altech has an experienced staff of engineering, manufacturing and sales personnel to provide the highest quality products with superior service. This is the Altech Commitment!

In response to a growing market for high power regulated Power Supplies, Altech introduced the new Din Rail mountable power supply line. They are reliable, cost effective, space economical and easy to install and maintain. They are able to handle any industrial process requirement. In addition, you do not need to oversize them; they are designed to work on 100% load capacity. The universal input, power factor correction and many approvals proves that Altech Power Supplies will function worldwide on a wide variety of applications. Wide operation temperature range, high efficiency and many protections make Altech Power supplies your best choice.

Our well trained technical experts welcome the opportunity to answer your technical questions and provide solutions to your automation and control needs. Give us a call or visit www.altechcorp.com.



Altech's control components meet diverse national and international standards such as UL, NEC, CSA, IEC, VDE and more. Altech provides superior customer service and delivery through Total Quality Management and Continuous Process Improvement. Altech is ISO 9001 approved. We perform these services with honesty and integrity and are committed to achieve these goals.

### 









#### Selection Guide ......4-5



#### **PSC Compact Class 2 Series**

- · Compact Design and Lightweight
- Class 2, UL 1310 Recognized
- Brown-out protection
- 10W to 480W rated power
- Universal single phase input

.....6-35



#### **PS Industrial Series**

- · Robust Metal housing
- UL 508 listed
- · Built in active PFC function
- 75W to 960W rated power
- Single and three phase universal input .....86-111



#### PSA Flex Series (1 Phase)

- · Flex power, solid metal housing
- UL 508 listed
- 120W to 600W rated power
- · High efficiency with Boost Power
- Single phase input

.....36-47



#### **PS-C and W Series**

- · Narrow design, small metal housing
- UL 508 listed
- 150% pick load capacity
- 120W to 480W rated power
- Single and two phase wide input .....112-133



#### **PSB Flex Series (2 & 3 Phase)**



- · Flex power , solid metal housing
- UL 508 listed
- 120W to 600W rated power
- High efficiency with Boost Power
- Two and Three phase input
  - .....48-57

#### **CBI DC UPS System**



- Fully automated battery care module
- · Three charging modes
- 12, 24, 36 and 48V DC single outputs
- 110-230-277 / 230-400-500VAC input
- · System start from battery function

.....134-155



#### **PS-S Slim line Series**

- · Slim Line Design, plastic housing
- UL 508 listed
- · DC OK contact
- 10W to 100W rated power
- Universal single phase input

.....58-71

### CB Battery Chargers



- · Intelligent battery chargers
- Suitable for most common battery types
- · Adjustable charging current
- · 2 VDC and 24VDC single output
- 110-220-277 VAC input

.....155-189



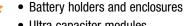
#### **PS Low Profile Series**

- · Low profile Design, plastic housing
- UL 60950-1 Recognized
- Isolation Class II
- 10W to 100W rated power
- Universal single phase input

.....72-85

#### **Accessories**

- · Redundancy diode module
- · UPS controller module



· Ultra capacitor modules

.....190-199

FAQ	200-203
Index	204
Terms & Conditions	206



### **Selection Guide**

Choose your product from a wide range of features and options, suitable for almost all applications.

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	Cat. No.		Rat	ed Curi	rent		Urit	ersall	in co	allel or	Jion Spirit	30950	300	50020, 80,00,	Class	of Scot	r Circi	inod	Joha	Leu
	VDC	5	12	15	24	48	Ju.	SW	400	7	7	7		41/2	0	Sk.	On	04	040	Ç
	PSC-10xx	-	0.84A	0.67A	0.42A	-														
	PSC-20xx	-	1.7A	1.4A	1A	-														
paci	PSC-40xx	-	3.4A	2.7A	1.7A	0.85A														
Com	PSC-60xx	_	4A	5A	2.5A	1.25A														
PSC Class 2 Compact	PSC-96xx	-	7.5A	6.4A	4A	2A														
Clas	PSC-151xx	_	-	_	6.3A	3.2A														
Sc	PSC-241xx	_	-	-	10A	5A														
	PSC-481xx	_	-	-	20A	10A														
	PSC-RM20	-	-	-	20A	-														
	PSA-120xx	_	_	_	5A	_														
HASE	PSA-180xx	_	_	_	7.5A	_														
FIex SINGLE PHASE	PSA-360xx	_	_	_	14A	_														
SB FI	PSA-600xx	-	-	_	25A	-														
PSA & PSB Flex )) PHASE SINGL	PSB-120xx	_		_	5A	_														_
PSA E) PHA	PSB-180xx	_	_	_	7.5A	_														
PSA & TWO (THREE) PHASE	PSB-360xx	_	_	_	14A	_														
TWO	PSB-600xx	_	_	_	25A	-														
	PS-S10xx	2A	0.84A	0.67A	0.42A	_														
ine	PS-S20xx	3A	1.67A	1.34A	1	-														
Slimine E PHASE	PS-S40xx	6A	3.33A	-	1.7A	0.83A														
PS-S	PS-S60xx	10A	5A	-	2.5A	1.25A														
	PS-S100xx	-	7.5A	-	4A	2A														
0	PS-15xx	2.4A	1.25A	1A	0.63A	-														
rofile ASE	PS-30xx	3A	2A	2A	1.5A	-														
S Low Profil SINGLE PHASE	PS-45xx	5A	3.5A	2.8A	2A	-														
PS Low Profile SINGLE PHASE	PS-60xx	6.5A	4.5A	4A	2.5A	-														
Δ.	PS-100xx	-	7.5A	6.5A	4.2A	-														

### **Selection Guide**



Choose your product from a wide range of features and options, suitable for almost all applications.

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SE	PS-120xx	-	10A	-	5A	2.5A			Ш											
E PH/	PSH-120xx	-	-	-	5A	2.5A			Ш											
al SINGLE PHASE	PSP-240xx	-	-	-	10A	5A			Ш			$\Box$								
stria	PSP-480xx	-	-	-	20A	10A			Ш											
PS Industrial SI	PSP-480Sxx	-	-	-	20A	10A														
	PST-240xx	_	-	-	10A	5A														
THREE PHASE	PST-480xx	-	-	-	20A	10A														
PST-960xx 40A 20A																				
PST-960Pxx 40A 20A																				
	PS-C120xx	_	10A	_	5A	2.5A			П			П								
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Compact Housing OLTAGE SINGLE PHASE	PSH-C480xx		_	_	20A	10A			$\vdash$											
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Comp	PSW-120xx	_	10A	-	5A	2.5A			Н											
Comp WIDE VOLTAGE	PSW-240xx	_	-	-	10A	5A			Н			$\dashv$								
<b>&gt;</b>	PSW-480Pxx	1			20	10								$\Box$						
	CBI12xx	-	3-25A	-	-	-														
UPS	CBI24xx	_	-	-	3-20A	-														
DC-UPS	CBI48xx	-	-	-	-	5-10A														
	CBI280 xx		12V/15A MULTI-\	24V/10A /OLTAGE	36V/7A MULTI-V	48V/5A OLTAGE														
ery	CB12xx	_	3-35A	_	_	_														
Battery Charger	CB24xx	-	-	-	3-20A	-			П			П								
	CB12245A	-	6 A	-	5 A	-						П								
o,	CB12245A - 6A - 5A -																			
Acces.	PS-UPS			21-28V			$\vdash$	$\vdash$	H	$\dashv$		$\dashv$		H						
PS-UPS 21-28V																				
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Se	Selected items, see data sheet Special order item / not UL approved. DC OK signal								prov	ed.		DC	OK	sign	al					



ALTECH's Compact DIN rail switching power supply, PSC Series designed for the fast growing demand of DIN rail applications. These 10W to 480W models are enclosed with fully isolated plastic or metal case to prevent users from hazardous shock. The design complies with the compact requirements that the precious space on the industrial rail can be preserved effectively. Featuring up to 94% of efficiency, this series is cooled only by free air convection up to 70°C that significantly increase the reliability and lifetime of the power supply. Another important feature of PSC Series is its low power consumption (<0.75W) This unique characteristic can significantly expand the application of PSC series beyond just heavy industrial field, but can also be implied to dotcom or IT applications that require green power to save the energy and to obey the anticipated government laws in the near future!

Short circuit protection, overload protection, over voltage protection, and the DC OK signal for monitoring the status of power supply are standard functions for the PSC Series. Typical applications include factory automation, process control, electro-mechanical industry, dotcom and IT.

• Input voltage range: 85-264V AC; 120-370V DC

AC inrush current (max): Cold start: 20A at 115V AC; 40A at 230V AC
 DC adjustment range: ±10% rated output voltage
 Overload protection: 105% rated output power

• Over-voltage protection: 115%-150% rated output voltage

Other protection:
 Setup, rise, time (max):
 Brown out protection
 500ms, 30ms/230V AC

1000ms, 30ms/115V AC, at full load

Withstand voltage: I/P-0/P: 3KV AC, I/P-FG:1.5KV AC, O/P-FG:0.5KV AC
 Working temperature: -20 to +70°C (-4° to +158°F), refer to output

de-rating curve

• Safety standards: UL508 listed, UL1310 recognized, TUV approved

EN60950-1 compliant

• EMC standards: EN55022 class B

EN61000-4-2,3,4,5,6,8,11

ENV50204; EN55024; EN61000-6-1; EN61204-3;

Light Industry Level criteria A

Military Standard
 Vibration
 MIL-HDBK-217F
 withstands 2G test

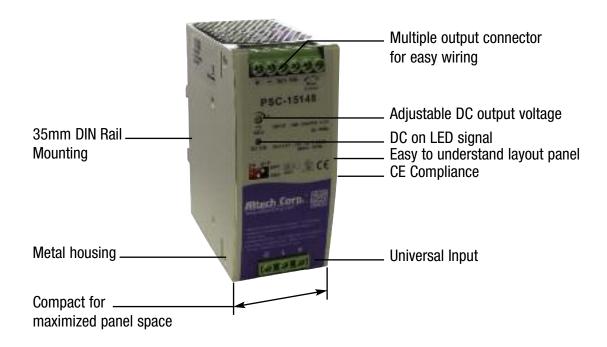
• On/Off Built in remote ON/OFF function (metal case only)

#### Features:

- Universal AC input/Full range
- Protections: Short circuit / Overload / Overvoltage
- Cooling by free air convection
- · DIN rail mountable
- UL1310
- NEC class 2 / LPS compliant (12V,24V,48V only)
- No load power consumption <0.75W</li>
- LED indicator for power on
- 100% full load burn-in test



ROHS CUDUS CE LINERGY













#### 10W Single Output Industrial DIN Rail Power Supply

Cat. No.	Out V DC	put A	Tol. %	Ripple & Noise	Efficiency	NOTES
PSC-1012	12V DC	0.84A	±1%	100 mVp-p	81%	
PSC-1015	15V DC	0.67A	±1%	100 mVp-p	81%	
PSC-1024	24V DC	0.42A	±1%	120 mVp-p	81%	



Cat. No.	Out <sub>l</sub> V DC	out A	Tol. %	Ripple & Noise	Efficiency	NOTES
PSC-2012	12V DC	1.7A	±1%	100 mVp-p	83%	
PSC-2015	15V DC	1.4A	±1%	100 mVp-p	85%	
PSC-2024	24V DC	1A	±1%	120 mVp-p	86%	

#### **40W Single Output Industrial DIN Rail Power Supply**

Cat. No.	Out <sub>l</sub> V DC	out A	Tol. %	Ripple & Noise	Efficiency	NOTES
PSC-4012	12V DC	3.4A	±1%	100 mVp-p	84%	
PSC-4015	15V DC	2.7A	±1%	100 mVp-p	84%	
PSC-4024	24V DC	1.7A	±1%	120 mVp-p	84%	
PSC-4048	48V DC	0.85A	±1%	180 mVp-p	85%	

#### **60W Single Output Industrial DIN Rail Power Supply**

Cat. No.	Out		Tol.	Ripple &	Efficiency	NOTES
	V DC	Α	%	Noise		
PSC-6012	12V DC	5A	±1%	100 mVp-p	86%	
PSC-6015	15V DC	4A	±1%	100 mVp-p	87%	
PSC-6024	24V DC	2.5A	±1%	120 mVp-p	87%	
PSC-6048	48V DC	1.25A	±1%	180 mVp-p	88%	

#### 96W Single Output Industrial DIN Rail Power Supply

Cat. No.	Outp V DC	out A	Tol. %	Ripple & Noise	Efficiency	NOTES
PSC-9612*	12V DC	7.5A	±1%	180 mVp-p	87%	
PSC-9615*	15V DC	6.4A	±1%	180 mVp-p	87%	
PSC-9624	24V DC	4A	±1%	180 mVp-p	88%	
PSC-9648	48V DC	2A	±1%	250 mVp-p	87%	

<sup>\*</sup>Not included in UL file E361915





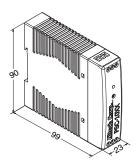






#### **SPECIFICATIONS**

### PSC-10 Series



#### Terminal Pin. No Assign. (TB1)

		_	•	
Pin No.	Assignment			
1	FG⊕			
2	AC/N			
3	AC/L			

#### Terminal Pin. No Assign. (TB2)

Pin No.	Assignment
4	DC OUTPUT +V
5	DC OUTPUT -V
6	DC OK SIGNAL

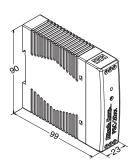
Universal Input: 88-264V AC, 124-370V DC full range; 0.23A @ 110V AC; 0.17A @ 230V AC

Connection: Input - 2 poles, Output - 2 poles, single screw terminal

Size (WxHxD): 23x90x99mm (0.9x3.54x3.94 inches)

Packaging: 1/box; 0.29lbs / 0.13Kg

PSC-20 Series



Terminal Pin. No Assign. (TB1)

		_	•	
Pin No.	Assignment			
1	FG⊕			
2	AC/N			
3	AC/L			

Terminal Pin. No Assign. (TB2)

Pin No.	Assignment
4	DC OUTPUT +V
5	DC OUTPUT -V
6	DC OK SIGNAL

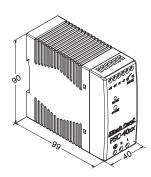
Universal Input: 88-264V AC, 124-370V DC full range; 0.45A @ 110V AC; 0.32A @ 230V AC

Connection: Input - 2 poles, Output - 2 poles, single screw terminal

Size (WxHxD): 23x90x99mm (0.9x3.54x3.94 inches)

Packaging: 1/box; 0.32lbs / 0.14Kg

PSC-40 Series



Terminal Pin. No Assign. (TB1)

Pin No.	Assignment
1	FG⊕
2	AC/N
3	AC/L

Terminal Pin. No Assign. (TB2)

Pin No.	Assignment
1/2	DC OUTPUT +V
3/4	DC OUTPUT -V
5/6	DC OK Relay Contact

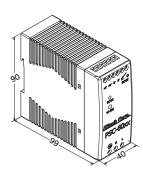
Universal Input: 88-264V AC, 124-370V DC full range; 0.8A @ 115V AC, 0.4A @ 230V AC

Connection: Input - 2 poles, Output - 2 poles, double screw terminal

Size (WxHxD): 40x90x99mm (1.57x3.54x3.94 inches)

Packaging: 1/box; 0.63lbs / 0.28Kg

PSC-60 Series



Terminal Pin. No Assign. (TB1)

Pin No.	Assignment
1	FG⊕
2	AC/N
3	AC/L

Terminal Pin. No Assign. (TB2)

	,
Pin No.	Assignment
1/2	DC OUTPUT +V
3/4	DC OUTPUT -V
5/6	DC OK Relay Contact

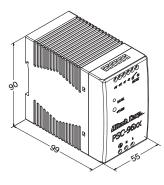
Universal Input: 88-264V AC, 124-370V DC full range; 1.3A @ 115V AC, 0.6A @ 230V AC

Connection: Input - 2 poles, Output - 2 poles, double screw terminal

Size (WxHxD): 40x90x99mm (1.57x3.54x3.94 inches)

Packaging: 1/box; 0.67lbs / 0.3Kg

PSC-96 Series



Terminal Pin. No Assign. (TB1)

		_	•	
Pin No.	Assignment			
1	FG 🖶			
2	AC/N			
3	AC/L			

Terminal Pin. No Assign. (TB2)

Pin No.	Assignment
1/2	DC OUTPUT +V
3/4	DC OUTPUT -V
5/6	DC OK Relay Contact

Universal Input: 88-264V AC, 124-370V DC full range; 1.1A @ 115V AC, 0.55A @ 230V AC

Connection: Input - 2 poles, Output - 2 poles, double screw terminal

Size (WxHxD): 55x90x99mm (2.17x3.54x3.94 inches)

Packaging: 1/box; 0.9lbs / 0.4Kg



### **PSC-10 Series**













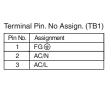
#### Features:

- Universal AC input (88-264V AC)
- Protections: Short Circuit / Overload / Overvoltage
- Brown-out protection
- Installed on DIN rail TS35 / 7.5 or 15
- True DC OK signal output
- All wiring 105°C long life electrolytic capacitors
- High operation temperature up to 70°C
- Withstands 2G vibration test
- High efficiency, long life and high reliability
- 3 year warranty
- UL1310 Class 2 Power unit / LPS pass
- UL508 (Industrial control equipment) listed

DUTPUT	Cat. No.	PSC-1012	PSC-1015	PSC-1024	
	DC VOLTAGE RATED CURRENT	12V 0.84A	15V 0.67A 0~0.67A	24V 0.42A 0~0.42A	
	CURRENT RANGE RATED POWER	0~0.84A 10.08W	10.05W	0~0.42A 10.08W	
	RIPPLE & NOISE (max)	10.00W 100mVp-p	10.05 <b>w</b>	120mVp-p	
	THI I LE & NOISE (MAX)		1 ' '	terminated with a 0.1µF & 47µF parallel capacitor	
	VOLTAGE ADJ. RANGE	10.8~13.2V	13.5~16.5V	21.6~26.4V	
	VOLTAGE TOLERANCE	±1.0%	±1.0%	±1.0%	
		Tolerance: includes set up tolerance, li	ne regulation and load regulation.		
	LINE REGULATION	±1.0%	±1.0%	±1.0%	
	LOAD REGULATION	±1.0%	±1.0%	±1.0%	
NPUT	SETUP, RISE TIME	< 800ms, < 100ms/230V AC			
NF O I	HOLD UP TIME (Typ.)	> 32ms / 230V AC; > 16ms			
	VOLTAGE RANGE	88V~264VAC; 124V~370VD0	ر put voltages. Please check the derating cu	rve for more details	
	FREQUENCY RANGE	47~63Hz	put voltagoo. I loade briden ale derating out	vo ioi more detaile.	
	EFFICIENCY (Typ.)	81%	81%	81%	
	AC CURRENT (Typ.)	0.23A/115VAC; 0.17A/230VA	C		
	INRUSH CURRENT (Typ.)	15A / 115V AC; 30A / 230V A	AC .		
PROTECTION	LEAKAGE CURRENT	< 1mA/ 230VAC			
	OVERLOAD PROTECTION	> 102% rated output power			
		**	ing, recovers automatically after fault cond	ition is removed.	
	OVERVOLTAGE PROTECTION	115%~150% rated output vi	oltage		
	OVED TEMPEDATURE PROTECTION	Protection type: Latch-off mode.	70°C constant compat limiting / a	without walta as a see to O	
NVIRONMENT	OVER TEMPERATURE PROTECTION	re-power on to recover	70°C constant current limiting / c	output voltage goes to 0;	
	WORKING TEMP.	-20 ~ +70°C (Refer to output	t load derating curve)		
	WORKING HUMIDITY	20 ~ 90% RH non-condensing			
	STORAGE TEMP. / HUMIDITY	-40 ~ +85°C; 10 ~ 95% RH			
AEET/ 0 E140	TEMP. COEFFICIENT	$\pm 0.03\%$ / °C (0 ~ 50°C)			
SAFETY & EMC	VIBRATION	10 ~ 500Hz, 2G 10min. / 1c	cycle, 60 min. each long X,Y, Z a	Kes	
	SAFETY STANDARDS	·	6+A11, UL1310 NEC class 2 cor	•	
	WITHSTAND VOLTAGE		I/P-FG: 1.5KVAC (2121DC) 1 mir	nute	
	ISOLATION RESISTANCE	I/P-O/P, I/P-FG, O/P-FG: 100N			
	EMI CONDUCTION & RADIATION	EN55022:2006+A1:2007 Cla			
	HARMONIC CURRENT EMS IMMUNITY	EN61000-3-2:2006 Class A,		aduatru laval aritaria A	
	EINIQ IINIINIOINI I A		1998+A1:2001+A2:2003 light in	idustry level, criteria A ipment. The final equipment must be re-confirme	
OUTPUT		that it still meets EMC directives.	pononi mila matanoa ma a mai oqu	ipinona ino mai oquipinon masc so to commo	
	DC OK Signal	Open collector. Max: 40mA			
	MTBF	562.7K hrs MIL-HDBK-217	rK		
	DIMENSION	23x90x99 mm (WxHxD)			
	PACKING	0.13Kg/48 pcs. / 7.44Kg			
	CONNECTION	I/P 3 poles, O/P: 3 poles scre	ew DIN terminal		
	COOLING	Free air convection			
			ed are measured at 230V AC input, rated to		

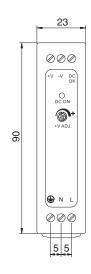
### **PSC-10 Series**

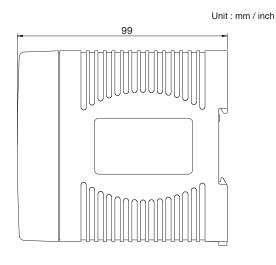
#### **Mechanical Specification**



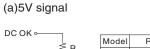
Terminal Pin. No Assign. (TB2)

Pin No.	Assignment
4	DC OUTPUT +V
5	DC OUTPUT -V
6	DC OK SIGNAL





#### **Application of DC OK Active Signal**

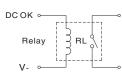


	Model   R   12V ≥1.5KΩ   25.1V   22KΩ   24V >3.9KΩ			
 < D	Model	R		
\$ R	12V	≥1.5KΩ		
☆ 5.1V	15V	≥2K Ω		
	24V	≥3.9KΩ		



(b)LED

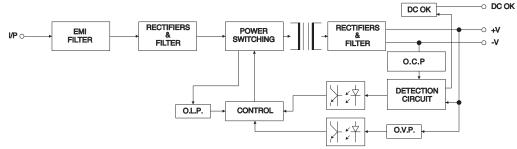




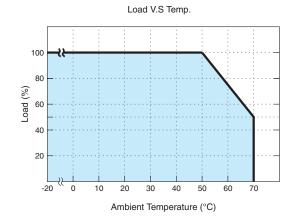
(c)Relay

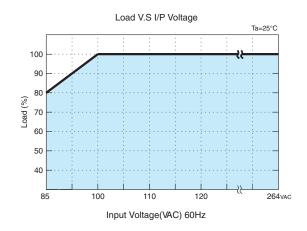
Model	R
12V	≥700 Ω
15V	≥700 ♀
24V	≥1.2KΩ

#### **Block Diagram**



#### **Derating Curve**







### **PSC-20 Series**













#### Features:

- Universal AC input (88-264V AC)
- Protections: Short Circuit / Overload / Overvoltage
- Brown-out protection
- Installed on DIN rail TS35 / 7.5 or 15
- True DC OK signal output
- All wiring 105°C long life electrolytic capacitors
- High operation temperature up to 70°C
- Withstands 2G vibration test
- High efficiency, long life and high reliability
- 3 year warranty
- UL1310 Class 2 Power unit / LPS pass
- UL508 (Industrial control equipment) listed

OUTPUT	Cat. No.	PSC-2012	PSC-2015	PSC-2024		
	DC VOLTAGE	12V	15V	24V		
	RATED CURRENT	1.7A	1.4A	1A		
	CURRENT RANGE	0~1.7A	0~1.4A	0~1A		
	RATED POWER	20.4W	21W	24W		
	RIPPLE & NOISE (max)	100mVp-p	100mVp-p	120mVp-p		
				e terminated with a 0.1μF & 47μF parallel capacitor		
	VOLTAGE ADJ. RANGE	10.8~13.2V	13.5~16.5V	21.6~26.4V		
	VOLTAGE TOLERANCE	±1.0%	±1.0%	±1.0%		
			e, line regulation and load regulation.	1 4 994		
	LINE REGULATION	±1.0%	±1.0%	±1.0%		
	LOAD REGULATION	±1.0%	±1.0%	±1.0%		
INPUT	SETUP, RISE TIME	< 800ms, < 100ms/230V				
INFUI	HOLD UP TIME (Typ.)	> 32ms / 230V AC; > 16m				
	VOLTAGE RANGE	88V~264VAC; 124V~370V	/DC v input voltages. Please check the derating c	urua for mora dataile		
	FREQUENCY RANGE	47~63Hz	v input voltages. Flease check the defaulty co	arve for more details.		
	EFFICIENCY (Typ.)	83%	85%	86%		
	AC CURRENT (Typ.)	0.45A/115VAC; 0.32A/230		100%		
	INRUSH CURRENT (Typ.)	20A / 115V AC; 40A / 230				
PROTECTION	LEAKAGE CURRENT	< 1mA/ 230VAC				
	OVERLOAD PROTECTION	> 105% rated output power				
	01211201121110112011011	·	miting, recovers automatically after fault con	dition is removed.		
	OVERVOLTAGE PROTECTION	115%~150% rated output	= -			
		Protection type: Latch-off mode.				
	OVER TEMPERATURE PROTECTION	N Power supply shut down at 70°C constant current limiting / output voltage goes to 0;				
ENVIRONMENT		re-power on to recover				
	WORKING TEMP.	-20 ~ +70°C (Refer to out)	put load derating curve)			
	WORKING HUMIDITY	20 ~ 90% RH non-condensing				
	STORAGE TEMP. / HUMIDITY	-40 ~ +85°C; 10 ~ 95% R	RH			
	TEMP. COEFFICIENT	±0.03% / °C (0 ~ 50°C)				
SAFETY & EMC	VIBRATION	10 ~ 500Hz, 2G 10min. /	1cycle, 60 min. each long X,Y, Z a	ixes		
	SAFETY STANDARDS	UL508, TUV EN60950-1:20	006+A11, UL1310 NEC class 2 co	mpliant		
	WITHSTAND VOLTAGE	I/P-0/P: 4242DC I/P-FG	: 2121DC 1 minute			
	ISOLATION RESISTANCE	I/P-0/P, I/P-FG, 0/P-FG: 10	00M Ohms/500VDC			
	EMI CONDUCTION & RADIATION	EN55022:2006+A1:2007	Class B			
	HARMONIC CURRENT	EN61000-3-2:2006 Class	A, EN61000-3-3:2008			
	EMS IMMUNITY		24:1998+A1:2001+A2:2003 light			
OUTPUT		The power supply is considered a contract that it still meets EMC directives.	component which will installed into a final eq	uipment. The final equipment must be re-confirmed		
0011 01	DC OK Signal	Open collector. Max: 40mA	1			
	DO ON Olyllal	and the second s		7 (25°C) 125.9K HRS MIL-HDBK-217 (25°C)		
	MTRE	I JULAK HRS MILLINGE 1917 191				
	MTBF	120.4K HRS MIL-HDBK-217 (25	5 C)   IST.SK FINS MIL-HUBK-2	7 (25 C)   123.9K HN3 MIL-HDBK-217 (25 C)		
	DIMENSION	23x90x99 mm (WxHxD)	5 C)   131.3K FIN3 MIL-HUBK-2	7 (25 C)   123.3K FINO MIL-HUBK-217 (25 C)		
	DIMENSION PACKING	23x90x99 mm (WxHxD) 0.14Kg/48 pcs./7.92Kg		7 (25 C)   123.3K FING MIL-HUBK-217 (25 C)		
	DIMENSION	23x90x99 mm (WxHxD)		7 (25 C)   123.3K FING MIL-HUBK-217 (25 C)		

### **PSC-20 Series**

**Mechanical Specification** 

#### Unit: mm / inch 23 99 000 +v -v DC Terminal Pin. No Assign. (TB1) Pin No. Assignment 1 FG ( ) **®** AC/N 90 Terminal Pin. No Assign. (TB2) Pin No. Assignment 4 DC OUTPUT +V DC OUTPUT -V DC OK SIGNAL (⊕ N L 000 5 5 **Application of DC OK Active Signal** (c)Relay (a)5V signal (b)LED DC OK ⊶ DC OK • DC OK Model Model R Model R R ≸ R 12V ≥1.5K Ω 12V ≥**2.4K**Ω 12V ≥700Ω RL Relay 15V ≥**2K**Ω 15V $\geq$ 3K $\Omega$ 15V ≥700 Ω ≥**4.7K**Ω ≥1.2K Ω 24V ≥3.9K Ω 24V 24V **Block Diagram** -O DC OK DC OK RECTIFIERS & FILTER RECTIFIERS EMI FILTER POWER SWITCHING FILTER I/P o -o **-V** O.C.P DETECTION CIRCUIT O.L.P. CONTROL O.V.P. **Derating Curve** Load V.S Temp. Load V.S I/P Voltage Ta=25°C 100 100 90 Load (%) Load (%) 60 70 60 40 50 20 40 -20 0 10 20 30 50 60 85 100 110 120 264vac 40 70 Input Voltage(VAC)60Hz Ambient Temperature (°C)



### **PSC-40 Series**













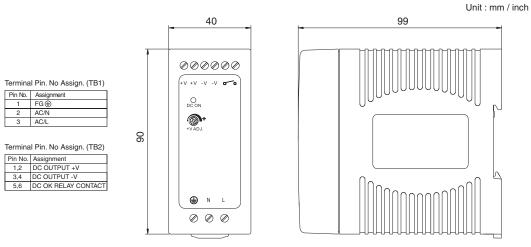
#### Features:

- Universal AC input (88-264V AC)
- Protections: Short Circuit / Overload / Overvoltage
- Brown-out protection
- Installed on DIN rail TS35 / 7.5 or 15
- True DC OK signal output
- All wiring 105°C long life electrolytic capacitors
- High operation temperature up to 70°C
- Withstands 2G vibration test
- High efficiency, long life and high reliability
- 3 year warranty
- UL1310 Class 2 Power unit / LPS pass
- UL508 (Industrial control equipment) listed

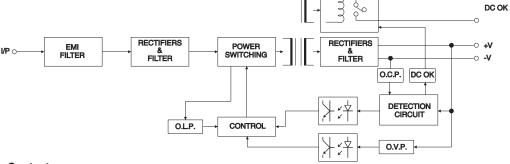
OUTPUT	Cat. No.	PSC-4012	PSC-4015	PSC-4024	PSC-4048	
	DC VOLTAGE	12V	15V	24V	48V	
	RATED CURRENT	3.4A	2.7A	1.7A	0.85A	
	CURRENT RANGE	0 ~ 3.4A	0 ~ 2.7A	0 ~ 1.7A	0 ~ 0.85A	
	RATED POWER	40.8W	40.5W	40.8W	40.8W	
	RIPPLE & NOISE (max)	100mVp-p	100mVp-p	120mVp-p	180mVp-p	
		Ripple & noise are measure	d at 20MHz of bandwidth by using a	12" twisted pair-wire terminated with	a 0.1µF & 47µF parallel capacitor	
	VOLTAGE ADJ. RANGE	10.8 ~ 13.2V	13.5 ~ 16.5V	21.6 ~ 26.4V	43.2 ~ 52.8V	
	VOLTAGE TOLERANCE	±1.0%	±1.0%	±1.0%	±1.0%	
		Tolerance: includes set up	tolerance, line regulation and load	regulation.		
	LINE REGULATION	±1.0%	±1.0%	±1.0%	±1.0%	
	LOAD REGULATION	±1.0%	±1.0%	±1.0%	±1.0%	
	SETUP, RISE TIME	< 800ms, < 50ms	230VAC at full load			
INDLIT	HOLD UP TIME (Typ.)		>16ms / 115VAC at full loa	ad		
INPUT	VOLTAGE RANGE	88 ~ 264VAC: 124				
	VOED TO WAR		inder low input voltages. Please che	eck the derating curve for more de	tails.	
	FREQUENCY RANGE	47~63Hz		1	1	
	EFFICIENCY (Typ.)	84%	84%	84%	85%	
	AC CURRENT (Typ.)	0.8 A / 115VAC; 0.4	A / 230VAC			
	INRUSH CURRENT (Typ.)	COLD START 30A /	115VAC; 60A / 230VAC			
	LEAKAGE CURRENT	< 1mA/ 230VAC				
PROTECTION	OVERLOAD PROTECTION	> 105% rated outp	ıt nower			
	OVERES/ID THO LEGITOR	'	current limiting, recovers automatic	ally after fault condition is removed	I	
	OVERVOLTAGE PROTECTION	115% ~ 150% rate	-	any artor radic condition to remove	•	
	OVERVOEN GET HOTEOTION	Protection type: latch-off				
	OVER TEMPERATURE PROTECTION		down at 70°C constant curi	rent limiting / output voltar	ne anes to 0.	
	OVER TERM EIGHTONE THOTEOTION	re-power on to reco		ront minung / output voita	jo good to 0,	
ENVIRONMENT	MODIZING TEMP	•		m.a\		
	WORKING TEMP.	$-20 \sim +70^{\circ}$ C (Refer to output load derating curve)				
	WORKING HUMIDITY	20 ~ 90% RH non-condensing				
	STORAGE TEMP. / HUMIDITY	-40 ~ +85°C; 10 ~ 95% RH				
	TEMP. COEFFICIENT	±0.03% / °C (0 ~ 5	,			
	VIBRATION	10 ~ 500Hz, 2G 10	min. / 1cycle, 60 min. eac	h long X,Y, Z axes		
SAFETY & EMC	SAFETY STANDARDS	UL508. TUV EN609	50-1:2006+A11, UL1310 N	IEC class 2 compliant		
	WITHSTAND VOLTAGE	I/P-O/P: 4242DC I/P-FG: 2121DC 1 minute				
	ISOLATION RESISTANCE		FG: 100M 0hms/500VDC			
	EMI CONDUCTION & RADIATION	EN55022: 2006 Cla				
	HARMONIC CURRENT		6 Class A, EN61000-3-3: 1	005+11.2001+12.2005		
	EMS IMMUNITY		:N55024:1998+A1:2001+ <i>F</i>		L oritorio A	
	EIVIS IIVIIVIOIVITT		dered a component which will insta			
		that it still meets EMC dir	•	anca into a final equipment. The fin	ar equipment must be re-committee	
OUTPUT	DC OK Signal		OC / 1A, 120VAC / 1A)			
	g .	, ,	,			
	MTBF	947.2K hrs MIL-F				
	DIMENSION	40x90x99 mm (Wx	,			
	PACKING	0.28Kg/27 pcs./8.7	•			
	CONNECTION		oles screw DIN terminal			
	COOLING	Free air convection				
	1	All parameters NOT speci	ally mentioned are measured at 230	OV AC input, rated load and 25°C of	ambient temperature.	

### **PSC-40 Series**

#### **Mechanical Specification**



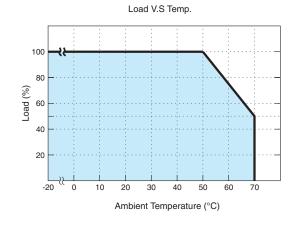
#### **Block Diagram**

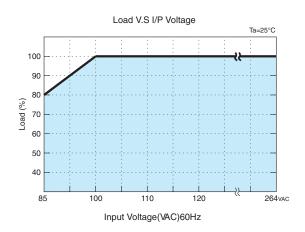


#### **DC OK Relay Contact**

Contact Close	When the output voltage reaches the adjusted output voltage
Contact Open	When the output voltage drop below 90% rated output voltage
Contact Ratings (max.)	30V / 1A resistive load

#### **Derating Curve**







### **PSC-60 Series**













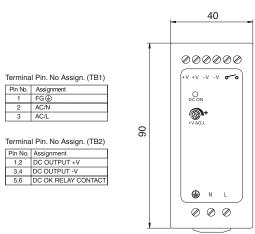
#### Features:

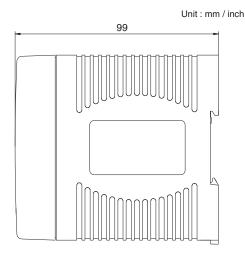
- Universal AC input (88-264V AC)
- Protections: Short Circuit / Overload / Overvoltage
- Brown-out protection
- Installed on DIN rail TS35 / 7.5 or 15
- True DC OK signal output
- All wiring 105°C long life electrolytic capacitors
- High operation temperature up to 70°C
- Withstands 2G vibration test
- High efficiency, long life and high reliability
- 3 year warranty
- UL1310 Class 2 Power unit / LPS pass
- UL508 (Industrial control equipment) listed

OUTPUT	Cat. No.	PSC-6012	PSC-6015	PSC-6024	PSC-6048		
	DC VOLTAGE	12V	15V	24V	48V		
	RATED CURRENT	5A	4A	2.5A	1.25A		
	CURRENT RANGE	0 ~ 5A	0 ~ 4A	0 ~ 2.5A	0 ~ 1.25A		
	RATED POWER	60W	60W	60W	60W		
	RIPPLE & NOISE (max)	100mVp-p	100mVp-p ed at 20MHz of bandwidth by using a	120mVp-p	180mVp-p		
	VOLTAGE ADJ. RANGE	10.8 ~ 13.2V	13.5 ~ 16.5V	21.6 ~ 26.4V	43.2 ~ 52.8V		
	VOLTAGE TOLERANCE	±1.0%	±1.0%	±1.0%	±1.0%		
	VOLINGE FOLLIUMVOL	1 1 1 1	tolerance, line regulation and load	1 1 1 1	21.070		
	LINE REGULATION	±1.0%	±1.0%	±1.0%	±1.0%		
	LOAD REGULATION	±1.0%	±1.0%	±1.0%	±1.0%		
	SETUP, RISE TIME		/ 230VAC at full load neasured at sold first start. Turning	ON/OFF the power supply may le	ad to increase of the set un time		
INPUT	HOLD UP TIME (Typ.)		>16ms / 115VAC at full lo		au to mercase of the set up time.		
	VOLTAGE RANGE	88 ~ 264VAC; 124	~ 370VDC input voltage. Please check the d	erating curve for more details			
	FREQUENCY RANGE	47~63Hz	input voltago. I loudo dilout ulo u	ording our vo for more detaile.			
	EFFICIENCY (Typ.)	86%	87%	87%	88%		
	AC CURRENT (Typ.)	1.3 A / 115VAC; 0.6		07 70	0070		
	INRUSH CURRENT (Typ.)		115VAC; 60A / 230VAC				
PROTECTION	LEAKAGE CURRENT	<1mA / 230VAC	110010, 00117 200010				
	OVER LOAD PROTECTION	> 102% rated output power					
	OVER VOLTAGE PROTECTION	Protection type: Constant current limiting, recovers automatically after fault condition is removed $115\% \sim 150\%$ rated output voltage					
		Protection type: latch-off mode					
ENVIRONMENT	OVER TEMPERATURE PROTECTION	Power supply shut re-power on to reco	down at 70°C constant cu over	rrent limiting / output volt	age goes to 0;		
	WORKING TEMP.	-20 ~ +70°C (Refer to output load derating curve)					
	WORKING HUMIDITY	20 ~ 90% RH non-	condensing				
	STORAGE TEMP. / HUMIDITY	-40 ~ +85°C; 10 ~ 95% RH					
	TEMP. COEFFICIENT	±0.03% / °C (0 ~ 5	0°C)				
SAFETY & EMC	VIBRATION	•	min. / 1cycle, 60 min. ea	ch long X,Y, Z axes			
	SAFETY STANDARDS		50-1:2006+A11, UL1310	NEC class 2 compliant			
	WITHSTAND VOLTAGE	•	P-FG: 2121DC 1 minute				
	ISOLATION RESISTANCE	ATION RESISTANCE I/P-0/P, I/P-FG, 0/P-FG: 100M 0hms/500VDC					
	EMI CONDUCTION & RADIATION	EN55022: 2006 Cla					
	HARMONIC CURRENT	EN61000-3-2: 2000	6 Class A, EN61000-3-3: 1	995+A1: 2001+A2: 2005	j		
	EMS IMMUNITY		EN55024: 1998+A1:2001				
OUTPUT		The power supply is cons that it still meets EMC dir		talled into a final equipment. The f	inal equipment must be re-confirme		
	DC OK Signal	Relay contact (24VI	OC / 1A, 120VAC / 1A)				
	MTBF	944.6K HRS MIL-I	HDBK-217F				
	DIMENSION	40x90x99 mm (Wx					
	PACKING	0.3kg; 27pcs / 9.3k					
	CONNECTION	• •	poles screw DIN terminal				
	COOLING	Free air convection	r				
			ally mentioned are measured at 23	10\/ 10\ 10\;			

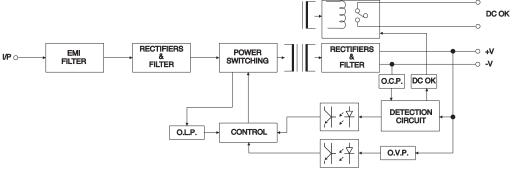
### **PSC-60 Series**

#### **Mechanical Specification**





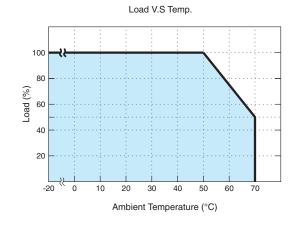
#### **Block Diagram**

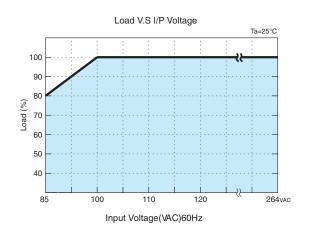


#### **DC OK Relay Contact**

Contact Close	When the output voltage reaches the adjusted output voltage
Contact Open	When the output voltage drop below 90% rated output voltage
Contact Ratings (max.)	30V / 1A resistive load

#### **Derating Curve**







### **PSC-96 Series**













#### Features:

- Universal AC input (88-264V AC)
- Protections: Short Circuit / Overload / Overvoltage
- Brown-out protection
- Installed on DIN rail TS35 / 7.5 or 15
- True DC OK signal output
- All wiring 105°C long life electrolytic capacitors
- High operation temperature up to 70°C
- Withstands 2G vibration test
- High efficiency, long life and high reliability
- 3 year warranty
- UL1310 Class 2 Power unit / LPS pass
- UL508 (Industrial control equipment) listed

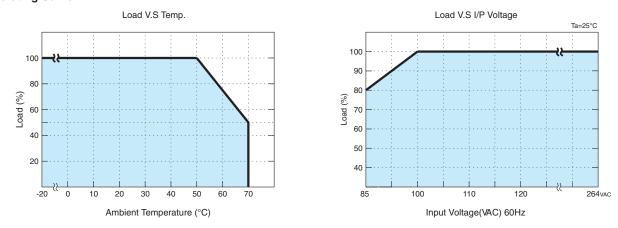
OUTPUT	Cat. No.	PSC-9612*	PSC-9615*	PSC-9624	PSC-9648			
	DC VOLTAGE	12V	15V	24V	48V			
	RATED CURRENT	7.5A	6.4A	4A	2A			
	CURRENT RANGE	0 ~ 7.5A	0 ~ 6.4A	0 ~ 4A	0 ~ 2A			
	RATED POWER	90W	96W	96W	96W			
	RIPPLE & NOISE (max)	180mVp-p	180mVp-p	180mVp-p	250mVp-p			
			at 20MHz of bandwidth by using a					
	VOLTAGE ADJ. RANGE	10.8 ~ 13.2V	13.5 ~ 16.5V	21.6 ~ 26.4V	43.2 ~ 52.8V			
	VOLTAGE TOLERANCE	±1.0%	±1.0%	±1.0%	±1.0%			
		Tolerance: includes set up	tolerance, line regulation and load	regulation.				
	LINE REGULATION	±1.0%	±1.0%	±1.0%	±1.0%			
	LOAD REGULATION	±2.0%	±2.0%	±2.0%	±2.0%			
	SETUP, RISE TIME	< 800ms, < 40ms /	230VAC at full load	1	1			
NPUT	HOLD UP TIME (Typ.)	,	>16ms / 115VAC at full loa	nd				
INI OI	VOLTAGE RANGE	88 ~ 264VAC; 124 -	~ 370VDC					
	1020102120102	,	input voltage. Please check the de	rating curve for more details.				
	FREQUENCY RANGE	47Hz~63Hz						
	POWER FACTOR (Typ.)	< 0.92 / 230VAC: <	0.98 / 115VAC at full load					
	EFFICIENCY (Typ.)	87%	87%	88%	87%			
	AC CURRENT (Typ.)	1.1 A / 115VAC; 0.5	5A / 230VAC	1	1 *****			
PROTECTION	INRUSH CURRENT (Typ.)	COLD START 30A / 115VAC; 60A / 230VAC						
THOTEOTION	LEAKAGE CURRENT	<1mA / 230VAC						
	OVER LOAD PROTECTION	> 102% rated output power						
	01211 2010 1 110 1 20 110 11	Protection type: Constant current limiting, recovers automatically after fault condition is removed.						
	OVER VOLTAGE PROTECTION	115% ~ 150% rated output voltage						
		Protection type: latch-off n						
ENIVIDONIMENIT	OVER TEMPERATURE PROTECTION							
ENVIRONMENT		Protection type: Shut down overvoltage, re-power on to recover						
	WORKING TEMP.	-20 ~ +70°C (Refer to output load derating curve)						
	WORKING HUMIDITY	20 ~ 90% RH non-c	condensing					
	STORAGE TEMP. / HUMIDITY	-40 ~ +85°C; 10 ~	95% RH					
CAFETY O FMO	TEMP. COEFFICIENT	±0.03% / °C (0 ~ 50	)°C)					
SAFETY & EMC	VIBRATION	10 ~ 500Hz, 2G 10r	nin. / 1cycle, 60 min. eac	h long X,Y, Z axes				
	SAFETY STANDARDS	UI 508, TUV FN6095	0-1:2006+A11, UL1310 N	IFC class 2 compliant				
	WITHSTAND VOLTAGE	,	I/P-FG: 2121DC 1 minute	izo diado z dompilant				
	ISOLATION RESISTANCE		FG: 100M Ohms/500VDC					
	EMI CONDUCTION & RADIATION	EN55022:2006 Clas						
	HARMONIC CURRENT		Class A, EN61000-3-3: 19	05 - 41 - 2001 - 42 - 2005				
			,		al aritaria A			
	EMS IMMUNITY		N55024:1998+A1:2001+A		ei, citteria A nal equipment must be re-confirmed			
DUTPUT		that it still meets EMC dire		anca into a finai equipment. The n	nai equipment must be re-committee			
3011 01		Relay contact (24VD	C / 1A 120VAC / 1A)					
3011 01	DC OK Signal	Relay contact (24VDC / 1A, 120VAC / 1A)						
	DC OK Signal	, ,	2K_217F	120.4K Hrs MIL-HDBK-217F				
9011 01	MTBF	120.4K Hrs MIL-HDI						
<del>,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</del>	MTBF DIMENSION	120.4K Hrs MIL-HDI 55x90x99 mm (WxF	lxD)					
<del>,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</del>	MTBF DIMENSION PACKING	120.4K Hrs MIL-HDI 55x90x99 mm (WxF 0.4Kg/24 pcs. / 10.8	lxD) BKg					
5011 01	MTBF DIMENSION	120.4K Hrs MIL-HDI 55x90x99 mm (WxH 0.4Kg/24 pcs. / 10.8	lxD)					

\*Not included in UL E361935

### **PSC-96 Series**

#### **Mechanical Specification** Unit: mm / inch 55 99 000000 Terminal Pin. No Assign. (TB1) Pin Nb. Assignment O DC ON **\***+V ADJ. AC/L 8 Terminal Pin. No Assign. (TB2) Pin No. Assignment DC OUTPUT +V DC OUTPUT -V DC OK RELAY CONTACT Ν 000 **Block Diagram** DC OK RECTIFIERS & FILTER EMI FILTER -> **+V** PFC CIRCUIT POWER SWITCHING & RECTIFIERS -o **-V** O.C.P. DC OK O.L.P. O.V.P. O.L.P. DETECTION CIRCUIT PWM&PFC CONTROL O.V.P. O.T.P. **DC OK Relay Contact** Contact Close When the output voltage reaches the adjusted output voltage Contact Open When the output voltage drop below 90% rated output voltage Contact Ratings (max.) 30V / 1A resistive load

#### **Derating Curve**













#### Features:

- Universal AC input (88-264V AC)
- Installed on DIN rail TS-35 / 7.5 or 15
- Built-in active PFC function, PF > 0.95
- 150% peak load capability
- 100% full load burn-in test
- · Protection: SCP, OLP, OVP, OTP
- Two selectable peak load modes
- Built-in DC OK Relay contact
- Built-in Remote ON / OFF function
- 3 years warranty
- UL 508



#### **150W DIN Rail Power Supply**

Cat. No.	Phases	Output V DC A	Tol. %	Ripple & Noise	Efficiency	NOTES
PSC-15124	1	24V DC 6.3A	±1%	≤240 mVp-p	≥87%	
PSC-15148	1	48V DC 3.2A	±1%	≤480 mVp-p	≥87%	



#### 240W DIN Rail Power Supply

Cat. No.	Phases	Output V DC A	Tol. %	Ripple & Noise	Efficiency	NOTES
PSC-24124	1	24V DC 10A	±1%	≤150 mVp-p	≥91%	
PSC-24148	1	48V DC 5A	±1%	≤300 mVp-p	≥92%	



#### **480W DIN Rail Power Supply**

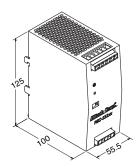
Cat. No.	Phases	Output V DC A	Tol. %	Ripple & Noise	Efficiency	NOTES
PSC-48124	1	24V DC 20A	±1%	≤240 mVp-p	≥93%	
PSC-48148	1	48V DC 10A	±1%	≤480 mVp-p	≥94%	



#### 20A DIN Rail Redundancy Module

Cat. No.	Phases	Output	In	put	NOTES
		V DC A	VDC	A	
PSC-RM20	1	24V DC 20A	24VDC	2x20A	

<sup>\*\*</sup>Other output voltages on request.



Terminal Pin No. Assignment (TB1)

reminari irrivo. Assignment (TD)				
Pin NO.	Assignment			
1	FG ⊕			
2	AC/L			
3	AC/N			

Terminal Pin No. Assignment (TB2)

Pin NO.	Assignment
1	DC+
2	DC-
3	INH+
4	INH-
5,6	Relay Contact

Switch No. Assignment

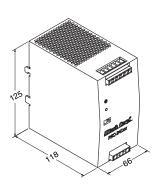
SW NO.	Assignment
SW1	PEAK LOAD SETTING
SW2	REMOTE ON/OFF SETTING

**Universal Input:** 2.0A @ 115VAC / 1.0A @ 230VAC Connection Input: 2 poles, single screw terminal Connection Output: 2 poles, single screw terminal

Size (WxHxD): 55.5x12.5x100 mm (2.19x4.92x3.93 in.)

Packaging: 1/box; 0.72kg (1.6 lbs)

#### **PSC-241 Series**



errilina i Firi No. Assigninent (TDT					
Pin NO.	Assignment				
1	FG 🖶				
2	AC/L				
3	AC/N				

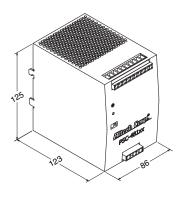
Terminal Pin No. Assignment (TB2) Switch No. Assignment

SW NO.	Assignment
SW1	PEAK LOAD SETTING
SW2	REMOTEON/OFF SETTING

**Universal Input:** 2.6A @ 115VAC / 1.3A @ 230VAC Connection Input: 2 poles, single screw terminal Connection Output: 2 poles, single screw terminal Size (WxHxD): 66x12.5x118 mm (2.6x4.9x4.65 in.)

Packaging: 1/box; 0.9kg (2.0 lbs)

**PSC-481 Series** 



Terminal Pin No. Assignment (TB1) Terminal Pin No. Assignment (TB2)

Pin NO.	Assignment
1	FG 🖲
2	AC/L
3	AC/N

Pin NO.	Assignment
1-3	DC+
4-6	DC-
7	INH+
8	INH-
9,10	DCOK Signal

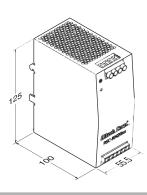
Switch No. Assignment

SW NO.	Assignment
SW1	PEAK LOAD SETTING
SW2	REMOTE ON/OFF SETTING

**Universal Input:** 5.0A @ 115VAC / 2.5A @ 230VAC Connection Input: 2 poles, single screw terminal Connection Output: 2 poles, single screw terminal Size (WxHxD): 86x12.5x123 mm (3.4x4.9x4.85 in.)

1/box; 1.45kg (3.2 lbs) Packaging:

PSC-RM20



Terminal Pin. No Assignment (TB1)

Pin No.	Assignment	
1	Vout+	
2	Vout-	
3,4	Vin-	
5	Vin B+	
6	Vin A+	
•		

Terminal Pin. No Assignment (TB2)

	• , ,
Pin No.	Assignment
1	Alarm B1
2	Alarm B2
3	Alarm A1
4	Alarm A2

2x20A @ 24VDC Input:

Connection Input: 2 poles, single screw terminal Connection Output: 2 poles, single screw terminal

Size (WxHxD): 55.5x12.5x100 mm (2.19x4.92x3.93 in.)

Packaging: 1/box; 0.72kg (1.6 lbs)















#### Features:

- Universal AC input (88-264V AC)
- Installed on DIN rail TS-35 / 7.5 or 15
- Built-in active PFC function, PF > 0.95
- 150% peak load capability
- 100% full load burn-in test
- Protection: SCP, OLP, OVP, OTP
- Two selectable peak load modes
- Built-in DC OK Relay contact
- Built-in Remote ON / OFF function
- 3 years warranty
- UĹ 508

OUTPUT	Cat. No.	PSC-15124	PSC-15148
	DC VOLTAGE	24V	48V
	RATED CURRENT	6.3A	3.2A
	CURRENT RANGE	0~6.3A	0~3.2A
	RATED POWER	150W	150W
	PEAK CURRENT	9.45A	4.8A
	PEAK POWER	225W (3sec.) 3 seconds or 20% duty cycle max. and the average output power s	should not exceed the rate power
	RIPPLE & NOISE (max)	240mVp-p	480mVp-p 'twisted pair-wire terminated with a 0.1µF & 47µF parallel capacitor.
	VOLTAGE ADJ. RANGE	-2% ~ +8%	-2% ~ +8%
	VOLTAGE TOLERANCE	±1.0%	±1.0%
		Tolerance: includes set up tolerance, line regulation and load re	egulation.
	LINE REGULATION	±0.5%	±0.5%
	LOAD REGULATION	±1.0%	±1.0%
	SETUP, RISE TIME	700ms, 30ms / 230VAC / 115VAC at full load	
INPUT_	HOLD UP TIME (Typ.)	16ms / 230VAC; 16ms / 115VAC at full load	
	VOLTAGE RANGE	88 ~ 264VAC; 124 ~ 373VDC Derating may apply in low input voltage. Please check the dera	iting curve for more details.
	FREQUENCY RANGE	47 ~ 63Hz	
	POWER FACTOR(Typ.)	0.9 / 230VAC; 0.98 / 115VAC at full load	
	EFFICIENCY (Typ.)	87%	87%
	AC CURRENT (Typ.)	2.0A / 115VAC; 1.0A / 230VAC	
	INRUSH CURRENT (Typ.)	33A / 115VAC; 65A / 230VAC	
PROTECTION	LEAKAGE CURRENT	<1mA/ 240VAC	
	OVERLOAD PROTECTION	105% ~ 150% rated output power for 3 sec and then shutdow 150% or greater rated power or short circuit is constant curren	
		If O/P drops to 40% output then it auto-recover 5 times; if fault	
		during auto recovery, the system will shut down and needs to be	pe restarted to recover.
	OVER VOLTAGE	29 ~ 33V	56 ~ 65V
	OVED TEMPEDATURE	Protection type: Latch-off mode, repower on to recover.	
ENVIDONMENT	OVER TEMPERATURE	95 ±5°C (TSW: detect on heatsink of power did Protection type: Shut down o/p voltage, recovers automatically	,
ENVIRONMENT	WODI/INO TEMP		and temperature goes down
	WORKING TEMP.	-10 ~ +70°C (Refer to derating curve) Installation clearance: 40mm from top, 20mm from bottom, 5m	um from the left and right side are recommended when loaded
		permanently with full power. In case the adjacent device is a he	
	WORKING HUMIDITY	20 ~ 95% RH non-condensing	
	STORAGE TEMP. / HUMIDITY	-40 ~ +85°C, 10 ~ 95% RH	
	TEMP. COEFFICIENT	±0.03% / °C (0 ~ 50°C)	
SAFETY & EMC	VIBRATION	10 ~ 500Hz, 2G 10min. / 1cycle, 60min. each a	llong X, Y, Z axes
5711 E 1 1 G E 1110	OAFFTY OTAND ARRO		•
	SAFETY STANDARDS	UL 508 / TUV EN 60950-1	771/D0 0/D D0 0/, 7071/D0
	WITHSTAND VOLTAGE	I/P-O/P: 4242VDC, I/P-FG: 2121VDC, O/P-FG: 70	-
	ISOLATION RESISTANCE	I/P-O/P, I/P-FG, O/P-FG: >100M Ohms / 500VD0	C / 25°C / 70% RH
	EMI CONDUCTION & RADIATION	EN55022 (CISPR22) Class B	
	HARMONIC CURRENT	EN61000-3-2, -3	
	EMS IMMUNITY	Compliance to EN61000-4-2,3,4,5,6,8,11; ENV	, , , , , , , , , , , , , , , , , , , ,
OUTPUT		EN61204-3; heavy industry level; criteria A, ME The power supply is considered a component which will install	
	DC OK RELAY. CONTACT RATINGS (max)	re-confirmed that it still meets EMC directives.	ive lead
	III. UK BELAY LUNIALI BAHNIS (may)	60VDC / 0.3A, 30VDC / 1A, 30VAC / 0.5A resisti	ive ioau
	` '	CO TV LIDE (MILL LIDDY OF TE)	
	MTBF	62.7K HRS (MIL-HDBK-217F)	
	MTBF DIMENSION	55.5x125.2x99.8 mm (WxHxD)	
	MTBF	,	

#### **Mechanical Specification**

Terminal Pin No. Assignment (TB1)

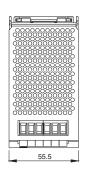
Pin NO.	Assignment
1	FG 🕀
2	AC/L
3	AC/N

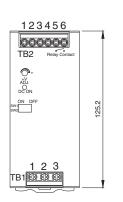
Terminal Pin No. Assignment (TB2)

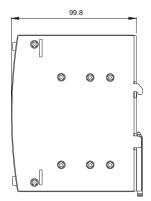
Pin NO.	Assignment
1	DC+
2	DC-
3	INH+
4	INH-
5,6	Relay Contact

Switch No. Assignment

SW NO.	Assignment
SW1	PEAK LOAD SETTING
SW2	REMOTE ON/OFF SETTING

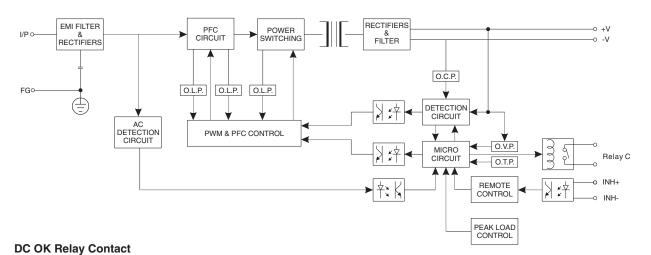






Unit: mm / inch

#### **Block Diagram**



Contact Close	When the output voltage reaches the adjusted output voltage.
Contact Open	When the output voltage drop below 45% rated output voltage.
Contact Ratings(max.)	30V/1A resistive load





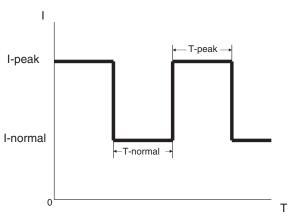








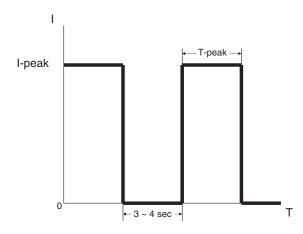
#### Peak Load SW1 ON (Mode1) Default setting



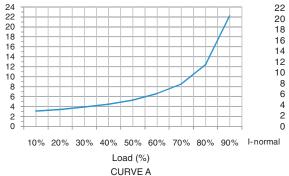
T-peak presents while the unit is working within 110%~150% Rating output power. See curve "B" for the variation in T-peak between output current and holdup time. If T-peak is more than the time setting in curve "B", the output current will drop to the constant current limit (I-normal) that is 105% rating power, meanwhile, I-normal and T-normal will be presenting. See curve "A" for the timing back to I-Peak of T-normal and this Mode can use for easy 2-stage battery charger.

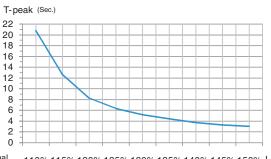
#### Peak Load SW2 OFF (Mode2)

T-normal (Sec.)



T-peak presents while the unit is working within 110%~150% Rating output power. See curve " B " for the variation in T-peak between output current and holdup time. If T-peak is more than the time setting in curve "B", the output current will be shut down for  $3{\text -}4$  sec, then auto-recovery.



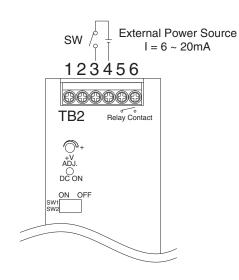


#### Remote ON/OFF

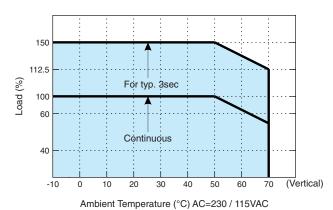
The PSU can be turned ON/OFF by using the "Remote Control" function.

SW2	INH+(3 PIN)/ INH-(4 PIN)	Output Status
OFF	SW ON (>2.5V)	ENABLE
OFF	SW OFF (<0.8V)	DISABLE
ON	SW ON (>2.5V)	DISABLE
ON	SW OFF (<0.8V)	FNABI F

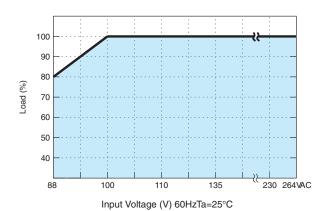
(Default Setting)



#### **Derating Curve**



#### **Output derating VS input Voltage**

















#### Features:

- Universal AC input (88-264V AC)
- High efficiency 92% and low power dissipation
- Installed on DIN rail TS-35 / 7.5 or 15
- Built-in active PFC function, PF > 0.95
- 150% peak load capability
- 100% full load burn-in test
- Protection: SCP, OLP, OVP, OTP
- Two selectable peak load modesBuilt-in DC OK Relay contact
- Built-in Remote ON / OFF function
- 3 years warranty
- UĹ 508

OUTPUT	Cat. No.	PSC-24124	PSC-24148
	DC VOLTAGE	24V	48V
	RATED CURRENT	10A	5A
	CURRENT RANGE	0~10A	0~5A
	RATED POWER	240W	240W
	PEAK CURRENT	15A	7.5A
	PEAK POWER	360W (3sec.) Two selectable peak load modes	
		3 seconds or 20% duty cycle Max. The average output power shown	uld not exceed the rate power.
	RIPPLE & NOISE (max)	150mVp-p Ripple & noise are measured at 20MHz of bandwidth by using a 12	300mVp-p " twisted pair-wire terminated with a 0.1µF & 47µF parallel capacitor.
	VOLTAGE ADJ. RANGE	-2% ~ +8%	-2% ~ +8%
	VOLTAGE TOLERANCE	±1.0%	±1.0%
		Tolerance: includes set up tolerance, line regulation and load r	egulation.
	LINE REGULATION	±0.5%	±0.5%
	LOAD REGULATION	±1.0%	±1.0%
	SETUP, RISE TIME	700ms, 30ms / 230VAC / 115VAC at full load	'
INPUT	HOLD UP TIME (Typ.)	20ms / 230VAC; 20ms / 115VAC at full load	
	VOLTAGE RANGE	88 ~ 264VAC; 124 ~ 373VDC	
		Derating may apply in low input voltage. Please check the der	ating curve for more details.
	FREQUENCY RANGE	47 ~ 63Hz	
	POWER FACTOR (Typ.)	0.96 / 230VAC; 0.96 / 115VAC at full load	
	EFFICIENCY (Typ.)	91%	92%
	AC CURRENT (Typ.)	2.6A / 115VAC; 1.3A / 230VAC	
	INRUSH CURRENT (Typ.)	33A / 115VAC; 65A / 230VAC	
PROTECTION	LEAKAGE CURRENT	<1mA/ 240VAC	
	OVERLOAD	105% ~ 150% rated output power for 3 sec and then shutdov	vn in O/P with auto-recovery.
		150% or greater rated power or short circuit is constant curre	=
		If O/P drops to 40% output then it auto-recover 5 times; if fau	
	OVER VOLTAGE	during auto recovery, the system will shut down and needs to $28 \sim 33V$	56 ~ 65V
	OVER VOLIAGE	Protection type: Shut down O/P voltage with auto-recovery	30 ~ 03V
	OVER TEMPERATURE	95 ±5°C (TSW: detect on heatsink of power did	nde)
ENVIRONMENT	OVERT PERMIENTATIONE	Protection type: Shut down o/p voltage, recovers automatically	
	WORKING TEMP.	-25 ~ +70°C (Refer to output load derating cur	ve)
		Installation clearances: 40mm on top, 20mm on the bottom, 5	
		permanently with full power. In case the adjacent device is a h	neat source, 15mm clearance is recommended.
	WORKING HUMIDITY	20 ~ 95% RH non-condensing	
	STORAGE TEMP. / HUMIDITY	-40 ~ +85°C; 10 ~ 95% RH	
	TEMP. COEFFICIENT	±0.03% °C (0 ~ 50°C)	
SAFETY & EMC	VIBRATION	10 ~ 500Hz, 2G 10min. / 1cycle, 60 min. each	n long X,Y, Z axes
	SAFETY STANDARDS	UL508, TUV EN60950-1	
	WITHSTAND VOLTAGE	I/P-0/P: 4242VDC	G: 707VDC
	ISOLATION RESISTANCE	I/P-0/P, I/P-FG, 0/P-FG: > 100M Ohms / 500VD	OC / 25°C / 70% RH
	EMI CONDUCTION & RADIATION	EN55022:2006 Class B	
	HARMONIC CURRENT	EN61000-3-2: 2006 Class A, ENG1000-3-3: 19	995+A1: 2001+A2: 2005
	EMS IMMUNITY	EN61204-3: 2000, EN55024: 1998+A1: 2001+	
<b>CUITPLIT</b>		The power supply is considered a component which will instal	
UUIFUI	T == =================================	re-confirmed that it still meets EMC directives.	
	DC OK RELAY CONTACT RATINGS (max)	60VDC / 0.3A, 30VDC / 1A, 30VAC / 0.5A resist	tive load
	MTBF	57K HRS (MIL-HDBK-217F)	
	DIMENSION	65.8x125.2x117.7 mm (WxHxD)	
	PACKING	0.9kg; 12pcs / 12.8kg	
	COOLING	Free air convection	
		All parameters NOT specially mentioned are measured at 230	VAC input rated load and 25°C of ambient temperature

#### **Mechanical Specification**

Terminal Pin No. Assignment (TB1)

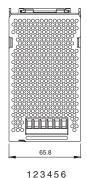
Pin NO.	Assignment
1	FG 🖶
2	AC/L
3	AC/N

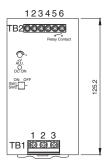
#### Terminal Pin No. Assignment (TB2)

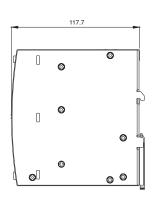
Pin NO.	Assignment
1	DC+
2	DC-
3	INH+
4	INH-
5,6	Relay Contact

Switch No. Assignment

SW NO.	Assignment
SW1	PEAK LOAD SETTING
SW2	REMOTE ON/OFF SETTING

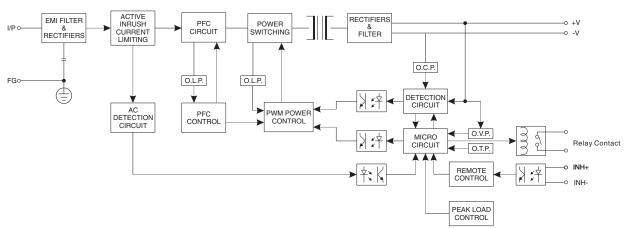






Unit: mm / inch

#### **Block Diagram**



#### **DC OK Relay Contact**

Contact Close	When the output voltage reaches the adjusted output voltage.
Contact Open	When the output voltage drop below 45% rated output voltage.
Contact Ratings(max.)	30V/1A resistive load





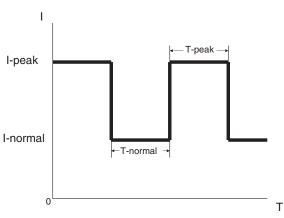






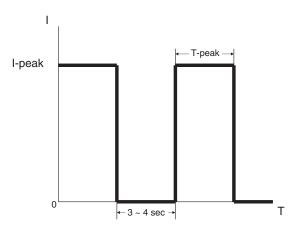


#### Peak Load SW1 ON (Mode1) Default setting

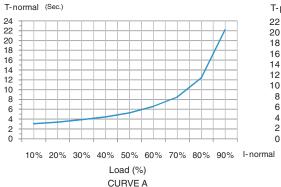


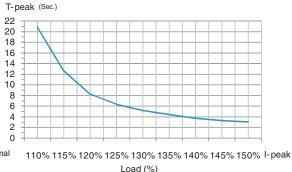
T-peak presents while the unit is working within  $110\%\sim150\%$ Rating output power. See curve " B " for the variation in T-peak between output current and holdup time. If T-peak is more than the time setting in curve "B", the output current will drop to the constant current limit (I-normal) that is 105% rating power, meanwhile, I- normal and T-normal will be presenting. See curve "A" for the timing back to I-Peak of T-normal and this Mode can use for easy 2-stage battery charger.

#### Peak Load SW2 OFF (Mode2)



T-peak presents while the unit is working within  $110\%{\sim}150\%$ Rating output power. See curve " B " for the variation in T-peak between output current and holdup time. If T-peak is more than the time setting in curve "B", the output current will be shut down for 3~4 sec, then auto-recovery.



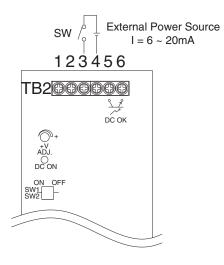


#### Remote ON/OFF

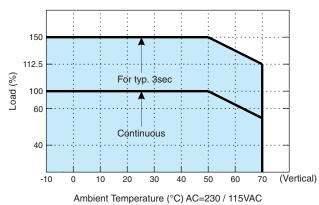
The PSU can be turned ON/OFF by using the "Remote Control" function.

SW2	INH+(3 PIN)/ INH-(4 PIN)	Output Status
OFF	SW ON (>2.5V)	ENABLE
OFF	SW OFF (<0.8V)	DISABLE
ON	SW ON (>2.5V)	DISABLE
ON	SW OFF (<0.8V)	ENABLE

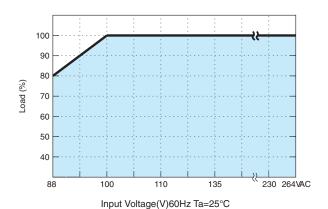
(Default Setting)



#### **Derating Curve**



#### **Output derating VS input Voltage**

















#### Features:

- Universal AC input (88-264V AC)
- Installed on DIN rail TS-35 / 7.5 or 15
- Built-in active PFC function, PF > 0.95
- 150% peak load capability
- Protection: SCP, OLP, OVP, OTP
- Two selectable peak load modes
- Built-in DC OK (Open Collector Signal)
- Built-in Remote ON / OFF function
- 3 years warranty UL 508

OUTPUT	Cat. No.	PSC-48124	PSC-48148
	DC VOLTAGE	24V	48V
	RATED CURRENT	20A	10A
	CURRENT RANGE	0~20A	0~10A
	RATED POWER	480W	480W
	PEAK CURRENT	30A	15A
	PEAK POWER	I and the second	ISA
	PEAR POWER	720W (3sec.) Two selectable peak load modes 3 seconds or 20% duty cycle Max. The average output power should n	ot exceed the rate power.
	RIPPLE & NOISE (max)	240mVp-p Ripple & noise are measured at 20MHz of bandwidth by using a 12" tw	480mVp-p
	VOLTAGE ADJ. RANGE	-5% $\sim$ +5%	isteu paii-wire terriiiriateu wiur a 0.1 µr ox 47 µr parailei capacitoi.
	VOLTAGE TOLERANCE	±1.0%	±1.0%
	VOLIAGE TOLLIANOL	Tolerance: includes set up tolerance, line regulation and load regul	
	LINE REGULATION	±0.5%	±0.5%
	LOAD REGULATION	±1.0%	±1.0%
	SETUP, RISE TIME		1 ±1.0 /0
INDIT	1	800ms, 100ms / 230VAC / 115VAC at full load	
INPUT	HOLD UP TIME (Typ.)	16ms / 230VAC; 16ms / 115VAC at full load	
	VOLTAGE RANGE	88 ~ 264VAC; 124 ~ 373VDC	
		Derating may apply in low input voltage. Please check the derating	g curve for more details.
	FREQUENCY RANGE	47 ~ 63Hz	
	POWER FACTOR (Typ.)	0.96 / 230VAC / 115VAC at full load	
	EFFICIENCY (Typ.)	93%	94%
	AC CURRENT (Typ.)	5.0A / 115VAC; 2.5A / 230VAC	
	INRUSH CURRENT (Typ.)	33A / 115VAC; 65A / 230VAC	
DDOTECTION	LEAKAGE CURRENT	< 1mA/ 240VAC	
PROTECTION		< IIIIAV 240VAG	
	OVERLOAD	$105\% \sim 150\%$ rated output power for 3 sec and then shutdown in	
		150% or greater rated power or short circuit is constant current lii	
		If 0/P drops to 40% output then it auto-recover 5 times; if fault co during auto recovery, the system will shut down and needs to be r	
	OVER VOLTAGE	29 ~ 33V	
	OVER VOLIAGE	Protection type: Latch-off mode.	56 ~ 65V
	OVER TEMPERATURE	95 ±5°C (TSW: detect on heatsink of power diode	۸
ENVIRONMENT	OVEN TEIVIPENATURE	Protection type: Shut down o/p voltage, recovers automatically aft	
LIVITIOIVILIVI			· ·
	WORKING TEMP.	-20 ~ +70°C (Refer to output load derating curve)	
		Installation clearance: 40mm from top, 20mm from the left and rig loaded permanently with full power. In case the adjacent device is	
	WODKING HIJMIDITY		a fleat soice, formin clearance is reconferiued.
	WORKING HUMIDITY	20 ~ 95% RH non-condensing	
	STORAGE TEMP. / HUMIDITY	-40 ~ +85°C; 10 ~ 95% RH	
	TEMP. COEFFICIENT	$\pm 0.03\%$ °C (0 ~ 50°C)	
SAFETY & EMC	VIBRATION	10 ~ 500Hz, 2G 10min. / 1cycle, 60 min. each lo	ng X,Y, Z axes
	SAFETY STANDARDS	UL 508 / EN 60950-1	
	WITHSTAND VOLTAGE	I/P-0/P: 4242VDC, I/P-FG: 2121VDC, 0/P-FG: 707V	/DC. O/P-DC OK: 707VDC
	ISOLATION RESISTANCE	I/P-0/P, I/P-FG, 0/P-FG: >100M 0hms / 500VDC /	•
	EMI CONDUCTION & RADIATION	EN 55022 (CISPR22), EN 61000-6-3	20 07 7070 1111
		* **	
	HARMONIC CURRENT	EN61000-3-2, -3-3	N 01004 0
	EMS IMMUNITY	IEC 61000-4-2, 3, 4, 5, 6, 8, 11; EN 61000-6-1; E	
OUTDUT		The power supply is considered a component which will installed re-confirmed that it still meets EMC directives.	into a final equipment. The final equipment must be
OUTPUT			
	DC OK RELAY CONTACT RATINGS (max)	60VDC / 0.3A, 30VDC / 1A, 30VAC / 0.5A resistive	load
	DIMENSION	86.3x124.8x123.4 mm (WxHxD)	
	PACKING	1.45kg; 8pcs / 12kg	
		All parameters NOT specially mentioned are measured at 230VAC	input, rated load and 25°C of ambient temperature.

#### **Mechanical Specification**

Terminal Pin No. Assignment (TB1)

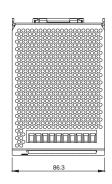
Pin NO.	Assignment
1	FG 🖶
2	AC/L
3	AC/N

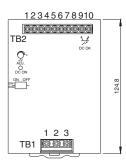
#### Terminal Pin No. Assignment (TB2)

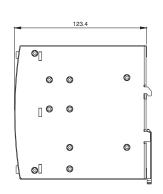
Pin NO.	Assignment
1-3	DC+
4-6	DC-
7	INH+
8	INH-
9,10	DC OK Singal

#### Switch No. Assignment

SW NO.	Assignment
SW1	PEAK LOAD SETTING
SW2	REMOTE ON/OFF SETTING

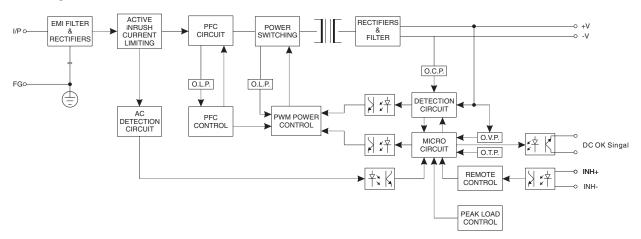






Unit: mm / inch

#### **Block Diagram**



#### **DC OK Relay Contact**

Contact Ratings(max.)	CTR : MIN. 50% at I <sub>F</sub> = 5mA, V <sub>CE</sub> = 5V
Isolation Voltage	Between input and output Viso = 3750Vrms





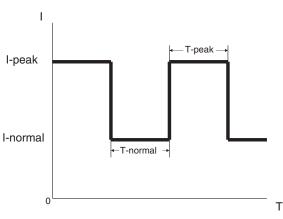








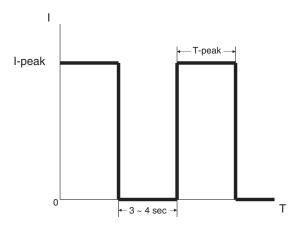
#### Peak Load SW1 ON (Mode1) Default setting



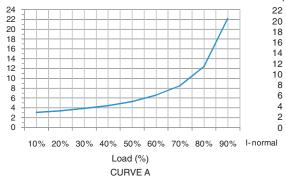
T-peak presents while the unit is working within 110%~150% Rating output power. See curve "B" for the variation in T-peak between output current and holdup time. If T-peak is more than the time setting in curve "B", the output current will drop to the constant current limit (I-normal) that is 105% rating power, meanwhile, I-normal and T-normal will be presenting. See curve "A" for the timing back to I-Peak of T-normal and this Mode can use for easy 2-stage battery charger.

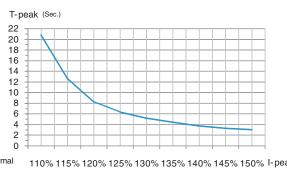
#### Peak Load SW2 OFF (Mode2)

T-normal (Sec.)



T-peak presents while the unit is working within 110%~150% Rating output power. See curve "B" for the variation in T-peak between output current and holdup time. If T-peak is more than the time setting in curve "B", the output current will be shut down for  $3{\sim}4$  sec, then auto-recovery.





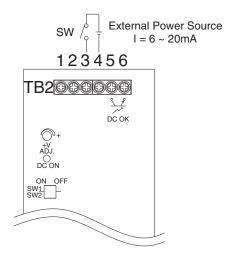
110% 115% 120% 125% 130% 135% 140% 145% 150% I-peak
Load (%)
CURVE B

#### Remote ON/OFF

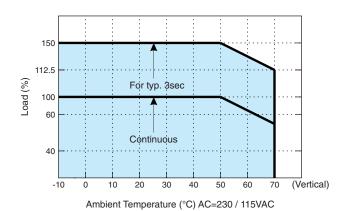
The PSU can be turned ON/OFF by using the "Remote Control" function.

SW2	INH+(3 PIN)/ INH-(4 PIN)	Output Status
OFF	SW ON (>2.5V)	ENABLE
OFF	SW OFF (<0.8V)	DISABLE
ON	SW ON (>2.5V)	DISABLE
ON	SW OFF (<0.8V)	ENABLE

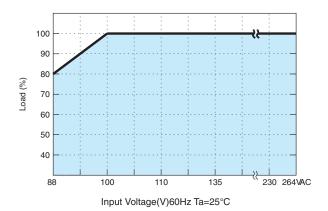
(Default Setting)



#### **Derating Curve**



#### **Output derating VS input Voltage**





### PSC-RM20 Specifications





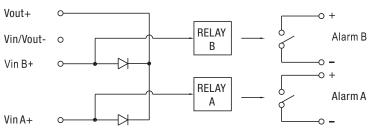


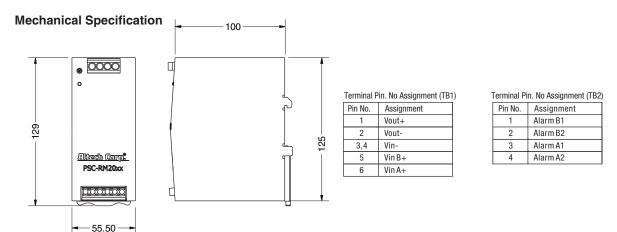
#### Features:

- Suitable for redundant operation of 24V system
- Installed on DIN Rail TS35 / 7.5 or 15
- Relay contact signal output and LED indicator for input failure alarm
- Cooling by free air convection
- 3 year warranty

OUTPUT	Cat. No.	PS-RDN20
	REVERSE VOLTAGE (max.)	30V
	OUTPUT CURRENT (max.)	20A
	VOLTAGE DROP	0.5V
	LED INDICATORS	Two green LED's indicating each input is OK or fail
INPUT		
	INPUT VOLTAGE RANGE	21 ~ 28V
	NUMBER OF INPUTS	Two
	INPUT CURRENT (max.)	20A per input
PROTECTION		
	INPUT VOLTAGE ALARM	When input is $\geq 20V$ ( $\pm 5\%$ ) or $\leq 30V$ ( $\pm 5\%$ ) relay contacts
	RELAY CONTACT RATING (max.)	30VDC, 1A
ENVIRONMENT	1	
	WORKING TEMP.	-20 ~ +70°C
	WORKING HUMIDITY	20 ~ 90% RH non-condensing
	STORAGE TEMP., HUMIDITY	-40 ~ +85°C, 10 ~ 95% RH
	VIBRATION	10 ~ 500Hz, 2G 10min./1cycle, 60 min. each long X,Y, Z axes
	MOUNTING	Compliance to IEC60068-2-6
SAFETY & EMC		
	WITHSTAND VOLTAGE	Terminal- Chassis: 0.5KVAC, Relay Contacts- Terminal: 0.5KVAC
	ISOLATION RESISTANCE	Terminal- Chassis: ≥100M Ohms / 500VDC (25°C; 70% RH)
	<b>EMI CONDUCTION &amp; RADIATION</b>	Compliance to EN55022 (CISPR22) Class B
	EMS IMMUNITY	Compliance to EN61000-4-2,3,4,5,6,8; ENV50204; heavy industry level; criteria A,
OUTPUT		
	MTBF	996.8Khrs min. MIL-HDBK-217K (25°C)
	DIMENSION	55.5x125.2x100mm (WxHxD)
	PACKING	0.45Kg; 20pcs / 11Kg / 1.29CUFT
		All parameters NOT specially mentioned are measured at 24V DC input, rated load and 25°C of ambient temperature.

#### **Block Diagram**

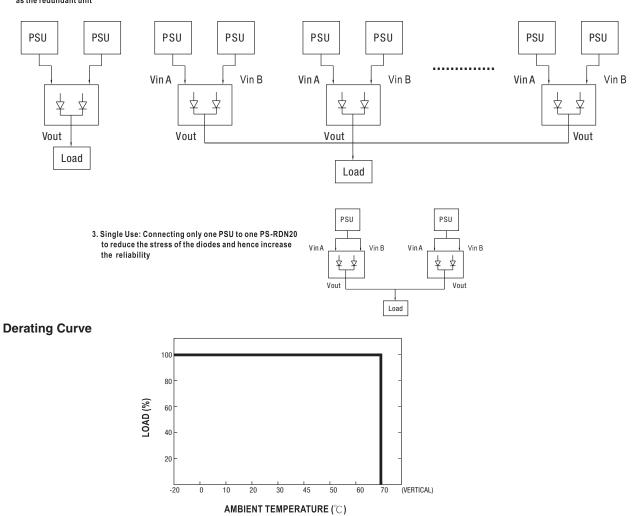




#### **Applications**

1. 1+1 Redundancy
Using 1 more PSU
as the redundant unit

2. 1+N Redundancy: Using more PSUs as the redundant units to increase the reliability

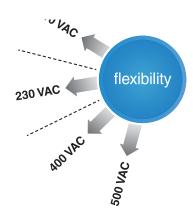




# FLEX Power Single Phase 24V DC Power Supplies

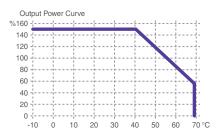
#### More flexibility in input voltage

The FLEX line of power supplies are suitable to a wide range of input voltage. With a single type it is therefore possible to meet the requirements of more applications and consequently improve design activity and stock management.



#### More Power: Power Boost

As an example, PSA-18024 is a 24Vdc power supply that features a continuous duty current of 7.5A at 110°C and 5A at 60°C and a Power Boost of 150%, equivalent to 7.5A, for at least 3 min. This features allows the use of a smaller size unit to power demanding loads such as motors, solenoid valves, lamps and other loads with transient overload behavior which would otherwise require an oversize power supply.



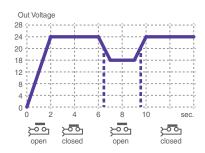
### More flexibility in input voltage

As an example, PSA-18024 can be the right solution for two design cases in very different temperature conditions:

- 1) 7.5A, 24Vdc in continuous duty at 40°C.
- 2) 5A, 24Vdc in continuous duty at 60°C +Power Boost 7,5A for at least 3 min.

## Power Good relay for monitoring the output voltage level

Output voltage is continuously monitored. The units 24 VDC output are equipped with Power Good relay. The NO contact triggers any time the output voltage level goes below 20Vdc (24 Vdc output). This feature is particularly useful in redundant applications.



# Applications in compliance with EN 60204-1 standard

The FLEX Power units comply with the requirement of EN60204-1 standard that an overload of 50% over the nominal current be withstand by the power supply for at least 1 hour to allow the tripping of magneto-thermic switches on the output. These features allows the implementation of "Control of commands and Emergency stops" by means of industrial PCs, PLC, remote I/O, etc. required by the standard.

# FLEX Power Single Phase 24V DC Power Supplies

### Hiccup Mode Automatic Restart

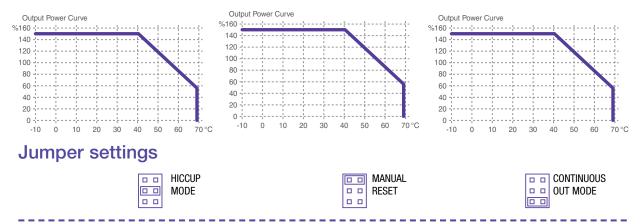
This is the default factory setting of all FLEX Power units. In case of shortcircuit or overloading, the output current is interrupted. The device tries again to re-establish output voltage and normal condition about every 2 second till the problem is cleared.

### Manual Reset Mode Restart by Operator

In case of short-circuit or overload, the output current is interrupted. In order to restart the output it is necessary to switch-off the input circuit for about 1 minute. This protection mode is particularly suggested in applications where safety procedures require that reset be carried out only by an authorized person.

## Continuous Output mode

In case of short-circuit or overload, the output current is kept at high values with near zero voltage. In case of short circuit the current can reach up to 3 times the rated current at 60°C. This protection mode is used to meet the requirements of demanding loads such as motors, solenoid valves, lamps, PLC with highly capacitive input circuits and other loads with marked transient overload behavior.



# Output circuits protected by magneto-thermic circuit breakers

Standard output circuit breakers can be triggered quickly and reliably with FLEX technology, which allows three times the nominal current at 60°C. Defective current paths are selectively disconnected, the defect is limited and the important parts of the system remain in operation. This together with the 50% overload capacity in compliance with EN60204-1 allows to safely manage any overload and short circuit condition.

# Reduced dimensions and snap-on DIN rail bracket

The higher performances obtained with the FLEX Power line, allow almost half dimensions as conventional technology and higher performances. An example is the PSA-12024 (120V) with maximum current is 12A. In permanent duty at 40°C it can deliver 5A at 24Vdc. All FLEX units feature the new DIN rail mounting bracket, easy to use and safe against heavy loading and vibrations.

### **Easy Parallel connection**

With FLEX technology it is easy to double capacity. The units PSA-360, PSB-360, PSA-600 and PSB-600 can be easily connected in parallel without needing high precision instruments. Follow instructions supplied with each unit.

## **FLEX Power Single Phase 24V DC Power Supplies**

### **Specifications**











### Features:

- Multiple overload/ short circuit protection modes
- Efficiency above 91%
- Small size
- DIN rail mountable
- · Cooling by free air convection
- · UL508 (industrial control equipment) approved
- EN60950-1
- Built-in DC OK relay contact
- · 3 year warranty



### **120W DIN Rail Power Supply**

Cat. No.	Phases	Output V DC A	Tol. %	Ripple & Noise	Efficiency	NOTES
PSA-12024	1	24V DC 5A	±3%	≤80 mVp-p	≥91%	



### **180W DIN Rail Power Supply**

Cat. No.	Phases	Output V DC A	Tol. %	Ripple & Noise	Efficiency	NOTES
PSA-18024	1	24V DC 7.5A	±3%	≤80 mVp-p	≥91%	

12V DC and 48V DC output on request.



### 360W DIN Rail Power Supply

Cat. No.	Phases	Output V DC A	Tol. %	Ripple & Noise	Efficiency	NOTES
PSA-36024	1	24V DC 14A	±3%	≤80 mVp-p	≥91%	

12V DC and 48V DC output on request.



### 600W DIN Rail Power Supply

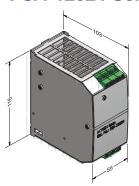
Cat. No.	Phases	Output V DC A	Tol. %	Ripple & Noise	Efficiency	NOTES
PSA-60024	1	24V DC 25A	±3%	≤80 mVp-p	≥92%	

48V DC output on request.

\*\*Other output voltages on request.

### **SPECIFICATIONS**

### PSA-12024 Series



Terminal Pin. No Assignment (TB1)

Terminal Pin. No Assignment (TB2)

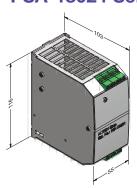
Pin No.	Assignment PSA-12024 (1 phase)	Pin No.	Assignment PSA-12024 (1 phase)
1	N/AC	1/2	DC OUTPUT -V
2	L/AC	3/4	DC OUTPUT +V
3	FG ⊕	5/6	Relay Contact

Nominal Input Data: 115VAC/1.8A - 230VAC/0.9A (selectable by switch) screw terminal blocks for wires 0.2-2.5mm<sup>2</sup> / AWG 24-14

Size (WxHxD): 55x116x103 mm (2.17x4.57x4.06 inches)

Packaging: 1/box; 0.5kg (1.1 lbs)

### PSA-18024 Series



Terminal Pin. No Assignment (TB1)

Terminal Pin. No Assignment (TB2)

Pin No.	Assignment PSA-18024 (1 phase)	Pin No.	Assignment PSA-18024 (1 phase)
1	N/AC	1/2	DC OUTPUT -V
2	L/AC	3/4	DC OUTPUT +V
3	FG ⊕	5/6	Relay Contact

Nominal Input Data: 115VAC/2.8A - 230VAC/1.3A (selectable by switch) Connection: screw terminal blocks for wires 0.2-2.5mm<sup>2</sup> / AWG 24-14

Size (WxHxD): 55x116x103 mm (2.17x4.57x4.06 inches)

Packaging: 1/box; 0.6kg (1.32 lbs)

### PSA-36024 Series



Terminal Pin. No Assignment (TB1)

Terminal Pin. No Assignment (TB2)

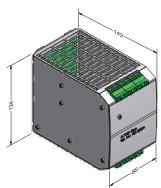
Pin No.	Assignment PSA-36024 (1 phase)	Pin No.	Assignment PSA-36024 (1 phase)
1	N/AC	1/2/3	DC OUTPUT -V
2	L/AC	4/5/6	DC OUTPUT +V
3	FG ⊕	7/8	Relay Contact

Nominal Input Data: 115VAC/3.3A - 230VAC/2.2A (selectable by switch) Connection: screw terminal blocks for wires 0.2-2.5mm<sup>2</sup> / AWG 24-14

Size (WxHxD): 72x118x133 mm (2.83x4.49x5.24 inches)

Packaging: 1/box; 0.72kg (1.59 lbs)

### PSA-60024 Series



Terminal Pin. No Assignment (TB1)

Terminal Pin. No Assignment (TB2)

Pin No.	Assignment PSA-60024 (1 phase)	Pin No.	Assignment PSA-60024 (1 phase)
1	N/AC	1/2	DC OUTPUT -V
2	L/AC	3/4	DC OUTPUT +V
3	Jumper 115V AC	5/6	Relay Contact
4	Jumper 115V AC		

Nominal Input Data: 115VAC/8.0A - 230VAC/4.2A (selectable by switch)

Connection: screw terminal blocks for wires up to

FG 🖶

4mm<sup>2</sup> / 11AWG (solid), 6mm<sup>2</sup> / 10AWG (stranded)

Size (WxHxD): 85x120x142 mm (3.35x4.72x5.59inches)

Packaging: 1/box; 1.0kg (2.2 lbs)



### PSA-120 Series (1 Phase) **Specifications**









#### Features:

- Multiple overload/ short circuit protection modes
- Efficiency above 91%
- Small size
- DIN rail mountable
- Cooling by free air convection
- UL 508 (industrial control equipment) approved
- EN60950-1
- Built-in DC OK relay circuit
- 3 year warranty

### OUTPUT

Cat. No.	PSA-12024
DC VOLTAGE	24 V
RATED CURRENT	5A
CURRENT RANGE	0-5A
RATED POWER	120 W
RIPPLE & NOISE (max)	100 mVp-p
	Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated
	with a 0.1μF & 47μF parallel capacitor.
VOLTAGE ADJ. RANGE	22 V ~ 27 V
VOLTAGE TOLERANCE	-0.3%
	Tolerance: includes set up tolerance, line regulation and load regulation.
START UP WITH STRONG LOAD	≤ 50,000 µF
SHORT CIRCUIT CURRENT ICC	12A
	Max 2 sec.: Hiccup mode
DIGGIDATION DOWED LOAD	Permanent: Continuous mode
DISSIPATION POWER LOAD max	11 W
LINE REGULATION	± 0.5%
LOAD REGULATION	± 1%
SETUP, RISE TIME	1 sec. (max)
	Length of set up time is measured at cold first start. Turning ON/OFF the power supply may lead to increase of the set up time
HOLD UP TIME (Typ.)	20 msec
VOLTAGE RANGE	90 ~ 135V AC / 180 ~ 264V AC switch select
EDECLIENCY DANCE	47 62 11-

### INPUT

· ··· ··· ····- (· <b>›)</b> ···	
VOLTAGE RANGE	90 ~ 135V AC / 180 ~ 264V AC switch select
FREQUENCY RANGE	47 ~ 63 Hz
EFFICIENCY (Typ.)	>91 %
AC CURRENT (115 - 230V)	1.8 - 0.9V AC
INRUSH CURRENT (Typ.)	< 11 A ≤ 5 msec
INTERNAL FUSE	4A (T)

LEAKAGE CURRENT < 1.5 mA @ 230 V AC **OVERLOAD** In (60°C) x 1.5  $^{3} \ge 3$  min.

EXTERNAL FUSE (recommended)

Current max. Overload @ 4VDC (permanent) Imax=In (60°C) x (1.8 - 2.2)

OVER VOLTAGE 30 ~ 35 VDC

**OVER TEMPERATURE** Shuts down output and automatically restarts when the temperature inside goes down

SHORT CIRCUIT PROTECTION 1 Hiccup Mode / 2 Fold Back / 3 Restart After Main - Selectable

10 A (MCB curve B)

-25 up to +70 °C WORKING TEMP.

**HUMIDITY** 95 % at 25°C, no condensation

-40 up to +85 °C STORAGE TEMP TEMP. COEFFICIENT  $\pm 0.03\% / C^{\circ} (0 \sim 60 °C)$ MOUNTING In according to IEC60068-2-6

SAFETY STANDARDS UL508 Listed, IEC/EN 60950, EN 50178, IEC/EN 60950, EN60950-1, PELV EN 60204-1

WITHSTAND VOLTAGE 0/P-FG: 500 VAC

PROTECTION CLASS IP 20 (EN/IEC 60529)

ISOLATION RESISTANCE  $100 \text{ M}\Omega$  (min) @ 500 VDC**EMI CONDUCTION & RADIATION** EN61000-6-4

HARMONIC CURRENT EN61000-3-2

**EMS IMMUNITY** EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN61000-6-2, The power supply is considered a component which will be installed into a final equipment.

The final equipment must be re-confirmed that it still meets EMC directives

MTBF IEC 61709 > 500.000 h DC OK AKTIV SIGNAL (max.) 20 ~ 30 VDC

POLLUTION DEGREE

CONNECTION TERMINAL BLOCK 2.5 mm Screw terminal (24 ~ 14 AWG) DIMENSION 55x110x105 mm ( 2.16x4.33x4.13 in )

**PACKING** 0.50 kg (1.1 lbs) each

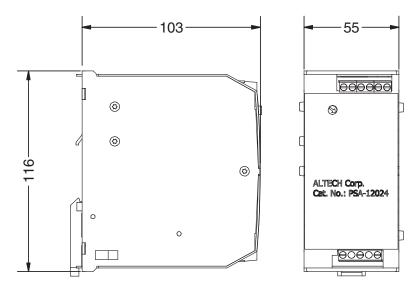
All parameters NOT specially mentioned are measured at 230V AC input, rated load and 25°C of ambient temperature.

### **PROTECTION**

### **ENVIRONMENT**

### **SAFETY & EMC**

### **OTHERS**



TB1 Terminal Pin. No Assignment

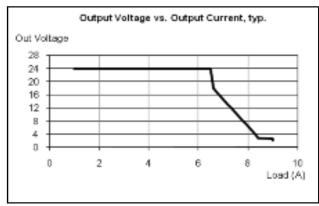
Pin No.	Assignment
	(1 phase)
1	N / AC
2	L / AC
2	FG⊕

TB2 Terminal Pin. No Assignment

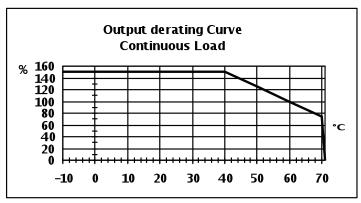
Pin No.	Assignment	
1,2	DC output -V	
3,4	DC output +V	
5,6	DC OK relay contacts	

### **DC OK Relay Contact**

Outputs are used for preventive function monitoring of the power supply. An electrically isolated signal contact is available. The signal contact closes when the output power is OK and opens when the output voltage falls below  $20Vdc \pm 5\%$ .



### **Output Derating Curve**





# PSA-180 Series (1 Phase) Specifications











#### Features:

- Multiple overload/ short circuit protection modes
- Efficiency above 91%
- Small size
- DIN rail mountable
- Cooling by free air convection
- UL508 (industrial control equipment) approved
- EN60950-1
- Built-in DC OK relay contact
- 3 year warranty

### OUTPUT

	Cat. No.	PSA-18024
Т	DC VOLTAGE	24 V
	RATED CURRENT	7.5 A
	CURRENT RANGE	0-7.5A
	RATED POWER	180 W
	RIPPLE & NOISE (max)	100 mVp-p
	VOLTAGE ADJ. RANGE (DC) VOLTAGE TOLERANCE	Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a $0.1\mu$ F & $47\mu$ F parallel capacitor. $10~V \sim 14~V$ $-0.03$
	VOLIAGE TOLLIANOL	Tolerance: includes set up tolerance, line regulation and load regulation.
	START UP WITH STRONG LOAD	≤ 50,000 µF
	SHORT CIRCUIT CURRENT Icc	16 A
	CHOTH ONICOTI CONTENT 100	Max 2 sec.: Hiccup mode
		Permanent: Continuous mode
	DISSIPATION POWER LOAD mas	17 W
	LINE REGULATION	± 0.5%
	LOAD REGULATION	± 1%
	SETUP, RISE TIME	1 sec. (max)
		Length of set up time is measured at cold first start. Turning ON/OFF the power supply may lead to increase of the set up time.
	HOLD UP TIME (Typ.)	Typ. 20 msec
	VOLTAGE RANGE	90 ~ 135V AC / 180 ~ 264V AC switch select
	FREQUENCY RANGE	47 ~ 63 Hz +-6%
	FEFICIENCY (Typ.)	>91 %

### INPUT

VOLTAGE RANGE	90 ~ 135V AC	/ 180 ~ 264V AC switch select
FREQUENCY RANGE	47 ~ 63 Hz +-	6%
EFFICIENCY (Typ.)	>91 %	
AC CURRENT (115 - 23	30 Vac.) 2.8 ~ 1.3 A	
INRUSH CURRENT (Typ.	.) < 11 A < 5 ms	ec
INTERNAL FUSE	4A (T)	

### PROTECTION

**ENVIRONMENT** 

**SAFETY & EMC** 

## LEAKAGE CURRENT < 1.5 mA @ 230 Vac</td> OVERLOAD In (60°C) x 1.5 ³ (3 min.)

Current max. Overload @ 4Vdc (permanent) Imax=In (60°C) x (1.8 - 2.2)

OVER VOLTAGE 30 – 35 Vdc

EXTERNAL FUSE (recommended)

OVER TEMPERATURE Yes. Shuts down output and automatically restarts when the temperature inside goes down

SHORT CIRCUIT PROTECTION 1 Hiccup Mode / 2 Fold Back / 3 Restart After Main - Selectable

10 A (MCB curve B)

DC OK AKTIV SIGNAL (max.)  $20 \sim 30 \,\text{Vdc}$  WORKING TEMP.  $-25 \,\text{up to} + 70 \,^{\circ}\text{C}$  HUMIDITY  $95 \,^{\circ}\text{M}$  at  $25 \,^{\circ}\text{C}$ , no

MOUNTING

HUMIDITY 95 % at 25 °C, no condensation STORAGE TEMP -40 up to +85 °C TEMP. COEFFICIENT  $\pm$  0.03% / C° (0  $\sim$  60 °C)

SAFETY STANDARDS UL508 Listed

IEC/EN 60950, EN 50178, IEC/EN 60950, EN60950-1, PELV EN 60204-1

In according to IEC60068-2-6

WITHSTAND VOLTAGE I/P-O/P: 3k VAC I/P-FG: 1.6k VAC O/P-FG: 500 VAC

PROTECTION CLASS IP 20 (EN/IEC 60529) ISOLATION RESISTANCE 100 M $\Omega$  (min) @ 500 Vdc

EMI CONDUCTION & RADIATION EN61000-6-4 HARMONIC CURRENT EN61000-3-2

EMS IMMUNITY EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5,

EN 61000-4-6, EN61000-6-2, EN61000-6-4,

The power supply is considered a component which will be installed into a final equipment. The final equipment must be

re-confirmed that it still meets EMC directives.

#### **OTHERS**

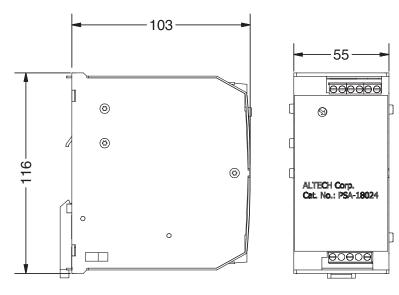
MTBF IEC 61709 > 500.000 h

POLLUTION DEGREE 2
CONNECTION TERMINAL BLOCK 2.5 mm Screw termina

CONNECTION TERMINAL BLOCK 2.5 mm Screw terminal (24  $\sim$  14 AWG) DIMENSION 55x110x105 mm ( 2.16x4.33x4.13 in )

PACKING 0.60 kg (1.3 lbs) each

NOTE All parameters NOT specially mentioned are measured at 230V AC input, rated load and 25°C of ambient temperature.



TB1 Terminal Pin. No Assignment

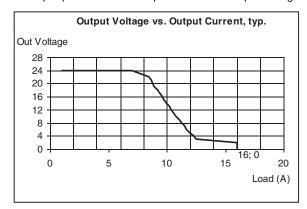
Pin No.	Assignment			
	(1 phase)			
1	N / AC			
2	L / AC			
3	FG⊕			

TB1 Terminal Pin. No Assignment

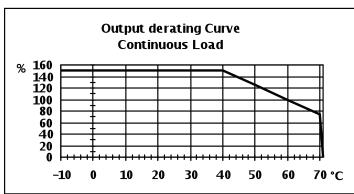
Pin No.	Assignment			
	DC output -V			
3,4	DC output +V			
5,6	DC OK relay contacts			

### **DC OK Relay Contact**

Outputs are used for preventive function monitoring of the power supply. An electrically isolated signal contact is available. The signal contact closes when the output power is OK and opens when the output voltage falls below  $20Vdc \pm 5\%$ .



### **Output Derating Curve**





### PSA-360 Series (1 Phase) **Specifications**











### Features:

- Multiple overload/ short circuit protection modes
- Efficiency above 91%
- Easy parallel connection for more power
- Small size
- DIN rail mountable
- Cooling by free air convection
- UL508 (industrial control equipment) approved
- EN60950-1
- Built-in DC OK relay contact

### OUTPUT

	2 and a second s		
	• 3 year warranty		
Cat. No.	PSA-36024		
DC VOLTAGE	24 V		
RATED CURRENT	14 A		
CURRENT RANGE	0 ~ 14 A		
RATED POWER	336 W		
RIPPLE & NOISE (max)	80 mVp-p		
,	Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1µF & 47µF parallel capaci		
VOLTAGE ADJ. RANGE (DC)	22 ~ 27 V		
VOLTAGE TOLERANCE	-0.03		
	Tolerance: includes set up tolerance, line regulation and load regulation.		
START UP WITH STRONG LOAD	≤ 50,000 µF		
SHORT CIRCUIT CURRENT Icc	30 A		
	Max 2 sec.: Hiccup mode		
	Permanent: Continuous mode		
DISSIPATION POWER LOAD mas	28 W		
LINE REGULATION	± 0.5%		
LOAD REGULATION	± 1%		
SETUP, RISE TIME	1 sec. (max)		
or or, ruor runc	Length of set up time is measured at cold first start. Turning ON/OFF the power supply may lead to increase of the set up time.		
HOLD UP TIME (Typ.)	Typ. 20 msec		
VOLTAGE RANGE	90 ~ 135V AC / 180 ~ 264V AC switch select		
FREQUENCY RANGE	47 ~ 63 Hz		
EFFICIENCY (Typ.)	47 ~ 03 HZ >91 %		
AC CURRENT (115 – 230 Vac.)	3.3 ~ 2.2 A		
INRUSH CURRENT (Tvp.)	3.3 ~ 2.2 A < 16 A < 5 msec		
INTERNAL FUSE	6.3 A (T)		
EXTERNAL FUSE (recommended)	16 A (MCB curve B)		
LEAKAGE CURRENT	< 1.5 mA @ 230 Vac		
OVERLOAD	In (60°C) x 1.5 ³ (3 min.)		
	Current max. Overload @ 4Vdc (permanent) Imax=In (60°C) x (1.8 - 2.2)		
OVER VOLTAGE	14 ~ 17 Vdc 30 ~ 35 Vdc 50 ~ 55 Vdc		
OVER TEMPERATURE	Yes. Shuts down output and automatically restarts when the temperature inside goes down		
SHORT CIRCUIT PROTECTION	1 Hiccup Mode / 2 Fold Back / 3 Restart After Main - Selectable		
DC OK AKTIV SIGNAL (max.)	20 ~ 30 Vdc		
WORKING TEMP.	-25 up to +70 °C		
	(>60°derating 2.5% °C)		
HUMIDITY	95 % at 25°C, no condensation		
STORAGE TEMP	-40 up to +85 °C		
TEMP COFFEICIENT	+ 0 03% / C° (0 - 60 °C)		

# **PROTECTION**

INPUT

### **ENVIRONMENT**

### **SAFETY & EMC**

### **OTHERS**

TEMP. COEFFICIENT MOUNTING	$\pm$ 0.03% / C° (0 $\sim$ 60 °C) In according to IEC60068-2-6
SAFETY STANDARDS	UL508 Listed IEC/EN 60950, EN 50178, IEC/EN 60950, EN60950-1, PELV EN 60204-1
WITHSTAND VOLTAGE	I/P-O/P: 3k VAC
PROTECTION CLASS	IP 20 (EN/IEC 60529)
ISOLATION RESISTANCE	100 MΩ (min) @ 500 Vdc
EMI CONDUCTION & RADIATION	EN61000-6-4
HARMONIC CURRENT	
EMS IMMUNITY	EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5,
	EN 61000-4-6, EN61000-6-2, EN61000-6-4,

re-confirmed that it still meets EMC directives.

#### MTBF IEC 61709 > 500.000 h

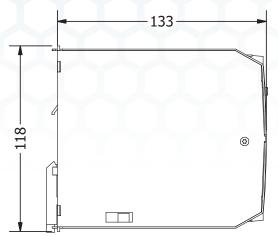
POLLUTION DEGREE 2

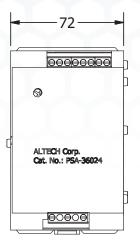
CONNECTION TERMINAL BLOCK 2.5 mm Screw terminal (24 ~ 14 AWG) DIMENSION 72x115x135 mm ( 2.8x4.5x5.3 in ) **PACKING** 0.65 kg (1.4 lbs) each

NOTE All parameters NOT specially mentioned are measured at 230V AC input, rated load and 25°C of ambient temperature.

The power supply is considered a component which will be installed into a final equipment. The final equipment must be







TB1 Terminal Pin. No Assignment

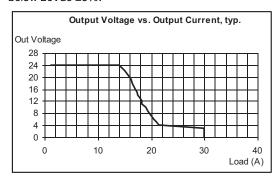
Pin No.	Assignment (1 phase)
1	N
2	L
	FG ⊕

TB1 Terminal Pin. No Assignment

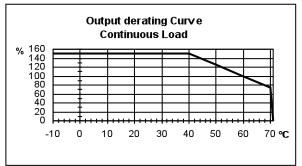
Pin No.	Assignment			
1,2,3	DC output -V			
4,5,6	DC output +V			
7,8	DC OK relay contacts			

### **DC OK Relay Contact**

Outputs are used for preventive function monitoring of the power supply. An electrically isolated signal contact is available. The signal contact closes when the output power is OK and opens when the output voltage falls below 20Vdc  $\pm 5\%$ .

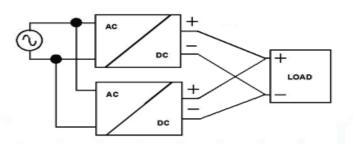


### **Output Derating Curve**



### **Parallel Connection**

A parallel connection with the same model power supply can be set up to increase the output power. The output has to be adjusted approximately to the same value (± 20mV) while applying a 1-2 A load to all devices before connecting them in parallel. In PSA-360xx, for more power, the position of the Easy Parallel jumper needs to be changed to enable a parallel connection. In this mode up to 4 power supplies can be put together in parallel.





Note: All dimensions are in millimeters, to convert to inches multiply by 0.03937.

CC Class 2 Series

PSA Flex Serio

PSB FIEX Series

PS-S Slim Series

os Low Profile Serve

os Industrial Series

PSC & W Series

CBI Type

CB Type Chargers

vcc6220ties

Appendix



### PSA-600 Series (1 Phase) **Specifications**











#### Features:

- Multiple overload/ short circuit protection modes
- Efficiency above 92%
- · Easy parallel connection for more power
- Small size
- DIN rail mountable
- Cooling by free air convection
- UL508 (industrial control equipment) approved
- EN60950-1
- Built-in DC OK relay contact
- 3 year warranty

### OU.

JTPUT	Cat. No.	PSA-60024
	DC VOLTAGE	24 V
	RATED CURRENT	25 A
	CURRENT RANGE	0-25A
	RATED POWER	600 W
	RIPPLE & NOISE (max)	100 mVp-p
		Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1µF & 47µF parallel capacitor.
	VOLTAGE ADJ. RANGE	22 V ~ 27 V
	VOLTAGE TOLERANCE	-0.03
		Tolerance: includes set up tolerance, line regulation and load regulation.
	START UP WITH STRONG LOAD	≤ 50,000 µF
	SHORT CIRCUIT CURRENT Icc	60 A
		Max 2 sec.: Hiccup mode
		Permanent: Continuous mode
	DISSIPATION POWER LOAD mas	54 W
	LINE REGULATION	± 0.5%
	LOAD REGULATION	± 1%
	SETUP, RISE TIME	1 sec. (max)
		Length of set up time is measured at cold first start. Turning ON/OFF the power supply may lead to increase of the set up time.
PUT	HOLD UP TIME (Typ.)	Typ. 20 msec
	VOLTAGE RANGE	90 ~ 135V AC / 180 ~ 264V AC switch select
	FREQUENCY RANGE	47 ~ 63 Hz +-6%
	EFFICIENCY (Typ.)	>91 %
	AC CURRENT (115 – 230 Vac.)	8 ~ 4.2 A
	INRUSH CURRENT (Typ.)	< 16 A < 5 msec
	INTERNAL FUSE	10A (T)

### INP

**PROTECTION** 

ENVIRONMENT

SAFETY & EMC

**EXTERNAL FUSE (recommended)** 16 A (curve B) LEAKAGE CURRENT < 1.5 mA @ 230 Vac

**OVERLOAD** In (60°C) x 1.5 3 (3 min.)

Current max. Overload @ 4Vdc (permanent) Imax=In (60°C) x (1.8 - 2.2)

**OVER VOLTAGE** 

OVER TEMPERATURE Yes. Shuts down output and automatically restarts when the temperature inside goes down

SHORT CIRCUIT PROTECTION 1 Hiccup Mode / 2 Fold Back / 3 Restart After Main - Selectable

DC OK AKTIV SIGNAL (max.) 20 ~ 30 Vdc WORKING TEMP. -25 up to +70 °C

HUMIDITY 95 % at 25°C, no condensation STORAGE TEMP -40 up to +85 °C TEMP. COEFFICIENT  $\pm 0.03\% / C^{\circ} (0 \sim 60 °C)$ 

SAFETY STANDARDS UL508 Listed

MOUNTING

IEC/EN 60950, EN 50178, IEC/EN 60950, EN60950-1, PELV EN 60204-1

In according to IEC60068-2-6

WITHSTAND VOLTAGE 0/P-FG: 500 VAC

PROTECTION CLASS IP 20 (EN/IEC 60529) ISOLATION RESISTANCE 100 M $\Omega$  (min) @ 500 Vdc

**EMI CONDUCTION & RADIATION** EN61000-6-4 HARMONIC CURRENT

**EMS IMMUNITY** EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5,

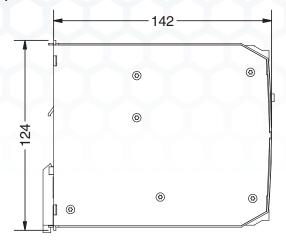
EN 61000-4-6, EN61000-6-2, EN61000-6-4,

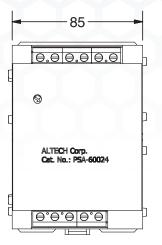
The power supply is considered a component which will be installed into a final equipment. The final equipment must be

#### **OTHERS**

re-confirmed that it still meets EMC directives. MTBF IEC 61709 > 500.000 h POLLUTION DEGREE CONNECTION TERMINAL BLOCK 4 mm Screw terminal (30 ~ 10 AWG) DIMENSION 85x120x140 mm ( 3.34x4.72x5.51 in ) **PACKING** 0.75 kg (1.9 lbs) each NOTE All parameters NOT specially mentioned are measured at 230V AC input, rated load and 25°C of ambient temperature.







TB1 Terminal Pin. No Assignment

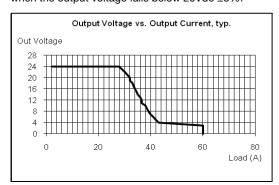
Pin No.	Assignment				
	(1 phase)				
1	N / AC				
2	L / AC				
3	Jumper 115V AC				
4	Jumper 115V AC				
5	FG⊕				

TB2 Terminal Pin. No Assignment

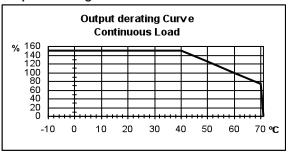
Pin No.	Assignment		
1,2	DC output -V		
3,4	DC output +V		
5,6	DC OK relay contacts		

### **DC OK Relay Contact**

Outputs are used for preventive function monitoring of the power supply. An electrically isolated signal contact is available. The signal contact closes when the output power is OK and opens when the output voltage falls below 20Vdc ±5%.

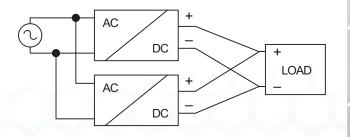


### **Output Derating Curve**



#### **Parallel Connection**

A parallel connection with the same model power supply can be set up to increase the output power. The output has to be adjusted approximately to the same value (± 20mV) while applying a 1-2 A load to all devices before connecting them in parallel. In PSA-600xx, for more power, the position of the Easy Parallel jumper needs to be changed to enable a parallel connection. In this mode up to 4 power supplies can be put together in parallel.





Note: All dimensions are in millimeters, to convert to inches multiply by 0.03937.

SC Class 2 Series

PSA Flex Serios

PSB Flex Series

PS-S Slim Series

OS LOW Profile Serve

os Industrial Serio

PS C & W Series

CBI Type

CB Type Chargers

Accessories

Appendix

### **FLEX Power Two and Three Phase** 24V DC\*\* Power Supplies

### **Specifications**









### Features:

- · Multiple overload/ short circuit protection modes
- Efficiency above 91%
- Small size
- DIN rail mountable
- · Cooling by free air convection
- · UL508 (industrial control equipment) approved
- EN60950-1
- Built-in DC OK relay contact
- · 3 year warranty



### **120W DIN Rail Power Supply**

Cat. No.	Phases	Output V DC A	Tol. %	Ripple & Noise	Efficiency	NOTES
PSB-12024	2	24V DC 5A	±3%	≤80 mVp-p	≥91%	



### **180W DIN Rail Power Supply**

Cat. No.	Phases	Output V DC A	Tol. %	Ripple & Noise	Efficiency	NOTES
PSB-18024	2	24V DC 7.5A	±3%	≤80 mVp-p	≥91%	

12 VDC and 48 VDC output on request



### 360W DIN Rail Power Supply

Cat. No.	Phases		Tol. %	Ripple & Noise	Efficiency	NOTES
PSB-36024	2	24V DC 14A	±3%	≤80 mVp-p	≥91%	
12 VDC and 48 VDC output on request						



### 600W DIN Rail Power Supply

Cat. No.	Phases	Output V DC A	Tol. %	Ripple & Noise	Efficiency	NOTES
PSB-60024	3	24V DC 25A	±3%	≤80 mVp-p	≥92%	
48 VDC output on request						

\*\*Other output voltages on request.

### **SPECIFICATIONS**

### PSB-12024 Series



TB1 Terminal Pin. No Assignment

TBT TOTTIMIATT III. 140 7 toolgriinont				
Pin No.	Assignment			
	(2 phase)			
1	N/L			
2	L/L			
3	FG⊜			

TB2 Terminal Pin. No Assignment

Pin No.	Assignment
1,2	DC output -V
3,4	DC output +V
5,6	DC OK relay contacts

Nominal Input Data: 230VAC/1.0A - 400VAC/0.5A - 500VAC/0.4A

(selectable by switch)

**Connection:** screw terminal blocks for 0.2-2.5mm<sup>2</sup> / AWG 24-14 wires.

**Size (WxHxD):** 55x116x103 mm (2.17x4.57x4.06 inches)

Packaging: 1/box; 0.5kg (1.1 lbs)

PSB-18024 Series



TB1 Terminal Pin. No Assignment

IBI Iermi	nai Pin. No Assignmeni
Pin No.	Assignment
	(2 phase)
1	N/L
2	L/L
3	FG⊕

TB2 Terminal Pin. No Assignment

Pin No.	Assignment
1,2	DC output -V
3,4	DC output +V
5,6	DC OK relay contacts

Nominal Input Data: 230VAC/1.5A - 400VAC/0.8A - 500VAC/0.7A

(selectable by switch)

**Connection:** screw terminal blocks for 0.2-2.5mm<sup>2</sup> / AWG 24-14 wires.

**Size (WxHxD):** 55x116x103 mm (2.17x4.57x4.06 inches)

Packaging: 1/box; 0.6kg (1.32 lbs)

PSB-36024 Series



TB1 Terminal Pin. No Assignment

Pin No.	Assignment
	(2 phase)
1	N/L
2	L/L
3	FG⊕

TB1 Terminal Pin. No Assignment

Pin No.	Assignment
1,2,3	DC output -V
4,5,6	DC output +V
7,8	DC OK relay contacts

Nominal Input Data: 230VAC/2.2A - 400VAC/1.4A - 500VAC/1.0A

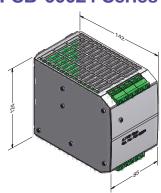
(selectable by switch)

**Connection:** screw terminal blocks for 0.2-2.5mm<sup>2</sup> / AWG 24-14 wires.

**Size (WxHxD):** 72x118x133 mm (2.83x4.49x5.24 inches)

**Packaging:** 1/box; 0.72kg (1.59 lbs)

PSB-60024 Series



TB1 Terminal Pin. No Assignment

Pin No.	Assignment
	(3 phase)
1	L1
2	L2
3	L3
4	FG⊕
5	FG⊕

TB2 Terminal Pin. No Assignment

Pin No.	Assignment
1.0	DO - 1- 1- 1- 1/
1,2	DC output -V
3,4	DC output +V
5,6	DC OK relay contacts

Nominal Input Data: 400VAC/0.95A - 500VAC/0.85A

**Connection:** screw terminal blocks for wires up to

4mm<sup>2</sup> / 11AWG (solid), 6mm<sup>2</sup> / 10AWG (stranded)

**Size (WxHxD):** 85x120x142 mm (3.35x4.72x5.59inches)

**Packaging:** 1/box; 1.1kg (2.43 lbs)



### PSB-120 Series (2 Phase) **Specifications**











#### Features:

- Multiple overload/ short circuit protection modes
- Efficiency above 91%
- Small size
- DIN rail mountable
- Cooling by free air convection
- UL508 (industrial control equipment) approved
- EN60950-1
- Built-in DC OK relay contact
- 3 year warranty

### OUTPUT

Cat. No.	PSB-12024
DC VOLTAGE	24 V
RATED CURRENT	5A
CURRENT RANGE	0 - 5 A
RATED POWER	120 W
RIPPLE & NOISE (max)	100 mVp-p
VOLTAGE ADJ. RANGE VOLTAGE TOLERANCE	Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a $0.1\mu$ F & $47\mu$ F parallel capacitor. 22 V $\sim 27$ V $-0.03$
	Tolerance: includes set up tolerance, line regulation and load regulation.
START UP WITH STRONG LOAD	$\leq$ 50,000 $\mu$ F
CURRENT SHORT CIRCUIT Icc	12A
	Max 2 sec.: Hiccup mode
	Permanent: Continuous mode
DISSIPATION POWER LOAD mas	11 W
LINE REGULATION	± 0.5%
LOAD REGULATION	± 1%
SETUP, RISE TIME	1 sec. (max)
HOLD UP TIME (Typ.)	Length of set up time is measured at cold first start. Turning ON/OFF the power supply may lead to increase of the set up time.  Typ. 20 msec
VOLTAGE RANGE FREQUENCY RANGE	187 ~ 264 V AC / 330 ~ 550V AC by switch 47 ~ 63 Hz +-6%

### INPUT

PROTECTION

**ENVIRONMENT** 

**SAFETY & EMC** 

VOLTAGE RANGE	187 ~ 264 V AC / 330 ~ 550V AC by s
FREQUENCY RANGE	47 ~ 63 Hz +-6%
EFFICIENCY (Typ.)	>91 %
AC CURRENT (115 - 230 Vac.)	1.0 ~ 0.58 ~ 0.46A

INRUSH CURRENT (Typ.) < 11 A < 5 msecINTERNAL FUSE T 4 A EXTERNAL FUSE (recommended) 10 A (MCB curve B)

LEAKAGE CURRENT < 1.5 mA @ 230 Vac

OVERLOAD In (60°C) x 1.5 3 3 min.; Current max. Overload @ 4Vdc (permanent) Imax=In (60°C) x (1.8 ~ 2.2)

**OVER VOLTAGE** 

**OVER TEMPERATURE** Yes. Shuts down output and automatically restarts when the temperature inside goes down

SHORT CIRCUIT PROTECTION 1 Hiccup Mode / 2 Fold Back / 3 Restart After Main - Selectable

DC OK AKTIV SIGNAL (max.)  $20 \sim 30 \text{ Vdc}$ 

WORKING TEMP. -25 up to +70 °C (>60°derating 2.5% °C)

HUMIDITY 95 % at 25°C, no condensation

STORAGE TEMP -40 up to +85 °C TEMP. COEFFICIENT  $\pm 0.03\% / C^{\circ} (0 - 60 ^{\circ}C)$ 

VIBRATION In according to IEC60068-2-6

SAFETY STANDARDS UL508 approved, IEC/EN 60950, EN 50178, IEC/EN 60950, EN60950-1, PELV EN 60204-1

WITHSTAND VOLTAGE 0/P-FG: 500 VAC

IP 20 (EN/IEC 60529) PROTECTION CLASS ISOLATION RESISTANCE 100 M $\Omega$  (min) @ 500 Vdc

**EMI CONDUCTION & RADIATION** EN61000-6-4 HARMONIC CURRENT EN61000-3-2

**EMS IMMUNITY** EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5,

EN 61000-4-6, EN61000-6-2,

The power supply is considered a component which will be installed into a final equipment. The final equipment must be

re-confirmed that it still meets EMC directives.

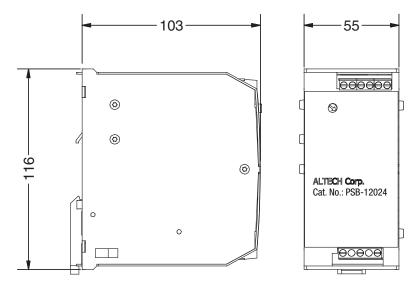
### **OTHERS**

MTBF IEC 61709 > 500.000 h POLLUTION DEGREE

CONNECTION TERMINAL BLOCK 2.5 mm Screw (24 ~ 14 AWG) DIMENSION 55x110x105 mm ( 2.16x4.33x4.13 in )

**PACKING** 0.50 kg (1.1 lbs) each

NOTE All parameters NOT specially mentioned are measured at 230V AC input, rated load and 25°C of ambient temperature.



TB1 Terminal Pin. No Assignment

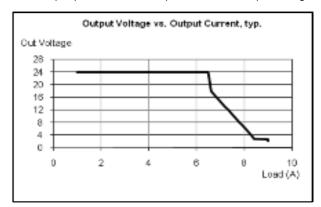
Pin No.	Assignment
	(2 phase)
1	N/L
2	L/L
3	FG⊕

TB2 Terminal Pin. No Assignment

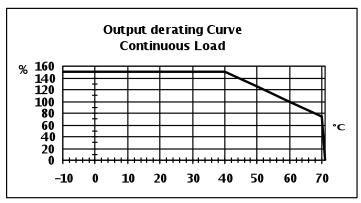
Pin No.	Assignment
1,2	DC output -V
3,4	DC output +V
5,6	DC OK relay contacts

### **DC OK Relay Contact**

Outputs are used for preventive function monitoring of the power supply. An electrically isolated signal contact is available. The signal contact closes when the output power is OK and opens when the output voltage falls below  $20Vdc \pm 5\%$ .



### **Output Derating Curve**





### PSB-180 Series (2 Phase) **Specifications**











#### Features:

- Multiple overload/ short circuit protection modes
- Efficiency above 91%
- Small size
- DIN rail mountable
- Cooling by free air convection
- UL508 (industrial control equipment) approved
- EN60950-1
- Built-in DC OK relay contact
- 3 year warranty

### OUTPUT

Cat. No.	PSB-18024
DC VOLTAGE	24 V
rated current	7.5 A
Current range	0 - 7.5 A
rated power	180 W
RIPPLE & NOISE (max)	100 mVp-p
VOLTAGE ADJ. RANGE	Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a $0.1\mu F$ & $47\mu F$ parallel capacito $22\ V \sim 27\ V$
VOLTAGE TOLERANCE	-0.03 Tolerance: includes set up tolerance, line regulation and load regulation.
START UP WITH STRONG LOAD	≤ 50,000 µF
CURRENT SHORT CIRCUIT ICC	16 A
	Max 2 sec.: Hiccup mode
	Permanent: Continuous mode
DISSIPATION POWER LOAD mas	17 W
LINE REGULATION	± 0.5%
LOAD REGULATION	± 1%
SETUP, RISE TIME	1 sec. (max)
	Length of set up time is measured at cold first start. Turning ON/OFF the power supply may lead to increase of the set up time.
HOLD UP TIME (Typ.)	Typ. 20 msec
Voltage range	187 ~ 264 V AC / 330 ~ 550V AC by switch
FREQUENCY RANGE	47 ~ 63 Hz +-6%

### INPUT

PROTECTION

ENVIRONMENT

**SAFETY & EMC** 

VOLTAGE RANGE	187 ~ 264 V AC / 330 ~ 550V AC by switch
FREQUENCY RANGE	47 ~ 63 Hz +-6%
EFFICIENCY (Typ.)	>91 %

AC CURRENT (230 - 400 - 500 Vac.) 1.5 ~ 0.8 ~ 0.7 A INRUSH CURRENT (Typ.) < 17 A < 5 msec**INTERNAL FUSE** T 4 A **EXTERNAL FUSE (recommended)** 10 A (MCB curve B)

LEAKAGE CURRENT < 1.5 mA @ 500 Vac OVERLOAD In (60°C) x 1.5 3 3 min.;

Current max. Overload @ 4Vdc (permanent) Imax=In (60°C) x (1.8 ~ 2.2)

**OVER VOLTAGE** 

**OVER TEMPERATURE** Yes. Shuts down output and automatically restarts when the temperature inside goes down

SHORT CIRCUIT PROTECTION 1 Hiccup Mode / 2 Fold Back / 3 Restart After Main - Selectable

DC OK AKTIV SIGNAL (max.)  $20 \sim 30 \text{ Vdc}$ WORKING TEMP. -25 up to +70 °C (>60°derating 2.5% °C)

**HUMIDITY** 95 % at 25°C, no condensation

STORAGE TEMP -40 up to +85 °C TEMP. COEFFICIENT  $\pm 0.03\% / C^{\circ} (0 \sim 60 °C)$ VIBRATION In according to IEC60068-2-6

SAFETY STANDARDS UL508 approved, IEC/EN 60950, EN 50178, IEC/EN 60950, EN60950-1, PELV EN 60204-1

WITHSTAND VOLTAGE O/P-FG: 500 VAC

PROTECTION CLASS IP 20 (EN/IEC 60529) ISOLATION RESISTANCE 100 M $\Omega$  (min) @ 500 Vdc

**EMI CONDUCTION & RADIATION** EN61000-6-4 HARMONIC CURRENT

**EMS IMMUNITY** EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5,

EN 61000-4-6, EN61000-6-2, EN61000-6-4,

The power supply is considered a component which will be installed into a final equipment. The final equipment must be

re-confirmed that it still meets EMC directives.

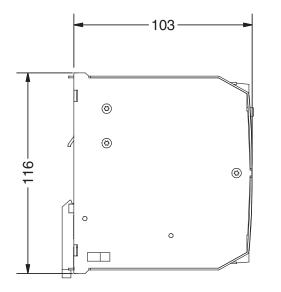
### **OTHERS**

> 500.000 h MTBF IEC 61709 POLLUTION DEGREE CONNECTION TERMINAL BLOCK 2.5 mm Screw (24 ~ 14 AWG)

DIMENSION 55x110x105 mm ( 2.16x4.33x4.13 in )

**PACKING** 0.60 kg (1.3 lbs) each

NOTE All parameters NOT specially mentioned are measured at 230V AC input, rated load and 25°C of ambient temperature





TB1 Terminal Pin. No Assignment

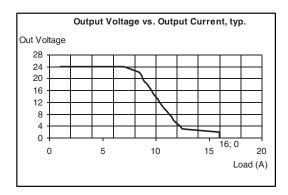
Pin No.	Assignment (2 phase)
1	N/L
2	L/L
3	FG⊕

TB2 Terminal Pin. No Assignment

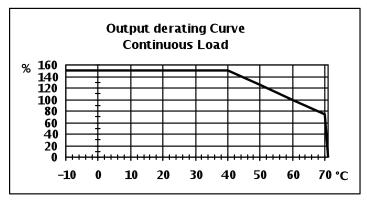
Pin No.	Assignment
1,2	DC output -V
3,4	DC output +V
5,6	DC OK relay contacts

### **DC OK Relay Contact**

Outputs are used for preventive function monitoring of the power supply. An electrically isolated signal contact is available. The signal contact closes when the output power is OK and opens when the output voltage falls below  $20 \text{Vdc} \pm 5\%$ .



### **Output Derating Curve**





### PSB-360 Series (2 Phase) **Specifications**











#### Features:

- Multiple overload/ short circuit protection modes
- Efficiency above 91%
- · Easy parallel connection for more power
- Small size
- DIN rail mountable
- Cooling by free air convection
- UL508 (industrial control equipment) approved
- EN60950-1
- Built-in DC OK relay contact
- 3 year warranty

### **OUTPUT**

Cat. No.	PSB-36024
DC VOLTAGE	24 V
rated current	14 A
CURRENT RANGE	Refer to Output derating curve
rated power	336 W
RIPPLE & NOISE (max)	100 mVp-p
	Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1µF & 47µF parallel capacity
Voltage Adj. Range	22 V ~ 27 V
VOLTAGE TOLERANCE	-0.03
	Tolerance: includes set up tolerance, line regulation and load regulation.
START UP WITH STRONG LOAD	≤ 50,000 µF
CURRENT SHORT CIRCUIT ICC	30 A
	Max 2 sec.: Hiccup mode
	Permanent: Continuous mode
DISSIPATION POWER LOAD mas	28 W
LINE REGULATION	± 0.5%
LOAD REGULATION	± 1%
SETUP, RISE TIME	1 sec. (max)
	Length of set up time is measured at cold first start. Turning ON/OFF the power supply may lead to increase of the set up time.
HOLD UP TIME (Typ.)	Typ. 20 msec
Voltage range	187 ~ 264 V AC / 330 ~ 550V AC by switch
EDECLIENOV DANOE	47 00 11 00/

### **INPUT**

TIOLD OF THILL (TYP.)	1)p: 20 111000
VOLTAGE RANGE	187 ~ 264 V AC / 330 ~ 550V AC by switch
FREQUENCY RANGE	47 ~ 63 Hz +-6%
EFFICIENCY (Typ.)	>91 %
AC CURRENT (230 - 400 - 500 Vac.)	2.2 ~ 1.4 ~ 1.0 A
INRUSH CURRENT (Typ.)	< 17 A < 5 msec
INTERNAL FUSE	T 4 A
EXTERNAL FUSE (recommended)	16 A (MCB curve B)

### **PROTECTION**

	LEAKAGE CURRENT	< 1.5 IIIA @ 500 Vac
Π	OVERLOAD	In (60°C) x 1.5 3 3 min.;

### Current max. Overload @ 4Vdc (permanent) Imax=In (60°C) x (1.8 ~ 2.2)

**OVER VOLTAGE** OVER TEMPERATURE Yes. Shuts down output and automatically restarts when the temperature inside goes down SHORT CIRCUIT PROTECTION 1 Hiccup Mode / 2 Fold Back / 3 Restart After Main - Selectable

VIBRATION

DC OK AKTIV SIGNAL (max.) 20 ~ 30 Vdc WORKING TEMP. -25 up to +70 °C (>60°derating 2.5% °C) HUMIDITY 95 % at 25°C, no condensation STORAGE TEMP -40 up to +85 °C TEMP. COEFFICIENT  $\pm$  0.03% / C° (0 ~ 60 °C)

### **SAFETY & EMC**

**ENVIRONMENT** 

SAFETY STANDARDS	UL508 approved, IEC/EN 60950, EN 50178, IEC/EN 60950, EN60950-1, PELV EN 60204-1
WITHSTAND VOLTAGE	I/P-O/P: 3k VAC I/P-FG: 1.6k VAC O/P-FG: 500 VAC

PROTECTION CLASS IP 20 (EN/IEC 60529) ISOLATION RESISTANCE 100 M $\Omega$  (min) @ 500 Vdc

**EMI CONDUCTION & RADIATION** EN61000-6-4 HARMONIC CURRENT EN61000-3-2 **EMS IMMUNITY** 

EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5,

In according to IEC60068-2-6

EN 61000-4-6, EN61000-6-2, EN61000-6-4,

The power supply is considered a component which will be installed into a final equipment. The final equipment must be re-confirmed that it still meets EMC directives.

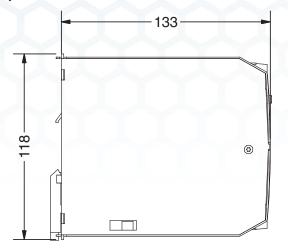
#### **OTHERS**

MTBF IEC 61709	> 500.000 h
POLLUTION DEGREE	2
CONNECTION TERMINAL BLOCK	2.5 mm Screw (24 ~ 14 AWG)
DIMENSION	72x115x135 mm ( 2.8x4.5x5.3 in )
PACKING	0.65 kg (1.3 lbs) each

NOTE All parameters NOT specially mentioned are measured at 230V AC input, rated load and 25°C of ambient temperature.

## Altech Corp.

### **Mechanical Specification**





TB1 Terminal Pin. No Assignment

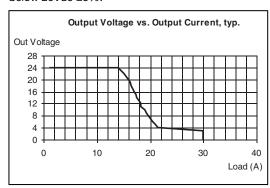
Pin No.	Assignment (2 phase)
1	N/L
2	L/L
3	FG⊕

TB1 Terminal Pin. No Assignment

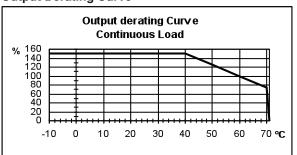
Pin No.	Assignment
1,2,3	DC output -V
	DC output +V
7,8	DC OK relay contacts

### **DC OK Relay Contact**

Outputs are used for preventive function monitoring of the power supply. An electrically isolated signal contact is available. The signal contact closes when the output power is OK and opens when the output voltage falls below 20Vdc  $\pm 5\%$ .

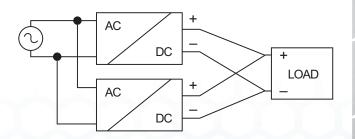


### **Output Derating Curve**



#### **Parallel Connection**

A parallel connection with the same model power supply can be set up to increase the output power. The output has to be adjusted approximately to the same value (± 20mV) while applying a 1-2 A load to all devices before connecting them in parallel. In PSA-600xx, for more power, the position of the Easy Parallel jumper needs to be changed to enable a parallel connection. In this mode up to 4 power supplies can be put together in parallel.





Note: All dimensions are in millimeters, to convert to inches multiply by 0.03937.

SC Class 2 Series

PSA Flex Series

PSB Flex Series

PS-S Slim Series

os Low Profile Serve

as Industrial Series

PS C & W Series

CBI Type

CB Type Chargers

Accessories

Appendix



### PSB-600 Series (3 Phase) **Specifications**











### Features:

- Multiple overload/ short circuit protection modes
- Efficiency above 92%
- · Easy parallel connection for more power
- Small size
- DIN rail mountable
- Cooling by free air convection
- UL508 (industrial control equipment) approved
- EN60950-1
- Built-in DC OK relay contact
- 3 year warranty

### OUTPUT

Cat. No.	PSB-60024
DC VOLTAGE	24 V
RATED CURRENT	25 A
CURRENT RANGE	Refer to Output derating curve
RATED POWER	600 W
RIPPLE & NOISE (max)	100 mVp-p
	$Ripple \ \& \ noise \ are \ measured \ at \ 20MHz \ of \ bandwidth \ by \ using \ a \ 12" \ twisted \ pair-wire \ terminated \ with \ a \ 0.1 \mu F \ \& \ 47 \mu F \ parallel \ capaciton \ and \ and \ before \ before \ before \ and \ before $
VOLTAGE ADJ. RANGE	22 V ~ 27 V
VOLTAGE TOLERANCE	-0.03
	Tolerance: includes set up tolerance, line regulation and load regulation.
START UP WITH STRONG LOAD	≤ 50,000 µF
CURRENT SHORT CIRCUIT Icc	60 A
	Max 2 sec.: Hiccup mode
	Permanent: Continuous mode
DISSIPATION POWER LOAD mas	28 W
LINE REGULATION	± 0.5%
LOAD REGULATION	± 1%
SETUP, RISE TIME	1 sec. (max)
	Length of set up time is measured at cold first start. Turning ON/OFF the power supply may lead to increase of the set up time.
HOLD UP TIME (Typ.)	Typ. 20 msec
VOLTAGE RANGE	330 ~ 550V AC
EDECLIENOV DANOE	47 00 11 00/

### INPUT

330 ~ 550V AC 47 ~ 63 Hz +-6%
>92 %
0.95 - 0.85 A
< 17 A < 5 msec
T 6.3 A
16 A (MCB curve B)

### **PROTECTION**

**ENVIRONMENT** 

LEAKAGE CURRENT	< 1.5 mA @ 500 Vac
OVERLOAD	In (60°C) x 1.5 3 3 min.:

Current max. Overload @ 4Vdc (permanent) Imax=In (60°C) x (1.8 ~ 2.2)

**OVER VOLTAGE** 

**OVER TEMPERATURE** Yes. Shuts down output and automatically restarts when the temperature inside goes down

SHORT CIRCUIT PROTECTION 1 Hiccup Mode / 2 Fold Back / 3 Restart After Main  $20 \sim 30 \text{ Vdc}$ 

DC OK AKTIV SIGNAL (max.) WORKING TEMP.

-25 up to +70 °C (>60°derating 2.5% °C) **HUMIDITY** 95 % at 25°C, no condensation STORAGE TEMP -40 up to +85 °C

TEMP. COEFFICIENT  $\pm 0.03\% / C^{\circ} (0 \sim 60 °C)$ VIBRATION In according to IEC60068-2-6

### **SAFETY & EMC**

SAFETY STANDARDS	UL508 approved, IEC/EN 60950, EN 50178, IEC/EN 60950, EN60950-1, PELV EN 60204-1
WITHSTAND VOLTAGE	I/P-O/P: 3k VAC
PROTECTION CLASS	IP 20 (EN/IEC 60529)
ISOLATION RESISTANCE	100 M $\Omega$ (min) @ 500 Vdc
EMI CONDUCTION & RADIATION	EN61000-6-4
HARMONIC CURRENT	EN61000-3-2

**EMS IMMUNITY** EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5,

EN 61000-4-6, EN61000-6-2, EN61000-6-4,

The power supply is considered a component which will be installed into a final equipment. The final equipment must be re-confirmed that it still meets EMC directives.

### **OTHERS**

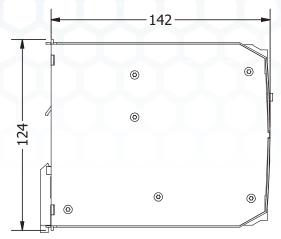
MTBF IEC 61709 > 500.000 h POLLUTION DEGREE

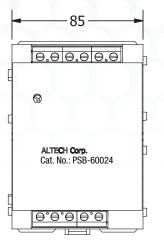
CONNECTION TERMINAL BLOCK 2.5 mm Screw (24 ~ 14 AWG) 85x120x140 mm (3.34x4.72x5.51 in ) DIMENSION

**PACKING** 0.75 kg (1.9 lbs) each

NOTE All parameters NOT specially mentioned are measured at 230V AC input, rated load and 25°C of ambient temperature.







TB1 Terminal Pin. No Assignment

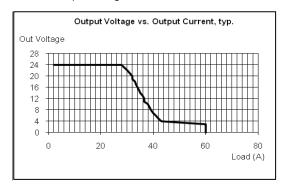
Pin No.	Assignment
	(3 phase)
1	L1
2	L2
3	L3
4	FG ⊕
5	FG ⊕

TB2 Terminal Pin. No Assignment

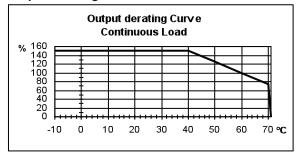
Pin No.	Assignment
1,2	DC output -V
	DC output +V
5,6	DC OK relay contacts

### **DC OK Relay Contact**

Outputs are used for preventive function monitoring of the power supply. An electrically isolated signal contact is available. The signal contact closes when the output power is OK and opens when the output voltage falls below 20Vdc  $\pm 5\%$ .

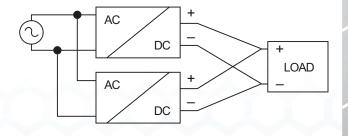


### **Output Derating Curve**



### **Parallel Connection**

A parallel connection with the same model power supply can be set up to increase the output power. The output has to be adjusted approximately to the same value (± 20mV) while applying a 1-2 A load to all devices before connecting them in parallel. In PSA-600xx, for more power, the position of the Easy Parallel jumper needs to be changed to enable a parallel connection. In this mode up to 4 power supplies can be put together in parallel.





Note: All dimensions are in millimeters, to convert to inches multiply by 0.03937.

PSC Class 5 Series

PSA Flex Serio

PSB Flex Series

PS-S Slim Series

PS TOM brotile See

os Industrial Serie

PSC & W Series

CBI Type

CB Type Chargers

Accessories

Appendix



### Slimline Single Phase Power Supply

ALTECH's slim type DIN rail switching power supply, PS-S Series designed for the fast growing demand of low wattage DIN rail applications. These 10W to 100W models are enclosed with fully isolated plastic case to prevent users from hazardous shock. The design complies with the slim trend that the precious space on the industrial rail can be saved effectively. Featuring up to 84% of efficiency, this series is cooled by only free air convection up to 70°C that significantly increase the reliability and lifetime of the power supply. Another important feature of PS-S Series is its low power consumption (<0.75W). This unique characteristic can significantly expand the application of PS-S series beyond just heavy industrial field, but can also be implied to datacom or IT applications that require green power to save the energy and to obey the anticipated government laws in the near future!

Short circuit protection, overload protection, over voltage protection, and the DC OK signal for monitoring the status of power supply are standard functions for the PS-S Series. Typical applications includes factory automation, process control, electro-mechanical industry, datacom and IT.

• Input voltage range: 85 - 264V AC; 120-370V DC

• AC inrush current (max): Cold start: 20A at 115V AC,; 40A at 230V DC

• DC adjustment range: ±10% rated output voltage

• Overload protection: 105% - 160% constant current limiting (auto- recovery)

• Over-voltage protection: 115% - 135% rated output voltage

• Setup, rise, time (max): 500ms, 30ms/230V AC

1000ms, 30ms/115V AC, at full load

• Withstand voltage: I/P-O/P: 3KV AC, I/P-FG:1.5KV AC, O/P-FG:0.5KV AC

• Working temperature: -20 to +70°C (-4° to +158°F), refer to output

derating curve

Safety standards: UL508, EN60950-1
 EMC standards: EN55022 class B

EN61000-4-2,3,4,5,6,8,11

ENV50204; EN55024; EN61000-6-1; EN61204-3;

Light Industry Level criteria A

• Military Standard MIL-HDBK-217F

### **PS-S Series**









### Features:

- Universal AC input/Full range
- Protections: Short circuit / Overload / Overvoltage
- Cooling by free air convection
- · DIN rail mountable
- NEC class 2 / LPS compliant (12V,24V,48V only)
- LED indicator for power on
- · DC OK relay contact
- No load power consumption<0.75W
- 100% full load burn-in test

for maximized panel space

• 3 year warranty Multiple output connector for easy wiring on PS-S40, PS-S60 and PS-S100 models 5V/3.0A DC on LED signal DC OK 35mm DIN Rail \_ Adjustable DC output voltage Mounting +V ADJ tech Corp. Easy to understand layout panel 100-240VAC 0.55A **CE Compliance** 50/60Hz UL508 Listed Robust plastic housing Universal Input Slim Series - narrow\_

### 10-100W Slimline POWER SUPPLIES









### 10W Single Output Industrial DIN Rail Power Supply



Cat. No.	Out V DC	put A	Tol. %	Ripple & Noise	Efficiency	NOTES
PS-S1005	5V DC	2A	±5%	80 mVp-p	77%	
PS-S1012	12V DC	0.84A	±3%	120 mVp-p	81%	
PS-S1015	15V DC	0.67A	±3%	120 mVp-p	81%	
PS-S1024	24V DC	0.42A	±2%	150 mVp-p	84%	

### 20W Single Output Industrial DIN Rail Power Supply



Cat. No.	Out V DC	put A	Tol. %	Ripple & Noise	Efficiency	NOTES
PS-S2005	5V DC	3A	±2%	80 mVp-p	76%	
PS-S2012	12V DC	1.67A	±1%	120 mVp-p	80%	
PS-S2015	15V DC	1.34A	±1%	120 mVp-p	81%	
PS-S2024	24V DC	1A	±1%	150 mVp-p	84%	

### **40W Single Output Industrial DIN Rail Power Supply**



Cat. No.	Out <sub>l</sub> V DC	out A	Tol. %	Ripple & Noise	Efficiency	NOTES
PS-S4005	5V DC	6A	±2%	80 mVp-p	78%	
PS-S4012	12V DC	3.33A	±1%	120 mVp-p	86%	
PS-S4024	24V DC	1.7A	±1%	150 mVp-p	88%	
PS-S4048	48V DC	0.83A	±1%	200 mVp-p	88%	

### **60W Single Output Industrial DIN Rail Power Supply**



Cat. No.	Out <sub> </sub> V DC	put A	Tol. %	Ripple & Noise	Efficiency	NOTES
PS-S6005	5V DC	10A	±2%	80 mVp-p	78%	
PS-S6012	12V DC	5A	±1%	120 mVp-p	86%	
PS-S6024	24V DC	2.5A	±1%	150 mVp-p	88%	
PS-S6048	48V DC	1.25A	±1%	200 mVp-p	87%	

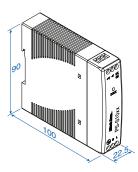
### 100W Single Output Industrial DIN Rail Power Supply



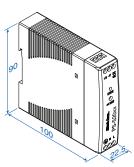
Cat. No.	Outp V DC	out A	Tol. %	Ripple & Noise	Efficiency	NOTES
PS-S10012	12V DC	7.5A	±1%	120 mVp-p	85%	
PS-S10024	24V DC	4A	±1%	150 mVp-p	86%	
PS-S10048	48V DC	2A	±1%	200 mVp-p	88%	

### **SPECIFICATIONS**

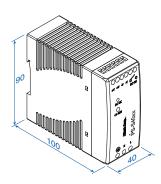
### PS-S10 Series



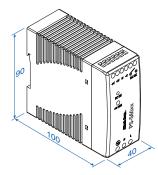
### PS-S20 Series



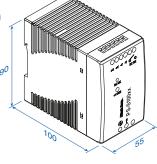
### PS-S40 Series



### PS-S60 Series



PS-S100 Series



#### Terminal Pin. No Assign. (TB1)

		_	•	
Pin No.	Assignment			
1	FG⊕			
2	AC/N			
3	AC/L			

#### Terminal Pin. No Assign. (TB2)

Pin No.	Assignment	
4	DC OUTPUT +V	
5	DC OUTPUT -V	
6	DC OK SIGNAL	

Universal Input: 85-264V AC, 120-370V DC full range;

0.33A @ 110V AC; 0.21A @ 230V AC

Connection: Input - 2 poles, Output - 2 poles, single screw terminal

Size (WxHxD): 22.5x90x100mm (0.89x3.54x3.94 inches)

Packaging: 1/box; 0.37lbs / 0.17Kg

Terminal Pin. No Assign. (TB1)

Pin	Nb.	Assignment
1		FG⊕
2		AC/N
3	}	AC/L

### Terminal Pin. No Assign. (TB2)

Pin No.	Assignment
4	DC OUTPUT +V
5	DC OUTPUT -V
6	DC OK SIGNAL

Universal Input: 85-264V AC, 120-370V DC full range; 0.55A @ 110V AC; 0.35A @ 230V AC

Connection: Input - 2 poles, Output - 2 poles, single screw terminal

Size (WxHxD): 22.5x90x100mm (0.89x3.54x3.94 inches)

Packaging: 1/box; 0.42lbs / 0.19Kg

Terminal Pin. No Assign. (TB1)

Pin No.	Assignment
1	FG ⊕
2	AC/N
3	AC/L

### Terminal Pin. No Assign. (TB2)

Pin No.	Assignment
1/2	DC OUTPUT +V
3/4	DC OUTPUT -V
5/6	DC OK Relay Contact

Universal Input: 85-264V AC, 120-370V DC full range;

1.1A @ 115V AC, 0.7A @ 370V AC

Connection: Input - 2 poles, Output - 2 poles, double screw terminal

Size (WxHxD): 40x90x100mm (1.57x3.54x3.94 inches)

Packaging: 1/box; 0.66lbs / 0.3Kg

Terminal Pin. No Assign. (TB1)

Pin No.	Assignment
1	FG⊕
2	AC/N
3	AC/L

Terminal Pin. No Assign. (TB2)

Pin No.	Assignment
1/2	DC OUTPUT +V
3/4	DC OUTPUT -V
5/6	DC OK Relay Contact

Universal Input: 85-264V AC, 120-370V DC full range;

1.8A @ 115V AC, 1A @ 370V AC

Connection: Input - 2 poles, Output - 2 poles, double screw terminal

Size (WxHxD): 40x90x100mm (1.57x3.54x3.94 inches)

Packaging: 1/box; 0.73lbs / 0.33Kg

Terminal Pin. No Assign. (TB1)

Pin No.	Assignment	
1	FG ⊕	
2	AC/N	
3	AC/L	

Terminal Pin. No Assign. (TB2)

Pin No.	Assignment
1/2	DC OUTPUT +V
3/4	DC OUTPUT -V
5/6	DC OK Relay Contact

Universal Input: 85-264V AC, 120-370V DC full range; 1.3A @ 115V AC, 0.8A @ 230V AC

Connection: Input - 2 poles, Output - 2 poles, double screw terminal

Size (WxHxD): 55x90x100mm (2.17x3.54x3.94 inches)

Packaging: 1/box; 0.93lbs / 0.42Kg



### **PS-S10 Series Specifications**







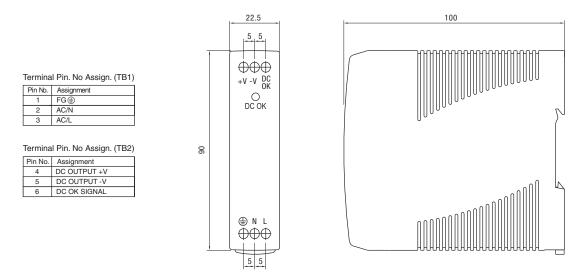




#### Features:

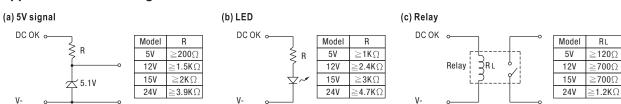
- Universal AC input / full rangeProtections: Short Circuit / Overload / Overvoltage
- Cooling by free air convection
- DIN rail mountable
- Built in DC OK active signal
- LED indicator for power on
  No load power consumption < 0.75W</li>
- 100% full load burn-in test
- 3 year warranty

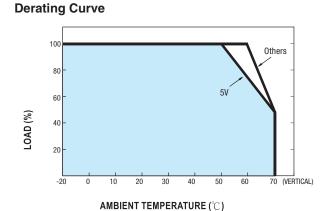
D.C.VOLTAGE   SV   12V   15V   24V   ANTERIOR PATE CURRENT PANGE   Q-2A   Q-0.84A   Q-67A   Q-42A   Q-0.67A   Q-0.42A   Q-0.67A   Q-0.67A   Q-0.42A   Q-0.67A   Q-0.42A   Q-0.67A   Q-0.42A   Q-0.67A   Q-0.42A   Q-0.67A   Q-0.	OUTPUT	Cat. No.	PS-S1005	PS-S1012	PS-S1015	PS-S1024
RATED CURRENT ARAGE		DC VOLTAGE	5V	12V	15V	24V
CURRENT FANGE   Q-2A					1	
RATED POWER RIPPLE & NOISE (max)						
RIPPLE & NOISE (max)			'			
NOLTAGE TOLERANCE		The state of the s				
VOLTAGE TOLERANCE		HIFFLE & NOISE (IIIAX)		1		
LINE REGULATION		VOLTAGE TOLERANCE				
LOAD REGULATION			Tolerance: includes set up toler	ance, line regulation and load regu	lation.	
SETUP, RISE TIME		LINE REGULATION	±1.0%	±1.0%	±1.0%	±1.0%
HOLD UP TIME (Typ.)   120ms/230VAC; 225ms/115VAC at full load		LOAD REGULATION	±5.0%	±3.0%	±3.0%	±2.0%
HOLD UP TIME (Typ.)   120ms/230VAC; 225ms/115VAC at full load		SETUP. RISE TIME	500ms, 30ms/230VAC;	1000ms, 30ms/115VAC at	t full load	1
VOLTAGE RANGE   REQUENCY FANDE   FREQUENCY FANDE   FANDE		3-101,1102.11112		•		increase of the set up time.
FREQUENCY RANGE	INPUT	HOLD UP TIME (Typ.)	120ms/230VAC; 25ms/	115VAC at full load		
EFFICIENCY (Typ.)   77%   81%   81%   81%   84%   84%     AC CURRENT (max.)   0.33A/115VAC; 0.21A/230VAC     INRUSH CURRENT (typ.)   (OLD START: 36A/115VAC; 70A/230VAC     COLD START: 36A/115VAC; 70A/230VAC			,	/DC		
AC CURRENT (max.)   0.33A/115WAC; 0.21A/230VAC   NRUSH CURRENT (typ.)   COLD START: 35A/115VAC; 70A/230VAC   C1mA/240VAC				1.040/	. 040/	. 0.40/
INRUSH CURRENT (Typ.)		1 7			81%	84%
PROTECTION			· ·			
OVERLOAD PROTECTION		INRUSH CURRENT (Typ.)	COLD START: 35A/115V	AC; 70A/230VAC		
OVERVOLTAGE PROTECTION   5.75 -6.75V   1.3.8-16.2V   17.25-20.25V   27.6-32.4V	PROTECTION	LEAKAGE CURRENT	<1mA/ 240VAC			
OVERVOLTAGE PROTECTION   5.75~6.75V   13.8~16.2V   17.25~20.25V   27.6~32.4V     Protection type: Shut down overvoltage, re-power on to recover     Protection type: Shut down overvoltage, re-power on to recover     Protection type: Shut down overvoltage, re-power on to recover     Protection type: Shut down overvoltage, re-power on to recover     Protection type: Shut down overvoltage, re-power on to recover     Protection type: Shut down overvoltage, re-power on to recover     Protection type: Shut down overvoltage, re-power on to recover     Protection type: Shut down overvoltage, re-power on to recover     Protection type: Shut down overvoltage, re-power on to recover     Protection type: Shut down overvoltage, re-power on to recover     Protection type: Shut down overvoltage, re-power on to recover     Protection type: Shut down overvoltage, re-power on to recover     Protection type: Shut down overvoltage, re-power on to recover     Protection type: Shut down overvoltage, re-power on to recover     Protection type: Shut down overvoltage, re-power on to recover     Protection type: Shut down overvoltage, re-power on to recover     Protection type: Shut down overvoltage, re-power on to recover     Protection type: Shut down overvoltage, re-power on to recover     Protection type: Shut down overvoltage, re-power on to recover     Protection type: Shut down overvoltage, re-power on to recover     Protection type: Shut down overvoltage, re-power on to recover     Protection type: Shut down overvoltage, re-power on to recover     Protection type: Shut down overvoltage, re-power on to recover     Protection type: Shut down overvoltage, re-power on to recover     Protection type: Shut down overvoltage, re-power on to recover     Protection type: Shut down overvoltage, re-power on to recover     Protection type: Shut down overvoltage, re-power on to recover     Protection type: Shut down overvoltage, re-power on to recover     Protection type: Shut down overvoltage, re-power on to recover     Protection type: Shu		OVERLOAD PROTECTION	Above 105% rated outp	ut power		
OVER TEMPERATURE PROTECTION   Protection type: Shut down overvoltage, re-power on to recover   Power supply shut down at 70°C constant current limiting / output voltage goes to 0; re-power on to recover   Power supply shut down at 70°C constant current limiting / output voltage goes to 0; re-power on to recover   Power supply shut down at 70°C constant current limiting / output voltage goes to 0; re-power on to recover   Power supply shut down at 70°C constant current limiting / output voltage goes to 0; re-power on to recover   Power supply shut down at 70°C constant current limiting / output voltage goes to 0; re-power on to recover   Power supply shut down at 70°C constant current limiting / output voltage goes to 0; re-power on to recover   Power supply shut down at 70°C constant current limiting / output voltage goes to 0; re-power on to recover   Power supply shut down at 70°C constant current limiting / output voltage goes to 0; re-power on to recover   Power supply shut down at 70°C constant current limiting / output voltage goes to 0; re-power on to recover   Power supply shut down at 70°C constant current limiting / output voltage goes to 0; re-power on to recover   Power supply shut down at 70°C constant current limiting / output voltage goes to 0; re-power on to recover   Power supply shut down at 70°C constant current limiting / output voltage goes to 0; re-power on to recover   Power supply shut down at 70°C constant current limiting / output voltage goes to 0; re-power on to recover   Power supply shut down at 70°C constant current limiting / output voltage goes to 0; re-power on to recover   Power supply shut down at 70°C constant current limiting / output voltage goes to 10; re-power output load derating curve)   Power supply shut down derating curve   Power supply shut deating curve   Power			Protection type: Hiccup mode, r	ecovers automatically after fault co	ondition is removed	
OVER TEMPERATURE PROTECTION   Power supply shut down at 70°C constant current limiting / output voltage goes to 0; re-power on to recover re-power on to recover   Power supply shut down at 70°C constant current limiting / output voltage goes to 0; re-power on to recover   Power on the Power on the Power   Pow		OVERVOLTAGE PROTECTION	5.75~6.75V	13.8~16.2V	17.25~20.25V	27.6~32.4V
Te-power on to recover   3.75-6V (50mA)   9~13.5V (40mA)   11.5~16.5V (40mA)   18~27V (20mA)			Protection type: Shut down ove	rvoltage, re-power on to recover	1	1
DC OK AKTIV SIGNAL (max.)   3.75~6V (50mA)   9~13.5V (40mA)   11.5~16.5V (40mA)   18~27V (20mA)		OVER TEMPERATURE PROTECTION				
DC OK AKTIV SIGNAL (max.)   3.75~6V (50mA)   9~13.5V (40mA)   11.5~16.5V (40mA)   18~27V (20mA)			re-power on to recover			•
WORKING HUMIDITY   20 ~ 90% RH non-condensing	<b>ENVIRONMENT</b>	DC OK AKTIV SIGNAL (max.)		9~13.5V (40mA)	11.5~16.5V (40mA)	18~27V (20mA)
WORKING HUMIDITY   20 ~ 90% RH non-condensing		WORKING TEMP.	-20 ~ +70°C (Refer to c	output load derating curve)		
STORAGE TEMP. / HUMIDITY   TEMP. COEFFICIENT   ±0.03% °C (0 ~ 50°C)   VIBRATION   Component: 10 ~ 500Hz, 2G 10min. / 1cycle, 60 min. each long X,Y, Z axes		WORKING HUMIDITY	•	. ,		
TEMP. COEFFICIENT   ±0.03% °C (0 ~ 50°C)     VIBRATION   Component: 10 ~ 500Hz, 2G 10min. / 1 cycle, 60 min. each long X,Y, Z axes     MOUNTING   Component: 10 ~ 500Hz, 2G 10min. / 1 cycle, 60 min. each long X,Y, Z axes				•		
VIBRATION MOUNTING Component: 10 ~ 500Hz, 2G 10min. / 1cycle, 60 min. each long X,Y, Z axes  Compliance to IEC60068-2-6  SAFETY STANDARDS UL508 EN60950-1 compliant WITHSTAND VOLTAGE ISOLATION RESISTANCE EMI CONDUCTION & RADIATION Compliance to EN55011 EN55022 (ESPR22) EN61204-3 Class B  HARMONIC CURRENT Compliance to EN61000-3-2,-3 Compliance to EN61000-4-2,3,4,5,6,8,11; EN55024; EN61000-6-1;EN61204-3; light industry level; criteria A The power supply is considered a component which will installed into a final equipment. The final equipment must be re-confirme that it still meets EMC directives.  MTBF DIMENSION PACKING DIMENSION PACKING OTHERS  Compliance to EN61000 -4 -2,3,4,5,6,8,11; EN55024; EN61000-6-1;EN61204-3; light industry level; criteria A The power supply is considered a component which will installed into a final equipment. The final equipment must be re-confirme that it still meets EMC directives.				0 1111		
MOUNTING   Compliance to IEC60068-2-6			,	- 00 10min / 10volo 60	min anah lang V V 7 aya	•
SAFETY STANDARDS  UL508 EN60950-1 compliant  WITHSTAND VOLTAGE ISOLATION RESISTANCE ISOLATION RESISTANCE EMI CONDUCTION & RADIATION  Compliance to EN55011 EN55022 (CISPR22) EN61204-3 Class B  HARMONIC CURRENT Compliance to EN61000-3-2,-3  EMS IMMUNITY  Compliance to EN61000-4-2,3,4,5,6,8,11; EN55024; EN61000-6-1;EN61204-3; light industry level; criteria A  The power supply is considered a component which will installed into a final equipment. The final equipment must be re-confirme that it still meets EMC directives.  MTBF S84K hrs min. MIL-HDBK-217K (25°C) DIMENSION PACKING  0.17Kg; 72pcs / 13.2Kg / 0.91CUFT	OAFETY O FMO		•	, , ,	min. each long x, y, z axe	S
WITHSTAND VOLTAGE ISOLATION RESISTANCE ISOLATION RESISTANCE ISOLATION & RADIATION  Compliance to EN55011 EN55022 (CISPR22) EN61204-3 Class B  HARMONIC CURRENT Compliance to EN61000-3-2,-3 EMS IMMUNITY  Compliance to EN61000-4-2,3,4,5,6,8,11; EN55024; EN61000-6-1;EN61204-3; light industry level; criteria A The power supply is considered a component which will installed into a final equipment. The final equipment must be re-confirme that it still meets EMC directives.  MTBF S84K hrs min. MIL-HDBK-217K (25°C) DIMENSION 22.5x90x100mm (WxHxD) PACKING 0.17Kg; 72pcs / 13.2Kg / 0.91CUFT	SAFETY & EMIC		·	8-2-6		
WITHSTAND VOLTAGE ISOLATION RESISTANCE ISOLATION RESISTANCE IP-0/P, I/P-FG, 0/P-FG: 1.5KVAC		SAFETY STANDARDS				
ISOLATION RESISTANCE EMI CONDUCTION & RADIATION Compliance to EN55011 EN55022 (CISPR22) EN61204-3 Class B  HARMONIC CURRENT Compliance to EN61000-3-2,-3 EMS IMMUNITY Compliance to EN61000-4-2,3,4,5,6,8,11; EN55024; EN61000-6-1;EN61204-3; light industry level; criteria A The power supply is considered a component which will installed into a final equipment. The final equipment must be re-confirme that it still meets EMC directives.  MTBF 584K hrs min. MIL-HDBK-217K (25°C) DIMENSION 22.5x90x100mm (WxHxD) PACKING 0.17Kg; 72pcs / 13.2Kg / 0.91CUFT			•			
OTHERS  EMI CONDUCTION & RADIATION  Compliance to EN55011  EN55022 (CISPR22)  EN61204-3 Class B  Compliance to EN61000-3-2,-3  EMS IMMUNITY  Compliance to EN61000-4-2,3,4,5,6,8,11; EN55024; EN61000-6-1;EN61204-3; light industry level; criteria A  The power supply is considered a component which will installed into a final equipment. The final equipment must be re-confirme that it still meets EMC directives.  MTBF  584K hrs min. MIL-HDBK-217K (25°C)  DIMENSION  22.5x90x100mm (WxHxD)  PACKING  0.17Kg; 72pcs / 13.2Kg / 0.91CUFT		WITHSTAND VOLTAGE	I/P-0/P: 3KVAC I/P-F	G: 1.5KVAC	KVAC	
EN55022 (CISPR22) EN61204-3 Class B  HARMONIC CURRENT Compliance to EN61000-3-2,-3 EMS IMMUNITY Compliance to EN61000-4-2,3,4,5,6,8,11; EN55024; EN61000-6-1;EN61204-3; light industry level; criteria A The power supply is considered a component which will installed into a final equipment. The final equipment must be re-confirme that it still meets EMC directives.  MTBF 584K hrs min. MIL-HDBK-217K (25°C) DIMENSION 22.5x90x100mm (WxHxD) PACKING 0.17Kg; 72pcs / 13.2Kg / 0.91CUFT		ISOLATION RESISTANCE	I/P-0/P, I/P-FG, 0/P-FG:	100M Ohms/500VDC		
EN61204-3 Class B  HARMONIC CURRENT Compliance to EN61000-3-2,-3 Compliance to EN61000-4-2,3,4,5,6,8,11; EN55024; EN61000-6-1;EN61204-3; light industry level; criteria A The power supply is considered a component which will installed into a final equipment. The final equipment must be re-confirme that it still meets EMC directives.  MTBF 584K hrs min. MIL-HDBK-217K (25°C) DIMENSION 22.5x90x100mm (WxHxD) PACKING 0.17Kg; 72pcs / 13.2Kg / 0.91CUFT		EMI CONDUCTION & RADIATION	Compliance to EN5501	1		
HARMONIC CURRENT EMS IMMUNITY Compliance to EN61000-3-2,-3 Compliance to EN61000-4-2,3,4,5,6,8,11; EN55024; EN61000-6-1;EN61204-3; light industry level; criteria A The power supply is considered a component which will installed into a final equipment. The final equipment must be re-confirme that it still meets EMC directives.  MTBF 584K hrs min. MIL-HDBK-217K (25°C) DIMENSION 22.5x90x100mm (WxHxD) PACKING 0.17Kg; 72pcs / 13.2Kg / 0.91CUFT			EN55022 (CISPR22)			
HARMONIC CURRENT EMS IMMUNITY Compliance to EN61000-3-2,-3 Compliance to EN61000-4-2,3,4,5,6,8,11; EN55024; EN61000-6-1;EN61204-3; light industry level; criteria A The power supply is considered a component which will installed into a final equipment. The final equipment must be re-confirme that it still meets EMC directives.  MTBF 584K hrs min. MIL-HDBK-217K (25°C) DIMENSION 22.5x90x100mm (WxHxD) PACKING 0.17Kg; 72pcs / 13.2Kg / 0.91CUFT			EN61204-3 Class B			
OTHERS  EMS IMMUNITY  Compliance to EN61000-4-2,3,4,5,6,8,11; EN55024; EN61000-6-1;EN61204-3; light industry level; criteria A  The power supply is considered a component which will installed into a final equipment. The final equipment must be re-confirme that it still meets EMC directives.  MTBF  584K hrs min. MIL-HDBK-217K (25°C)  DIMENSION  22.5x90x100mm (WxHxD)  PACKING  0.17Kg; 72pcs / 13.2Kg / 0.91CUFT		HARMONIC CURRENT		)-3-23		
Ilight industry level; criteria A The power supply is considered a component which will installed into a final equipment. The final equipment must be re-confirme that it still meets EMC directives.  MTBF 584K hrs min. MIL-HDBK-217K (25°C) DIMENSION 22.5x90x100mm (WxHxD) PACKING 0.17Kg; 72pcs / 13.2Kg / 0.91CUFT			•	•	24· FN61000-6-1·FN6120	04-3·
THERS         that it still meets EMC directives.           MTBF         584K hrs min.         MIL-HDBK-217K (25°C)           DIMENSION         22.5x90x100mm (WxHxD)           PACKING         0.17Kg; 72pcs / 13.2Kg / 0.91CUFT		Ello illinoiti i	•		,	· · · · · ·
MTBF 584K hrs min. MIL-HDBK-217K (25°C) DIMENSION 22.5x90x100mm (WxHxD) PACKING 0.17Kg; 72pcs / 13.2Kg / 0.91CUFT			The power supply is considered	a component which will installed	into a final equipment. The final ed	quipment must be re-confirmed
DIMENSION         22.5x90x100mm (WxHxD)           PACKING         0.17Kg; 72pcs / 13.2Kg / 0.91CUFT	OTHERS		that it still meets EMC directive	S.		
PACKING 0.17Kg; 72pcs / 13.2Kg / 0.91CUFT		MTBF	584K hrs min. MIL-HI	OBK-217K (25°C)		
3, 1,		DIMENSION	22.5x90x100mm (WxHx	(D)		
		PACKING	0.17Kg; 72pcs / 13.2Kg	/ 0.91CUFT		
אוו אמו מווסנבים ואטו שהכשות וווכוונוטווכע מוכ וווכמשנוכע מו בשטע אט ווושעל. ומנכע וועם מווע בשטע אט ווושעל. ומנכע ווועם מווע בשטע אט ווושעל. ומנכע ווועם מוועם אינו וווישעל אינו ווווישעל אינו וווישעל אינו ווווישעל אינו וווישעל אינו ווווישעל אינו ווווישעל אינו וווישעל אינו		1	0, 1	•	input, rated load and 25°C of amb	bient temperature

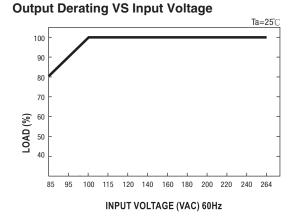


#### **Block Diagram** DC OK O DC OK RECTIFIERS RECTIFIERS POWER EMI -O +V **SWITCHING** FILTER FILTER **FILTER** DETECTION FG O CIRCUIT CONTROL 0.L.P. 0.V.P.

### **Application of DC OK Signal**









## **PS-S20 Series Specifications**







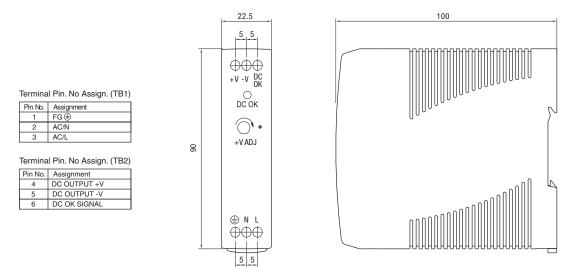


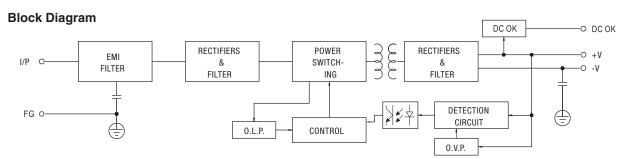


### Features:

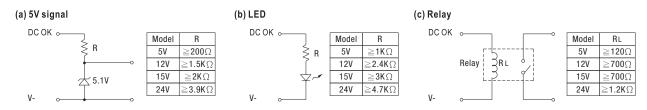
- Universal AC input / full range
- Protections: Short Circuit / Overload / Overvoltage
- Cooling by free air convection
- DIN rail mountable
- Built in DC OK active signal
- LED indicator for power on
- No load power consumption < 0.75W
- 100% full load burn-in test
- 3 year warranty

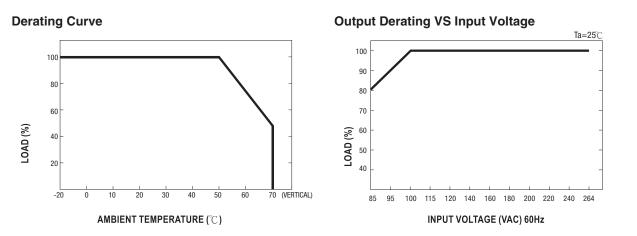
OUTPUT	Cat. No.	PS-S2005	PS-S2012	PS-S2015	PS-S2024	
	DC VOLTAGE	5V	12V	15V	24V	
	RATED CURRENT	3A	1.67A	1.34A	1A	
	**		1	1		
	CURRENT RANGE	0~3A	0~1.67A	0~1.34A	0~1A	
	RATED POWER	15W	20W	20W	24W	
	RIPPLE & NOISE (max)	80mVp-p	120mVp-p	120mVp-p	150mVp-p	
		Ripple & noise are measured at 2	20MHz of bandwidth by using a 12" to	wisted pair-wire terminated with a 0	.1μF & 47μF parallel capacitor	
	VOLTAGE ADJ. RANGE	4.75 ~ 5.5V	10.8 ~ 13.2V	13.5 ~ 16.5V	21.6 ~ 26.4V	
	VOLTAGE TOLERANCE	±2.0%	±1.0%	±1.0%	±1.0%	
	VOLITICE FOLLITINOL				±1.070	
	LINE DECLI ATION		ance, line regulation and load regul		1.00/	
	LINE REGULATION	±1.0%	±1.0%	±1.0%	±1.0%	
	LOAD REGULATION	±1.0%	±1.0%	±1.0%	±1.0%	
	SETUP, RISE TIME	500ms, 30ms/230VAC;	1000ms, 30ms/115VAC at	t full load		
		Length of set up time is measu	red at cold first start. Turning ON/O	FF the power supply may lead to	increase of the set up time.	
INPUT	HOLD UP TIME (Typ.)	50ms/230VAC; 20ms/1	-	,	·	
	VOLTAGE RANGE	85~264VAC 120~37	OVDC			
	FREQUENCY RANGE	47~63Hz				
		76%	0.00/	81%	0.40/	
	EFFICIENCY (Typ.)		80%	0170	84%	
	AC CURRENT (max.)	0.55A/115VAC; 0.35A/2				
	INRUSH CURRENT (Typ.)	COLD START: 20A/115V	/AC; 40A/230VAC			
PROTECTION	LEAKAGE CURRENT	≤1mA/ 240VAC				
	OVERLOAD PROTECTION	105% ~ 160% rated or	utput power			
		Protection type: Constant curre	nt limiting, recovers automatically a	after fault condition is removed		
	OVERVOLTAGE PROTECTION	5.75~6.75V	13.8~16.2V	17.25~20.25V	27.6~32.4V	
		Protection type: Shut down ove	rvoltage, re-power on to recover	1	1	
	OVER TEMPERATURE PROTECTION	= -	n at 70°C constant current	limiting / output voltage	anes to 0:	
	OVERT TEIVIL ET VITORE THO TEOTION			illining / output voltago	9000 to 0,	
	DO OK AKTIN CIONAL (******)	re-power on to recover		44 F 40 FV (40 A)	10 071/ (00 1)	
ENVIRONMENT	DC OK AKTIV SIGNAL (max.)	3.75~6V (50mA)	9~13.5V (40mA)	11.5~16.5V (40mA)	18~27V (20mA)	
	WORKING TEMP.	-20 ~ +70°C (Refer to d	output load derating curve)			
	WORKING HUMIDITY	20 ~ 90% RH non-cond				
		-40 ~ +85°C, 10 ~ 95%	•			
	STORAGE TEMP., HUMIDITY	·	0 NII			
	TEMP. COEFFICIENT	$\pm 0.03\%$ °C (0 ~ 50°C)				
	VIBRATION	Component: 10 ~ 500H	lz, 2G 10min. / 1cycle, 60 ı	min. each long X,Y, Z axes	3	
SAFETY & EMC	MOUNTING	Compliance to IEC6006	8-2-6			
	SAFETY STANDARDS	UL508				
		EN60950-1 compliant				
	WITHSTAND VOLTAGE	•	C+ 1 5KV/AC	KVAC		
		I/P-0/P: 3KVAC				
	ISOLATION RESISTANCE					
	EMI CONDUCTION & RADIATION	Compliance to EN5501	1			
		EN55022 (CISPR22)				
		EN61204-3 Class B				
	HARMONIC CURRENT	Compliance to EN61000-3-2,-3				
	EMS IMMUNITY	Compliance to EN61000-4-2,3,4,5,6,8,11; EN55024; ENV50204; EN61000-6-1;EN61204-3;				
	Zino iminora i			- 1, LIVVOOLOT, LIVO 1000	5 1,LNO120T 0,	
		light industry level; crite				
OTHERO			d a component which will installed	into a final equipment. The final e	quipment must be re-confirmed	
OTHERS		that it still meets EMC directive	S.			
	MTBF	236.9K hrs min. MIL-	HDBK-217K (25°C)			
	DIMENSION	22.5x90x100mm (WxHz	xD)			
	PACKING	0.19Kg; 72pcs / 14.7Kg	a / 0.91CUFT			
		• • •	nentioned are measured at 230V AC	Cinnut rated load and 25°C of am	hient temperature	
	-	in parameters into a specially II	ionaonou are measureu at 250V AC	mpat, ratou loau allu 20 0 01 dili	oroni tomporature	





### **Application of DC OK Signal**







### **PS-S40 Series Specifications**











### Features:

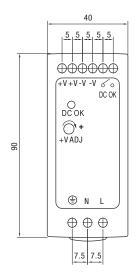
- Universal AC input/full range
- Protections: Short Circuit / Overload / Overvoltage
- Cooling by free air convection
- DIN rail mountable
- LED indicator for power on DC OK relay contact No load power consumption < 0.75W
- 100% full load burn-in test
- 3 year warranty

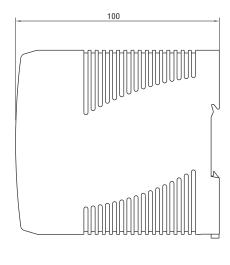
OUTPUT	Cat. No.	PS-S4005	PS-S4012	PS-S4024	PS-S4048
	DC VOLTAGE	5V	12V	24V	48V
	RATED CURRENT	6A	3.33A	1.7A	0.83A
	CURRENT RANGE	0~6A	0~3.33A	0~1.7A	0~0.83A
	RATED POWER	30W	40W	40.8W	39.8W
	RIPPLE & NOISE (max)	80mVp-p	120mVp-p	150mVp-p	200mVp-p
		Ripple & noise are measured at 2	20MHz of bandwidth by using a 12	2 twisted pair-wire terminated with a 0.1	μF & 47μF parallel capacitor
	VOLTAGE ADJ. RANGE	5 ~ 6V	12 ~ 15V	24 ~ 30V	48 ~ 56V
	VOLTAGE TOLERANCE	±2.0%	±1.0%	±1.0%	±1.0%
		Tolerance: includes set up toler	ance, line regulation and load re	egulation.	
	LINE REGULATION	±1.0%	±1.0%	±1.0%	±1.0%
	LOAD REGULATION	±1.0%	±1.0%	±1.0%	±1.0%
	SETUP, RISE TIME	500ms, 30ms/230VAC;	500ms, 30ms/115VAC	at full load	
		Length of set up time is measu	red at cold first start. Turning Ol	N/OFF the power supply may lead to i	ncrease of the set up time.
INPUT	HOLD UP TIME (Typ.)	50ms/230VAC; 20ms/1	15VAC at full load		
	VOLTAGE RANGE	85~264VAC 120~37	OVDC		
	FREQUENCY RANGE	47~63Hz			
	EFFICIENCY (Typ.)	78%	86%	88%	88%
	AC CURRENT (max)	1.1A/115VAC; 0.7A/230	VAC		
	INRUSH CURRENT (Typ.)	COLD START: 30A/115V	AC; 60A/230VAC		
PROTECTION	LEAKAGE CURRENT	≤1mA/ 240VAC			
	OVERLOAD PROTECTION	105% ~ 150% rated ou	ıtput power		
		Protection type: Constant currer	nt limiting, recovers automatical	lly after fault condition is removed	
	OVERVOLTAGE PROTECTION	6.25~7.25V	15.6~18V	31.2~36V	57.6~64.8V
	OVER TEMPERATURE PROTECTION	**	rvoltage, re-power on to recove		
	OVER TEMPERATURE PROTECTION	re-power on to recover	n at 70°C constant curre	ent limiting / output voltage o	goes to 0;
ENVIRONMENT	DC OK AKTIV SIGNAL (max.)	Relay contact rating (ma	ax.): 30V/ 1A resistive		
	WORKING TEMP.	-20 ~ +70°C (Refer to d	output load derating cur	ve)	
	WORKING HUMIDITY	20 ~ 90% RH non-cond	densing		
	STORAGE TEMP., HUMIDITY	-40 ~ +85°C, 10 ~ 95%	6 RH		
	TEMP. COEFFICIENT	±0.03% °C (0 ~ 50°C)			
	VIBRATION	Component: 10 ~ 500H	z, 2G 10min. / 1cycle, 6	0 min. each long X,Y, Z axes	;
SAFETY & EMC	MOUNTING	Compliance to IEC6006	8-2-6	•	
	SAFETY STANDARDS	UL508			
		EN60950-1 compliant			
	WITHSTAND VOLTAGE	I/P-0/P: 3KVAC I/P-F	G: 1.5KVAC	).5KVAC	
	ISOLATION RESISTANCE	I/P-O/P, I/P-FG, O/P-FG:	≥100M 0hms/500VDC	(25°C; 70% RH)	
	EMI CONDUCTION & RADIATION	Compliance to EN5501	1	,	
		EN55022 (CISPR22)			
		EN61204-3 Class B			
	HARMONIC CURRENT	Compliance to EN61000	0-3-2,-3		
					6 2: ENG1204 2:
	EMS IMMUNITY	Compliance to EN61000	0-4-2,3,4,5,6,8,11; EN5	5024; ENV50204 ; EN61000	-0-2, ENUTZU4-3,
		Compliance to EN61000 light industry level; crite		5024; ENV50204 ; EN61000	-0-2, ENO1204-3,
		light industry level; crite	eria A	5024; ENV50204; EN61000 led into a final equipment. The final equipment.	
OTHERS		light industry level; crite	eria A d a component which will install		
OTHERS_		light industry level; crite The power supply is considered	eria A d a component which will install s.		
OTHERS_	EMS IMMUNITY	light industry level; crite The power supply is considered that it still meets EMC directive	eria A d a component which will install s. HDBK-217K (25°C)		
OTHERS_	EMS IMMUNITY  MTBF	light industry level; crite The power supply is considered that it still meets EMC directive 301.7K hrs min. MIL-	eria A d a component which will install s. HDBK-217K (25°C)		



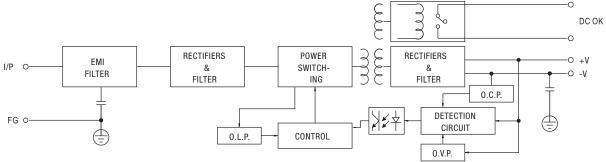
Terminal Pin. No Assign. (TB2

Terrilliai Fill. No Assign. (TD2)		
Pin No.	Assignment	
1,2	DC OUTPUT +V	
3,4	DC OUTPUT -V	
5,6	DC OK RELAY CONTACT	





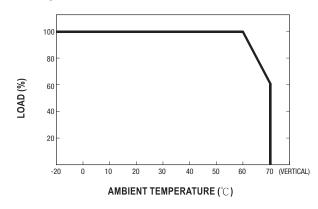
### **Block Diagram**



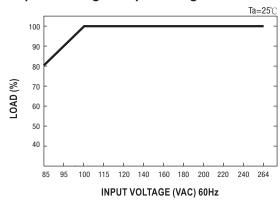
### **DC OK Relay Contact**

Contact Close	When the output voltage reaches the adjusted output voltage.
Contact Open	When the output voltage drop more than 90% output voltage.
Contact Ratings (max.)	30V/1A resistive load

### **Derating Curve**



### **Output Derating VS Input Voltage**





### **PS-S60 Series Specifications**







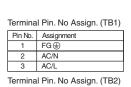




### Features:

- Universal AC input/full rangeProtections: Short Circuit / Overload / Overvoltage
- Cooling by free air convection
- DIN rail mountable
- LED indicator for power on
- No load power consumption < 0.75W
- 100% full load burn-in test
- 3 year warranty

OUTPUT	Cat. No.	PS-S6005	PS-S6012	PS-S6024	PS-S6048
	DC VOLTAGE	5V	12V	24V	48V
	RATED CURRENT	10A	5A	2.5A	1.25A
	CURRENT RANGE	0 ~ 10A	0 ~ 5A	0 ~ 2.5A	0 ~ 1.25A
	RATED POWER	50W	60W	60W	60W
	RIPPLE & NOISE (max)	80mVp-p	120mVp-p	150mVp-p	200mVp-p
		Ripple & noise are measured at 20	MHz of bandwidth by using a 12 twist	ted pair-wire terminated with a 0.1 $\mu$	F & 47µF parallel capacitor
	VOLTAGE ADJ. RANGE	5 ~ 6V	12 ~ 15V	24 ~ 30V	48 ~ 56V
	VOLTAGE TOLERANCE	±2.0%	±1.0%	±1.0%	±1.0%
		· ·	nce, line regulation and load regulat	tion.	
	LINE REGULATION	±1.0%	±1.0%	±1.0%	±1.0%
	LOAD REGULATION	±1.5%	±1.0%	±1.0%	±1.0%
	SETUP, RISE TIME	500ms, 30ms/230VAC; 5	500ms, 30ms/115VAC at fu	II load	
		Length of set up time is measure	ed at cold first start. Turning ON/OFF	the power supply may lead to inc	crease of the set up time.
INPUT	HOLD UP TIME (Typ.)	50ms/230VAC / 20ms/1	15VAC at full load		
	VOLTAGE RANGE	85 ~ 264VAC 120 ~ 3	370VDC		
	FREQUENCY RANGE	47~63Hz			
	EFFICIENCY (Typ.)	78%	86%	88%	87%
	AC CURRENT (max)	1.8A/115VAC; 1A/230VA	C		
	INRUSH CURRENT (Typ.)	COLD START: 30A/115VA	AC; 60A/230VAC		
PROTECTION	LEAKAGE CURRENT	≤1mA/ 240VAC			
	OVERLOAD PROTECTION	105% ~ 150% rated out	tput power		
		Protection type: Constant current	t limiting, recovers automatically aft	er fault condition is removed	
	OVERVOLTAGE PROTECTION	6.25 ~ 7.25V	15.6 ~ 18V	31.2 ~ 36V	57.6 ~ 64.8V
	OVER TEMPERATURE PROTECTION	Protection type: Shut down overv	voltage, re-power on to recover 1 at 70°C constant current li	imitina / output voltage a	nee to O:
	OVER TEMPERATURE PROTECTION	re-power on to recover	rat 70 G constant current i	initing / output voitage go	Jes 10 0,
ENVIRONMENT	DC OK AKTIV SIGNAL (max.)	Relay contact rating (ma	x.): 30V/1A resistive		
	WORKING TEMP.	,	utput load derating curve)		
	WORKING HUMIDITY	20 ~ 90% RH non-conde	•		
	STORAGE TEMP., HUMIDITY	-40 ~ +85°C, 10 ~ 95%	RH		
	TEMP. COEFFICIENT	$\pm 0.03\%$ °C (0 ~ 50°C)			
	VIBRATION	•	z, 2G 10min. / 1cycle, 60 m	in. each long X,Y, Z axes	
SAFETY & EMC	MOUNTING	Compliance to IEC60068	3-2-6		
	SAFETY STANDARDS	UL508			
		EN60950-1 compliant			
	WITHSTAND VOLTAGE	I/P-O/P: 3KVAC I/P-FG	i: 1.5KVAC	VAC	
	ISOLATION RESISTANCE	I/P-O/P, I/P-FG, O/P-FG: 2	≥100M Ohms/500VDC (25°	°C; 70% RH)	
	EMI CONDUCTION & RADIATION	Compliance to EN55011			
		EN55022 (CISPR22)			
		EN61204-3 Class B			
	HARMONIC CURRENT	Compliance to EN61000	-3-2,-3		
	EMS IMMUNITY	Compliance to EN61000	-4-2,3,4,5,6,8,11; EN5502	4; ENV50204; EN61000-6	5-2; EN61204-3;
		light industry level; criter	ria A		
OTHERO			a component which will installed in	to a final equipment. The final equ	ipment must be re-confirmed
OTHERS		that it still meets EMC directives.			
	MTBF	299.2K hrs min. MIL-H	1DBK-217K (25°C)		
	DIMENSION	40x90x100mm (WxHxD)			
	PACKING	0.33Kg; 42pcs / 14.8Kg			
		All parameters NOT specially me	entioned are measured at 230V AC in	nput, rated load and 25°C of ambie	ent temperature

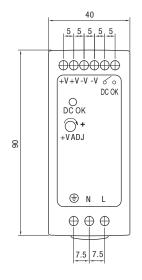


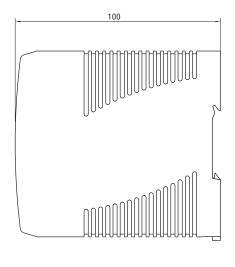
 Pin No.
 Assignment

 1,2
 DC OUTPUT +V

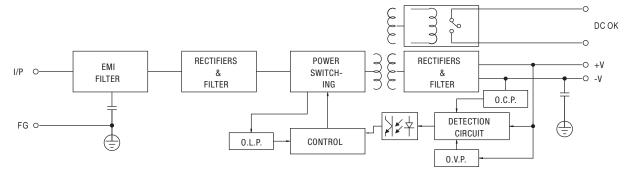
 3,4
 DC OUTPUT -V

 5,6
 DC OK RELAY CONTACT





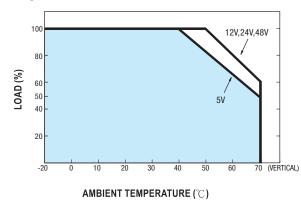
### **Block Diagram**



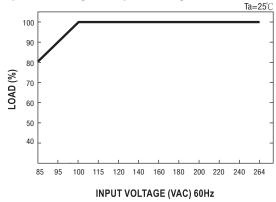
### **DC OK Relay Contact**

Contact Close	When the output voltage reaches the adjusted output voltage.
Contact Open	When the output voltage drop more than 90% output voltage.
Contact Ratings (max.)	30V/1A resistive load

### **Derating Curve**



### **Output Derating VS Input Voltage**





# PS-S100 Series Specifications







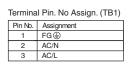




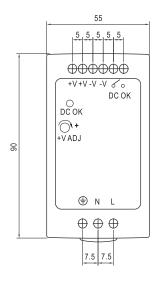
### Features:

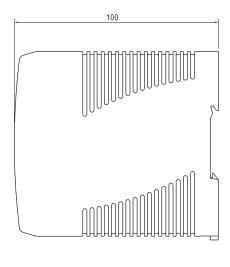
- Universal AC input / full range
- Protections: Short Circuit / Overload / Overvoltage / Over temperature
- ZCS/ZVS technology to reduce power dissipation
- Cooling by free air convection
- · DIN rail mountable
- · DC OK relay contact
- No load power consumption < 1W
- LED indicator for power on
- 100% full load burn-in test
- 3 year warranty

OUTPUT	Cat. No.	PS-S10012	PS-S10024	PS-S10048		
	DC VOLTAGE	12V	24V	48V		
	RATED CURRENT	7.5A	4A	2A		
	CURRENT RANGE	0 ~ 7.5A	0 ~ 4A	0 ~ 2A		
	RATED POWER	90W	96W	96W		
	RIPPLE & NOISE (max)	120mVp-p	150mVp-p	200mVp-p		
		Ripple & noise are measured at 20MHz of ba	andwidth by using a 12 twisted pair-wir	re terminated with a 0.1µF & 47µF parallel capacitor.		
	VOLTAGE ADJ. RANGE	12 ~ 15V	24 ~ 30V	48 ~ 56V		
	VOLTAGE TOLERANCE	±1.0%	±1.0%	±1.0%		
		Tolerance: includes set up tolerance, line	regulation and load regulation.			
	LINE REGULATION	±1.0%	±1.0%	±1.0%		
	LOAD REGULATION	±1.0%	±1.0%	±1.0%		
	SETUP, RISE TIME	3000ms, 50ms/230VAC; 3000n	ns, 50ms/115VAC at full loa	d "		
	·	Length of set up time is measured at cold	d first start. Turning ON/OFF the powe	r supply may lead to increase of the set up time		
INPUT	HOLD UP TIME (Typ.)	50ms/230VAC; 20ms/115VAC a		,		
	VOLTAGE RANGE	85 ~ 264VAC 120 ~ 370VD0	C			
		Derating maybe needed under low input v	voltages, please check the derating c	urve for more detail		
	FREQUENCY RANGE	47~63Hz				
	POWER FACTOR (Typ.)	$PF \ge 0.95/230VAC$ ; $PF \ge 0.98/1$	115VAC at full load			
	EFFICIENCY (Typ.)	85%	86%	88%		
	AC CURRENT (max)	1.3A/115VAC; 0.8A/230VAC				
	INRUSH CURRENT (Typ.)	COLD START: 30A/115VAC; 60A/230VAC				
PROTECTION	LEAKAGE CURRENT	≤1mA/ 240VAC				
	OVERLOAD	105% ~ 150% rated output power				
		Protection type: Constant current limiting,	, recovers automatically after fault co	ndition is removed		
	OVERVOLTAGE	15.6 ~ 18V	31.2 ~ 36V	57.6 ~ 64.8V		
		Protection type: Shut down overvoltage, re	e-power on to recover			
	OVERTEMPERATURE	$90^{\circ}\text{C} \pm 10^{\circ}\text{C}$ (RTH2) detect on h	neat sink of power transistor	•		
		Protection type: Shut down overvoltage, re	re-power on to recover			
	SHORT CIRCUIT PROTECTION	Power supply shut down at 70°C constant current limiting / output voltage goes to 0;				
		re-power on to recover				
ENVIRONMENT	DC OK AKTIV SIGNAL (max.)	Relay contact rating (max.): 30\	V/1A resistive			
	WORKING TEMP.	-10 ~ +60°C (Refer to output lo	oad derating curve)			
	WORKING HUMIDITY	20 ~ 90% RH non-condensing				
	STORAGE TEMP., HUMIDITY	-40 ~ +85°C, 10 ~ 95% RH				
	TEMP. COEFFICIENT	±0.03% °C (0 ~ 50°C)				
	VIBRATION	Component: 10 ~ 500Hz, 2G 10	Omin / 1cycle 60 min each	long X Y 7 axes		
SAFETY & EMC	MOUNTING	Compliance to IEC60068-2-6	o 7			
OTH ETT & EMIS	SAFETY STANDARDS	UL508				
	SAFETT STANDANDS					
	WITHSTAND VOLTAGE	EN60950-1 compliant				
	WITHSTAND VOLTAGE	I/P-0/P: 3KVAC				
	ISOLATION RESISTANCE	I/P-O/P, I/P-FG, O/P-FG: ≥100M 0hms/500VDC/25°C/70% RH				
	EMI CONDUCTION & RADIATION	Compliance to EN55011				
		EN55022 (CISPR22)				
	LIADMONIO CURRENT	EN61204-3 Class B	•			
	HARMONIC CURRENT	Compliance to EN61000-3-2,-3 Compliance to EN61000-4-2,3,4,5,6,8,11; EN55024; ENV50204; EN61000-6-2; EN61204-3;				
	EMS IMMUNITY	•	,4,5,6,8,11; EN55024; ENV5	U2U4; EN61UUU-6-2; EN612U4-3;		
		light industry level; criteria A	and the contract of the contra			
OTHERS		The power supply is considered a compor		quipment. The final equipment must be		
<u>OTHERS</u>		re-confirmed that it still meets EMC direc				
	MTBF	346K hrs min. MIL-HDBK-21	7K (25°C)			
	DIMENSION	55x90x100mm (WxHxD)				
	PACKING	0.42Kg; 30pcs / 13.6Kg / 0.820				
		All parameters NOT specially mentioned a	are measured at 230V AC input, rated	load and 25°C of ambient temperature.		

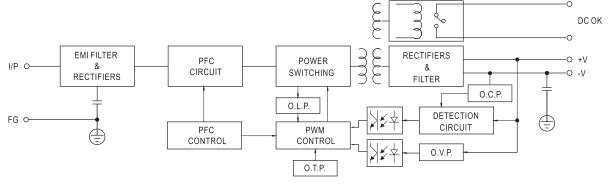


Terminal Pin. No Assign. (TB2)		
Pin No.	Assignment	
1,2	DC OUTPUT +V	
	DC OUTPUT -V	
5,6	DC OK RELAY CONTACT	





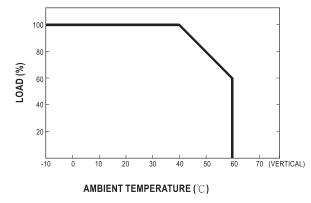
### **Block Diagram**



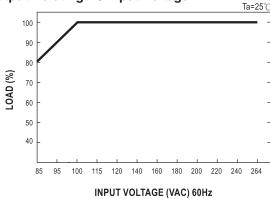
### **DC OK Relay Contact**

Contact Close	When the output voltage reaches the adjusted output voltage.
Contact Open	When the output voltage drop below 90% output voltage.
Contact Ratings (max.)	30V/1A resistive load

### **Derating Curve**



### **Output Derating VS Input Voltage**





# Low Profile Single Phase Power Supply (Class II)

The Low Profile Single Phase Power Supplies are 15W to 100W single output Class II DIN rail switching power supplies. They are designed for the fast growing demand of the DIN rail application with limited enclosure height. With Class II of protection level, low profile series provide users a safer operating environment since the whole plastic case is free from hazardous leakage current. Featuring up to 89% of high efficiency, this series can be cooled by only free air convection that significantly increase the reliability and lifetime of the power supply. Complying with the safety of the UL508 and EMC requirements of EN50178 which is mainly for power distribution aspects, the low profile switching power supplies are suitable to be installed in a power distribution box or a control cabinet and the major application fields are building automation and household appliance control.

• Input voltage range: 85 - 264V AC; 120-370V DC

• AC inrush current: Cold start: 15A at 115V AC, 30A at 230V DC (PS-30xx)

• DC adjustment range: ±10% rated output voltage

• Overload protection: 105% - 160% constant current limiting, auto-recovery

• Over-voltage protection: 115% - 135% rated output voltage

• Setup, rise, hold up time: 100ms, 30ms, 100ms at full load and 230V AC (PS-30xx)

• Withstand voltage: I/P-0/P:3KV AC, I/P-FG:1.5KV AC

• Working temperature: -20 to +50°C (-4° to +122°F) at 100%

and +60°C (+140°F) at 80% load

Safety standards: UL60950-1, UL508
 EMC standards: EN55022 class B

EN61000-4-2,3,4,5,6,8,11

ENV50204

EN61204-3

• Military Standard: MIL-HDBK-217K

### **PS Series - Low Profile**





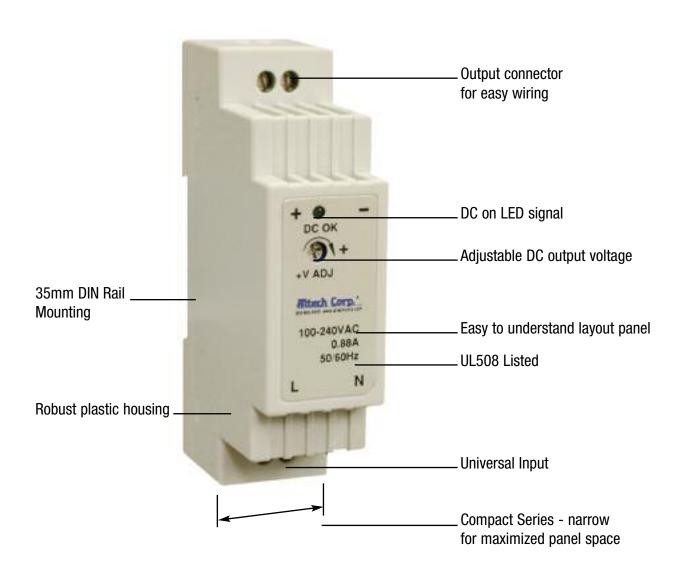








- Universal AC input/Full range
- Protections: Short circuit / Overload / Overvoltage
- · Cooling by free air convection
- DIN rail mountable
- Isolation class II
- · LED indicator for power on
- 100% full load burn-in test
- 3 year warranty



## 15-100W Low Profile POWER SUPPLIES













Cat. No.	Output V DC A	Tol. %	Ripple & Noise	Efficiency	NOTES
PS-1505	5V DC 2.4A	±2%	80 mVp-p	77%	
PS-1512	12V DC 1.25A	±1%	120 mVp-p	84%	
PS-1515	15V DC 1A	±1%	120 mVp-p	83.5%	
PS-1524	24V DC 0.63A	±1%	150 mVp-p	85%	

### 30W Single Output Class II DIN Rail Power Supply

Cat. No.	Output V DC A	Tol. %	Ripple & Noise	Efficiency	NOTES
PS-3005	5V DC 3A	±2%	80 mVp-p	74%	
PS-3012	12V DC 2A	±1%	120 mVp-p	81%	
PS-3015	15V DC 2A	±1%	120 mVp-p	82%	
PS-3024	24V DC 1.5A	±1%	150 mVp-p	83%	

### 45W Single Output Class II DIN Rail Power Supply

Cat. No.	Output V DC A	Tol. %	Ripple & Noise	Efficiency	NOTES
PS-4505	5V DC 5A	±2%	100 mVp-p	72%	
PS-4512	12V DC 3.5A	±1%	200 mVp-p	77%	
PS-4515	15V DC 2.8A	±1%	240 mVp-p	77%	
PS-4524	24V DC 2A	±1%	480 mVp-p	80%	

### **60W Single Output Class II DIN Rail Power Supply**

Cat. No.	Output V DC A	Tol. %	Ripple & Noise	Efficiency	NOTES
PS-6005	5V DC 6.5A	±2%	80 mVp-p	76%	
PS-6012	12V DC 4.5A	±1%	120 mVp-p	82%	
PS-6015	15V DC 4.0A	±1%	120 mVp-p	83%	
PS-6024	24V DC 2.5A	±1%	150 mVp-p	84%	

### 100W Single Output Class II DIN Rail Power Supply

	Cat. No.	Outp V DC	ut A	Tol. %	Ripple & Noise	Efficiency	NOTES
	PS-10012	12V DC	7.5A	±2%	120 mVp-p	87%	
	PS-10015	15V DC	6.5A	±1%	120 mVp-p	87%	
	PS-10024	24V DC	4.2A	±1%	150 mVp-p	89%	



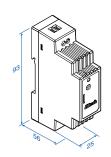




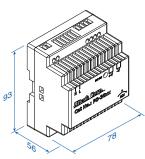


### **SPECIFICATIONS**

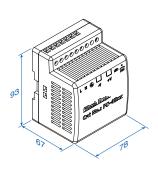
### PS-15 Series



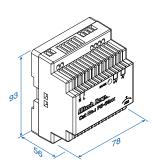
### PS-30 Series



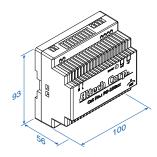
### PS-45 Series



### PS-60 Series



### PS-100 Series



#### Terminal Pin. No Assignment

Pin No.	Assignment	Pin No.	Assignment
1	AC/L	3	-V
2	AC/N	4	+V

Universal Input: 85-264V AC, 120-370V DC full range;

0.88A @ 115V AC; 0.48A @ 230V AC

Connection: Input - 2 poles, Output - 2 poles, single screw terminal

Size (WxHxD): 25x93x56mm (0.98x3.66x2.20 inches)

Packaging: 1/box; 0.22lbs / 0.1Kg

Terminal Pin. No Assignment

Pin No.	Assignment	Pin No.	Assignment
1	AC/L	5,6	-V
2	AC/N	7	LED
3,4	+V	8	+V ADJ.

Universal Input: 85-264V AC, 120-370V DC full range;

0.88A @ 115V AC; 0.48A @ 230V AC

Connection: Input - 2 poles, Output - 2 poles, double screw terminal

Size (WxHxD): 78x93x56mm (3.07x3.66x2.20 inches)

Packaging: 1/box; 0.60lbs / 0.27Kg

#### Terminal Pin. No Assignment

Pin	Assignment	Pin	Assignment
1	AC/L	6,7	DC OUTPUT+V
2	AC/N	8	LED
3	FG ⊕	9	+V ADJ.
4,5	DC OUTPUT-V		

Universal Input: 85-264V AC, 120-370V DC full range;

1.5A @ 115V AC, 0.75A @ 230V AC

Connection: Input - 3 poles, Output - 2 poles, double screw terminal

Size (WxHxD): 78x93x67mm (3.07x3.66x2.64 inches)

Packaging: 1/box; 0.68lbs / 0.31Kg

#### Terminal Pin. No Assignment

	Pin No.	Assignment	Pin No.	Assignment
ı	1	AC/L	5,6	-V
1	2	AC/N	7	LED
1	3,4	+V	8	+V ADJ.

Universal Input: 88-264V AC, 124-370V DC full range; 1.2A @ 115V AC, 0.8A @ 230V AC

Connection: Input - 2 poles, Output - 2 poles, double screw terminal

Size (WxHxD): 78x93x56mm (3.07x3.66x2.20 inches)

Packaging: 1/box; 0.66lbs / 0.30Kg

#### Terminal Pin. No Assignment

Pin No.	Assignment	Pin No.	Assignment				
1	AC/L	5,6	-V				
2	AC/N	7	LED				
3,4	+V	8	+V ADJ.				

Universal Input: 88-264V AC, 124-370V DC full range;

3A @ 115V AC, 1.6A @ 230V AC

Connection: Input - 2 poles, Output - 2 poles, double screw terminal

Size (WxHxD): 100x93x56mm (3.94x3.66x2.20 inches)

Packaging: 1/box; 0.77lbs / 0.35Kg



# **PS-15 Series Specifications**





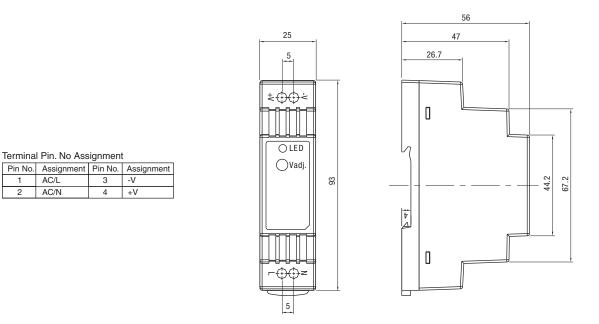




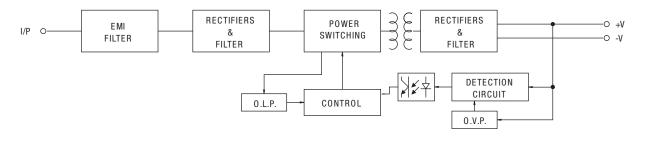


- Universal AC input / full range
- Protections: Short Circuit / Overload / Over Voltage
- Cooling by free air convection
- DIN rail mountable
- · Isolation class II
- LED indicator for power on
- No load power consumption <0.5W
- 100% full load burn-in test
- 3 year warranty

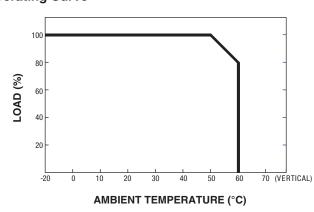
OUTPUT	Cat. No.	PS-1505	PS-1512	PS-1515	PS-1524			
	DC VOLTAGE	5V	12V	15V	24V			
	RATED CURRENT	2.4A	1.25A	1A	0.63A			
	CURRENT RANGE	0 ~ 2.4A	0 ~ 1.25A	0 ~ 1A	0 ~ 0.63A			
	RATED POWER	12W	15W	15W	15.2W			
	RIPPLE & NOISE (max)	80mVp-p	120mVp-p	120mVp-p	150mVp-p			
		Ripple & noise are measured a	at 20MHz of bandwidth by using a	12 twisted pair-wire terminated with	a 0.1μF & 47μF parallel capacito			
	VOLTAGE ADJ. RANGE	4.75 ~ 5.5V	10.8 ~ 13.2V	13.5 ~ 16.5V	21.6 ~ 26.4V			
	VOLTAGE TOLERANCE	±2.0%	±1.0%	±1.0%	±1.0%			
		Tolerance: includes set up to	lerance, line regulation and load	regulation.				
	LINE REGULATION	±1.0%	±1.0%	±1.0%	±1.0%			
	LOAD REGULATION	±1.0%	±1.0%	±1.0%	±1.0%			
	SETUP, RISE TIME	1000ms, 50ms / 230 <sup>th</sup>	VAC 1000ms, 50ms /	115VAC at full load				
NPUT	HOLD UP TIME (Typ.)	70ms / 230VAC	16ms / 115VAC	at full load				
	VOLTAGE RANGE	85 ~ 264VAC	120 ~ 370VDC					
	FREQUENCY RANGE	47 ~ 63Hz	.20 0.0120					
	EFFICIENCY (Typ.)	77%	84%	83.50%	85%			
	AC CURRENT (max.)	0.88A / 115VAC	0.48A / 230VAC	7 00.0070	1 00 //			
ROTECTION	INRUSH CURRENT (Typ.)		15VAC 65A / 230VAC					
HOTEOTION	OVERLOAD	105 ~ 160% rated output power						
	OVENLUAD	Protection type: Constant current limiting recovers automatically after fault condition is removed (Hiccup mode)						
		Constant current operation region is within 60 ~ 100% rated output voltage.						
	OVERVOLTAGE	5.75 ~ 6.75V	egion is within 60 ~ 100% rated 13.8 ~ 16.2V	output voltage.   17.25 ~ 20.25V	27.6 ~ 32.4V			
NVIRONMENT	OVERVOLIAGE				21.0 ~ 32.44			
INVIRUNIVIENI			overvoltage, clamping by zener di					
	WORKING TEMP.	•	output load derating cu	rve)				
	WORKING HUMIDITY	20 ~ 90% RH non-co	· ·					
	STORAGE TEMP., HUMIDITY	-40 ~ +85°C, 10 ~ 95						
	TEMP. COEFFICIENT	$\pm 0.03\%$ °C (0 ~ 50°C)						
	VIBRATION	•		60 min. each long X,Y, Z ax	ies			
SAFETY & EMC	MOUNTING	Compliance to IEC600	068-2-6					
	SAFETY STANDARDS	UL60950-1						
		EN60950-1 complian	t					
		Design refer to EN50	178					
	WITHSTAND VOLTAGE	I/P-0/P: 3KVAC						
	ISOLATION RESISTANCE	I/P-0/P: 100M 0hms/	500VDC (25°C; 70% RH)					
	EMI CONDUCTION & RADIATION	Compliance to EN550	111					
		EN55022 (CISPR22); EN61204-3 Class B						
	HARMONIC CURRENT	Compliance to EN610						
	EMS IMMUNITY	•	•	55024; ENV50204; EN6100	00-6-2: EN61204-3:			
		heavy industry level;		,,	, , , , , , , , , , , , , , , , , , , ,			
			red a component which will insta	lled into a final equipment.				
			· ·					
OTHERS		The final equipment must be	e re-confirmed that it still meets b					
OTHERS	MTRE	The final equipment must be		ino directives.				
OTHERS_	MTBF DIMENSION	1172.3K hrs min. N	MIL-HDBK-217K (25°C)	ino directives.				
OTHERS_	MTBF DIMENSION PACKING		MIL-HDBK-217K (25°C) D)	and directives.				



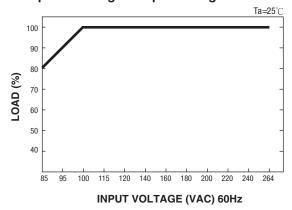
### **Block Diagram**



### **Derating Curve**



### **Output Derating VS Input Voltage**





# **PS-30 Series Specifications**







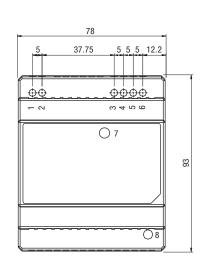
- Universal AC input/ full rangeProtections: Short Circuit / Overload / Over Voltage
- Cooling by free air convectionDIN rail mountable
- Isolation class II
- LED indicator for power on
- 100% full load burn-in test
- 3 year warranty

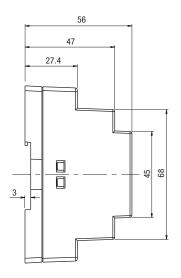
OUTPUT	Cat. No.	PS-3005	PS-3012	PS-3015	PS-3024
	DC VOLTAGE	5V	12V	15V	24V
	RATED CURRENT	3A	2A	2A	1.5A
	CURRENT RANGE	0 ~ 3A	0 ~ 2A	0 ~ 2A	0 ~ 1.5A
	RATED POWER	15W	24W	30W	36W
	RIPPLE & NOISE (max)	80mVp-p	120mVp-p	120mVp-p	150mVp-p
	Till TEE a Noise (max)		OMHz of bandwidth by using a 12 twi		
	VOLTAGE ADJ. RANGE	4.75 ~ 5.5V	10.8 ~ 13.2V	13.5 ~ 16.5V	21.6 ~ 26.4V
	VOLTAGE TOLERANCE	±2.0%	±1.0%	±1.0%	±1.0%
		Tolerance: includes set up tolera	ance, line regulation and load regula	ation.	1
	LINE REGULATION	±1.0%	±1.0%	±1.0%	±1.0%
	LOAD REGULATION	±1.0%	±1.0%	±1.0%	±1.0%
	SETUP, RISE TIME		100ms, 30ms / 115VAC	1 111	1 =
INPUT	HOLD UP TIME (Typ.)	100ms / 230VAC	21ms / 115VAC at full lo		
	VOLTAGE RANGE	85 ~ 264VAC	120 ~ 370VDC		
	FREQUENCY RANGE	47 ~ 63Hz			
	EFFICIENCY (Typ.)	74%	81%	82%	83%
	AC CURRENT (Typ.)	0.88A / 115VAC	0.48A / 230VAC	0270	1 00 //
PROTECTION	INRUSH CURRENT (Typ.)	COLD START 15A / 115			
	OVERLOAD	105 ~ 160% rated outp	ut power		
			it limiting recovers automatically aft	ter fault condition is removed	
	OVERVOLTAGE	5.75 ~ 6.75V	13.8 ~ 16.2V	17.25 ~ 20.25V	27.6 ~ 32.4V
ENVIRONMENT	0120202		voltage, clamping by zener diode	11.120 20.201	2.10 02.11
	WORKING TEMP.		utput load derating curve)		
	WORKING HUMIDITY	20 ~ 90% RH non-cond			
	STORAGE TEMP., HUMIDITY	-40 ~ +85°C, 10 ~ 95%			
	TEMP. COEFFICIENT	±0.03% / °C (0 ~ 50°C)	) [ [ ]		
			7 OC 10min / 10volo 60 n	ain agah lang V V 7 ayas	
CAFETY O FMC	VIBRATION	•	z, 2G 10min. / 1cycle, 60 n	IIII. each long A, t, Z axes	j
SAFETY & EMC	MOUNTING	Compliance to IEC60068	3-2-6		
	SAFETY STANDARDS	UL60950-1			
		EN60950-1 compliant			
		Design refer to EN5017	В		
	WITHSTAND VOLTAGE	I/P-0/P: 3KVAC			
	ISOLATION RESISTANCE	I/P-0/P: 100M 0hms / 5	600VDC		
	EMI CONDUCTION & RADIATION	Compliance to EN55011			
		EN55022 (CISPR22) Cla	ss B		
	HARMONIC CURRENT	Compliance to EN61000			
	EMS IMMUNITY	•	)-4-2,3,4,5,6,8,11; EN5502	24· FNV50204· FN61000-	-6-2· FN61204-3·
	Line initionit	heavy industry level; cri		1, 2,4,00201, 2,401000	0 2, 2101201 0,
			a component which will installed in	nto a final equipment. The final eq	quinment must be re-confirmed
OTHERS		that it still meets EMC directives	•	no a miai equipment. The mai et	quipment must be re-communed
	MTBF	441.5K hrs min. MIL-I			
	DIMENSION	78x93x56mm (WxHxD)	1551 2171 (200)		
	PACKING	, ,	1 DOCUET		
	FAUNINU	0.27Kg; 48pcs / 14Kg /		input roted land 105°0 -1	siant town aretur-
		All parameters NOT specially m	entioned are measured at 230V AC	input, rateu ioau and 25 C of ami	лені істірегаціге

| Terminal Pin. No Assignment | Pin No. | Assignment | Pin No. | Assignment | Assig

8

+V ADJ

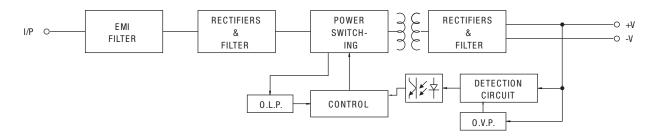




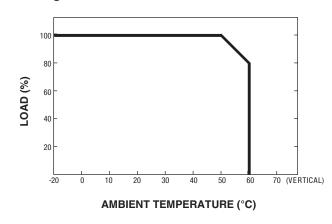
### **Block Diagram**

3,4

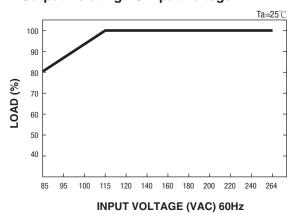
+V



### **Derating Curve**



### **Output Derating VS Input Voltage**





# PS-45 Series Specifications







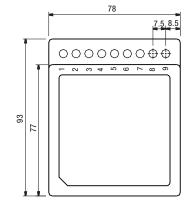


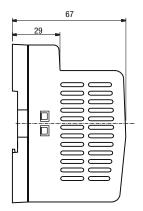
- Universal AC input / full range
- Protections: Short Circuit / Overload / Over Voltage/ Overtemperature
- Cooling by free air convection
- DIN rail mountable
- UL508 approved
- LED indicator for power on
- Fix switching frequency at 100kHz
- 100% full load burn-in test
- 3 year warranty

OUTPUT	Cat. No.	PS-4505	PS-4512	PS-4515	PS-4524			
	DC VOLTAGE RATED CURRENT CURRENT RANGE	5V 5A 0 ~ 5A	12V 3.5A 0 ~ 3.5A	15V 2.8A 0 ~ 2.8A	24V 2A 0 ~ 2A			
	RATED POWER	25W	42W	42W	48W			
	RIPPLE & NOISE (max)	100mVp-p	200mVp-p	240mVp-p	480mVp-p			
			20MHz of bandwidth by using a 12					
	VOLTAGE ADJ. RANGE	4.75 ~ 5.5V	10.8 ~ 13.2V	13.5 ~ 16.5V	21.6 ~ 26.4V			
	VOLTAGE TOLERANCE	±2.0%	±1.0%	±1.0%	±1.0%			
		Tolerance: includes set up tole	erance, line regulation and load re	gulation.				
	LINE REGULATION	±1.0%	±1.0%	±1.0%	±1.0%			
	LOAD REGULATION	±1.0%	±1.0%	±1.0%	±1.0%			
MDUT	SETUP, RISE TIME	800ms, 60ms / 230VA						
INPUT	HOLD UP TIME (Typ.)	60ms / 230VAC at full	load					
	VOLTAGE RANGE	85 ~ 264VAC	120 ~ 370VDC					
	FREQUENCY RANGE	47 ~ 63Hz						
	EFFICIENCY (Typ.)	72%	77%	77%	80%			
	AC CURRENT (max.)	1.5A / 115VAC	0.75A / 230VAC					
PROTECTION	INRUSH CURRENT (Typ.)	COLD START 28A / 115	5VAC; 56A / 230VAC					
PROTECTION	LEAKAGE CURRENT	≤1mA / 240VAC						
	OVERLOAD	105 ~ 160% rated output power						
			ent limiting recovers automatically		1			
	OVERVOLTAGE	5.75 ~ 6.75V	13.8 ~ 16.2V	17.25 ~ 20.25V	27.6 ~ 32.4V			
	OVEDTENADEDATUDE		ervoltage, clamping by zener diod					
ENVIRONMENT	OVERTEMPERATURE		detect on heat sink of po					
LINVINOINIVILINI			ervoltage, re-power on to recover					
	WORKING TEMPERATURE	•	output load derating curv	re)				
	WORKING HUMIDITY	20 ~ 90% RH non-con	•					
	STORAGE TEMP., HUMIDITY TEMP. COEFFICIENT	-20 ~ +85°C, 10 ~ 95°						
	VIBRATION	±0.03% / °C (0 ~ 50°C	<sup>,</sup> ) Hz, 2G 10min. / 1cycle, 6(	n min, each long V V 7 a	<b>,</b> 00			
SAFETY & EMC	MOUNTING	Compliance to IEC6006		o illii. Gacii ioliy A, i, Z az	(62			
SAFETT & EIVIC		•	00-2-0					
	SAFETY STANDARDS	UL508						
	WITHCTAND VOLTACE	EN60950-1 compliant I/P-0/P: 3KVAC I/P-F	FG:1.5KVAC	\/AC				
	WITHSTAND VOLTAGE ISOLATION RESISTANCE		G: 100M Ohms / 500VDC					
	EMI CONDUCTION & RADIATION	· · ·	ii. Toom onns / 3000dc 11; EN55022 (CISPR22) C					
	HARMONIC CURRENT	Compliance to EN6100		1000 D				
	EMS IMMUNITY	•	00-4-2,3,4,5,6,8,11; ENV5	50204· FN55024· FN6100	∩-6-2·			
	Line initioni i	heavy industry level; c		7020 1, E11000E 1, E11010	50 0 L,			
			ed a component which will installe	ed into a final equipment.				
OTHERS			re-confirmed that it still meets EM					
	MTBF	364.6K hrs min. MIL						
	DIMENSION	93x78x67mm (LxWxH)	, ,					
	PACKING	0.31Kg; 48pcs / 16.1K						
		• .	mentioned are measured at 230V	AC input_rated load and 25°C of	ambient temperature			
		All parameters into a specially i	monuoneu are measureu al 230V	Ao imput, rateu toau anu 20 6 01	ambioni temperature			

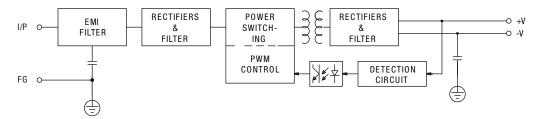
Terminal Pin. No Assignment

		-	
Pin	Assignment	Pin	Assignment
1	AC/L	6,7	DC OUTPUT+V
2	AC/N	8	LED
3	FG ⊕	9	+V ADJ.
4.5	DC OUTPUT-V		

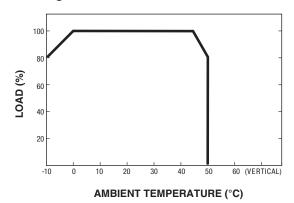




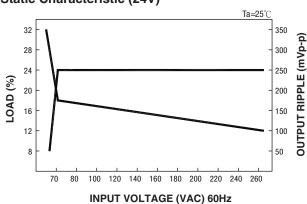
### **Block Diagram**



### **Derating Curve**



### **Static Characteristic (24V)**





# PS-60 Series Specifications





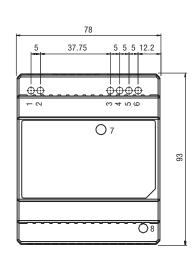


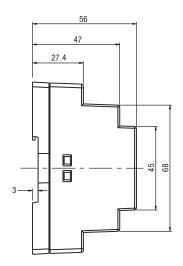
- Universal AC input / full range
- Protections: Short Circuit / Overload / Over Voltage
- Cooling by free air convection
- DIN rail mountable
- Isolation class II
- LED indicator for power on
- 100% full load burn-in test
- 3 year warranty

Cat. No.	PS-6005	PS-6012	PS-6015	PS-6024
DC VOLTAGE RATED CURRENT	5V 6.5A	12V 4.5A	15V 4A	24V 2.5A
			* "'	0 ~ 2.5A
				60W
RIPPLE & NUISE (Max)				150mVp-p
VOLTACE AD L DANCE				
				21.6 ~ 26.4V ±1.0%
VOLIAGE TOLERANCE		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		±1.070
LINE REGULATION	•	· -	=	±1.0%
				±1.0%
				1.070
· · · · · · · · · · · · · · · · · · ·	*	,		
1				
		124 ~ 370000		
		82%	83%	84%
1 - 1		I control of the cont	0070	0470
` ,				
OVERLOAD	•	•	ly after fault condition is removed	
OVERVOLTAGE	**			27.6 ~ 32.4V
overwoemae				27.0 02.40
WODKING TEMP	•			
	•		ve)	
		•		
		ıuı		
	, ,	/ 1cvcle, 60 min, each	long X.Y. 7 axes	
	•	• •	1011g 71, 1, 2 ax00	
	<u> </u>	0		
SAFETT STANDANDS				
	•	1		
WITHSTAND VOLTAGE		•		
		OVDC (25°C: 70% RH)		
		0000 (20 0, 7070 1111)		
LIMI COMBOCITION & TUNDINITION	•	ss B		
HARMONIC CURRENT	, , ,			
	•	•	50204: EN55024: EN6100	0-6-2: EN61204-3:
	•		,,	,
	, ,		led into a final equipment. The fina	equipment must be re-confirmed
	that it still meets EMC directives			• •
MTRF	216.2K hrs min MII -F	IDBK-217K (25°C)		
	78x93x56mm (WxHxD)	1551. Z 171. (20 0)		
DIMENSION	LOY20YOULIIII IAAYIIYID			
PACKING	0.3Kg; 48pcs / 15.4Kg /	1.02CUFT		
	DC VOLTAGE	DC VOLTAGE RATED CURRENT CURRENT RANGE RATED POWER RIPPLE & NOISE (max)  VOLTAGE ADJ. RANGE VOLTAGE TOLERANCE  LINE REGULATION LOAD REGULATION LOAD REGULATION SETUP, RISE TIME HOLD UP TIME (Typ.)  VOLTAGE RANGE FREQUENCY RANGE FREQUENCY (Typ.) AC CURRENT (max.) INRUSH CURRENT (Typ.)  OVERLOAD  WORKING TEMP. WORKING TEMP. WORKING HUMIDITY STORAGE TEMP., HUMIDITY STORAGE TEMP., HUMIDITY TEMP. COEFFICIENT VIBRATION SAFETY STANDARDS  WITHSTAND VOLTAGE INCOMPARENT INSUM CURRENT WITHSTAND VOLTAGE INCOMPARENT INSUM CURRENT EMIL COMPARISON WITHSTAND CURRENT WITHSTAND CURRENT EMIL COMPARISON WITHSTAND CURRENT WITHSTAND CURRENT COMPARISON WORKING TEMP. WORKING T	DC VOLTAGE   RATED CURRENT   CURRENT RANGE   CURRENT RANGE   0 ~ 6.5A   0 ~ 4.5A   5.4W   5	DC VOLTAGE   ATED CURRENT   CURRENT RANGE   0 ~ 6.5A   4.5A   4.5A

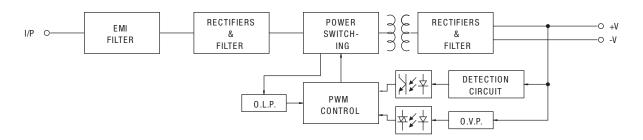
Terminal Pin. No Assignment

		9	
Pin No.	Assignment	Pin No.	Assignment
1	AC/L	5,6	-V
2	AC/N	7	LED
3.4	+V	8	+V ADJ.

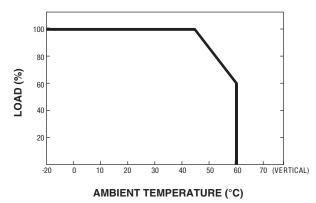




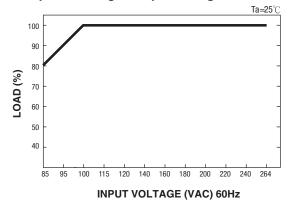
### **Block Diagram**



### **Derating Curve**



### **Output Derating VS Input Voltage**





# **PS-100 Series Specifications**









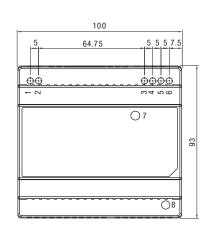


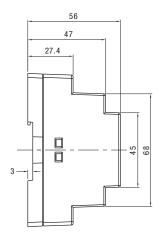
- Universal AC input / full range
- Protections: Short Circuit / Overload / Over Voltage / Overtemperature
- Cooling by free air convection
- DIN rail mountable
- Isolation class II
- LED indicator for power on
- No load power consumption <1W
- 100% full load burn-in test
- 3 year warranty

OUTPUT	Cat. No.	PS-10012	PS-10015	PS-10024
	DC VOLTAGE RATED CURRENT	12V 7.5A	15V 6.5A	24V 4.2A
	CURRENT RANGE	0 ~ 7.5A	0 ~ 6.5A	0 ~ 4.2A
	RATED POWER	90W	97.5W	100.8W
	RIPPLE & NOISE (max)	120mVp-p	120mVp-p	150mVp-p
	VOLTAGE ADJ. RANGE	Ripple & noise are measured at 20MHz of bandwing $1.2 \sim 15V$	dth by using a 12 twisted pair-wire terminate   15 ~ 18V	d with a 0.1μ+ & 47μ+ parallel capacitor.    24 ~ 29V
	VOLTAGE ADS. NANGE VOLTAGE TOLERANCE	±2.0%	±1.0%	±1.0%
	VOLIAGE TOLLIANGE	Tolerance: includes set up tolerance, line regulation	The state of the s	1.070
	LINE REGULATION	±1.0%	±1.0%	±1.0%
	LOAD REGULATION	±1.0%	±1.0%	±1.0%
	SETUP, RISE TIME		, 80ms / 115VAC at full load	1 =
INPUT	HOLD UP TIME (Typ.)	•	115VAC at full load	
	VOLTAGE RANGE FREQUENCY RANGE	88 ~ 264VAC 124 ~ 47 ~ 63Hz	370VDC [ Connect AC/L(+), AC/N(-	)]
	EFFICIENCY (Typ.)	87%	87%	89%
	AC CURRENT (max.)	3A / 115VAC 1.6	A / 230VAC	
PROTECTION	INRUSH CURRENT (Typ.)	COLD START 30A / 115VAC; 45A / 2	230VAC	
	OVERLOAD	105 ~ 135% rated output power Protection type: Constant current limiting recovers Under short circuit or overload ≥ 150% conditions current protection mode		
	OVERVOLTAGE	16 ~ 20V	19 ~ 23V	30 ~ 35V
		Protection type: Shut down overvoltage, re-power	on to recover	1
	OVERTEMPERATURE	90°C ± 15°C (RTH2) detect on heat sir	nk of power transistor	
ENVIRONMENT		Protection type: Shut down overvoltage	je, re-power on to recover	
	WORKING TEMP.	-20 ~ +60°C (Refer to output load der	rating curve)	
	WORKING HUMIDITY	20 ~ 90% RH non-condensing		
	STORAGE TEMP., HUMIDITY	-40 ~ +85°C, 10 ~ 95% RH		
	TEMP. COEFFICIENT	±0.03% / °C (0 ~ 50°C)		
	VIBRATION	10 ~ 500Hz, 2G 10min. / 1cycle, 60 n	nin. each long X,Y, Z axes	
SAFETY & EMC	MOUNTING	Compliance to IEC60068-2-6		
	SAFETY STANDARDS	UL60950-1		
		EN60950-1 compliant		
		Design refer to EN50178		
	WITHSTAND VOLTAGE	I/P-O/P: 3KVAC		
	ISOLATION RESISTANCE	I/P-0/P: 100M Ohms/500VDC (25°C;	70% RH)	
	EMI CONDUCTION & RADIATION		(CISPR22) Class B	
	HARMONIC CURRENT	Compliance to EN61000-3-2,-3		
	5140 II414 IIII	Harmonic current test @ 90% load	2.44 FNN/F0004 FNT=004 F11	000 0 0 FN0400: 0
	EMS IMMUNITY	Compliance to EN61000-4-2,3,4,5,6,8	B,11; ENV50204; EN55024; EN610	000-6-2; EN61204-3;
		heavy industry level; criteria A  The power supply is considered a component whi	ch will inetalled into a final equipment. The fir	aal aquinment must be re-confirmed
OTHERS		that it still meets EMC directives.	ch wiii installed into a linal equipment. The lii	iai equipment must be re-commieu
	MTBF	486K hrs min. MIL-HDBK-217K (25)	°C)	
	DIMENSION	100x93x56mm (WxHxD)	<b>U</b>	
	PACKING	0.35Kg; 36pcs / 13.6Kg / 0.89CUFT		
	NOTE	All parameters NOT specially mentioned are meas	ured at 230V AC input, rated load and 25°C o	f ambient temperature.
		,		

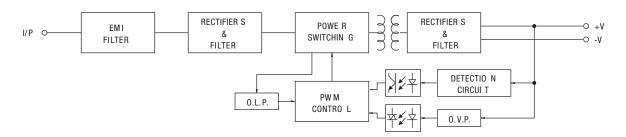
Terminal Pin. No Assignment

Pin No.	Assignment	Pin No.	Assignment
1	AC/L	5,6	-V
2	AC/N	7	LED
3.4	+V	8	+V ADJ.

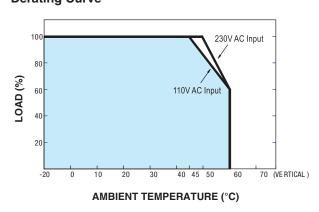




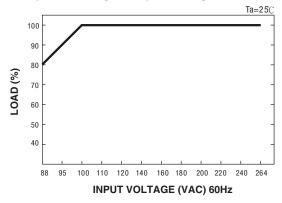
### **Block Diagram**



### **Derating Curve**



### **Output Derating VS Input Voltage**





# Industrial Metal Case Single Phase and Three Phase Power Supply

The Altech Industrial metal case power supplies have been optimized for use in practically any DC power applications, with a wide range of AC/DC inputs and an extended temperature range of -20° C up to +70° C. These metal case power supplies feature a small housing design and high power reserve. Excellent electrical specifications and high immunity against fluctuations in input voltage make these metal case modules the best choice to industrial automation. Altech's metal case power supplies are available in six single-phase and four three-phase models with 12VDC (75W and 120W), 24 VDC and 48VDC output voltages, and up to 40A output currents. This voltage range enables the Industrial metal case supplies to be used in virtually any single-phase or three-phase application. The Industrial metal case power supply series offers users easy wiring with screw terminal blocks and snap-on DIN-rail mounting. Designed for use in numerous applications around the world, this power supplies are UL and CSA approved, CE marked and ROHS compliant. They feature a rugged metal housing, vibration- and shock-proof construction and provide a cost-effective power delivery solution for basic functionality requirements.

### **Single Phase Power Supply:**

Input voltage range:
 AC inrush current: Cold start:
 85-264V AC / 120-370V DC
 20A at 115V AC, 40A at 230V AC

• Overload voltage protection: 105%-160% constant current limiting auto-recovery

• Over-voltage protection: 115%-135% rated output voltage

• Setup, rise, hold up time: 500ms; 70ms; 30ms at full load and 230V AC

• Working temperature: -20 to +50°C (-4° to +122°F) at 100%

+60°C (+140°F) at 80% load

### **Three Phase Power Supply:**

Three phase input

• Input voltage range: 340-550V AC / 480-760V DC

• AC inrush current: Cold start: 50A

Overload voltage protection: 105%-150% constant current limiting auto-recovery

• Over-voltage protection: 115%-135% rated output voltage

• Setup, rise, hold up time: 1200ms, 40ms, 20ms @ 400V AC

800ms, 40ms, 40ms @ 500V AC full load

Working temperature: -20 to +70°C (-4 to +158°F) at 100%
 EMC standards: EN61000-6-2 (EN50082-2)

Heavy Industrial Level; criteria A

• Military standard: MIL-HDBK-217K

### PS Series - Metal Case











- Universal AC input / Full range
- Single phase or Three phase
- Built in active PFC function
- Protections: Short circuit / Overload / Overvoltage / Over temperature
- · Cooling by free air convection
- DIN rail mountable
- UL 508 (industrial control equipment) approved
- LED indicator for power on
- 100% full load burn-in test
- 3 year warranty



# 75-240W Single Phase Power Supplies













### 75W Single Output DIN Rail Power Supply

Cat. No.	Outp		Tol.	Ripple &	Efficiency	NOTES
	V DC	Α	%	Noise		
PS-7512	12V DC	6.3A	±2%	100 mVp-p	76%	
PS-7524	24V DC	3.2A	±1%	150 mVp-p	80%	
PS-7548	48V DC	1.6A	±1%	240 mVp-p	81%	



# 120W Single Output DIN Rail Power Supply

Cat. No.	Outp	ut	Tol.	Ripple &	Efficiency	NOTES
	V DC	A	%	Noise		
PS-12012	12V DC	10A	±2%	80 mVp-p	80%	
PS-12024	24V DC	5A	±1%	80 mVp-p	84%	
PS-12048	48V DC	2.5A	±1%	100 mVp-p	85%	



### 120W High Input Single Output DIN Rail Power Supply

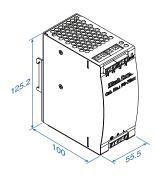
Cat. No.	Outp	ut	Tol.	Ripple &	Efficiency	NOTES
	V DC	A	%	Noise		
PSH-12024	24V DC	5A	±1%	80 mVp-p	85%	
PSH-12048	48V DC	2.5A	±1%	80 mVp-p	86%	



### 240W Single Output DIN Rail Power Supply with PFC Function

Cat. No.	Outp	ut	Tol.	Ripple &	Efficiency	NOTES
	V DC	A	%	Noise		
PSP-24024	24V DC	10A	±1%	80 mVp-p	84%	
PSP-24048	48V DC	5A	±1%	150 mVp-p	85%	

**PS-75** Series



101111111a11 111.140 /1001g11. (1D1)				
Pin No.	Assignment			
1	FG⊕			
2	AC/N			
3	AC/L			

Terminal Pin. No Assign. (TB1) Terminal Pin. No Assign. (TB2)

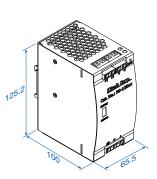
Pin No.	Assignment
1,2	DC OUTPUT +V
3,4	DC OUTPUT -V

Universal Input: 85-264V AC, 120-370V DC full range, 1.6A @ 115V AC, 0.96A @ 230V AC

Connection: Input - 3 poles, Output - 4 poles screw terminal Size (WxHxD): 55.5x125x100mm (2.20x4.95x3.95 inches)

Packaging: 1/box; 1.35lbs / 0.60Kg

**PS-120 Series** (Switch Select)



Terminal Pin. No Assign. (TB1)

omman minto mongrii (181)		
Pin No. Assignment		
1	FG⊕	
2	AC/N	
3	AC/L	

Terminal Pin. No Assign. (TB2)

Pin No. Assignment	
1,2	DC OUTPUT +V
3,4	DC OUTPUT -V

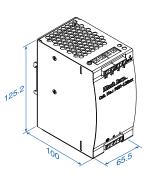
Switch select Input: 88-132V AC / 176-264 V AC, 248-370V DC range,

2.6A @ 115V AC, 1.6A @ 230V AC

Connection: Input - 3 poles, Output - 4 poles screw terminal Size (WxHxD): 65.5x125x100mm (2.56x4.95x3.95 inches)

Packaging: 1/box; 1.75lbs / 0.79Kg

**PSH-120 High Input Series** 



Terminai Pin. No Assign. (18)		
Pin No.	Assignment	
1	FG ⊕	
2	AC/N(L2)	
3	AC/L(L1)	

Terminal Pin No Assign (TR2)

Torriniar Fini. 140 / toolgin. (TDL)	
Pin No.	Assignment
1,2	DC OUTPUT +V
3,4	DC OUTPUT -V

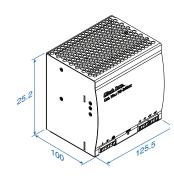
340-550V AC, 480-780V DC range, Universal Input:

0.65A @ 400V AC, 0.6A @ 500V AC

Connection: Input - 3 poles, Output - 4 poles screw terminal Size (WxHxD): 65.5x125x100mm (2.56x4.95x3.95 inches)

Packaging: 1/box; 1.65lbs / 0.75Kg

**PSP-240 Series** 



Terminal Pin. No Assign. (TB1)

		,
Pin No.	Assignment	
1	FG ⊕	
2	AC/N	
3	AC/L	

Terminal Pin. No Assign. (TB2)

Pin No.	Assignment
1,2	DC OUTPUT +V
3,4	DC OUTPUT -V

Universal Input: 85-264V AC, 120-370V DC full range,

2.8A @ 115V AC, 1.4A @ 230V AC

Built in active Power Factor Correction function. PF>0.95 Connection: Input - 3 poles, Output - 4 poles screw terminal Size (WxHxD): 125x125x100mm (4.95x4.95x3.95 inches)

Packaging: 1/box; 2.7lbs / 1.2Kg



# **PS-75 Series Specifications**



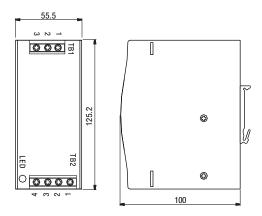






- Universe al AC input / full range
  Protections: Short Circuit / Over load / Overvoltage / Over temperature
- Cooling by free air convectionDIN rail mountable
- UL508 (industrial control equipment) approved
- LED indicator for power on
- 100% full load burn-in test
- Fix switching frequency at 50KHz
- 3 year warranty

OUTPUT	Cat. No.	PS-7512	PS-7524	PS-7548
	DC VOLTAGE RATED CURRENT CURRENT RANGE	12V 6.3A 0 ~ 6.3A	24V 3.2A 0 ~ 3.2A	48V 1.6A 0 ~ 1.6A
	RATED POWER	76W	76.8W	76.8W
	RIPPLE & NOISE (max)	100mVp-p	150mVp-p	240mVp-p
		Ripple & noise are measured at 20MHz of bandwidth by		
	VOLTAGE ADJ. RANGE	12 ~ 14V	24 ~ 28V	48 ~ 53V
	VOLTAGE TOLERANCE	±2.0%	±1.0%	±1.0%
	LINE REGULATION	Tolerance: includes set up tolerance, line regulation a $\pm 0.5\%$	and load regulation. $\pm 0.5\%$	±0.5%
	LOAD REGULATION	±0.5% ±1.0%	±0.3 % ±1.0%	±1.0%
	SETUP, RISE TIME		60ms / 115VAC at full load	_1.070
INPUT	HOLD UP TIME (Typ.)	60ms / 230VAC 12ms / 1	15VAC at full load	
	VOLTAGE RANGE FREQUENCY RANGE	85 ~ 264VAC 120 ~ 370VDC 47 ~ 63Hz		
	EFFICIENCY (Typ.)	76%	80%	81%
	AC CURRENT (max.)	1.6 A / 115VAC 0.96A / 230VAC		
PROTECTION	INRUSH CURRENT (Typ.)		0A / 230VAC	
PROTECTION	LEAKAGE CURRENT	≤ 1mA / 240VAC		
	OVERLOAD	105 ~ 150% rated output power		
	OVERVOLTAGE	Protection type: Constant current limiting, recovers a $15 \sim 16.5V$	utomatically after fault condition is removed 29 ~ 34V	58 ~ 65V
	OVERVOLIAGE	Protection type: Shut down overvoltage, re-power on		30 ~ 03V
	OVERTEMPERATURE	$85^{\circ}\text{C} \pm 5^{\circ}\text{C}$ (TSW1) detect on heat sink		
ENVIRONMENT		Protection type: Shut down overvoltage, recovers aut	•	
	WORKING TEMP.	-10 ~ +60°C (Refer to output load dera	ing curve)	
	WORKING HUMIDITY	20 ~ 90% RH non-condensing		
	STORAGE TEMP., HUMIDITY	-20 ~ +85°C, 10 ~ 95% RH		
	TEMP. COEFFICIENT	±0.03% / °C (0 ~ 50°C)	and lane V.V. 7 avec	
SAFETY & EMC	VIBRATION MOUNTING	10 ~ 500Hz, 2G 10min./1cycle, 60 min. Compliance to IEC60068-2-6	each long x, y, z axes	
SAFETT & EIVIU	1 11 11	<u>'</u>		
	SAFETY STANDARDS	UL508 EN60950-1 compliant		
	WITHSTAND VOLTAGE	·	/P-FG: 0.5KVAC	
	ISOLATION RESISTANCE	I/P-O/P, I/P-FG, O/P-FG: 100M Ohms /		
	EMI CONDUCTION & RADIATION	Compliance to EN55011; EN55022 (CIS		
	HARMONIC CURRENT	Compliance to EN61000-3-2,-3		
	EMS IMMUNITY	Compliance to EN61000-4-2,3,4,5,6,8,	11; ENV50204; EN55024; EN61000-6-2	2; (EN50082-2)
		heavy industry level; criteria A	will installed into a final anxioment. The first	
OTHERS		The power supply is considered a component which that it still meets EMC directives.	will installed into a final equipment. The final equipm	nent must be re-confirmed
	MTBF	123.1K hrs min. MIL-HDBK-217K (25	°C)	
	DIMENSION	55.5x125.2x100mm (WxHxD)		
	PACKING	0.6Kg; 20pcs / 13Kg / 1.29CUFT	ad at 000V AO issued and of °C 11111	
		All parameters NOT specially mentioned are measure	ed at 230V AC input, rated load and 25°C of ambient	temperature.



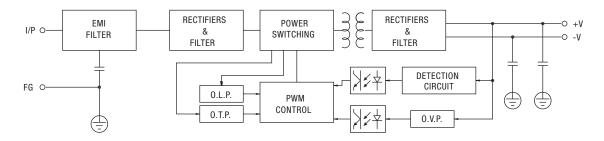
Terminal Pin. No Assignment (TB1)

Pin No.	Assignment
1	FG ⊕
2	AC/N
3	AC/L

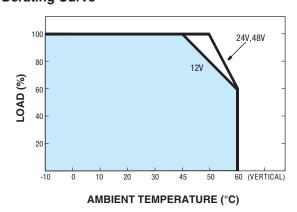
Terminal Pin. No Assignment (TB2)

Pin No.	Assignment
1,2	DC O UTPUT +V
3,4	DC O UTPUT -V

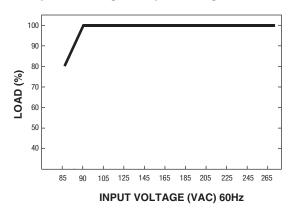
### **Block Diagram**



### **Derating Curve**



### **Output Derating VS Input Voltage**





# **PS-120 Series Specifications**





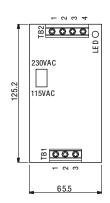


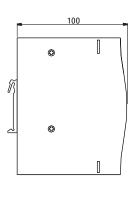




- Universal AC input / full range
- Protections: Short Circuit / Over load / Overvoltage/Over temperature
- Cooling by free air convection
- DIN rail mountable TS-35/7.5 or 15
- UL 508 (industrial control equipment) approved
- LED indicator for power on
- 100% full load burn-in test
- Fix switching frequency at 50KHz
- 3 year warranty

OUTPUT	Cat. No.	PS-12012	PS-12024	PS-12048	
	DC VOLTAGE	12V	24V	48V	
	RATED CURRENT	10A	5A	2.5A	
	CURRENT RANGE	0 ~ 10A	0 ~ 5A	0 ~ 2.5A	
	RATED POWER	120W	120W	120W	
	RIPPLE & NOISE (max)	80mVp-p	80mVp-p	100mVp-p	
	== (		th by using a 12 twisted pair-wire terminated with a 0.1		
	VOLTAGE ADJ. RANGE	12 ~ 14V	24 ~ 28V	48 ~ 53V	
	VOLTAGE TOLERANCE	±2.0%	±1.0%	±1.0%	
	VOLITICE TOLLITINGE	Tolerance: includes set up tolerance, line regulati		21.070	
	LINE REGULATION	±0.5%	±0.5%	±0.5%	
	LOAD REGULATION	±1.0%	±1.0%	±1.0%	
		·	· ·	±1.0%	
	SETUP, RISE TIME	· · · · · · · · · · · · · · · · · · ·	70ms / 115VAC at full load		
INPUT	HOLD UP TIME (Typ.)	36ms / 230VAC 32ms	/ 115VAC at full load		
	VOLTAGE RANGE	88 ~ 132VAC / 176 ~ 264VAC by sw	itch 120 ~ 185VDC / 24	18 ~ 370VDC	
	FREQUENCY RANGE	47 ~ 63Hz	120 10010072	.0 0,0,00	
	EFFICIENCY (Typ.)	80%	84%	85%	
			0470	0370	
	AC CURRENT (max.)		404 / 0001/40		
	INRUSH CURRENT (Typ.)	COLD START 20A / 115VAC	40A / 230VAC		
PROTECTION	LEAKAGE CURRENT	≤ 3.5mA / 240VAC			
	OVERLOAD	105 ~ 150% rated output power			
	OVERLEON IS	Protection type: Constant current limiting, recove	re automatically after fault condition is removed		
	OVERVOLTAGE	15 ~ 16.5V	29 ~ 33V	58 ~ 65V	
	OVERVOLIAGE			30 ~ 03V	
	OVEDTEMBED AT LIDE	Protection type: Shut down overvoltage, re-powe		00°C . F°C (TCW4)	
ENVIDONINGENIT	OVERTEMPERATURE	85°C ± 5°C (TSW1)	90°C ± 5°C (TSW1)	$90^{\circ}\text{C} \pm 5^{\circ}\text{C} \text{ (TSW1)}$	
ENVIRONMENT		Protection type: Shut down overvoltage, recovers	automatically after temperature goes down		
	WORKING TEMP.	$-10 \sim +60^{\circ}$ C (Refer to output load de	erating curve)		
	WORKING HUMIDITY	20 ~ 90% RH non-condensing	,		
	STORAGE TEMP., HUMIDITY	-20 ~ +85°C, 10 ~ 95% RH			
	TEMP. COEFFICIENT	±0.03% / °C (0 ~ 50°C)			
	VIBRATION	10 ~ 500Hz, 2G 10min./1cycle, 60 m	nin each long Y V 7 aves		
CAEETY & EMC	MOUNTING	Compliance to IEC60068-2-6	iii. each long A, i, 2 axes		
SAFETY & EMC	MODIVING	Compilance to iEGOOGG-2-0			
	SAFETY STANDARDS	UL508			
		UL60950-1			
		EN60950-1 compliant			
	WITHSTAND VOLTAGE	I/P-O/P: 3KVAC			
	ISOLATION RESISTANCE	I/P-0/P, I/P-FG, 0/P-FG: 100M 0hms			
	EMI CONDUCTION & RADIATION	Compliance to EN55011; EN55022 (0			
	HARMONIC CURRENT	Compliance to EN61000-3-2,-3	5101 1122) Glass B		
		·	0.11. FNVE0004. FNEE004. FNC1000. C	O. (ENEODO O).	
	EMS IMMUNITY		,8,11; ENV50204; EN55024; EN61000-6	-2; (ENSUU82-2);	
		heavy industry level; criteria A			
OTLIEBO			ich will installed into a final equipment. The final equi	ipment must be re-confirmed	
OTHERS		that it still meets EMC directives.			
	MTBF	136.8K hrs min. MIL-HDBK-217K (	25°C)		
	DIMENSION	65.5x125.2x100mm (WxHxD)			
	PACKING	0.79Kg; 20pcs / 16.5Kg / 1.29CUFT			
	I AUNING	• •	ourned at 220V AC input rotad load and 25°C -f	ant tomporatura	
	I and the second	All parameters NOT specially mentioned are mea	sured at 230V AC input, rated load and 25°C of ambie	an temperature.	





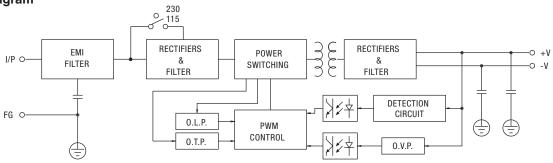
Terminal Pin. No Assignment (TB1)

Pin No.	Assignment
1	FG ⊕
2	AC/N
3	AC/L

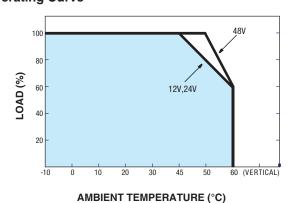
Terminal Pin. No Assignment (TB2)

Pin No.	Assignment
1,2	DCOUTPUT+V
3,4	DC O UTPUT -V

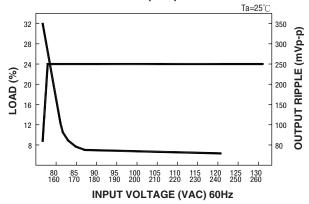




### **Derating Curve**



### Static Characterisitcs (24V)





# **PSH-120 High Input Series**

## **Specifications**



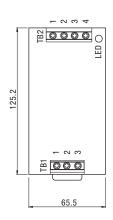


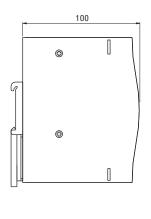




- Universal AC input / full range
- Protections: Short Circuit / Overload / Over Voltage / Overtemperature
- Cooling by free air convection
- Built-in constant current limiting circuit
- DIN rail mountable
- EN61000-6-2(EN50082-2) industrial immunity level
- 100% full load burn-in test
- Fixed switching frequency at 70KHz
- 3 year warranty

OUTPUT	Cat. No.	PSH-12024	PSH-12048
	DC VOLTAGE RATED CURRENT CURRENT RANGE RATED POWER	24V 5A 0 ~ 5A 120W	48V 2.5A 0 ~ 2.5A 120W
	RIPPLE & NOISE (max)	80mVp-p	80mVp-p
	VOLTAGE ADJ. RANGE VOLTAGE TOLERANCE	Ripple & noise are measured at 20MHz of bandwidth by using a 12 twisted pa 24 ~ 28V ±1.0%	ir-wire terminated with a 0.1μF & 4/μF parallel capacitor.  48 ~ 55V ±1.0%
INPUT	LINE REGULATION LOAD REGULATION SETUP, RISE, HOLD UP TIME	Tolerance: includes set up tolerance, line regulation and load regulation. $ \pm 0.5\% $ $ \pm 0.5\% $ $ \pm 0.5\% $ $ 1700ms, 120ms, 16ms / 400VAC $ $ 1000ms, 120ms,$	±0.5% ±0.5% 30ms / 500VAC at full load
PROTECTION	VOLTAGE RANGE FREQUENCY RANGE EFFICIENCY (Typ.) AC CURRENT (max.) INRUSH CURRENT (max.) LEAKAGE CURRENT	340 ~ 550VAC 480 ~ 780VDC 47 ~ 63Hz 85% 0.65A / 400VAC 0.6A / 500VAC COLD START 50A ≤ 3.5 mA / 530VAC	86%
	OVERLOAD  OVERVOLTAGE  OVERTEMPERATURE	$105 \sim 160\% \ rated \ output \ power$ Protection type: Constant current limiting, recovers automatically after faul $30 \sim 36V$ Protection type: Shut down overvoltage, re-power on to recover $85^{\circ}C \pm 5^{\circ}C \ (TSW: \ detect \ on \ heat \ sink \ of \ power \ switch)$	condition is removed 59 ~ 66V
ENVIRONMENT		Protection type: Shut down overvoltage, recovers automatically after temperature of the state of	erature goes down
SAFETY & EMC	WORKING TEMP. WORKING HUMIDITY STORAGE TEMP., HUMIDITY TEMP. COEFFICIENT VIBRATION MOUNTING	-20 ~ +60°C (Refer to output load derating curve) 20 ~ 90% RH non-condensing -40 ~ +85°C, 10 ~ 95% RH ±0.03% / °C (0 ~ 50°C) 10 ~ 500Hz, 2G 10min./1cycle, 60 min. each long X,Y, Z Compliance to IEC60068-2-6	axes
OTHERS	SAFETY STANDARDS  WITHSTAND VOLTAGE ISOLATION RESISTANCE EMI CONDUCTION & RADIATION EMS IMMUNITY	UL60950-1 approved IEC60950-1 CB compliant I/P-0/P: 3KVAC I/P-FG: 1.5KVAC 0/P-FG: 0.5KVAC I/P-0/P, I/P-FG, 0/P-FG: 100M 0hms / 500VDC (25°C; 7'C compliance to EN55011 (CISPR11); EN55022 (CISPR22 Compliance to EN61000-4-2,3,4,5,6,8,11; ENV50204; E heavy industry level; criteria A The power supply is considered a component which will installed into a fin that it still meets EMC directives.	); EN61204-3 Class B N61204-3; EN61000-6-2; (EN50082-2),
	MTBF DIMENSION PACKING	178.7K hrs min. MIL-HDBK-217K (25°C) 65.5x125.2x100mm (WxHxD) 0.75Kg; 20pcs / 16Kg / 1.29CUFT All parameters NOT specially mentioned are measured at 230V AC input, re	ated load and 25°C of ambient temperature.





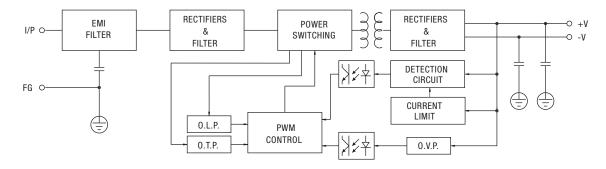
Terminal Pin No. Assignment (TB1)

Pin No.	Assignment
1	FG ⊕
2	AC/L2
3	AC/L1

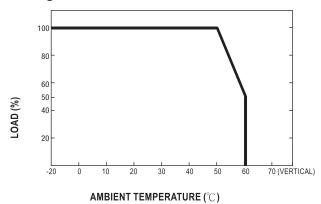
Terminal Pin No. Assignment (TB2)

Pin No.	Assignment
1,2	DC OUTPUT +V
3,4	DC OUTPUT -V

### **Block Diagram**



### **Derating Curve**





# **PSP-240 Series Specifications**





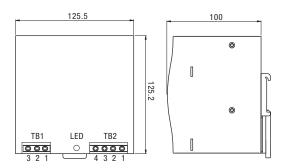






- Universal AC input / full range
- Built in active PFC function
- Protections: Short Circuit / Overload / Overvoltage / Over temperature
- Cooling by free air convection
- DIN rail mountable
- UL 508(industrial control equipment)approved
- LED indicator for power on
- 100% full load burn-in test
- Fixed switching frequency at 100KHz
- 3 year warranty

OUTPUT	Cat. No.	PSP-24024	PSP-24048
	DC VOLTAGE	24V	48V
	RATED CURRENT	10A	5A
	CURRENT RANGE	0 ~ 10A	0 ~ 5A
	RATED POWER	240W	240W
	RIPPLE & NOISE (max)	80mVp-p	150mVp-p
	THI I LE & NOIDE (Max)	Ripple & noise are measured at 20MHz of bandwidth by using a 12 twisted pair-	
	VOLTAGE ADJ. RANGE	24 ~ 28V	48 ~ 53V
	VOLTAGE TOLERANCE	±1.0%	±1.0%
		Tolerance: includes set up tolerance, line regulation and load regulation.	ı
	LINE REGULATION	±0.5%	±0.5%
	LOAD REGULATION	±1.0%	±1.0%
	SETUP, RISE TIME	800ms, 40ms / 230VAC 800ms, 40ms / 115VAC at fu	
INPUT	HOLD UP TIME (Typ.)	24ms / 230VAC 24ms / 115VAC at full load	1044
111 01	VOLTACE DANCE	0E 0C4VAC 100 270VDC	
	VOLTAGE RANGE	85 ~ 264VAC 120 ~ 370VDC  Derating may be needed under low input voltages, please check the derating	curve for more detail
	FREQUENCY RANGE	47 ~ 63Hz	,
	POWER FACTOR (Typ.)	0.96 / 230VAC 0.99 / 115VAC at full load	
	EFFICIENCY (Typ.)	84%	85%
	AC CURRENT (max.)	2.8A / 115VAC; 1.4A / 230VAC	0070
	INRUSH CURRENT (Typ.)	COLD START 27A / 115VAC 45A / 230VAC	
	LEAKAGE CURRENT	≤ 3.5mA / 240VAC	
PROTECTION	LEARAGE CONNEINT	≤ 3.3IIIA / 240VAC	
	OVERLOAD	105 ~ 150% rated output power	
		Protection type: Constant current limiting, recovers automatically after fault of	t and the second
	OVERVOLTAGE	30 ~ 36V	54 ~ 60V
		Protection type: Shut down overvoltage, re-power on to recover	
	OVERTEMPERATURE	$100^{\circ}\text{C} \pm 5^{\circ}\text{C}$ (TSW: detect on heat sink of power transisto	r)
ENVIRONMENT		Protection type: Shut down overvoltage, recovers automatically after temperature	ature goes down
	WORKING TEMP.	-10 $\sim$ +70°C (Refer to output load derating curve)	
	WORKING HUMIDITY	20 ~ 90% RH non-condensing	
	STORAGE TEMP., HUMIDITY	-20 ~ +85°C, 10 ~ 95% RH	
	TEMP. COEFFICIENT	±0.03% / °C (0 ~ 50°C)	
	VIBRATION	10 ~ 500Hz, 2G 10min./1cycle, 60 min. each long X,Y, Z a	axes
SAFETY & EMC	MOUNTING	Compliance to IEC60068-2-6	
SAFETT & EIVIC	•		
	SAFETY STANDARDS	UL508	
		UL60950-1	
		EN60950-1 compliant	
	WITHSTAND VOLTAGE	I/P-0/P: 3KVAC	
	ISOLATION RESISTANCE	I/P-O/P, I/P-FG, O/P-FG: 100M Ohms / 500VDC	
	EMI CONDUCTION & RADIATION	Compliance to EN55011; EN55022 (CISPR22) Class B	
	HARMONIC CURRENT	Compliance to EN61000-3-2,-3	
	EMS IMMUNITY	Compliance to EN61000-4-2,3,4,5,6,8,11; ENV50204; EN	55024; EN61000-6-2; (EN50082-2);
		heavy industry level; criteria A	, , , , , , , , , , , , , , , , , , , ,
		The power supply is considered a component which will installed into a final	equipment. The final equipment must be re-confirmed
OTHERS	<u> </u>	that it still meets EMC directives.	
	MTBF	289.9K hrs min. MIL-HDBK-217K (25°C)	
	DIMENSION	125.5x125.2x100mm (WxHxD)	
	PACKING	1.2Kg; 12pcs / 15.5Kg / 1.29CUFT	
		All parameters NOT specially mentioned are measured at 230V AC input, rate	ed load and 25°C of ambient temperature.
		,	



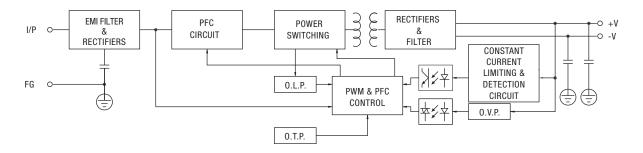
Terminal Pin Number Assignment (TB1)

Pin No.	Assignment	
1	FG ⊕	
2	AC/N	
3	AC/L	

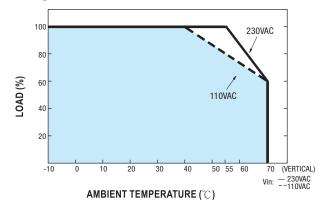
Terminal Pin Number Assignment (TB2)

Pin No.	Assignment
1,2	DC OUTPUT +V
3,4	DC OUTPUT -V

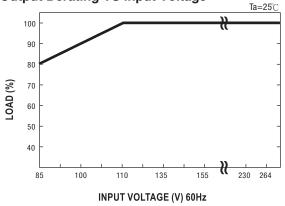
### **Block Diagram**



### **Derating Curve**



### **Output Derating VS Input Voltage**



# 480W Single Phase Power SUPPLIES











### 480W 220V AC Single Output **DIN Rail Power Supply with PFC Function**

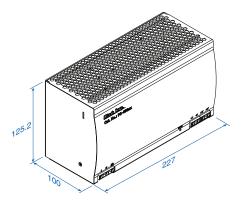
Cat. No.	Outp	ut	Tol.	Ripple &	Efficiency	NOTES
	V DC	A	%	Noise		
PSP-48024	24V DC	20A	±1%	120 mVp-p	89%	
PSP-48048	48V DC	10A	±1%	120 mVp-p	89%	



### 480W Switch Select 110/220V AC Single Output **DIN Rail Power Supply with PFC Function**

Cat. No.	Outp	ut	Tol.	Ripple &	Efficiency	NOTES
	V DC	A	%	Noise		
PSP-480S24	24V DC	20A	±1%	120 mVp-p	89%	
PSP-480S48	48V DC	10A	±1%	120 mVp-p	89%	

# PSP-480 Series (220V AC input only)



TB1 Terminal Pin. No Assignment

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Pin No.	Assignment		
1	AC/L		
2	AC/N		
3	FG⊕		

TB2 Terminal Pin. No Assignment

Pin No.	Assignment
1,2	DC OUTPUT +V
3,4	DC OUTPUT -V

Wide range Input: 180-264V AC only, 250-370V DC, 4A @ 230V AC

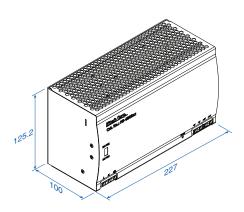
 $\label{eq:Built in passive Power Factor Correction function compliance to EN61000-3-2, and the property of the passive Power Factor Correction function compliance to EN61000-3-2, and the passive Power Factor Correction function compliance to EN61000-3-2, and the passive Power Factor Correction function compliance to EN61000-3-2, and the passive Power Factor Correction function compliance to EN61000-3-2, and the passive Power Factor Correction function compliance to EN61000-3-2, and the passive Power Factor Correction function compliance to EN61000-3-2, and the passive Power Factor Correction function compliance to EN61000-3-2, and the passive Power Factor Correction function compliance to EN61000-3-2, and the passive Power Factor Correction function compliance for the passive Power Factor Correction function for the passive Power Factor Correction function for the passive Power Factor Correction function function for the passive Power Factor Correction function function function function for the passive Power Factor Correction function fu$ 

PF>0.7

Connection: Input - 3 poles, Output - 4 poles screw terminal Size (WxHxD): 227x125x100mm (8.95x4.95x3.95 inches)

Packaging: 1/box; 5.3lbs / 2.4Kg

# PSP-480 with Switch Series (110V AC and 220V input AC)



TB1 Terminal Pin. No Assignment

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Pin No.	Assignment
1	AC/L
2	AC/N
3	FG⊕

TB2 Terminal Pin. No Assignment

Pin No.	Assignment
1,2	DC OUTPUT +V
3,4	DC OUTPUT -V

Switch select Input: 90-132V AC / 180-264 V AC, 254-370V DC range

8A @ 115V AC, 3.2A @ 230V AC

Built in passive Power Factor Correction function compliance to EN61000-3-2,

PF>0.7/230V AC only

Connection: Input - 3 poles, Output - 4 poles screw terminal Size (WxHxD): 227x125x100mm (8.95x4.95x3.95 inches)

Packaging: 1/box; 5.8lbs / 2.6Kg



# **PSP-480 Series Specifications**





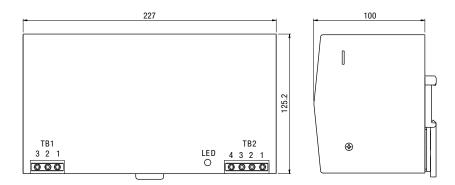






- Built-in passive PFC function compliance to EN61000-3-2
- High efficiency 89% and low dissipation
- Protections: Short Circuit / Overload / Overvoltage / Over temperature
- Cooling by free air convection
- Built-in constant current limiting circuit
- DIN rail mountable
- UL 508(industrial control equipment)approved
- EN61000-6-2(EN50082-2) industrial immunity level
- 100% full load burn-in test
- 3 year warranty

OUTPUT	Cat. No.	PSP-48024	PSP-48048
	DC VOLTAGE RATED CURRENT CURRENT RANGE RATED POWER RIPPLE & NOISE (max)	24V 20A 0 ~ 20A 480W 120mVp-p	48V 10A 0 ~ 10A 480W 120mVp-p
	VOLTAGE ADJ. RANGE VOLTAGE TOLERANCE	24 ~ 28V ±1.0%	using a 12 twisted pair-wire terminated with a 0.1 µF & 47 µF parallel capacitor. $48 \sim 53V \\ \pm 1.0\%$
INPUT	LINE REGULATION LOAD REGULATION SETUP, RISE TIME HOLD UP TIME (Typ.)	Tolerance: includes set up tolerance, line regulation at ±0.5% ±1.0% 1200ms, 40ms / 230VAC at full load 16ms / 230VAC	±0.5%   ±1.0%
PROTECTION	VOLTAGE RANGE FREQUENCY RANGE POWER FACTOR (Typ.) EFFICIENCY (Typ.) AC CURRENT (Typ.) INRUSH CURRENT (Typ.) LEAKAGE CURRENT	180 ~ 264 VAC by switch 250 ~ 37 47 ~ 63Hz ≥0.7 89% 4A / 230VAC COLD START 27A / 115VAC 45A / 2 ≤ 3.5mA / 240VAC	
ENVIRONMENT	OVERLOAD  OVERVOLTAGE  OVERTEMPERATURE	105 ~ 150% rated output power Protection type: Constant current limiting, recovers au 30 ~ 36V Protection type: Shut down overvoltage, re-power on 100°C $\pm$ 5°C (TSW: detect on heat sink of Protection type: Shut down overvoltage, recovers auto	54 ~ 60V to recover If power switch)
SAFETY & EMC	WORKING TEMP. WORKING HUMIDITY STORAGE TEMP., HUMIDITY TEMP. COEFFICIENT VIBRATION MOUNTING	$-20 \sim +70^{\circ}\text{C}$ (Refer to output load derati $20 \sim 95\%$ RH non-condensing $-20 \sim +85^{\circ}\text{C}$ , $10 \sim 95\%$ RH $\pm 0.03\%$ / $^{\circ}\text{C}$ (0 $\sim 50^{\circ}\text{C}$ ) $10 \sim 500$ Hz, 2G 10min./1cycle, 60 min. Compliance to IEC60068-2-6	
OTHERS	SAFETY STANDARDS  WITHSTAND VOLTAGE ISOLATION RESISTANCE EMI CONDUCTION & RADIATION HARMONIC CURRENT EMS IMMUNITY	I/P-O/P, I/P-FG, O/P-FG: ≥100M Ohms / Compliance to EN55022 (CISPR22); Clar Compliance to EN61000-3-2,-3 Compliance to EN61000-4-2,3,4,5,6,8,1 heavy industry level; criteria A	,
	MTBF DIMENSION PACKING	180.9K hrs min. MIL-HDBK-217K (25°0 227x125.2x100mm (WxHxD) 2.4Kg; 6pcs / 15Kg / 1.75CUFT All parameters NOT specially mentioned are measure	C) d at 230V AC input, rated load and 25°C of ambient temperature.



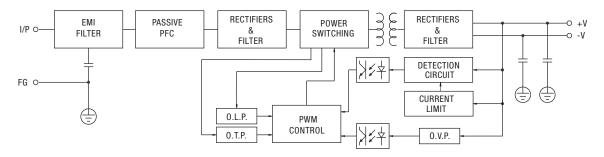
TB1 Terminal Pin. No Assignment

Pin No.	Assignment
1	AC/L
2	AC/N
3	FG ⊕

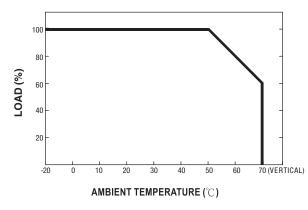
TB2 Terminal Pin. No Assignment

Pin No.	Assignment
1,2	DCOUTPUT+V
3,4	DCOUTPUT-V

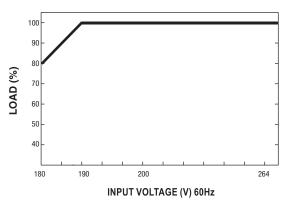
### **Block Diagram**



### **Derating Curve**



### **Output Derating VS Input Voltage**





# **PSP-480S Series Specifications**





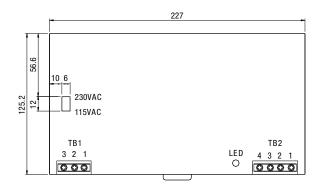


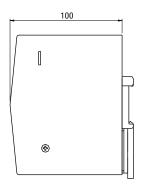




- AC input range selectable by switch
- Built-in passive PFC function compliance to EN61000-3-2
- High efficiency 89% and low dissipation
- Protections: Short Circuit / Overload / Overvoltage / Over temperature
- Cooling by free air convection
- Built-in constant current limiting circuit
- DIN rail mountable
- UL 508(industrial control equipment)approved
- EN61000-6-2(EN50082-2) industrial immunity level
- 100% full load burn-in test
- 3 year warranty

OUTPUT	Cat. No.	PSP-480S24	PSP-480S48
	DC VOLTAGE RATED CURRENT CURRENT RANGE RATED POWER RIPPLE & NOISE (max)	24V 20A 0 ~ 20A 480W 120mVp-p	48V 10A 0 ~ 10A 480W 120mVp-p
	VOLTAGE ADJ. RANGE VOLTAGE TOLERANCE	Ripple & noise are measured at 20MHz of bandwidth by $ \begin{array}{l} 24 \sim 28V \\ \pm 1.0\% \end{array} $ Tolerance: includes set up tolerance, line regulation a	using a 12 twisted pair-wire terminated with a 0.1 $\mu$ F & 47 $\mu$ F parallel capacitor. $ \begin{array}{c} 48 \sim 55V \\ \pm 1.0\% \end{array} $
INPUT	LINE REGULATION LOAD REGULATION SETUP, RISE TIME HOLD UP TIME (Typ.)	±0.5% ±1.0%	±0.5%   ±1.0% 40ms / 115VAC at full load
PROTECTION	VOLTAGE RANGE FREQUENCY RANGE POWER FACTOR (Typ.) EFFICIENCY (Typ.) AC CURRENT (Typ.) INRUSH CURRENT (Typ.) LEAKAGE CURRENT	90 ~ 132VAC / 180 ~ 264 VAC by switc 47 ~ 63Hz ≥0.7 / 230VAC only 89% 8A / 115VAC 3.2A / 230VAC COLD START 27A / 115VAC 45A / 2 ≤ 3.5mA / 240VAC	
ENVIRONMENT	OVERLOAD  OVERVOLTAGE  OVERTEMPERATURE	$105 \sim 150\% \ rated \ output \ power$ Protection type: Constant current limiting, recovers at $30 \sim 36V$ Protection type: Shut down overvoltage, re-power on $100^\circ C \pm 5^\circ C \ (TSW: \ detect \ on \ heat \ sink \ C$ Protection type: Shut down overvoltage, recovers auto	59 ~ 66V to recover of power switch)
SAFETY & EMC	WORKING TEMP. WORKING HUMIDITY STORAGE TEMP., HUMIDITY TEMP. COEFFICIENT VIBRATION MOUNTING	-20 $\sim$ +70°C (Refer to output load derat 20 $\sim$ 95% RH non-condensing -40 $\sim$ +85°C, 10 $\sim$ 95% RH $\pm$ 0.03% / °C (0 $\sim$ 50°C) 10 $\sim$ 500Hz, 2G 10min./1cycle, 60 min. Compliance to IEC60068-2-6	
OTHERS	SAFETY STANDARDS  WITHSTAND VOLTAGE ISOLATION RESISTANCE EMI CONDUCTION & RADIATION HARMONIC CURRENT EMS IMMUNITY	I/P-O/P, I/P-FG, O/P-FG: 100M Ohms / 5 Compliance to EN55011 (CISPR11); EN: Compliance to EN61000-3-2,-3 Compliance to EN61000-4-2,3,4,5,6,8,1 heavy industry level; criteria A	
	MTBF DIMENSION PACKING	187.9K hrs min. MIL-HDBK-217K (25° 227x125.2x100mm (WXHXD) 2.6Kg; 6pcs / 16.6Kg / 1.75CUFT All parameters NOT specially mentioned are measure	C) rd at 230V AC input, rated load and 25°C of ambient temperature.





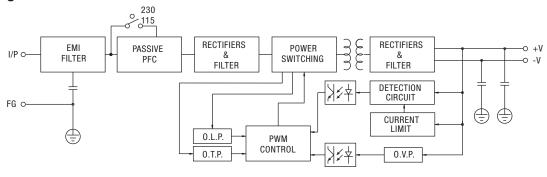
TB1 Terminal Pin. No Assignment

Pin No.	Assignment
1	AC/L
2	AC/N
3	FG 🖶

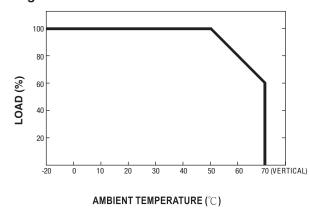
TB2 Terminal Pin. No Assignment

Pin No.	Assignment
1,2	DC O UTPUT +V
3,4	DC OUTPUT -V

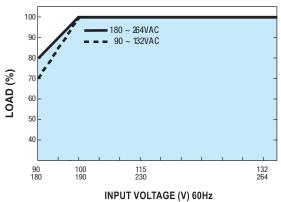
#### **Block Diagram**



### **Derating Curve**



### **Output Derating VS Input Voltage**



## 240-960W Three Phase Power Supplies





### 240W Three Phase Industrial DIN Rail Power Supply

Cat. No.	Outp	ut	Tol.	Ripple &	Efficiency	NOTES
	V DC	A	%	Noise		
PST-24024	24V DC	10A	±1%	80 mVp-p	89%	
PST-24048	48V DC	5A	±1%	80 mVp-p	89%	



### **480W Three Phase Industrial DIN Rail Power Supply**

Cat. No.	Output V DC A	Tol. %	Ripple & Noise	Efficiency	NOTES
PST-48024	24V DC 20A	±1%	80 mVp-p	89%	
PST-48048	48V DC 10A	±1%	80 mVp-p	90%	



### 960W Three Phase Industrial DIN Rail Power Supply

Cat. No.	Output V DC A	Tol. %	Ripple & Noise	Efficiency	NOTES
PST-96024	24V DC 40A	±1%	80 mVp-p	91%	
PST-96048	48V DC 20A	±1%	80 mVp-p	92%	



PARALLEL

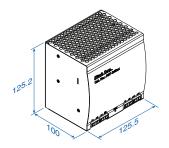
### 960W Three Phase Industrial DIN Rail Power Supply

with PFC and Parallel Function (1+1)

Cat. No.	Output V DC A	Tol. %	Ripple & Noise	Efficiency	NOTES
PST-960P24	24V DC 40A	±1%	80 mVp-p	91%	
PST-960P48	48V DC 20A	±1%	80 mVp-p	92%	

### **SPECIFICATIONS**

### **PST-240 Series**



TB1 Terminal Pin. No Assignment

		9
Pin No.	Assignment	
1	FG ⊕	
2	AC/L3	
3	AC/L2	
4	AC/L1	
	1	1 FG (a) 2 AC/L3 3 AC/L2

TB2 Terminal Pin. No Assignment

	•
Pin No.	Assignment
1,2	DC OUTPUT+V
3,4	DCOUTPUT-V

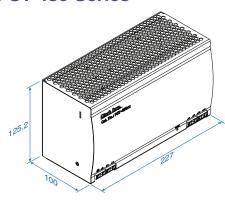
Three phase input: 340-550V AC wide range, 480-780V DC

0.95A @ 400V AC, 0.75A @ 500V AC

Connection: Input - 4 poles, Output - 4 poles screw terminal Size (WxHxD): 125x125x100mm (4.95x4.95x3.95 inches)

Packaging: 1/box; 2.87lbs / 1.3Kg

### **PST-480 Series**



TB1 Terminal Pin. No Assignment

	Pin No.	Assignment	
1 .		AC/L1	
2		AC/L2	
	3	AC/L3	
	4	FG⊕	

TB2 Terminal Pin. No Assignment

Pin No.	Assignment	
1,2	DCOUTPUT+V	
3,4	DCOUTPUT-V	

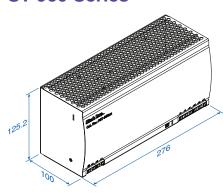
Three phase input: 340-550V AC wide range, 480-780V DC

1.7A @ 400V AC, 1.3A @ 500V AC

Connection: Input - 4 poles, Output - 4 poles screw terminal Size (WxHxD): 227x125x100mm (9.95x4.95x3.95 inches)

Packaging: 1/box; 5.5lbs / 2.5Kg

### **PST-960 Series**



TB1 Terminal Pin. No Assignment

Pin No.	Assignment	
1	AC/L1	
2	AC/L2	
3	AC/L3	
4	FG⊕	

TB2 Terminal Pin. No Assignment

Pin No.	Assignment		
1,2,3	DCOUTPUT+V		
4,5,6	DCOUTPUT - V		
7 GND		] Darrallal Only	
8	P (Current Share)	are) Parallel Onl	

Three phase input: 340-550V AC wide range,

2.4A @ 400V AC, 1.9A @ 500V AC

Connection: Input - 4 poles, Output - 6 poles screw terminal Size (WxHxD): 276x125x100mm (10.87x4.95x3.95 inches)

Packaging: 1/box; 7.3lbs / 3.3Kg



# **PST-240 Series Specifications**





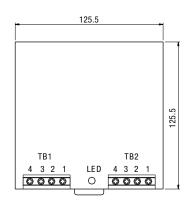


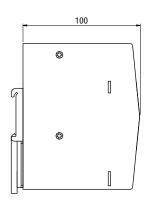




- Three-Phase AC 340 ~ 550V wide range input
- High efficiency 89% and low dissipation
- Protections: Short Circuit / Overload / Overvoltage / Over temperature
- Cooling by free air convection
- Built-in constant current limiting circuit
- DIN rail mountable
- UL 508(industrial control equipment)approved EN61000-6-2(EN50082-2) industrial immunity level
- 100% full load burn-in test
- Fixed switching frequency at 70KHz
- 3 year warranty

OUTPUT	Cat. No.	PST-24024	PST-24048
	DC VOLTAGE RATED CURRENT CURRENT RANGE RATED POWER	24V 10A 0 ~ 10A 240W	48V 5A 0 ~ 5A 240W
	RIPPLE & NOISE (max)	80mVp-p	80mVp-p
	VOLTAGE ADJ. RANGE VOLTAGE TOLERANCE	24 ~ 28V ±1.0%	using a 12 twisted pair-wire terminated with a 0.1 $\mu$ F & 47 $\mu$ F parallel capacitor. 48 $\sim 55V$ $\pm 1.0\%$
INPUT	LINE REGULATION LOAD REGULATION SETUP, RISE, HOLD UP TIME	Tolerance: includes set up tolerance, line regulation a $\pm 0.5\%$ $\pm 0.5\%$ $1200$ ms, $40$ ms, $20$ ms $/ 400$ VAC; $800$ ms	±0.5% ±0.5%
INI OT	VOLTAGE RANGE	Three Phase 340 ~ 550VAC (Dual Phase	
PROTECTION	FREQUENCY RANGE EFFICIENCY (Typ.) AC CURRENT INRUSH CURRENT (Typ.) LEAKAGE CURRENT	Dual phase operation: derating of 20%   47 ~ 63Hz   89%   0.95A / 400VAC; 0.75 / 500VAC   COLD START 50A   ≤ 3.5 mA / 530VAC	• • •
	OVERLOAD	105 ~ 150% rated output power Protection type: Constant current limiting, recovers a	utomatically after fault condition is removed
	OVERVOLTAGE	30 ~ 36V	59 ~ 66V
ENVIRONMENT	OVERTEMPERATURE	Protection type: Shut down overvoltage, re-power on 100°C ± 5°C (TSW) detect on heat sink of Protection type: Shut down overvoltage, re-power au	of power switch
SAFETY & EMC	WORKING TEMP. WORKING HUMIDITY STORAGE TEMP., HUMIDITY TEMP. COEFFICIENT VIBRATION MOUNTING	-20 ~ +70°C (Refer to output load derat 20 ~ 90% RH non-condensing -40 ~ +85°C, 10 ~ 95% RH ±0.03% / °C (0 ~ 50°C) 10 ~ 500Hz, 2G 10min./1cycle, 60 min. Compliance to IEC60068-2-6	• ,
OAI ETT & LIVIO	SAFETY STANDARDS	UL508	
OTHERS	WITHSTAND VOLTAGE ISOLATION RESISTANCE EMI CONDUCTION & RADIATION EMS IMMUNITY	I/P-O/P, I/P-FG, O/P-FG: 100M Ohms / 5 Compliance to EN55011 (CISPR11), EN Compliance to EN61000-4-2,3,4,5,6,8,1 heavy industry level; criteria A,	, ,
	MTBF DIMENSION PACKING	114.6K hrs min. MIL-HDBK-217K (25° 125.5x125.2x100mm (WxHxD) 1.3Kg; 12pcs / 16.6Kg / 1.29CUFT All parameters NOT specially mentioned are measure	cd at 400VAC input, rated load and 25°C of ambient temperature.





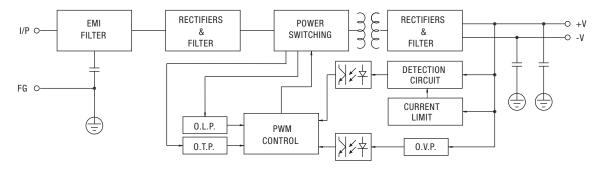
TB1 Terminal Pin. No Assignment

Pin No.	Assignment	
1	FG 🖶	
2	AC/L3	
3	AC/L2	
4	AC/L1	

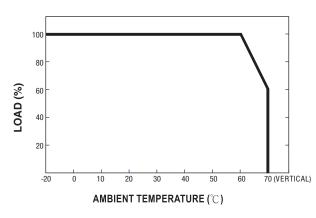
TB2 Terminal Pin. No Assignment

ınment
TPUT +V
TPUT -V

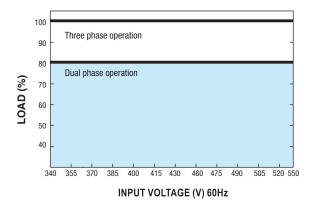
### **Block Diagram**



### **Derating Curve**



### **Output Derating VS Input Voltage**





# **PST-480 Series Specifications**





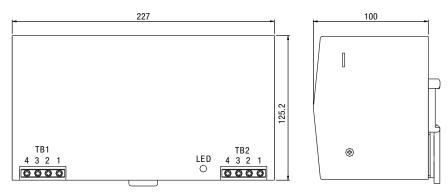






- Three-Phase AC 340 ~ 550V wide range input
- High efficiency 89% and low dissipation
- Protections: Short Circuit / Overload / Over Voltage / Overtemperature
- Cooling by free air convection
- Built-in constant current limiting circuit
- DIN rail mountable
- UL 508(industrial control equipment)approved
- EN61000-6-2(EN50082-2) industrial immunity level
- 100% full load burn-in test
- 3 year warranty

OUTPUT	Cat. No.	PST-48024	PST-48048
	DC VOLTAGE	24V	48V
	RATED CURRENT	20A	10A
	CURRENT RANGE	0 ~ 20A	0 ~ 10A
	RATED POWER	480W	480W
	RIPPLE & NOISE (max)	80mVp-p	80mVp-p
		The state of the s	using a 12 twisted pair-wire terminated with a 0.1µF & 47µF parallel capacitor.
	VOLTAGE ADJ. RANGE	24 ~ 28V	48 ~ 55V
	VOLTAGE TOLERANCE	±1.0%	±1.0%
		Tolerance: includes set up tolerance, line regulation a	
	LINE REGULATION	±0.5%	±0.5%
INDUT	LOAD REGULATION	±0.5%	±0.5%
INPUT	SETUP, RISE, HOLD UP TIME	1200ms, 40ms, 16ms / 400VAC; 800ms	s, 40ms, 35ms / 500VAC at full load
	VOLTAGE RANGE	Three Phase 340 ~ 550VAC (Dual Phase	se operation possible) 480 ~ 780VDC
		Dual phase operation: derating of 20%	is required
	FREQUENCY RANGE	47 ~ 63Hz	·
	EFFICIENCY (Typ.)	89%	90%
	AC CURRENT	1.7A / 400VAC; 1.3A / 500VAC	
	INRUSH CURRENT (Typ.)	COLD START 50A	
PROTECTION	LEAKAGE CURRENT	$\leq$ 3.5mA / 530VAC	
	OVERLOAD	105 ~ 150% rated output power	
		Protection type: Constant current limiting, recovers a	
	OVERVOLTAGE	30 ~ 36V	59 ~ 66V
		Protection type: Shut down overvoltage, re-power on	
	OVERTEMPERATURE	$110^{\circ}\text{C} \pm 5^{\circ}\text{C}$ (TSW) detect on heat sink	
ENVIRONMENT	I	Protection type: Shut down overvoltage, recovers aut	omatically after temperature goes down
	WORKING TEMP.	-20 ~ +70°C (Refer to output load dera	ing curve)
	WORKING HUMIDITY	20 ~ 90% RH non-condensing	
	STORAGE TEMP., HUMIDITY	-40 ~ +85°C, 10 ~ 95% RH	
	TEMP. COEFFICIENT	±0.03% / °C (0 ~ 50°C)	
	VIBRATION	10 ~ 500Hz, 2G 10min./1cycle, 60 min.	each long X,Y, Z axes
SAFETY & EMC	MOUNTING	Compliance to IEC60068-2-6	
	SAFETY STANDARDS	UL508	
		EN60950-1 compliant	
		UL60950-1	
	WITHSTAND VOLTAGE	I/P-O/P: 3KVAC	/P-FG: 0.5KVAC
	ISOLATION RESISTANCE	I/P-O/P, I/P-FG, O/P-FG: 100M Ohms / 5	00VDC (25°C: 70% RH)
	EMI CONDUCTION & RADIATION	Compliance to EN55011 (CISPR11), EN	55022 (CISPR22), EN61204-3 Class B
	HARMONIC CURRENT	Compliance to EN61000-3-2,-3	
	EMS IMMUNITY	Compliance to EN61000-4-2,3,4,5,6,8,	11; ENV50204; EN61204-3; EN61000-6-2; (EN50082-2),
		heavy industry level; criteria A	
		The power supply is considered a component which	will installed into a final equipment. The final equipment must be re-confirmed
OTHERS		that it still meets EMC directives.	
	MTBF	91.1K hrs min. MIL-HDBK-217K (25°C	(3)
	DIMENSION	227x125.2x100mm (WxHxD)	,
	PACKING	2.5Kg; 6pcs / 16Kg / 1.75CUFT	
			ed at 400VAC input, rated load and 25°C of ambient temperature.
		,	F - 9



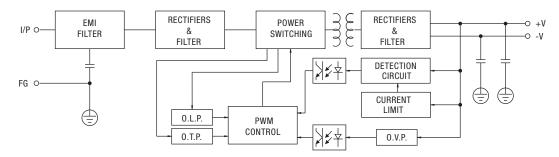
TB1 Terminal Pin. No Assignment

Pin No.	Assignment
1	AC/L1
2	AC/L2
3	AC/L3
4	FG 🖶

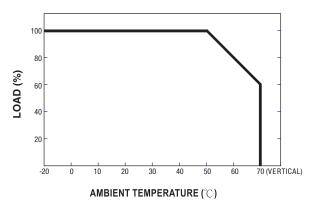
TB2 Terminal Pin. No Assignment

Pin No.	Assignment	
1,2	DC O UTPUT +V	
3,4	DCOUTPUT-V	

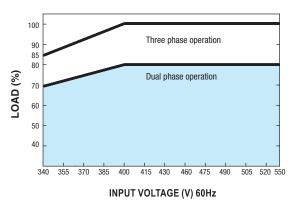
# **Block Diagram**



## **Derating Curve**



# **Output Derating VS Input Voltage**





# **PST-960 Series Specifications**







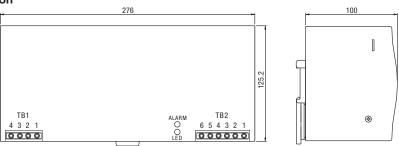




- Three-Phase AC 340 ~ 550V wide range input
- High efficiency 91% and low dissipation
- Protections: Short Circuit / Overload / Over Voltage / Overtemperature
- Optional parallel function(1+1)
- Cooling by free air convection
- DIN rail mountable
- UL 508(industrial control equipment) approved
   EN61000-6-2(EN50082-2) industrial immunity level
- 100% full load burn-in test
- 3 year warranty

OUTPUT	Cat. No.	PST-96024 / PST-960P24*	PST-96048 / PST-960P48*
	DC VOLTAGE RATED CURRENT CURRENT RANGE RATED POWER RIPPLE & NOISE (max)	24V 40A 0 ~ 40A 960W 80mVp-p	48V 20A 0 ~ 20A 960W 80mVp-p
	VOLTAGE ADJ. RANGE VOLTAGE TOLERANCE	Ripple & noise are measured at 20MHz of bandwidth by us $24 \sim 28V$ $\pm 1.0\%$ Tolerance: includes set up tolerance, line	sing a 12 twisted pair-wire terminated with a $0.1\mu F$ & $47\mu F$ parallel capacitor. $\begin{vmatrix} 48 & 55V \\ \pm 1.0\% \end{vmatrix}$ regulation and load regulation.
INPUT	LINE REGULATION LOAD REGULATION SETUP, RISE, HOLD UP TIME	±0.5%   ±0.5%   200ms, 60ms, 14ms / 400VAC 200m	±0.5%   ±0.5%  s, 60ms, 30ms / 500VAC at full load
PROTECTION	VOLTAGE RANGE FREQUENCY RANGE EFFICIENCY (Typ.) AC CURRENT INRUSH CURRENT (Typ.) LEAKAGE CURRENT	,	operation possible in connecting L1, L3, FG)  der certain derating to output load. Please refer to the derating curves for details.
ENVIRONMENT	OVERLOAD  OVERVOLTAGE  OVERTEMPERATURE	105 ~ 125% rated output power Protection type: Constant current limiting, unit will shut $30 \sim 36V$ Protection type: Shut down overvoltage, re-power on to $110^{\circ}C \pm 5^{\circ}C$ (TSW1) detect on heat sink of Protection type: Shut down overvoltage, re-	59 ~ 66V recover f power transistor
SAFETY & EMC	WORKING TEMP. WORKING HUMIDITY STORAGE TEMP., HUMIDITY TEMP. COEFFICIENT VIBRATION MOUNTING	-20 ~ +60°C (Refer to output load deratin 20 ~ 90% RH non-condensing -40 ~ +85°C, 10 ~ 95% RH ±0.03% / °C (0 ~ 50°C) 10 ~ 500Hz, 2G 10min./1cycle, 60 min. ec Compliance to IEC60068-2-6	g curve)
OTHERS	SAFETY STANDARDS  WITHSTAND VOLTAGE ISOLATION RESISTANCE EMI CONDUCTION & RADIATION HARMONIC CURRENT EMS IMMUNITY	I/P-O/P, I/P-FG, O/P-FG: 100M Ohms / 500 Compliance to EN55011 (CISPR11), EN55 Compliance to EN61000-3-2,-3 Compliance to EN61000-4-2,3,4,5,6,8,11 heavy industry level; criteria A	, , ,
	MTBF DIMENSION PACKING	122.5K hrs min. MIL-HDBK-217K (25°C) 276x125.2x100mm (WxHxD) 3.3Kg; 4pcs / 14.2Kg / 1.14CUFT All parameters NOT specially mentioned are measured a	at 400VAC input, rated load and 25°C of ambient temperature.

<sup>\*</sup>Special order required.



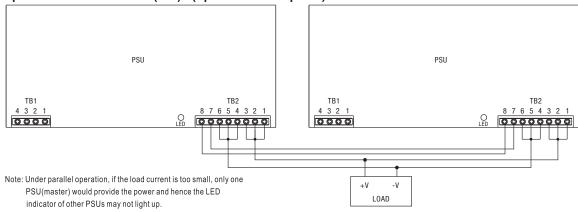
TB1 Terminal Pin. No Assignment

Pin No.	Assignment	
1	AC/L1	
2	AC/L2	
3	AC/L3	
4	FG⊕	

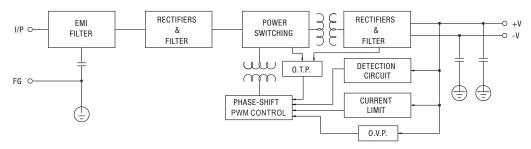
TB2 Terminal Pin. No Assignment

Pin No.	Assignment	
1,2,3	DCOUTPUT+V	
4,5,6	DCOUTPUT - V	
7	P (Current Share)	
8	P (Current Share)	Parallel Only

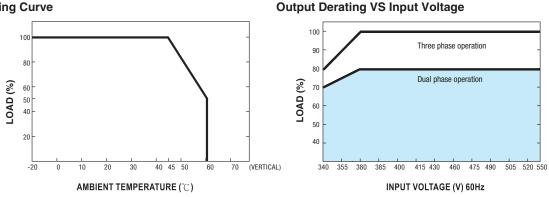
### Optional Parallel Function (1+1) - (Special order required)



### **Block Diagram**



### **Derating Curve**





# High Efficiency Compact Housing Power Supply

This high performance single output compact DIN rail PS-C Series, with up-to-date circuit design, possess up to 94% of high efficiency and works within 110 ~150% rated output power for up to 3 seconds.

With built-in active PFC function, PS-C Series is a full range AC input switching power supply that fulfills the requirement of EN61000-3-2 for harmonic current. The compact design helps save the precious space on the rail and also makes it up to 50% smaller in size compare to its predecessor model PS-Series. Meanwhile, PS-C also have 5~9% higher efficiency than corresponding models of the PS-Series, which response to the trend of green power with energy saving concept.

Other standard functions include DC OK relay contact, on panel LED indicator, and protection for short-circuit, overload (constant current limiting, shut down if over 3 seconds), over voltage, and over temperature. To fulfill the requirements of marine and semi-conductor related usage, PS-C Series also complies with GL and SEMI F47 norms in addition to UL, CUL and CE certificates. Suitable applications are factory automation, semi-conductor fabrication equipment, marine related installation, and electromechanical applications.

Input voltage range: 88-264V AC; 124-370V DC
 AC inrush current (typical):Cold start: 65A at 230V AC (PSC-240)

• DC adjustment range (typical): 12V: 12-14V, 24V: 24-28V, 48V: 48-55V,

Overload protection (typical): 110%-150% rated output power
 Overvoltage protection (typical): 14-17V for 12V model (PSW-120),

29-33V for 24V model 56-65V for 48V model

• Over temperature protection:  $95^{\circ}\text{C} \pm 5^{\circ}\text{C} \text{ (PSC-120/240)}; 105^{\circ}\text{C} \pm 5^{\circ}\text{C}$ 

• Withstand voltage: I/P-0/P:3KV AC, I/P-FG:1.5KV AC, O/P-FG:0.5KV AC,

• Working temperature:  $-25 \text{ to } +70^{\circ}\text{C } (-4^{\circ} \text{ to } +158^{\circ}\text{F}),$ 

refer to output derating curve

Safety standards: UL508; EN60950-1 compliant
 EMC standards: Compliance to EN55022 class B,

EN61000-4-2,3,4,5,6,8,11, ENV50204,

EN61000-6-2, EN61204-3, heavy Industry level,

SEMI F47, GL

• Military standard: MIL-HDBK-217K

# **PS-C Series**











- High efficiency up to 94% and low power dissipation
- Universal AC Input / Full Range
- 150% peak load capability
- Built-in active PFC function, PF>0.93
- Protections: Short circuit / Overload / Overvoltage / Over temperature
- · Cooling by free air convection
- Din rail mountable
- LED indicator for power on
- UL 508 (industrial control equipment) approved
- EN61000-6-2(EN50082-2) industrial immunity level
- 100% full load burn-in test



# 120-480W Single Phase

# **COMPACT SIZE POWER SUPPLIES**













# 120W Single Output DIN Rail Power Supply

Cat. No.	Output V DC A	Tol. %	Ripple & Noise	Efficiency	NOTES
PS-C12012	12V DC 10A	±1%	100 mVp-p	89%	
PS-C12024	24V DC 5A	±1%	100 mVp-p	91%	
PS-C12048	48V DC 2.5A	±1%	120 mVp-p	91%	



# 240W Single Output DIN Rail Power Supply

Cat. No.	Output		Tol.	Ripple &	Efficiency	NOTES
	V DC	A	%	Noise		
PS-C24024	24V DC 1	10A	±1%	100 mVp-p	94%	
PS-C24048	48V DC	5A	±1%	120 mVp-p	94%	



# 480W Single Output DIN Rail Power Supply

Cat. No.	Output V DC A	Tol. %	Ripple & Noise	Efficiency	NOTES
PS-C48024	24V DC 20A	±1%	100 mVp-p	94%	
PS-C48048	48V DC 10A	±1%	120 mVp-p	94%	



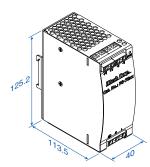
# **480W Single Output DIN Rail Power Supply**

with PFC and Parallel Function (1+7)

Cat. No.	Output V DC A	Tol. %	Ripple & Noise	Efficiency	NOTES
PS-C480P24	24V DC 20A	±1%	100 mVp-p	94%	
PS-C480P48	48V DC 10A	±1%	120 mVp-p	94%	

# **SPECIFICATIONS**

## **PS-C120 Series**



### Terminal Pin. No Assign. (TB1)

· · · · · · · · · · · · · · · · · · ·		
Pin No.	Assignment	
1	FG⊕	
2	AC/N	
3	AC/L	

### Terminal Pin. No Assign. (TB2)

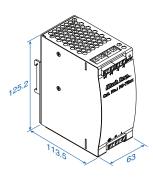
Pin No.	Assignment
1,2	Relay Contact
3	DC OUTPUT -V
4	DC OUTPUT +V

Universal Input: 88-264V AC, 124-370V DC full range, 1.4A/115V AC, 0.7A/230V AC

Connection: Input - 3 poles, Output - 4 poles screw terminal Size (WxHxD): 40x125.2x113.5mm (1.57x4.93x4.47 inches)

Packaging: 1/box; 1.48lbs / 0.67Kg

## **PS-C240 Series**



### Terminal Pin. No Assign. (TB1)

Pin No.	Assignment	
1	FG⊕	
2	AC/N	
3	AC/L	

### Terminal Pin. No Assign. (TB2)

Torrinian Control Troolgin (TDE		
	Pin No.	Assignment
	1,2	Relay Contact
	3,4	DC OUTPUT -V
	5,6	DC OUTPUT +V

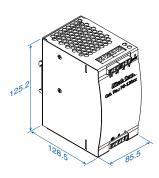
Switch select Input: 88-264V AC, 124-370V DC range,

2.6A/115V AC, 1.3A/230V AC

Connection: Input - 3 poles, Output - 6 poles screw terminal Size (WxHxD): 63x125.2x113.5mm (2.48x4.93x4.47 inches)

Packaging: 1/box; 2.27lbs / 1.03Kg

## PS-C480 Series



Terminal Pin. No Assign. (TB1)

Pin No.	Assignment
1	FG⊕
2	AC/N
3	AC/L

For Parallel Model Terminal Pin. No Assign. (TB1)

101111111111111111111111111111111111111		
Pin No.	Assignment	
1	FG ⊕	
2	AC/N	
3	AC/L	

### Terminal Pin. No Assign. (TB2)

	, , ,
Pin No.	Assignment
1,2	DC OUTPUT +V
3,4	DC OUTPUT -V
5,6	Relay Contact
7,8	NC

### For Parallel Model Terminal Pin. No Assign. (TB2)

Terrimai i iii. No Assigii. (TDZ)			
Pin No.	Assignment		
1,2	DC OUTPUT +V		
3,4	DC OUTPUT -V		
5,6	Relay Contact		
7	P+ (current share)*		
8	P- (current share)*		

<sup>\*</sup> Only parallel function.

Universal Input: 90-264V AC, 127-370V DC full range, 5A/115V AC, 2.5A/230V AC

Connection: Input - 3 poles, Output - 12 poles screw terminal Size (WxHxD): 85.5x125.2x128.5mm (3.37x4.93x5.06 inches)

Packaging: 1/box; 3.53lbs / 1.6Kg



# **PS-C120 Series Specifications**









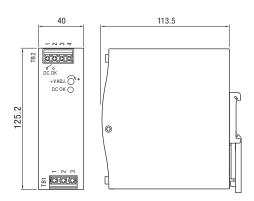
- High efficiency 91% and low power dissipation
- 150% peak load capability
- Built-in active PFC function, PF>0.93
- Protections: Short Circuit / Overload / Over Voltage / Overtemperature
- Cooling by free air convection
- DIN rail mountable
- UL 508 (industrial control equipment) approved EN61000-6-2 (EN50082-2) industrial immunity level
- Built-in DC OK relay contact
- 100% full load burn-in test
- 3 year warranty

OUTPUT	Cat. No.	PS-C12012	PS-C12024	PS-C12048
	DC VOLTAGE	12V	24V	48V
	RATED CURRENT	10A	5A	2.5A
	CURRENT RANGE	0 ~ 10A	0 ~ 5A	0 ~ 2.5A
	RATED POWER	120W	120W	120W
	PEAK CURRENT	15A	7.5A	3.75A
	PEAK POWER	180W (3 sec.)		
		3 seconds max., please refer to pea	k loading curves	
	RIPPLE & NOISE (max)	100mVp-p	100mVp-p	120mVp-p
	, ,	Ripple & noise are measured at 20MHz of bandwi	th by using a 12 twisted pair-wire terminated w	ith a 0.1µF & 47µF parallel capacitor.
	VOLTAGE ADJ. RANGE	12 ~ 14V	24 ~ 28V	48 ~ 55V
	VOLTAGE TOLERANCE	±1.0%	±1.0%	±1.0%
		Tolerance: includes set up tolerance, line regula	tion and load regulation.	1
	LINE REGULATION	±0.5%	±0.5%	±0.5%
	LOAD REGULATION	±1.0%	±1.0%	±1.0%
	SETUP, RISE TIME		ns, 60ms / 115VAC at full load	1 =
INPUT	HOLD UP TIME (Typ.)		115VAC at full load	
INT OT	1,51,7			
	VOLTAGE RANGE		~ 370VDC	
	EDECUENCY DANIE	Derating may be needed under low input voltag	es, please check the derating curve for more of	detail
	FREQUENCY RANGE	47 ~ 63Hz		
	POWER FACTOR (Typ.)	0.93 / 230VAC		1
	EFFICIENCY (Typ.)	89%	91%	90.50%
	AC CURRENT (Typ.)	1.4A / 115VAC 0.7A / 230VAC		
	INRUSH CURRENT (Typ.)	35A / 115VAC 70A / 230VAC		
PROTECTION	LEAKAGE CURRENT	$\leq$ 1 mA / 240VAC		
	OVERLOAD	Normally works within 110 ~ 150% down overvoltage	rated output power for more than	3 seconds and then shut
		• *	ent limiting with auto-recovery with after 3 seconds	nin 3
	OVERVOLTAGE	≥ 150% rated power, constant curro seconds and shut down overvoltage 14 ~ 17V	,	nin 3   56 ~ 65V
	OVERVOLTAGE  OVERTEMPERATURE	seconds and shut down overvoltage $14 \sim 17V$ Protection type: Shut down overvoltage, re-pow $95^{\circ}\text{C} \pm 5^{\circ}\text{C}$ (TSW: detect on heat sin	after 3 seconds 29 ~ 33V er on to recover k of power switch)	
ENWIDONIA ENT	OVERTEMPERATURE	seconds and shut down overvoltage $14\sim17V$ Protection type: Shut down overvoltage, re-pow $95^{\circ}C \pm 5^{\circ}C$ (TSW: detect on heat sin Protection type: Shut down overvoltage, re-pow	after 3 seconds 29 ~ 33V er on to recover k of power switch) er automatically after temperature goes down	
ENVIRONMENT		seconds and shut down overvoltage $14\sim17V$ Protection type: Shut down overvoltage, re-pow $95^{\circ}C \pm 5^{\circ}C$ (TSW: detect on heat sin Protection type: Shut down overvoltage, re-pow	after 3 seconds 29 ~ 33V er on to recover k of power switch)	
ENVIRONMENT	OVERTEMPERATURE	seconds and shut down overvoltage $14\sim17V$ Protection type: Shut down overvoltage, re-pow $95^{\circ}C \pm 5^{\circ}C$ (TSW: detect on heat sin Protection type: Shut down overvoltage, re-pow	after 3 seconds 29 ~ 33V er on to recover k of power switch) er automatically after temperature goes down 30VAC / 0.5A RESISTIVE LOAD	
ENVIRONMENT	OVERTEMPERATURE  DC OK RELAY CONTACT RATINGS (max.)	seconds and shut down overvoltage $14 \sim 17V$ Protection type: Shut down overvoltage, re-pow $95^{\circ}C \pm 5^{\circ}C$ (TSW: detect on heat sin Protection type: Shut down overvoltage, re-pow $60VDC / 0.3A$ $30VDC / 1A$	after 3 seconds   29 ~ 33V er on to recover k of power switch) er automatically after temperature goes down 30VAC / 0.5A RESISTIVE LOAD erating curve)	56 ~ 65V
ENVIRONMENT	OVERTEMPERATURE  DC OK RELAY CONTACT RATINGS (max.)	seconds and shut down overvoltage $14 \sim 17V$ Protection type: Shut down overvoltage, re-pow $95^{\circ}C \pm 5^{\circ}C$ (TSW: detect on heat sin Protection type: Shut down overvoltage, re-pow $60VDC / 0.3A$ $30VDC / 1A$ $-25 \sim +70^{\circ}C$ (Refer to output load of	after 3 seconds 29 ~ 33V er on to recover k of power switch) er automatically after temperature goes down 30VAC / 0.5A RESISTIVE LOAD erating curve) the bottom, 5mm on the left and right side ar	56 ~ 65V
ENVIRONMENT	OVERTEMPERATURE  DC OK RELAY CONTACT RATINGS (max.)	seconds and shut down overvoltage $14 \sim 17V$ Protection type: Shut down overvoltage, re-pow $95^{\circ}\text{C} \pm 5^{\circ}\text{C}$ (TSW: detect on heat sin Protection type: Shut down overvoltage, re-pow $60\text{VDC} / 0.3\text{A}$ $30\text{VDC} / 1\text{A}$ $-25 \sim +70^{\circ}\text{C}$ (Refer to output load designated installation clearances: $40\text{mm}$ on top, $20\text{mm}$ or	after 3 seconds 29 ~ 33V er on to recover k of power switch) er automatically after temperature goes down 30VAC / 0.5A RESISTIVE LOAD erating curve) the bottom, 5mm on the left and right side ar	56 ~ 65V
ENVIRONMENT	OVERTEMPERATURE  DC OK RELAY CONTACT RATINGS (max.)  WORKING TEMP.	seconds and shut down overvoltage $14\sim17V$ Protection type: Shut down overvoltage, re-pow $95^{\circ}\text{C} \pm 5^{\circ}\text{C}$ (TSW: detect on heat sin Protection type: Shut down overvoltage, re-pow $60\text{VDC} / 0.3\text{A}$ $30\text{VDC} / 1\text{A}$ $-25\sim+70^{\circ}\text{C}$ (Refer to output load of Installation clearances: $40\text{mm}$ on top, $20\text{mm}$ on permanently with full power. In case the adjace	after 3 seconds 29 ~ 33V er on to recover k of power switch) er automatically after temperature goes down 30VAC / 0.5A RESISTIVE LOAD erating curve) the bottom, 5mm on the left and right side ar	56 ~ 65V
ENVIRONMENT	OVERTEMPERATURE  DC OK RELAY CONTACT RATINGS (max.)  WORKING TEMP.  WORKING HUMIDITY	seconds and shut down overvoltage $14\sim17V$ Protection type: Shut down overvoltage, re-pow $95^{\circ}\text{C} \pm 5^{\circ}\text{C}$ (TSW: detect on heat sin Protection type: Shut down overvoltage, re-pow $60\text{VDC} / 0.3\text{A}$ $30\text{VDC} / 1\text{A}$ $-25\sim+70^{\circ}\text{C}$ (Refer to output load of Installation clearances: 40mm on top, 20mm on permanently with full power. In case the adjace $20\sim95\%$ RH non-condensing	after 3 seconds 29 ~ 33V er on to recover k of power switch) er automatically after temperature goes down 30VAC / 0.5A RESISTIVE LOAD erating curve) the bottom, 5mm on the left and right side ar	56 ~ 65V
ENVIRONMENT	OVERTEMPERATURE  DC OK RELAY CONTACT RATINGS (max.)  WORKING TEMP.  WORKING HUMIDITY  STORAGE TEMP., HUMIDITY	seconds and shut down overvoltage $14\sim17V$ Protection type: Shut down overvoltage, re-pow $95^{\circ}\text{C} \pm 5^{\circ}\text{C}$ (TSW: detect on heat sin Protection type: Shut down overvoltage, re-pow $60\text{VDC} / 0.3\text{A}$ $30\text{VDC} / 1\text{A}$ $-25\sim+70^{\circ}\text{C}$ (Refer to output load of Installation clearances: 40mm on top, 20mm on permanently with full power. In case the adjace $20\sim95\%$ RH non-condensing $-40\sim+85^{\circ}\text{C}$ , $10\sim95\%$ RH	after 3 seconds 29 ~ 33V er on to recover k of power switch) er automatically after temperature goes down 30VAC / 0.5A RESISTIVE LOAD erating curve) the bottom, 5mm on the left and right side ar nt device is a heat source, 15mm clearance is	56 ~ 65V
	OVERTEMPERATURE  DC OK RELAY CONTACT RATINGS (max.)  WORKING TEMP.  WORKING HUMIDITY  STORAGE TEMP., HUMIDITY  TEMP. COEFFICIENT	seconds and shut down overvoltage $14\sim17V$ Protection type: Shut down overvoltage, re-pow $95^{\circ}\text{C} \pm 5^{\circ}\text{C}$ (TSW: detect on heat sin Protection type: Shut down overvoltage, re-pow $60\text{VDC} / 0.3\text{A}$ $30\text{VDC} / 1\text{A}$ $-25\sim+70^{\circ}\text{C}$ (Refer to output load of Installation clearances: 40mm on top, 20mm on permanently with full power. In case the adjace $20\sim95\%$ RH non-condensing $-40\sim+85^{\circ}\text{C}$ , $10\sim95\%$ RH $\pm0.03\%$ / $^{\circ}\text{C}$ ( $0\sim50^{\circ}\text{C}$ )	after 3 seconds 29 ~ 33V er on to recover k of power switch) er automatically after temperature goes down 30VAC / 0.5A RESISTIVE LOAD erating curve) the bottom, 5mm on the left and right side ar nt device is a heat source, 15mm clearance is	56 ~ 65V
	OVERTEMPERATURE  DC OK RELAY CONTACT RATINGS (max.)  WORKING TEMP.  WORKING HUMIDITY STORAGE TEMP., HUMIDITY TEMP. COEFFICIENT VIBRATION MOUNTING	seconds and shut down overvoltage $14\sim17V$ Protection type: Shut down overvoltage, re-pow $95^{\circ}\text{C} \pm 5^{\circ}\text{C}$ (TSW: detect on heat sin Protection type: Shut down overvoltage, re-pow $60\text{VDC} / 0.3\text{A}$ $30\text{VDC} / 1\text{A}$ $-25\sim+70^{\circ}\text{C}$ (Refer to output load d Installation clearances: $40\text{mm}$ on top, $20\text{mm}$ or permanently with full power. In case the adjace $20\sim95\%$ RH non-condensing $-40\sim+85^{\circ}\text{C}$ , $10\sim95\%$ RH $\pm0.03\%$ / $^{\circ}\text{C}$ ( $0\sim50^{\circ}\text{C}$ ) $10\sim500\text{Hz}$ , $2\text{G}$ $10\text{mm}$ ./1cycle, $60\text{ C}$ Compliance to IEC60068-2-6	after 3 seconds 29 ~ 33V er on to recover k of power switch) er automatically after temperature goes down 30VAC / 0.5A RESISTIVE LOAD erating curve) the bottom, 5mm on the left and right side ar nt device is a heat source, 15mm clearance is	56 ~ 65V
	OVERTEMPERATURE  DC OK RELAY CONTACT RATINGS (max.)  WORKING TEMP.  WORKING HUMIDITY  STORAGE TEMP., HUMIDITY  TEMP. COEFFICIENT  VIBRATION	seconds and shut down overvoltage $14\sim17V$ Protection type: Shut down overvoltage, re-pow $95^{\circ}\text{C} \pm 5^{\circ}\text{C}$ (TSW: detect on heat sin Protection type: Shut down overvoltage, re-pow $60\text{VDC} / 0.3\text{A}$ $30\text{VDC} / 1\text{A}$ $-25\sim+70^{\circ}\text{C}$ (Refer to output load d Installation clearances: $40\text{mm}$ on top, $20\text{mm}$ or permanently with full power. In case the adjace $20\sim95\%$ RH non-condensing $-40\sim+85^{\circ}\text{C}$ , $10\sim95\%$ RH $\pm0.03\%$ / $^{\circ}\text{C}$ ( $0\sim50^{\circ}\text{C}$ ) $10\sim500\text{Hz}$ , $2\text{G}$ $10\text{mmin./1}$ cycle, $60\text{C}$ Compliance to IEC60068-2-6	after 3 seconds 29 ~ 33V er on to recover k of power switch) er automatically after temperature goes down 30VAC / 0.5A RESISTIVE LOAD erating curve) the bottom, 5mm on the left and right side ar nt device is a heat source, 15mm clearance is	56 ~ 65V
	OVERTEMPERATURE  DC OK RELAY CONTACT RATINGS (max.)  WORKING TEMP.  WORKING HUMIDITY STORAGE TEMP., HUMIDITY TEMP. COEFFICIENT VIBRATION MOUNTING  SAFETY STANDARDS	seconds and shut down overvoltage $14 \sim 17V$ Protection type: Shut down overvoltage, re-pow $95^{\circ}\text{C} \pm 5^{\circ}\text{C}$ (TSW: detect on heat sin Protection type: Shut down overvoltage, re-pow $60\text{VDC} / 0.3\text{A}$ $30\text{VDC} / 1\text{A}$ $-25 \sim +70^{\circ}\text{C}$ (Refer to output load of Installation clearances: $40\text{mm}$ on top, $20\text{mm}$ on permanently with full power. In case the adjace $20 \sim 95\%$ RH non-condensing $-40 \sim +85^{\circ}\text{C}$ , $10 \sim 95\%$ RH $\pm 0.03\% / {^{\circ}\text{C}}$ ( $0 \sim 50^{\circ}\text{C}$ ) $10 \sim 500\text{Hz}$ , $2\text{G}$ $10\text{min./1cycle}$ , $60^{\circ}\text{C}$ Compliance to IEC60068-2-6	after 3 seconds 29 ~ 33V er on to recover k of power switch) er automatically after temperature goes down 30VAC / 0.5A RESISTIVE LOAD erating curve) the bottom, 5mm on the left and right side ar nt device is a heat source, 15mm clearance is	e recommended when loaded recommended
	OVERTEMPERATURE  DC OK RELAY CONTACT RATINGS (max.)  WORKING TEMP.  WORKING HUMIDITY STORAGE TEMP., HUMIDITY TEMP. COEFFICIENT VIBRATION MOUNTING  SAFETY STANDARDS  WITHSTAND VOLTAGE	seconds and shut down overvoltage $14 \sim 17V$ Protection type: Shut down overvoltage, re-pow $95^{\circ}\text{C} \pm 5^{\circ}\text{C}$ (TSW: detect on heat sin Protection type: Shut down overvoltage, re-pow $60\text{VDC} / 0.3\text{A}$ $30\text{VDC} / 1\text{A}$ $-25 \sim +70^{\circ}\text{C}$ (Refer to output load of Installation clearances: $40\text{mm}$ on top, $20\text{mm}$ or permanently with full power. In case the adjace $20 \sim 95\%$ RH non-condensing $-40 \sim +85^{\circ}\text{C}$ , $10 \sim 95\%$ RH $\pm 0.03\% / {^{\circ}\text{C}}$ ( $0 \sim 50^{\circ}\text{C}$ ) $10 \sim 500\text{Hz}$ , $2\text{G}$ $10\text{min./1cycle}$ , $60^{\circ}\text{C}$ Compliance to IEC60068-2-6 UL508 EN60950-1 compliant I/P-O/P: $3\text{KVAC}$ I/P-FG: $1.5\text{KVAC}$	after 3 seconds 29 ~ 33V er on to recover k of power switch) er automatically after temperature goes down 30VAC / 0.5A RESISTIVE LOAD erating curve) the bottom, 5mm on the left and right side ar nt device is a heat source, 15mm clearance is min. each long X,Y, Z axes  0/P-FG: 0.5KVAC 0/P-DC 0K:	e recommended when loaded recommended
	OVERTEMPERATURE  DC OK RELAY CONTACT RATINGS (max.)  WORKING TEMP.  WORKING HUMIDITY STORAGE TEMP., HUMIDITY TEMP. COEFFICIENT VIBRATION MOUNTING  SAFETY STANDARDS  WITHSTAND VOLTAGE ISOLATION RESISTANCE	seconds and shut down overvoltage $14 \sim 17V$ Protection type: Shut down overvoltage, re-pow $95^{\circ}\text{C} \pm 5^{\circ}\text{C}$ (TSW: detect on heat sin Protection type: Shut down overvoltage, re-pow $60\text{VDC} / 0.3\text{A}$ $30\text{VDC} / 1\text{A}$ $-25 \sim +70^{\circ}\text{C}$ (Refer to output load of Installation clearances: $40\text{mm}$ on top, $20\text{mm}$ or permanently with full power. In case the adjace $20 \sim 95\%$ RH non-condensing $-40 \sim +85^{\circ}\text{C}$ , $10 \sim 95\%$ RH $\pm 0.03\% / ^{\circ}\text{C}$ ( $0 \sim 50^{\circ}\text{C}$ ) $10 \sim 500\text{Hz}$ , $2\text{G}$ $10\text{min}./1\text{cycle}$ , $60^{\circ}\text{C}$ Compliance to IEC60068-2-6  UL508  EN60950-1 compliant $1/\text{P}-0/\text{P}$ : $3\text{KVAC}$ $1/\text{P}-\text{FG}$ : $1.5\text{KVAC}$ $1/\text{P}-0/\text{P}$ ; $1/\text{P}-0/P$	after 3 seconds 29 ~ 33V er on to recover k of power switch) er automatically after temperature goes down 30VAC / 0.5A RESISTIVE LOAD erating curve) the bottom, 5mm on the left and right side ar nt device is a heat source, 15mm clearance is min. each long X,Y, Z axes  0/P-FG: 0.5KVAC 0/P-DC 0K: ms/500VDC (25°C; 70% RH)	e recommended when loaded recommended
	OVERTEMPERATURE  DC OK RELAY CONTACT RATINGS (max.)  WORKING TEMP.  WORKING HUMIDITY STORAGE TEMP., HUMIDITY TEMP. COEFFICIENT VIBRATION MOUNTING  SAFETY STANDARDS  WITHSTAND VOLTAGE ISOLATION RESISTANCE EMI CONDUCTION & RADIATION	seconds and shut down overvoltage $14 \sim 17V$ Protection type: Shut down overvoltage, re-pow $95^{\circ}\text{C} \pm 5^{\circ}\text{C}$ (TSW: detect on heat sin Protection type: Shut down overvoltage, re-pow $60\text{VDC} / 0.3\text{A}$ $30\text{VDC} / 1\text{A}$ $-25 \sim +70^{\circ}\text{C}$ (Refer to output load of Installation clearances: $40\text{mm}$ on top, $20\text{mm}$ or permanently with full power. In case the adjace $20 \sim 95\%$ RH non-condensing $-40 \sim +85^{\circ}\text{C}$ , $10 \sim 95\%$ RH $\pm 0.03\% / ^{\circ}\text{C}$ ( $0 \sim 50^{\circ}\text{C}$ ) $10 \sim 500\text{Hz}$ , $2\text{G}$ $10\text{min}./1\text{cycle}$ , $60\text{ Compliance}$ to $1\text{EC60068-2-6}$ UL508  EN60950-1 compliant $1\text{I/P-O/P}$ : $3\text{KVAC}$ $1\text{I/P-FG}$ : $1.5\text{KVAC}$ $1\text{I/P-O/P}$ ; $1\text{I/P-O/P}$	after 3 seconds 29 ~ 33V er on to recover k of power switch) er automatically after temperature goes down 30VAC / 0.5A RESISTIVE LOAD erating curve) the bottom, 5mm on the left and right side ar nt device is a heat source, 15mm clearance is min. each long X,Y, Z axes  0/P-FG: 0.5KVAC 0/P-DC 0K: ms/500VDC (25°C; 70% RH)	e recommended when loaded recommended
ENVIRONMENT  SAFETY & EMC	OVERTEMPERATURE  DC OK RELAY CONTACT RATINGS (max.)  WORKING TEMP.  WORKING HUMIDITY STORAGE TEMP., HUMIDITY TEMP. COEFFICIENT VIBRATION MOUNTING  SAFETY STANDARDS  WITHSTAND VOLTAGE ISOLATION RESISTANCE EMI CONDUCTION & RADIATION HARMONIC CURRENT	seconds and shut down overvoltage $14 \sim 17V$ Protection type: Shut down overvoltage, re-pow $95^{\circ}\text{C} \pm 5^{\circ}\text{C}$ (TSW: detect on heat sin Protection type: Shut down overvoltage, re-pow $60\text{VDC} / 0.3\text{A}$ $30\text{VDC} / 1\text{A}$ $-25 \sim +70^{\circ}\text{C}$ (Refer to output load of Installation clearances: $40\text{mm}$ on top, $20\text{mm}$ or permanently with full power. In case the adjace $20 \sim 95\%$ RH non-condensing $-40 \sim +85^{\circ}\text{C}$ , $10 \sim 95\%$ RH $\pm 0.03\% / ^{\circ}\text{C}$ ( $0 \sim 50^{\circ}\text{C}$ ) $10 \sim 500\text{Hz}$ , $2\text{G}$ $10\text{min}./1\text{cycle}$ , $60\text{ Compliance}$ to $1\text{EC60068-2-6}$ UL508  EN60950-1 compliant $1\text{I/P-O/P}$ : $3\text{KVAC}$ $1\text{I/P-FG}$ : $1.5\text{KVAC}$ $1\text{I/P-O/P}$ ; $3\text{KVAC}$ $1\text{I/P-FG}$ : $2100\text{M}$ Ohr Compliance to EN55022 (CISPR22) Compliance to EN61000-3-2,-3	after 3 seconds 29 ~ 33V er on to recover k of power switch) er automatically after temperature goes down 30VAC / 0.5A RESISTIVE LOAD erating curve) the bottom, 5mm on the left and right side ar nt device is a heat source, 15mm clearance is min. each long X,Y, Z axes  0/P-FG: 0.5KVAC 0/P-DC 0K: ms/500VDC (25°C; 70% RH) Class B	e recommended when loaded recommended
	OVERTEMPERATURE  DC OK RELAY CONTACT RATINGS (max.)  WORKING TEMP.  WORKING HUMIDITY STORAGE TEMP., HUMIDITY TEMP. COEFFICIENT VIBRATION MOUNTING  SAFETY STANDARDS  WITHSTAND VOLTAGE ISOLATION RESISTANCE EMI CONDUCTION & RADIATION	seconds and shut down overvoltage $14 \sim 17V$ Protection type: Shut down overvoltage, re-pow $95^{\circ}\text{C} \pm 5^{\circ}\text{C}$ (TSW: detect on heat sin Protection type: Shut down overvoltage, re-pow $60VDC / 0.3A$ $30VDC / 1A$ $-25 \sim +70^{\circ}\text{C}$ (Refer to output load of Installation clearances: $40\text{mm}$ on top, $20\text{mm}$ or permanently with full power. In case the adjace $20 \sim 95\%$ RH non-condensing $-40 \sim +85^{\circ}\text{C}$ , $10 \sim 95\%$ RH $\pm 0.03\%$ / $^{\circ}\text{C}$ ( $0 \sim 50^{\circ}\text{C}$ ) $10 \sim 500\text{Hz}$ , $2\text{G}$ $10\text{min./1cycle}$ , $60\text{ Compliance}$ to $10\text{EC}$ $10\text{C}$	after 3 seconds  29 ~ 33V er on to recover k of power switch) er automatically after temperature goes down 30VAC / 0.5A RESISTIVE LOAD erating curve) the bottom, 5mm on the left and right side ar nt device is a heat source, 15mm clearance is min. each long X,Y, Z axes  0/P-FG: 0.5KVAC 0/P-DC 0K: ms/500VDC (25°C; 70% RH) Class B 6,8,11; ENV50204; EN55024; EN61	e recommended when loaded recommended
SAFETY & EMC	OVERTEMPERATURE  DC OK RELAY CONTACT RATINGS (max.)  WORKING TEMP.  WORKING HUMIDITY STORAGE TEMP., HUMIDITY TEMP. COEFFICIENT VIBRATION MOUNTING  SAFETY STANDARDS  WITHSTAND VOLTAGE ISOLATION RESISTANCE EMI CONDUCTION & RADIATION HARMONIC CURRENT	seconds and shut down overvoltage  14 ~ 17V  Protection type: Shut down overvoltage, re-pow  95°C ± 5°C (TSW: detect on heat sin  Protection type: Shut down overvoltage, re-pow  60VDC / 0.3A 30VDC / 1A  -25 ~ +70°C (Refer to output load of  Installation clearances: 40mm on top, 20mm on  permanently with full power. In case the adjace  20 ~ 95% RH non-condensing  -40 ~ +85°C, 10 ~ 95% RH  ±0.03% / °C (0 ~ 50°C)  10 ~ 500Hz, 2G 10min./1cycle, 60 m  Compliance to IEC60068-2-6  UL508  EN60950-1 compliant  I/P-0/P: 3KVAC I/P-FG: 1.5KVAC  I/P-O/P; J/P-FG, 0/P-FG: ≥100M Oh  Compliance to EN55022 (CISPR22)  Compliance to EN61000-3-2,-3  Compliance to EN61000-4-2,3,4,5,t  EN61204-3; heavy industry level; ci  The power supply is considered a component with	after 3 seconds  29 ~ 33V er on to recover k of power switch) er automatically after temperature goes down 30VAC / 0.5A RESISTIVE LOAD erating curve) the bottom, 5mm on the left and right side ar nt device is a heat source, 15mm clearance is min. each long X,Y, Z axes  0/P-FG: 0.5KVAC 0/P-DC 0K: ms/500VDC (25°C; 70% RH) Class B  6,8,11; ENV50204; EN55024; EN61 iteria A, SEMI F47, GL approved	e recommended when loaded recommended  0.5KVAC  000-6-2; (EN50082-2);
	OVERTEMPERATURE  DC OK RELAY CONTACT RATINGS (max.)  WORKING TEMP.  WORKING HUMIDITY STORAGE TEMP., HUMIDITY TEMP. COEFFICIENT VIBRATION MOUNTING  SAFETY STANDARDS  WITHSTAND VOLTAGE ISOLATION RESISTANCE EMI CONDUCTION & RADIATION HARMONIC CURRENT EMS IMMUNITY	seconds and shut down overvoltage, re-pow 95°C ± 5°C (TSW: detect on heat sin Protection type: Shut down overvoltage, re-pow 60VDC / 0.3A 30VDC / 1A  -25 ~ +70°C (Refer to output load of Installation clearances: 40mm on top, 20mm on permanently with full power. In case the adjace 20 ~ 95% RH non-condensing -40 ~ +85°C, 10 ~ 95% RH ±0.03% / °C (0 ~ 50°C) 10 ~ 500Hz, 2G 10min./1cycle, 60 Compliance to IEC60068-2-6  UL508  EN60950-1 compliant I/P-O/P: 3KVAC I/P-FG: 1.5KVAC I/P-O/P, I/P-FG, 0/P-FG: ≥100M Oht Compliance to EN55022 (CISPR22) Compliance to EN61000-3-2,-3 Compliance to EN61000-4-2,3,4,5,t EN61204-3; heavy industry level; ci The power supply is considered a component withat it still meets EMC directives.	after 3 seconds  29 ~ 33V er on to recover k of power switch) er automatically after temperature goes down 30VAC / 0.5A RESISTIVE LOAD erating curve) the bottom, 5mm on the left and right side an tt device is a heat source, 15mm clearance is  min. each long X,Y, Z axes  0/P-FG: 0.5KVAC	e recommended when loaded recommended  0.5KVAC  000-6-2; (EN50082-2);
SAFETY & EMC	OVERTEMPERATURE  DC OK RELAY CONTACT RATINGS (max.)  WORKING TEMP.  WORKING HUMIDITY STORAGE TEMP., HUMIDITY TEMP. COEFFICIENT VIBRATION MOUNTING  SAFETY STANDARDS  WITHSTAND VOLTAGE ISOLATION RESISTANCE EMI CONDUCTION & RADIATION HARMONIC CURRENT EMS IMMUNITY	seconds and shut down overvoltage, re-pow 95°C ± 5°C (TSW: detect on heat sin Protection type: Shut down overvoltage, re-pow 60VDC / 0.3A 30VDC / 1A  -25 ~ +70°C (Refer to output load of Installation clearances: 40mm on top, 20mm on permanently with full power. In case the adjace 20 ~ 95% RH non-condensing -40 ~ +85°C, 10 ~ 95% RH ±0.03% / °C (0 ~ 50°C) 10 ~ 500Hz, 2G 10min./1cycle, 60 Compliance to IEC60068-2-6  UL508  EN60950-1 compliant I/P-0/P: 3KVAC I/P-FG: 1.5KVAC I/P-FG: 2100M Ohi Compliance to EN61000-3-2,-3 Compliance to EN61000-4-2,3,4,5,t EN61204-3; heavy industry level; ci The power supply is considered a component withat it still meets EMC directives.	after 3 seconds  29 ~ 33V er on to recover k of power switch) er automatically after temperature goes down 30VAC / 0.5A RESISTIVE LOAD erating curve) the bottom, 5mm on the left and right side an tt device is a heat source, 15mm clearance is  min. each long X,Y, Z axes  0/P-FG: 0.5KVAC	e recommended when loaded recommended  0.5KVAC  000-6-2; (EN50082-2);
SAFETY & EMC	OVERTEMPERATURE  DC OK RELAY CONTACT RATINGS (max.)  WORKING TEMP.  WORKING HUMIDITY STORAGE TEMP., HUMIDITY TEMP. COEFFICIENT VIBRATION MOUNTING  SAFETY STANDARDS  WITHSTAND VOLTAGE ISOLATION RESISTANCE EMI CONDUCTION & RADIATION HARMONIC CURRENT EMS IMMUNITY  MTBF DIMENSION	seconds and shut down overvoltage, re-pow 95°C ± 5°C (TSW: detect on heat sin Protection type: Shut down overvoltage, re-pow 60VDC / 0.3A 30VDC / 1A  -25 ~ +70°C (Refer to output load of Installation clearances: 40mm on top, 20mm on permanently with full power. In case the adjace 20 ~ 95% RH non-condensing -40 ~ +85°C, 10 ~ 95% RH ±0.03% / °C (0 ~ 50°C) 10 ~ 500Hz, 2G 10min./1cycle, 60 Compliance to IEC60068-2-6  UL508  EN60950-1 compliant I/P-0/P: 3KVAC I/P-FG: 1.5KVAC I/P-FG: 2100M Ohi Compliance to EN55022 (CISPR22) Compliance to EN61000-3-2,-3 Compliance to EN61000-4-2,3,4,5,t EN61204-3; heavy industry level; ci The power supply is considered a component withat it still meets EMC directives.	after 3 seconds  29 ~ 33V er on to recover k of power switch) er automatically after temperature goes down 30VAC / 0.5A RESISTIVE LOAD erating curve) the bottom, 5mm on the left and right side an tt device is a heat source, 15mm clearance is  min. each long X,Y, Z axes  0/P-FG: 0.5KVAC 0/P-DC 0K: ms/500VDC (25°C; 70% RH) Class B  6,8,11; ENV50204; EN55024; EN61 iteria A, SEMI F47, GL approved nich will installed into a final equipment. The fin	e recommended when loaded recommended  0.5KVAC  000-6-2; (EN50082-2);
SAFETY & EMC	OVERTEMPERATURE  DC OK RELAY CONTACT RATINGS (max.)  WORKING TEMP.  WORKING HUMIDITY STORAGE TEMP., HUMIDITY TEMP. COEFFICIENT VIBRATION MOUNTING  SAFETY STANDARDS  WITHSTAND VOLTAGE ISOLATION RESISTANCE EMI CONDUCTION & RADIATION HARMONIC CURRENT EMS IMMUNITY	seconds and shut down overvoltage, re-pow 95°C ± 5°C (TSW: detect on heat sin Protection type: Shut down overvoltage, re-pow 60VDC / 0.3A 30VDC / 1A  -25 ~ +70°C (Refer to output load of Installation clearances: 40mm on top, 20mm on permanently with full power. In case the adjace 20 ~ 95% RH non-condensing -40 ~ +85°C, 10 ~ 95% RH ±0.03% / °C (0 ~ 50°C) 10 ~ 500Hz, 2G 10min./1cycle, 60 Compliance to IEC60068-2-6  UL508  EN60950-1 compliant I/P-0/P: 3KVAC I/P-FG: 1.5KVAC I/P-FG: 2100M Ohi Compliance to EN61000-3-2,-3 Compliance to EN61000-4-2,3,4,5,t EN61204-3; heavy industry level; ci The power supply is considered a component withat it still meets EMC directives.	after 3 seconds  29 ~ 33V er on to recover k of power switch) er automatically after temperature goes down 30VAC / 0.5A RESISTIVE LOAD erating curve) the bottom, 5mm on the left and right side an at device is a heat source, 15mm clearance is  min. each long X,Y, Z axes  0/P-FG: 0.5KVAC 0/P-DC 0K: ms/500VDC (25°C; 70% RH) Class B  5,8,11; ENV50204; EN55024; EN61 iteria A, SEMI F47, GL approved nich will installed into a final equipment. The fin	e recommended when loaded recommended  0.5KVAC  000-6-2; (EN50082-2); all equipment must be re-confirmed

Terminal Pin No. Assignment (TB1) Terminal Pin No. Assignment (TB2)

Pin No.	Assignment
1	FG ⊕
2	AC/N
3	AC/L

Terminari iirivo. 705191111ent (				
Pin No.	Assignment			
1,2	Relay Contact			
3	DC OUTPUT -V			
4	DC OUTPUT+V			



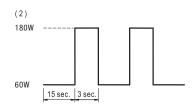
## **DC OK Relay Contact**

Contact Close	When the output voltage reaches the adjusted output voltage.
Contact Open	When the output voltage drop below 90% output voltage.
Contact Ratings (max.)	30V/1A resistive load

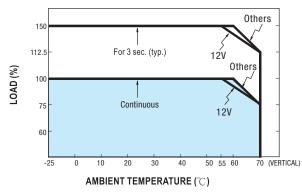
#### **Block Diagram** DC OK EMI FILTER **RECTIFIERS** POWER PFC & FILTER CIRCUIT SWITCHING RECTIFIERS 0.C.P. U.V.P. 0.L.P. DETECTION CIRCUIT PWM & PFC PFC CONTROL CONTROL 0.V.P.

## **Peak Loading**

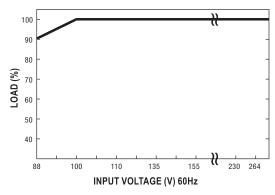




# **Derating Curve**



# **Output Derating VS Input Voltage**





# **PS-C240 Series Specifications**











- High efficiency 94% and low power dissipation
- 150% peak load capability
- Built-in active PFC function, PF>0.93
- Protections: Short Circuit / Overload / Over Voltage / Overtemperature
- Cooling by free air convection
- DIN rail mountable
- UL 508 (industrial control equipment) approved
- EN61000-6-2(EN50082-2) industrial immunity level
- Built-in DC OK relay contact
- 100% full load burn-in test
- 3 year warranty

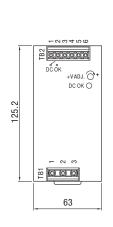
		• 3 year wa	arranty
OUTPUT	Cat. No.	PS-C24024	PS-C24048
	DC VOLTAGE	24V	48V
	RATED CURRENT	10A	5A
	CURRENT RANGE	0 ~ 10A	0 ~ 5A
	RATED POWER	240W	240W
	PEAK CURRENT	15A	7.5A
	PEAK POWER	360W (3 sec.)	
		3 seconds max., please refer to peak load	ling curves
	RIPPLE & NOISE (max)	100mVp-p	120mVp-p
		Ripple & noise are measured at 20MHz of bandwidth by u	sing a 12 twisted pair-wire terminated with a 0.1µF & 47µF parallel capacitor
	VOLTAGE ADJ. RANGE	24 ~ 28V	48 ~ 55V
	VOLTAGE TOLERANCE	±1.0%	±1.0%
		Tolerance: includes set up tolerance, line regulation and	
	LINE REGULATION	±0.5%	±0.5%
	LOAD REGULATION	±1.0%	±1.0%
INDUT	SETUP, RISE TIME	*	ns / 115VAC at full load
INPUT	HOLD UP TIME (Typ.)	20ms / 230VAC 20ms / 115	VAC at full load
	VOLTAGE RANGE	88 ~ 264VAC 124 ~ 370V	'DC
		Derating may be needed under low input voltages, plea	se check the derating curve for more detail
	FREQUENCY RANGE	47 ~ 63Hz	
	POWER FACTOR (Typ.)	0.93 / 230VAC 0.99 / 115VAC at full to	oad
	EFFICIENCY (Typ.)	94%	
	=	After 30 minutes of burn-in.	
	AC CURRENT (Typ.)	2.6A / 115VAC 1.3A / 230VAC	
	INRUSH CURRENT (Typ.)	33A / 115VAC 65A / 230VAC	
PROTECTION	` /		
THOTEOTION	LEAKAGE CURRENT	≤ 1 mA / 240VAC	
	OVERLOAD	Normally works within 110 ~ 150% rated	output power for more than 3 seconds and then shut
		down overvoltage with auto-recovery	
		≥ 150% rated power, constant current lin	niting with auto-
		recovery within 2 seconds and shut down	overvoltage after 2 seconds
	OVERVOLTAGE	29 ~ 33V	56 ~ 65V
		Protection type: Shut down overvoltage with auto-recov	
	OVERTEMPERATURE	$95^{\circ}\text{C} \pm 5^{\circ}\text{C}$ (TSW: detect on heat sink of p	-
ENVIRONMENT	OVERTERNI ETUTIONE	Protection type: Shut down overvoltage, re-power autor	,
LITTIONICITIE			
	DC OK RELAY CONTACT RATINGS (max.)	60VDC / 0.3A 30VDC / 1A 30VAC /	0.5A RESISTIVE LOAD
	WORKING TEMP.	-25 ~ +70°C (Refer to output load derating	g curve)
		Installation clearances: 40mm on top, 20mm on the bot	tom, 5mm on the left and right side are recommended when loaded
		permanently with full power. In case the adjacent device	
	WORKING HUMIDITY	20 ~ 95% RH non-condensing	
	STORAGE TEMP., HUMIDITY	-40 ~ +85°C, 10 ~ 95% RH	
	TEMP. COEFFICIENT	±0.03% / °C (0 ~ 50°C)	
	VIBRATION	10 ~ 500Hz, 2G 10min./1cycle, 60 min. e	ach long X V 7 axes
SAFETY & EMC	MOUNTING	Compliance to IEC60068-2-6	actificity A, 1, 2 axes
SAFETT & EIVIG		•	
	SAFETY STANDARDS	UL508	
		EN60950-1 compliant	
	WITHSTAND VOLTAGE	I/P-0/P: 3KVAC I/P-FG: 1.5KVAC 0/P	-FG: 0.5KVAC O/P-DC OK: 0.5KVAC
	ISOLATION RESISTANCE	I/P-O/P, I/P-FG, O/P-FG: ≥100M Ohms / 5	00VDC (25°C; 70% RH)
	EMI CONDUCTION & RADIATION	Compliance to EN55022 (CISPR22) Class	В
	HARMONIC CURRENT	Compliance to EN61000-3-2,-3	
	EMS IMMUNITY	Compliance to EN61000-4-2.3.4.5.6.8.11	; ENV50204; EN55024; EN61000-6-2; (EN50082-2),
		EN61204-3; heavy industry level; criteria	
			Il installed into a final equipment. The final equipment must be
OTHERS		re-confirmed that it still meets EMC directives.	ii installed liito a lilial equipment. The lilial equipment must be
	MTDE		
	MTBF	169.3K hrs min. MIL-HDBK-217K (25°C)	1
	DIMENSION	63x125.2x113.5mm (WxHxD)	
	PACKING	o	
		All acceptance NOT acceptance described and ac	at 220V AC input roted land and 25°C of ambient temperature
	PACKING	1.03Kg; 12pcs / 13.4Kg / 1.06CUFT	at 230V AC input, rated load and 25°C of ambient temperatur

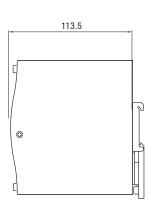
Terminal Pin No. Assignment (TB1)

Pin No.	Assignment
1	FG ⊕
2	AC/N
3	AC/L

Terminal Pin No. Assignment (TB2)

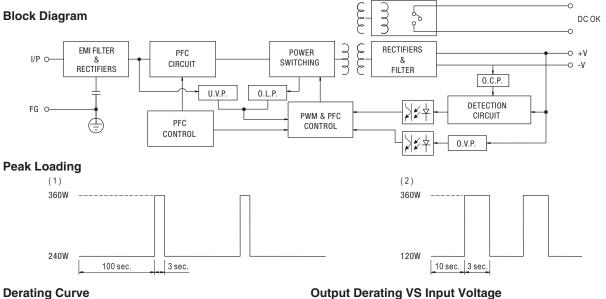
Pin No.	Assignment
1,2	Relay Contact
3,4	DC OUTPUT +V
5,6	DC OUTPUT -V





## **DC OK Relay Contact**

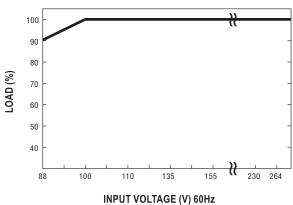
Contact Close	When the output voltage reaches the adjusted output voltage.
Contact Open	When the output voltage drop below 90% output voltage.
Contact Ratings (max.)	30V/1A resistive load





## 150 For typ. 3sec. 112.5 LOAD (%) 100 Continuous 75 60 -25 20 60 70 (VERTICAL) AMBIENT TEMPERATURE (°C)

# **Output Derating VS Input Voltage**





# **PS-C480 Series Specifications**











- High efficiency 94% and low power dissipation
- 150% peak load capability
- Built-in active PFC function, PF>0.94
- Protections: Short Circuit / Overload / Over Voltage / Overtemperature
- Cooling by free air convection
- Built-in constant current limiting circuit
- DIN rail mountable
- UL 508(industrial control equipment) approved
- EN61000-6-2(EN50082-2) industrial immunity level
- Built-in DC OK relay contact
- 100% full load burn-in test
- 3 year warranty

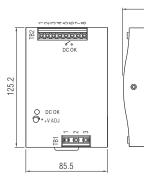
		• 3 year warra	arity
OUTPUT	Cat. No.	PS-C48024	PS-C48048
	DC VOLTAGE	24V	48V
	RATED CURRENT	20A	10A
	CURRENT RANGE	0 ~ 20A	0 ~ 10A
	RATED POWER	480W	480W
	PEAK CURRENT	30A	15A
	PEAK POWER	720W (3 sec.)	
	RIPPLE & NOISE (max)	3 seconds peak power max. and the averag 100mVp-p	e output power should not exceed the rate power 120mVp-p
	TIII T EE & NOIDE (Max)		a 12 twisted pair-wire terminated with a 0.1µF & 47µF parallel capacite
	VOLTAGE ADJ. RANGE	24 ~ 28V	48 ~ 55V
	VOLTAGE ADS. NANGE VOLTAGE TOLERANCE	±1.2%	±1.0%
	VOLIAGE TOLERANGE		
	LINE DECLI ATION	Tolerance: includes set up tolerance, line regulation and loa	_ =
	LINE REGULATION	±0.5%	±0.5%
	LOAD REGULATION	±1.0%	±1.0%
	SETUP, RISE TIME	1500ms, 150ms / 230VAC 3000ms, 15	Oms / 115VAC at full load
NPUT	HOLD UP TIME (Typ.)	14ms / 230VAC at full load	
	VOLTAGE RANGE	90 ~ 264VAC 127 ~ 370VDC	
		Derating may be needed under low input voltages, please	check the derating curve for more detail
	FREQUENCY RANGE	47 ~ 63Hz	
	POWER FACTOR (Typ.)	0.94 / 230VAC 0.99 / 115VAC at full load	1
	EFFICIENCY (Typ.)	94%	
	Li i loizito i (i jp.)	After 30 minutes of burn-in	
	AC CURRENT (Typ.)	5A / 115VAC 2.5A / 230VAC	
	1 2 7		
PROTECTION	INRUSH CURRENT (Typ.)	40A / 115VAC 80A / 230VAC	
RUTECTION	LEAKAGE CURRENT	≤ 0.8 mA / 240VAC	
	OVERLOAD  OVERVOLTAGE	down overvoltage with auto-recovery	utput power for more than 3 seconds and then shut ng with auto-recovery within 2 seconds and shut $ 56 \sim 65 \text{V} $
		Protection type: Shut down overvoltage with auto-recovery	on re-power on to recovery
	OVERTEMPERATURE	$105^{\circ}\text{C} \pm 5^{\circ}\text{C}$ (TSW: detect on heat sink of po	wer switch)
		Protection type: Shut down overvoltage, re-power automati	ically after temperature goes down
ENVIRONMENT	DC OK RELAY CONTACT RATINGS (max.)	60VDC / 0.3A; 30VDC / 1A; 30VAC / 0.5A res	sistive load
	WORKING TEMP.	-25 ~ +70°C (Refer to output load derating of	curve)
			n, 5mm on the left and right side are recommended when loaded
		permanently with full power. In case the adjacent device is	
	WORKING HUMIDITY	20 ~ 95% RH non-condensing	
	STORAGE TEMP., HUMIDITY	-40 ~ +85°C, 10 ~ 95% RH	
	TEMP. COEFFICIENT	±0.03% / °C (0 ~ 50°C)	
	VIBRATION	10 ~ 500Hz, 2G 10min./1cycle, 60 min. eac	h long X V 7 aves
SAFETY & EMC	MOUNTING	• •	11 1011g A, 1, 2 ax03
DAI LIT & LIVIO		Compliance to IEC60068-2-6	
	SAFETY STANDARDS	UL508	
		EN60950-1 compliant	
	WITHSTAND VOLTAGE		G: 0.5KVAC O/P-DC OK: 0.5KVAC
		I/P-O/P, I/P-FG, O/P-FG: ≥100M 0hms/500V	DC (25°C: 70% RH)
	ISOLATION RESISTANCE	1/1 -0/1, 1/1 -1 u, 0/1 -1 u. ≥100W 011113/300V	(,,,
	ISOLATION RESISTANCE EMI CONDUCTION & RADIATION	Compliance to EN55022 (CISPR22) Class B	(,,
			(,
	EMI CONDUCTION & RADIATION HARMONIC CURRENT	Compliance to EN55022 (CISPR22) Class B Compliance to EN61000-3-2,-3	, , ,
	EMI CONDUCTION & RADIATION	Compliance to EN55022 (CISPR22) Class B Compliance to EN61000-3-2,-3 Compliance to EN61000-4-2,3,4,5,6,8,11; E	NV50204; EN55024; EN61000-6-2; (EN50082-2),
	EMI CONDUCTION & RADIATION HARMONIC CURRENT	Compliance to EN55022 (CISPR22) Class B Compliance to EN61000-3-2,-3 Compliance to EN61000-4-2,3,4,5,6,8,11; EN61204-3; heavy industry level; criteria A,	NV50204; EN55024; EN61000-6-2; (EN50082-2), SEMI F47, GL approved
OTHERS	EMI CONDUCTION & RADIATION HARMONIC CURRENT	Compliance to EN55022 (CISPR22) Class B Compliance to EN61000-3-2,-3 Compliance to EN61000-4-2,3,4,5,6,8,11; EN61204-3; heavy industry level; criteria A, The power supply is considered a component which will in	NV50204; EN55024; EN61000-6-2; (EN50082-2),
OTHERS_	EMI CONDUCTION & RADIATION HARMONIC CURRENT EMS IMMUNITY	Compliance to EN55022 (CISPR22) Class B Compliance to EN61000-3-2,-3 Compliance to EN61000-4-2,3,4,5,6,8,11; EN61204-3; heavy industry level; criteria A, The power supply is considered a component which will in re-confirmed that it still meets EMC directives.	NV50204; EN55024; EN61000-6-2; (EN50082-2), SEMI F47, GL approved
OTHERS_	EMI CONDUCTION & RADIATION HARMONIC CURRENT EMS IMMUNITY  MTBF	Compliance to EN55022 (CISPR22) Class B Compliance to EN61000-3-2,-3 Compliance to EN61000-4-2,3,4,5,6,8,11; EN61204-3; heavy industry level; criteria A, The power supply is considered a component which will in re-confirmed that it still meets EMC directives.  112.9K hrs min. MIL-HDBK-217K (25°C)	NV50204; EN55024; EN61000-6-2; (EN50082-2), SEMI F47, GL approved
OTHERS_	EMI CONDUCTION & RADIATION HARMONIC CURRENT EMS IMMUNITY  MTBF DIMENSION	Compliance to EN55022 (CISPR22) Class B Compliance to EN61000-3-2,-3 Compliance to EN61000-4-2,3,4,5,6,8,11; EN61204-3; heavy industry level; criteria A, The power supply is considered a component which will in re-confirmed that it still meets EMC directives.  112.9K hrs min. MIL-HDBK-217K (25°C) 85.5x125.2x128.5mm (WxHxD)	NV50204; EN55024; EN61000-6-2; (EN50082-2), SEMI F47, GL approved
OTHERS_	EMI CONDUCTION & RADIATION HARMONIC CURRENT EMS IMMUNITY  MTBF	Compliance to EN55022 (CISPR22) Class B Compliance to EN61000-3-2,-3 Compliance to EN61000-4-2,3,4,5,6,8,11; EN61204-3; heavy industry level; criteria A, The power supply is considered a component which will in re-confirmed that it still meets EMC directives.  112.9K hrs min. MIL-HDBK-217K (25°C) 85.5x125.2x128.5mm (WxHxD) 1.6Kg; 8pcs / 13.8Kg / 0.9CUFT	NV50204; EN55024; EN61000-6-2; (EN50082-2), SEMI F47, GL approved

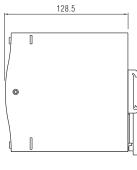
Terminal Pin No. Assignment (TB1)

Pin No.	Assignment	
1	FG ⊕	
2	AC/N	
3	AC/L	

Terminal Pin No. Assignment (TB2)

Pin No.	Assignment
1,2	DC OUTPUT +V
3,4	DC OUTPUT -V
5,6	Relay Contact
7,8	NC





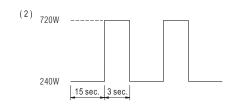
### **DC OK Relay Contact**

Contact Close	When the output voltage reaches the adjusted output voltage.
Contact Open	When the output voltage drop below 90% output voltage.
Contact Ratings (max.)	30V/1A resistive load

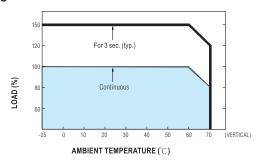
#### **Block Diagram** DC OK RECTIFIERS EMI FILTER POWER SWITCHING & RECTIFIERS & FILTER CIRCUIT 0.C.P. U.V.P. 0.L.P. DETECTION PWM & PFC PFC CONTROL CONTROL

### **Peak Loading**

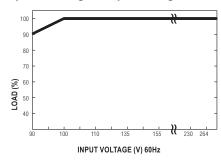




## **Derating Curve**



## **Output Derating VS Input Voltage**





# PS-C480P Series With Parallel Function **Specifications**











- High efficiency 94% and low power dissipation
- 150% peak load capability
- Built-in active PFC function, PF>0.94
- Protections: Short Circuit / Overload / Over Voltage / Overtemperature
- Cooling by free air convection
- Built-in constant current limiting circuit
- DIN rail mountable
- Current sharing up to 380W (1+7)
- UL 508(industrial control equipment)approved
- EN61000-6-2(EN50082-2) industrial immunity level
- Built-in DC OK relay contact
- 100% full load burn-in test
- 3 year warranty

OUTPUT	Cat. No.	PS-C480P24	PS-C480P48
	DC VOLTAGE RATED CURRENT	24V 20A	48V 10A
	CURRENT RANGE	0 ~ 20A	0 ~ 10A
	RATED POWER	480W	480W
	PEAK CURRENT	30A	15A
	PEAK POWER	720W (3 sec.)	
		3 seconds peak power max. and the average output power	r should not exceed the rate power
	RIPPLE & NOISE (max)	100mVp-p	120mVp-p
		Ripple & noise are measured at 20MHz of bandwidth by using	g a 12 twisted pair-wire terminated with a 0.1µF & 47µF parallel capacitor.
	VOLTAGE ADJ. RANGE	24 ~ 28V	48 ~ 55V
	VOLTAGE TOLERANCE	±1.2%	±1.0%
	LINE REGULATION	Tolerance: includes set up tolerance, line regulation and lo	ad regulation. $\pm 0.5\%$
	LOAD REGULATION	±0.5% ±1.0%	±0.5% ±1.0%
INPUT	SETUP, RISE, HOLD UP TIME		ms, 150ms / 115VAC at full load
	VOLTAGE RANGE	90 ~ 264VAC 127 ~ 370VDC	nie, roonie, rromo at an ioaa
	VOLIAGE HANGE	Derating may be needed under low input voltages, please	check the derating curve for more detail
	FREQUENCY RANGE	47 ~ 63Hz	
	POWER FACTOR (Typ.)	0.94 / 230VAC 0.99 / 115VAC at full load	i
	EFFICIENCY (Typ.)	94%	
		After 30 minutes of burn-in.	
	AC CURRENT (max.)	5A / 115VAC 2.5A / 230VAC	
PROTECTION	INRUSH CURRENT (Typ.) LEAKAGE CURRENT	40A / 115VAC 80A / 230VAC ≤ 0.6 mA / 240VAC	
PROTECTION			the decrease for more than 2 accords and the condition
	OVERLOAD	down overvoltage with auto-recovery	utput power for more than 3 seconds and then shut
		· ·	ng with auto-recovery within 2 seconds and shut
		down overvoltage after 2 seconds	ng mar date receivery mains 2 eccentee and once
	OVERVOLTAGE	29 ~ 33V	56 ~ 65V
		Protection type: Shut down overvoltage with auto-recovery	on re-power on to recovery
	OVERTEMPERATURE	$105^{\circ}\text{C} \pm 5^{\circ}\text{C}$ (TSW: detect on heat sink of po	•
	CURRENT CHARING	Protection type: Shut down overvoltage, re-power automat	ically after temperature goes down
<b>ENVIRONMENT</b>	CURRENT SHARING DC OK RELAY CONTACT RATINGS (max.)	Please see function diagram 60VDC / 0.3A; 30VDC / 1A; 30VAC / 0.5A re	sistiva load
ENVIRONMENT	WORKING TEMP.		
	WORKING TEIVIF.	-25 ~ +70°C (Refer to output load derating of Installation clearances: 40mm on top, 20mm on the botton	n, 5mm on the left and right side are recommended when loaded
		permanently with full power. In case the adjacent device is	
	WORKING HUMIDITY	20 ~ 95% RH non-condensing	
	STORAGE TEMP., HUMIDITY	-40 ~ +85°C, 10 ~ 95% RH	
	TEMP. COEFFICIENT VIBRATION	±0.03% / °C (0 ~ 50°C) 10 ~ 500Hz, 2G 10min./1cycle, 60 min. eac	h long V V 7 avec
SAFETY & EMC	MOUNTING	Compliance to IEC60068-2-6	ii long A, i, Z axes
O/II E I I G E III G	SAFETY STANDARDS	UL508	
	OAI ETT OTANDALIDO	EN60950-1 compliant	
	WITHSTAND VOLTAGE	I/P-O/P: 3KVAC I/P-FG: 1.5KVAC O/P-F	G: 0.5KVAC O/P-DC OK: 0.5KVAC
	ISOLATION RESISTANCE	I/P-O/P, I/P-FG, O/P-FG: ≥100M 0hms/500V	
	EMI CONDUCTION & RADIATION	Compliance to EN55022 (CISPR22) Class B	
	HARMONIC CURRENT	Compliance to EN61000-3-2,-3	
	EMS IMMUNITY		:NV50204; EN55024; EN61000-6-2; (EN50082-2),
		EN61204-3; heavy industry level; criteria A,	SEMI F47, GL approved
OTHERS	<u> </u>	re-confirmed that it still meets EMC directives.	stalled into a final equipment. The final equipment must be
	MTBF	112.9K hrs min. MIL-HDBK-217K (25°C)	
	DIMENSION	85.5x125.2x128.5mm (WxHxD)	
	PACKING	1.6Kg; 8pcs / 13.8Kg / 0.9CUFT	
		All parameters NOT specially mentioned are measured at 2	230V AC input, rated load and 25°C of ambient temperature.

Pin No.	Assignment
1	FG ⊕
2	AC/N
3	AC/L

Terminal Pin No. Assignment (TB1) Terminal Pin No. Assignment (TB2)

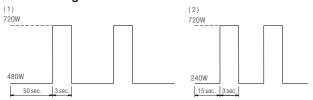
Torrinia	i ili ivo. Assigililloi	וו (וט
Pin No.	Assignment	
1,2	DC OUTPUT +V	
3,4	DC OUTPUT -V	
5,6	Relay Contact	
7	P+ (current share)	
8	P- (current share)	

# 128.5 ..... 125.2

### **DC OK Relay Contact**

Contact Close	When the output voltage reaches the adjusted output voltage.
Contact Open	When the output voltage drop below 90% output voltage.
Contact Ratings (max.)	30V/1A resistive load

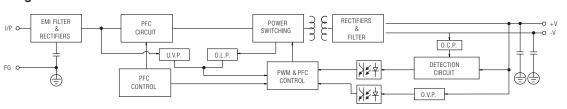
### **Peak Loading**



85.5

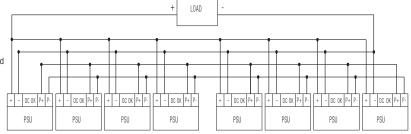
DC OK

### **Block Diagram**

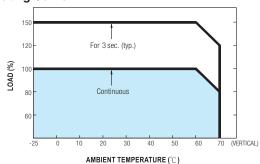


### **Function Diagram**

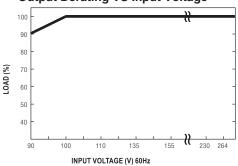
- 1. Current sharing
- (1)Parallel operation is available by connecting the units shown as below (P+,P- are connected mutually in parallel):
- (2)The voltage difference among each output should be minimized that less than 2% is required.
- (3)The total output current must not exceed the value determined by the following equation (Output current at parallel operation)
- =(The rated current per unit) x (Number of unit) x 0.9. (4) In parallel operation 8 units is the maximum, please consult the manufacture for other applications.
- (5) When in parallel operation, the minimum output load should be greater than 3% of total output load.
- (Min. load > 3% rated current per unit x number of unit)



### **Derating Curve**



### **Output Derating VS Input Voltage**





# Wide Input Compact Housing Power Supply

With the PSW family, AC/DC compact DIN rail switching power supplies with single phase wide input range, Altech further expanded the power supply line. Built-in active PFC function, these high efficient power units meet the harmonic current limitation per EN61000-3-2. Equipped with 180 to 550Vac single phase wide input range, they can be used in general power system applications with single phase 230Vac input or can capture two phases from the 220~550Vac three-phase power system, which can greatly increase the flexibility of system deployment.

With up-to-date circuit design PSW series possess up to 93% of extremely high efficiency and can provide 100% power continuously at 50\*C by only free air convection, or operate under 70\*C ambient temperature by suitable power derating. The compact design in width helps save the precious space on the rail and also makes it up to 50% smaller in size compare to its predecessor models. Meanwhile, with wider input range the PSW series also has 3% higher efficiency than corresponding models, which response to the trend of green power with energy saving concept. Other standard functions include DC OK relay contact alarm signal output, front panel DC voltage adjustment , as well as protection for short-circuit, overload (constant current mode, shut down if over 3 seconds), over voltage, and over temperature. The PSW series comply with UL508, IEC60950-1 (CB), and CE certificates and also meet the EMC requirements of heavy industrial immunity level (EN61000-6-2). Suitable applications include industrial control system, semi-conductor fabrication equipment, factory automation, electromechanical applications, and marine related installation.

• Input voltage range: 180~550V AC; 254-780V DC

• AC inrush current (typical):Cold start: 50A at 400V AC

DC adjustment range (typical):
 12V: 12-15V, 24V: 24-29V, 48V: 48-58V,

• Overload protection (typical): 105%-130% rated output

• Over-voltage protection (typical): 16-18V for 12V model (PSW-120),

31-37V for 24V model; 60-67V for 48V model

Setup, rise, time (typical): 2000ms, 70ms at full load and 230V AC (PSW-120)

2000ms, 150ms at full load and 230V AC (PSW240/480)

Withstand voltage:
 I/P-0/P:3KV AC, I/P-FG:1.5KV AC, O/P-FG:0.5KV AC.

• Working temperature: -20 to +70°C (-4° to +158°F),

refer to output derating curve (PSW-120)

• DC OK signal Relay contact

• Safety standards: UL508 (PSW-240 pending)

EMC standards: Compliance to EN55011 (CISPR11), EN55022 class B,

EN61000-4-2,3,4,5,6,8,11, ENV50204, EN55024,

EN61000-6-2, EN61204-3, heavy Industry Level criteria A

• Military standard: MIL-HDBK-217K

# **PSW Series**



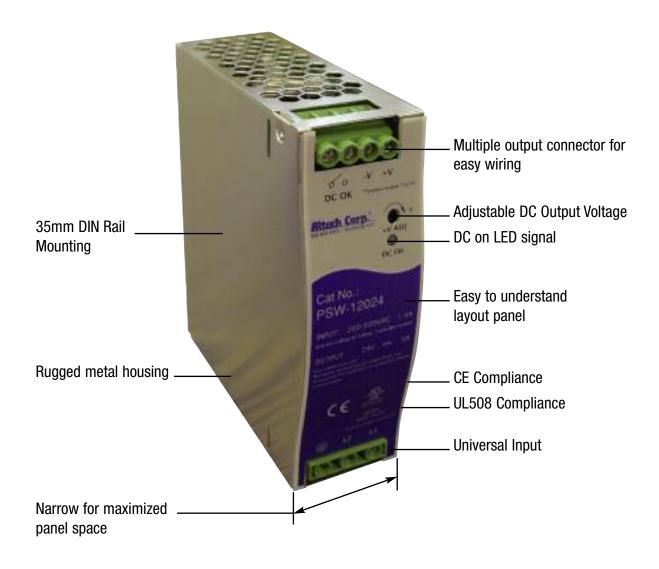








- Single and two phase wide input range 180~550VAC
- Universal AC Input / Full Range
- High efficiency up to 93% and low power dissipation
- Protections: Short circuit / Overload / Overvoltage / Over temperature
- · Cooling by free air convection
- DIN rail mountable
- UL 508 (industrial control equipment) approved
- EN61000-6-2(EN50082-2) industrial immunity level
- Built-in DC OK relay contact
- 100% full load burn-in test
- 3 year warranty



# 120-480W Single Phase

# WIDE INPUT POWER SUPPLIES













# 120W Single Output DIN Rail Power Supply

Cat. No.	Output V DC A	Tol. %	Ripple & Noise	Efficiency	NOTES
PSW-12012	12V DC 10A	±1.5%	120 mVp-p	89.5%	
PSW-12024	24V DC 5A	±1%	120 mVp-p	91%	
PSW-12048	48V DC 2.5A	±1%	150 mVp-p	92%	



# 240W Single Output DIN Rail Power Supply

Cat. No.	Outp	ut	Tol.	Ripple &	Efficiency	NOTES
	V DC	Α	%	Noise		
PSW-24024	24V DC	10A	±1%	120 mVp-p	90%	
PSW-24048	48V DC	5A	±1%	120 mVp-p	90%	

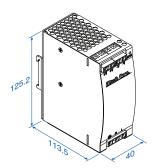


# **480W Single Output DIN Rail Power Supply**

Cat. No.	Output V DC A	Tol. %	Ripple & Noise	Efficiency	NOTES
PSW-48024	24V DC 20A	±1%	100 mVp-p	94%	
PSW-48048	48V DC 10A	±1%	120 mVp-p	94%	

# **SPECIFICATIONS**

# **PSW-120 Series**



Terminal Pin. No Assign. (TB1)

Terminai Fin. No Assign. (TBT)		
Pin No.	Assignment	
1	FG⊕	
2	AC/L2	
3	AC/L1	

Terminal Pin. No Assign. (TB2)

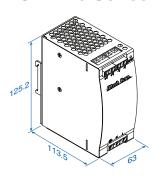
101111111a11 11111110 71001g111 (122)		
Pin No.	n No. Assignment	
1,2	Relay Contact	
3	DC OUTPUT -V	
4	DC OUTPUT +V	

Universal Input: 180-550V AC, 254-780V DC full range, 0.55A/400V AC, 1.2A/230V AC

Connection: Input - 3 poles, Output - 4 poles screw terminal Size (WxHxD): 40x125.2x113.5mm (1.57x4.93x4.47 inches)

Packaging: 1/box; 1.433lbs / 0.65Kg

# **PSW-240 Series**



Terminal Pin. No Assign. (TB1)

Pin No.	Assignment		
1	FG⊕		
2	AC/L2		
3	AC/L1		

Terminal Pin. No Assign. (TB2)

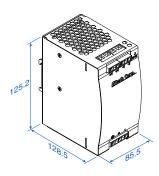
Pin No.	Assignment
1,2	Relay Contact
3,4	DC OUTPUT -V
5,6	DC OUTPUT +V

Universal Input: 180-550V AC, 254-780V DC full range, 1A/400V AC, 2A/230V AC

Connection: Input - 3 poles, Output - 6 poles screw terminal Size (WxHxD): 63x125.2x113.5mm (2.48x4.93x4.47 inches)

Packaging: 1/box; 2.337lbs / 1.06Kg

### **PSW-480 Series**



Terminal Pin. No Assign. (TB1)

Terminar Fin. No Assign. (TDT	
Pin No.	Assignment
1	FG⊕
2	AC/L2
3	AC/L1

Terminal Pin. No Assign. (TB2)

Pin No.	Assignment
1.2	DC OUTPUT +V
.,-	20 0011 01 11
3.4	DC OUTPUT -V
5,4	DC OOTFOT-V
E G	Delay Contact
5,6	Relay Contact

Universal Input: 180-550V AC, 254-780V DC full range, 1.6A/400V AC, 4A/230V AC

Connection: Input - 3 poles, Output - 6 poles screw terminal Size (WxHxD): 85.5x125.2x128.5mm (3.37x4.93x5.06 inches)

Packaging: 1/box; 3.748lbs / 1.7Kg



# **PSW-120 Series Specifications**



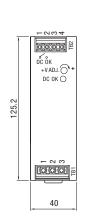


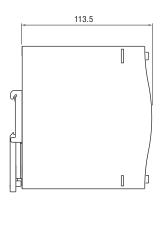




- $\bullet$  Single and two phase wide input range 180  $\sim$  550VAC
- Protections: Short Circuit / Overload / Over Voltage / Overtemperature
- Cooling by free air convection
- Built-in constant current limiting circuit
- DIN rail mountable
- UL508 (industrial control equipment) approved
- EN61000-6-2 (EN50082-2) industrial immunity level
- 100% full load burn-in test
- Built-in DC OK relay contact
- 3 year warranty

OUTPUT	Cat. No.	PSW-12012	PSW-12024	PSW-12048
	DC VOLTAGE	12V	24V	48V
	RATED CURRENT	10A	5A	2.5A
	CURRENT RANGE	0 ~ 10A	0 ~ 5A	0 ~ 2.5A
	RATED POWER	120W	120W	120W
	RIPPLE & NOISE (max)	120mVp-p	120mVp-p	150mVp-p
	Till I EE & Noise (max)		ridth by using a 12 twisted pair-wire terminated w	1 1 1
	VOLTAGE ADJ. RANGE	12 ~ 15V	24 ~ 29V	48 ~ 58V
	VOLTAGE TOLERANCE	±1.5%	±1.0%	±1.0%
	702.7.02 7022.7.1102	Tolerance: includes set up tolerance, line regulati		1=1.070
	LINE REGULATION	±0.5%	±0.5%	±0.5%
	LOAD REGULATION	±0.5%	±0.5%	±0.5%
	SETUP. RISE HOLD UP TIME		2000ms, 70ms, 10ms / 230VAC at full	· ·
INPUT	SETOI, HISE HOLD OF THME	, ,	art. Turning ON/OFF the power supply very quick r	
	VOLTAGE RANGE	180 ~ 550VAC 254	~ 780VDC	
	FREQUENCY RANGE	47 ~ 63Hz	100120	
	EFFICIENCY (Typ.)	89.5% / 400V	91% / 400V	92% / 400V
	AC CURRENT	0.55A / 400VAC 1.2A / 230VAC	91/8/4000	92/07 4000
	INRUSH CURRENT (Typ.)	COLD START 50A		
PROTECTION	LEAKAGE CURRENT	≤ 3.5 mA / 530VAC		
	OVERLOAD	105 ~ 130% rated output power		
		Protection type: Constant current limiting, recove	rs automatically after fault condition is removed	
	OVERVOLTAGE	16 ~ 18V	31 ~ 37V	60 ~ 67V
	OVERTEMPERATURE	Protection type: Shut down overvoltage, re-powe $105^{\circ}\text{C} \pm 5^{\circ}\text{C}$ (12V), $110^{\circ}\text{C} \pm 5^{\circ}\text{C}$ (24V) $100^{\circ}\text{C} \pm 5^{\circ}\text{C}$ (48V) (TSW1) detect on	) (TSW1) detect on heat sink of power	switch transistor;
		Protection type: Shut down overvoltage, re-powe	r automatically after temperature goes down	
ENVIRONMENT	DC OK SIGNAL	Relay contact rating (max.): 30V / 1A		
	WORKING TEMP.	-25 ~ +70°C (Refer to output load de	erating curve)	
	WORKING HUMIDITY	20 ~ 90% RH non-condensing	,	
	STORAGE TEMP., HUMIDITY	-40 ~ +85°C, 10 ~ 95% RH		
	TEMP. COEFFICIENT	±0.03% / °C (0 ~ 50°C)		
SAFETY & EMC	VIBRATION	,	nin. each long X,Y, Z axes Mounting cli	in: Compliance to IEC60068-2-6
ONI ETT & LINO		• •	040 10 19 19	p. 00pa00 to 1200000 2 0
	SAFETY STANDARDS	UL508 approved		
	WITHOTAND WOLTAGE	IEC60950-1 compliant	0/5 50 0 510/40 0/5 50 0/4 0 510	40
	WITHSTAND VOLTAGE		O/P-FG:0.5KVAC O/P-DC OK:0.5KV	AC
	ISOLATION RESISTANCE	I/P-0/P, I/P-FG, 0/P-FG: 100M 0hms/	,	_
		Compliance to EN55011 (CISPR11),		
	EMS IMMUNITY		,8,11; ENV50204; EN61204-3; EN610	00-6-2; (EN50082-2),
		heavy industry level; criteria A,		
		The power supply is considered a component wh	nich will installed into a final equipment. The final $\epsilon$	equipment must be
OTHERS		re-confirmed that it still meets EMC directives.		
	MTBF	268K hrs min. MIL-HDBK-217K (25	5°C)	
	DIMENSION	40x125.2x113.5mm (WxHxD)	,	
	PACKING	0.65Kg; 20pcs / 14Kg / 1.16CUFT		
	17.0.mg	• •	sured at 230V AC input, rated load and 25°C of an	phient temperature
		An parameters into a specially membrined are mea	waroa at 2008 Mo iliput, rateu idau aliu 20 6 di ali	wicht telliperature.

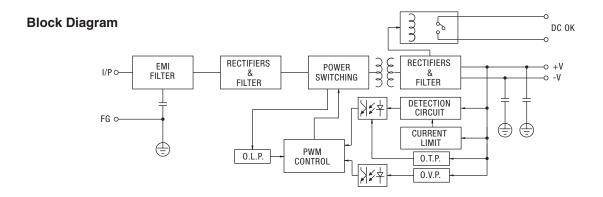




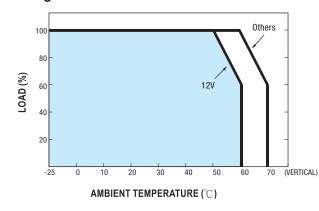
Pin No.	Assignment
1	FG ⊕
2	AC/L2
3	AC/L1

Terminal Pin No. Assignment (TB1) Terminal Pin No. Assignment (TB2)

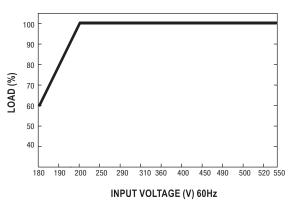
Pin No.	Assignment	
1,2	Relay Contact	
3	DC OUTPUT -V	
4	DC OUTPUT+V	



## **Derating Curve**



## **Static Characteristics**





# **PSW-240 Series Specifications**



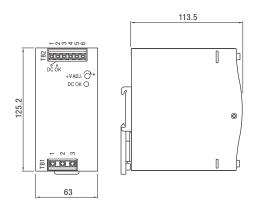






- Single and two phase wide input range 180~550VAC
- High efficiency 91% and low power dissipation
- Protections: Short Circuit / Overload / Over Voltage / Overtemperature
- Cooling by free air convection
- DIN rail mountable
- UL 508 (industrial control equipment) approved
- EN61000-6-2 (EN50082-2) industrial immunity level
- Built-in DC OK relay contact
- 100% full load burn-in test
- 3 year warranty

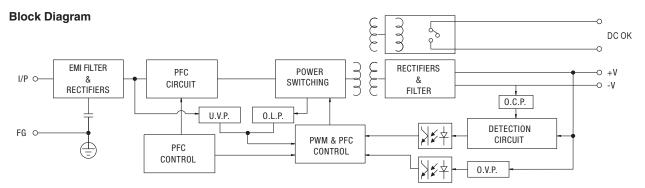
OUTPUT	Cat. No.	PSW-24024	PSW-24048
	DC VOLTAGE RATED CURRENT CURRENT RANGE RATED POWER RIPPLE & NOISE (max)	24V 10A 0 ~ 10A 240W 150mVp-p	48V 5A 0 ~ 5A 240W 150mVp-p
	VOLTAGE ADJ. RANGE VOLTAGE TOLERANCE		a 12 twisted pair-wire terminated with a 0.1µF & 47µF parallel capacito $48\sim55V$ $\pm1.0\%$
INPUT	LINE REGULATION LOAD REGULATION SETUP, RISE, HOLD UP TIME	±0.5% ±1.0%	±0.5% ±1.0% s, 150ms, 18ms / 230VAC at full load
PROTECTION	VOLTAGE RANGE FREQUENCY RANGE EFFICIENCY (Typ.) AC CURRENT INRUSH CURRENT (Typ.) LEAKAGE CURRENT	$180 \sim 550 \text{VAC} \qquad 254 \sim 780 \text{VDC}$ Derating may be needed under low input voltage. Please ch $47 \sim 63 \text{Hz}$ $91\%$ $1A \ / \ 400 \text{VAC} \qquad 2A \ / \ 230 \text{VAC}$ $\text{COLD START 50A}$ $\leq 3.5 \ \text{mA} \ / \ 530 \text{VAC}$	neck the derating curve for more details
	OVERLOAD  OVERVOLTAGE	29 ~ 33V Protection type: Shut down overvoltage, re-power on to reco	after 3 sec.; auto recovery after 1 minute if the fault condition is removed $56\sim65V$ overy power supply will shut down and then may have auto-recovery
ENVIRONMENT	OVERTEMPERATURE  DC OK RELAY CONTACT RATINGS (max.)	$90^{\circ}\text{C} \pm 5^{\circ}\text{C}$ (TSW) detect on heat sink of pow Protection type: Shut down overvoltage, reco 60VDC / 0.3A; $30VDC / 1A$ ; $30VAC / 0.5A$ re	vers automatically after temperature goes down
SAFETY & EMC	WORKING TEMP.  WORKING HUMIDITY STORAGE TEMP., HUMIDITY TEMP. COEFFICIENT VIBRATION MOUNTING	-30 ~ +70°C (Refer to output load derating c	urve) , 5mm on the left and right side are recommended when loaded a heat source, 15mm clearance is recommended.
OTHERS	SAFETY STANDARDS  WITHSTAND VOLTAGE ISOLATION RESISTANCE EMI CONDUCTION & RADIATION HARMONIC CURRENT EMS IMMUNITY	I/P-0/P, I/P-FG, 0/P-FG: $\geq$ 100M Ohms / 500 EN55022 (CISPR22), Class B Compliance to EN61000-3-2,-3	NV50204; EN 55024; EN61000-6-2; (EN50082-2); approved; stalled into a final equipment. The final
	MTBF DIMENSION PACKING	141.1K hrs min. MIL-HDBK-217K (25°C) 63x125.2x113.5mm (WxHxD) 1.06Kg; 12pcs / 13.7Kg / 1.06CUFT All parameters NOT specially mentioned are measured at 44	00VAC input, rated load and 25°C of ambient temperature.



Pin No.	Assignment
1	FG 🖶
2	AC/L2
3	AC/L1

Terminal Pin No. Assignment (TB1) Terminal Pin No. Assignment (TB2)

Pin No. Assignment	
1,2	Relay Contact
3,4	DC OUTPUT +V
5,6	DC OUTPUT -V



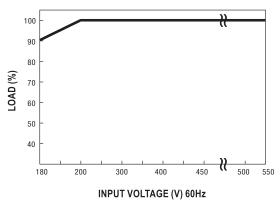
### **DC OK Relay Contact**

Contact Close	PSU turns on / DC OK.
Contact Open	PSU turns off / DC Fail.
Contact Ratings (max.)	30V/1A resistive load.

## **Derating Curve**

# 100 80 LOAD (%) 40 20 60 70 (VERTICAL) -30 AMBIENT TEMPERATURE (°C)

## **Output Derating VS Input Voltage**





# **PSW-480 Series Specifications**



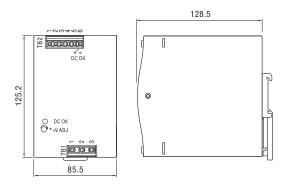






- Single and two phase wide input range 180~550VAC
- High efficiency 93% and low power dissipation
- Protections: Short Circuit / Overload / Over Voltage / Overtemperature
- Cooling by free air convection
- DIN rail mountable
- UL 508(industrial control equipment) approved
- EN61000-6-2 (EN50082-2) industrial immunity level
- Built-in DC OK relay contact
- 100% full load burn-in test
- 3 year warranty

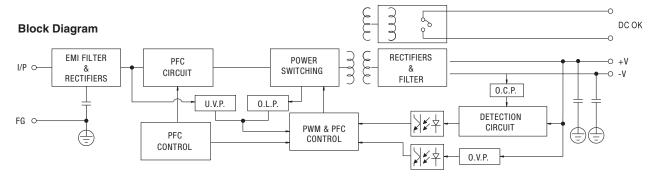
OUTPUT	Cat. No.	PSW-48024	PSW-48048
	DC VOLTAGE	24V	48V
	RATED CURRENT	20A	10A
	CURRENT RANGE	0 ~ 20A	0 ~ 10A
	RATED POWER	480W	480W
	RIPPLE & NOISE (max)	100mVp-p	150mVp-p
	VOLTAGE ADJ. RANGE	Rippie & noise are measured at 20MHz of bandwidth by using $1.24 \sim 28V$	a 12 twisted pair-wire terminated with a 0.1 $\mu$ F & 47 $\mu$ F parallel capacitor $48 \sim 55V$
	VOLTAGE TOLERANCE	±1.0%	±1.0%
	1021102 102210 1102	Tolerance: includes set up tolerance, line regulation and loa	
	LINE REGULATION	±0.5%	±0.5%
	LOAD REGULATION	±1.0%	±1.0%
INPUT	SETUP, RISE, HOLD UP TIME	800ms, 150ms, 18ms / 400VAC 2000m	ns, 150ms, 16ms / 230VAC at full load
	VOLTAGE RANGE	180 ~ 550VAC 254 ~ 780VDC	
		Derating may be needed under low input voltage. Please c	neck the derating curve for more details
	FREQUENCY RANGE	47 ~ 63Hz	
	EFFICIENCY (Typ.)	92%	93%
	AC CURRENT	1.6A / 400VAC 4A / 230VAC	
	INRUSH CURRENT (Typ.)	COLD START 50A	
PROTECTION	LEAKAGE CURRENT	≤ 3.5 mA / 530VAC	
	OVERLOAD	105 ~ 130% rated output power	
		Protection type: Constant current limiting, unit will shut down	after 3 sec.; auto recovery after 1 minute if the fault condition is removed
	OVERVOLTAGE	29 ~ 33V	56 ~ 65V
		Protection type: Shut down overvoltage; auto recovery afte	
		under over-voltage condition, if input voltage ≤ 200VAC, th several seconds.	e power supply will shut down and then may have auto-recovery afte
	OVERTEMPERATURE	$95^{\circ}\text{C} \pm 5^{\circ}\text{C}$ (TSW) detect on heat sink of pov	ver switch
	OVERTICINE EIGHTOILE	Protection type: Shut down overvoltage, recovers automatic	
<b>ENVIRONMENT</b>	DC OK RELAY CONTACT RATINGS (max.)	60VDC / 0.3A; 30VDC / 1A; 30VAC / 0.5A r	
	WORKING TEMP.	$-30 \sim +70^{\circ}$ C (Refer to output load derating of	curve)
			n, 5mm on the left and right side are recommended when loaded
	MODIVING LILIMIDITY	permanently with full power. In case the adjacent device is	a heat source, 15mm clearance is recommended.
	WORKING HUMIDITY	20 ~ 95% RH non-condensing	
	STORAGE TEMP., HUMIDITY TEMP. COEFFICIENT	-40 ~ +85°C; 10 ~ 95% RH ±0.03% / °C (0 ~ 50°C)	
	VIBRATION	10 ~ 500Hz, 2G 10min./1cycle, 60 min. eac	h long X V 7 aves
<b>SAFETY &amp; EMC</b>	MOUNTING	Compliance to IEC60068-2-6	11 1011g A, 1, 2 axes
07.0 21.1 & 2.00	SAFETY STANDARDS	·	
	SAFEIT STAINDANDS	UL508 approved IEC 60950-1 compliant	
		Design refer to GL	
	WITHSTAND VOLTAGE	•	:0.5KVAC 0/P-DC 0K:0.5KVAC
	ISOLATION RESISTANCE	I/P-0/P, I/P-FG, 0/P-FG: 100M 0hms / 500VI	
	EMI CONDUCTION & RADIATION	EN55022 (CISPR22), EN61204-3 Class B	(== =, ====,
	HARMONIC CURRENT	Compliance to EN61000-3-2,-3	
	EMS IMMUNITY	Compliance to EN61000-4-2,3,4,5,6,8,11; E EN61204-3; heavy industry level; criteria A	NV50204; EN 55024; EN61000-6-2; (EN50082-2); approved;
OTHERS		The power supply is considered a component which will in re-confirmed that it still meets EMC directives.	stalled into a final equipment. The final equipment must be
	MTBF	112.8K hrs min. MIL-HDBK-217K (25°C)	
	DIMENSION	85.5x125.2x128.5mm (WxHxD)	
	PACKING	1.7Kg; 8pcs / 14.6Kg / 0.9CUFT	
		All parameters NOT specially mentioned are measured at 4	00VAC input, rated load and 25°C of ambient temperature.



Terminal Pin No. Assignment (TB1) Terminal Pin No. Assignment (TB2)

Pin No.	Assignment
1	FG ⊕
2	AC/L2
3	AC/L1

	Pin No.	Assignment			
	1,2	DC OUTPUT +V			
	3,4	DC OUTPUT -V			
	5,6	Relay Contact			



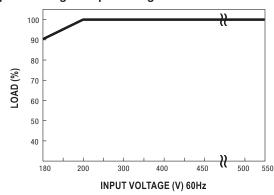
## **DC OK Relay Contact**

Contact Close	PSU turns on / DC OK.
Contact Open	PSU turns off / DC Fail.
Contact Ratings (max.)	30V/1A resistive load.

# **Derating Curve**

# 100 80 60 -30 0 10 20 30 40 50 60 70 (VERTICAL) AMBIENT TEMPERATURE (°C)

## **Output Derating VS Input Voltage**





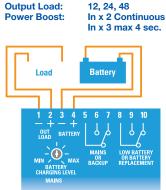
# Everything and more!

- More efficiency of the battery thanks to continuous control over time.
- · More monitoring in main connection nodes: input, output load, battery.
- Event logging: number of battery charging cycles, charge cycles completed, aborted charge cycles, Ah charged, charging time, total number of transitions stand-by /back-up etc.
- Event Management: checking the load output, shutdown management of PCs (UPS function), RESET management of a generic equipment.
- Flexibility of use: customization of the entire charging curve of the battery, battery type setting, setting of the various time-out algorithms of charge, setting boost voltage, absorption, float, etc... configuration as DC-UPS or batteries charger, enabling power supply function.

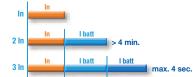
# **Power Continuity**

# DC-UPS = Power Supply + Battery Charger + Back Up Module

Double Output, Optimized Power Management. Thanks to the DC-UPS units, it will be possible to smart-manage available power. It will be automatically allocated between load and battery. Supplying power to the load is the first priority of the unit; thus it is not necessary to double the power, and also the power available for the battery will go to the load if the load requires so.



# In Power Boost mode the maximum current on the load output is the 2 times the rated current (2 x ln) in continuous operation and 3 times the rated current (3 x ln) for max. 4



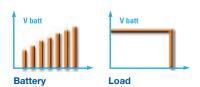
# **Time Buffering**

Time buffering is enabled when in back-up mode. Buffering time setting is possible by operating the rotary switch on the front panel.



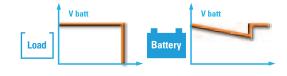
## **Smart Battery Management**

Load output will not be affected by battery conditions. The DC-UPS insures continuous power supply to the load even in conditions of completely discharged batteries. The automatic multi-stage operation optimizes and adapts to the battery status. DC-UPS can recharge deeply discharged batteries even when their voltage is close to zero, thus allowing recharge and complete recovery of flat batteries.



### **Avoid Deep Battery Discharge**

In case of mains failure, the battery will supply the load until battery voltage reaches 1.5 Vpc (Volt per cell). Below this level the device automatically switches off to prevent deep discharge and battery damage.



### **Adjustable Maximum Battery Charging Current**

The maximum battery charging current can be set from 10% to 100% of the device rated value.



# **Power Continuity**

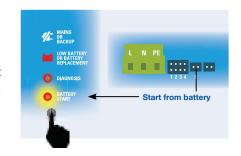
## **Start from Battery without Main**

If you want to restart the system while the mains is off, a battery restart function is available, via RTCONN cable connections, or via pushbutton in the front panel.



# Wide input voltage range

Flexibility is given also by the wide range input voltage. The range of the devices accept input voltage 120 - 230 - 277 - 400 - 500 VAC.





# One device for output 12 or 24 VDC

You can select the voltage between 12 or 24 VDC just before installing the device in your panel (available on selected products in the new Altech DC-UPS units).

# **Connection & Monitoring**

## **Monitor Signals**

Clear definition of each system oper-ation, via LED indications and Relay contact:

### Contact Port signals, galvanic insulation

- Main or back-up signaling relay with voltage-free. NO-NC output terminals.
- Battery faulty signaling relay, relay with voltage-free. NO-NC output terminals.
- Flat battery signaling relay, relay with voltage-free. NO-NC output terminals.

### **Display Signals by LED**

- Input Main On Off
- Battery Fault
- Low battery (capacity less than 30%)
- Type of Battery charge mode
- Help through "blinking code" the diagnosis of the system

### **Driver Contact**

Remote link for selection of trickle/ boost charging Via RTCONN remote connections cable it is possible to drive the devices from Boost - Bulk to Trickle - Float charge. It is also possible to permanently install a jumper for Boost - Bulk Charging.

### Accessories

All DC-UPS units can be made available with the following options by RJ45 or RJ11 connector:

Temperature sensor Probe, for ambient temperature compensation charging.



Voltage drop cable compensation.



Battery Start UP cable.



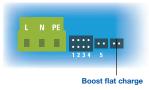
# Auxiliary output "Aux 2 and "Aux 3" MODBUS and CANBUS

MODBUS and CANBUS connection for Multimedia management, for connection to external displays and perform customized data monitoring. Connection to:

- Power View App
- Power View System
- Power Bus
- Power View Graphic
- Power View Bar Graph
   "
- Power View Config







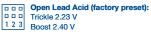


These devices are completely automatic and can charge any kind of battery using factory pre-set charging curves suitable to the most common battery technologies: open lead acid, sealed lead acid, lead gel, Ni-Cd and Ni-MH. These devices are very flexible and can be customized to meet the needs of the user and the requirements of the application. After the installation, it is possible to carry out functional software updates just using any laptop computer. Doing so, your system can always be updated to changing requirements. The Battery Care concept is based on algorithms that implement rapid and automatic charging, battery charge optimization during time, flat batteries recovery and real time diagnostic during installation and operation. Battery faults such as battery sulfated, elements in short circuit, accidental reverse polarity connection can easily be detected, identified and removed. The All in one Series meet the highest standards of quality and insure high reliability, with MTBF values up to 300.000 hours.

# **Battery Care**

# **One Device for All Battery Types**

All devices are suitable to charge most batteries types thank to user selectable charging curves. They can charge open lead acid, sealed lead acid, Gel, Ni-Cd, Ni-MH, Li Ion batteries. It is possible to change or add other charging curves connecting the device to a portable PC. Charging mode is then completely automatic.

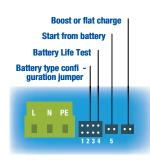








Optional: Ni/Cd, LI-Ion

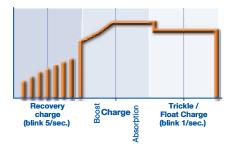


Boost or float charge

# Multi-Stage Charging / Four Charging Modes

Automatic multi-stage operation and real time diagnostic allows fast recharge and recovery of deeply discharged batteries, adding value and reliability to the system hosting the DC-UPS device. The type of charging is Voltages stabilized and Current stabilized IUoU. CBI battery chargers feature four charging modes, identified by a flashing code on a LED.

- Recovery (5 Blinks / sec) able to recharge batteries even when their voltage is close to zero.
- Boost Bulk (2 Blinks / sec).
- Absorption (1 Blinks / sec).
- Trickle Float (1 Blink / 2 sec).



# **Diagnosis of Battery and Device**

All CBI devices support the user during installation and operation. A LED flashing sequence code allows to discriminate among various possible faults. Error conditions, LED Fault ON and LED Diagnosis flashing with sequence of:

- 1 flash = Reverse polarity, wrong battery voltage
- 2 flashes= Disconnected battery
- 3 flashes = Battery element in short circuit
- 4 flashes = Overload
- 5 flashes = Battery to be replaced (Internal impedance Bad or Bad battery wire connection).



# **Battery Care**

# **Battery Life Test**

It guarantees battery reliability in time by continuously testing the internal impedance status. It avoids any possible risk of damages and grants also a permanent, reliable and safe connection of the battery to the power supply. The system, through a battery stimulation circuit with algorithms of evaluation of the detected parameter, is able to recognize sulfated batteries or batteries with a short-circuited cell.

# short-circuited cell. Temperature Compensation

In special application like fire fighting equipment, you can recharge the battery also with the temperature compensation charging function, for the best condition of your battery in the temperature fluctuation. Use Port# CBI-RJTEMP for this application.

# **Diagnostic Checks**

### Check for accidental disconnection of the battery cables.

DC-UPS detects accidental disconnection and immediately switches off output power.

### Battery not connected.

If the battery is not connected the battery output is disabled.

### Test of wire connection impedance.

During trickle charge the resistance on the battery connection is checked every 20 sec. This to detect if the cable connection has been properly made.

### Battery in open circuit or sulfated.

Every four hours DC-UPS tests of internal impedance, while in trickle charging mode.

### Reverse polarity check.

If the battery it is connected with inverted polarity, DC-UPS is automatically protected.

### Test of battery voltage connections.

Appropriate voltage check, to prevent connection of wrong battery types.

### End of charge check.

When the battery it is completely full, the device automatically switches to trickle charging mode.

### Check for battery cells in short circuit.

Thanks to specific testing algorithms, the DC-UPS recognize batteries with cells in internal short circuit.

### **Maximum Safety and Protection**

The DC-UPS series is designed to provide safe operation and long power supply and battery life. The following protections are standard features:

- Outputs protected against short circuit and overload
- Outputs in conformity to SELV and PELV conditions
- High insulation between primary and secondary
- Protection against deep battery discharge
- Protection against reverse polarity connection
- Detection of batteries with wrong rated voltage

All protections have automatic reset. No thermal fuse to be replaced. Robust construction and easy installation All the units in the range have aluminum casing, DIN rail fastening clip and are light and compact. IP20 protection degree.

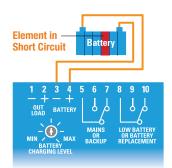
### Technology

The new DC-UPS range is based on two strategic know-how elements. Switching technology, we have 25 years of experience in design of advanced stabilized switching technology power supplies. A power supply/battery charger unit based on this technology is much more efficient.

Back UP Module and Battery Care units, unlike most other state-of-the-art battery chargers, the DC-UPS series is equipped with complex algorithms which controls the charging process and enable several monitoring functions. The firmware implements the extended battery care know-how, result of many years of experience in this field.

### Standards:

- IEC/EN 60335-2-29 Battery chargers
- EN60950 / UL60950
- EMC Directive
- DIN 41773 (Charging cycle)
- Electrical safety EN54-4 Fire Detection and fire alarm systems





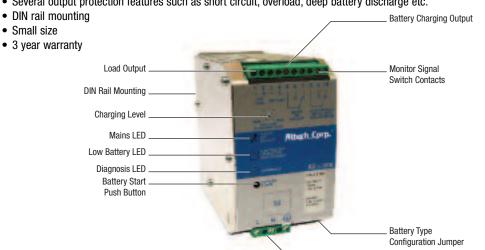
CBI All In One UPS Power Solutions combine the requirements for several applications in just one device which can be used as power supply unit, battery charger, battery care module or backup module. The available power is automatically distributed among load and battery, while supplying power to the load always is the first priority. The maximum available current of the load output is two times the value of the device's rated current.

If the device is disconnected from the main power source, the battery will supply the load until the battery voltage reaches 1.5 V per cell. This prevents the battery from deep discharge. CBI devices provide microprocessor controlled battery charging. Using algorithms, the battery's condition will be detected and based on that, an appropriate charging mode is chosen. The real-time diagnostics system will continuously monitor the charging progress and indicate possibly occurring faults such as elements in short circuit, accidental reverse polarity connection or disconnection of the battery by the battery fault LED and a flashing code of the diagnosis LED.

CBI All In One UPS Power Solutions are suitable for open/sealed lead acid-, lead gel- and optionally Ni-Cd batteries. By using the battery-select-jumper, it is possible to set predefined charging curves for those battery types. The available charging options are recovery-, boost- and trickle charge. All CB devices are built in a rugged metal case with a DIN rail mounting bracket.

### Features:

- · Power supply, battery charger, battery care module and backup module in one device
- · Three charging modes
- · Compact, rugged metal case
- Available in 12VDC, 24VDC and 48VDC
- Suitable for most common battery types
- · Adjustable charging current
- · Easy battery diagnosis and fault identification either by LED or external devices connected to fault
- Status contacts
- High efficiency up to 91% through switching technology
- Several output protection features such as short circuit, overload, deep battery discharge etc.



# **Battery Selection Chart**

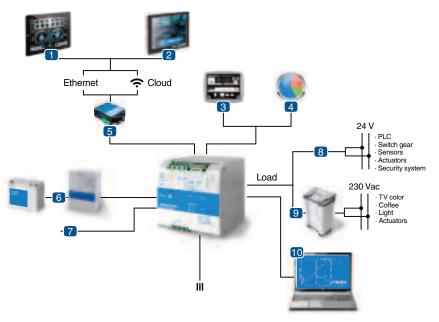
	Battery type	1.2 Ah	3.2 Ah	7.2 Ah	12 Ah
	Load 1.5 A	20	60	200	400
	Load 3 A	8	30	120	240
σ <u>M</u>	Load 5 A	3	15	55	100
BUFFERING (MINUTE) TIME	Load 7.5 A	2	10	30	60
	Load 10 A	-	7	20	45
	Load 12 A	-	3	12	30
	Load 15 A	-	-	9	20
	Load 20 A	-	-	7	13

The new communication platform for ALTECH CORP. devices allows the connection of all components in a simple but very powerful way. A single communication protocol based on MODbus-RTU or CANbus technology. You can select any of the two buses depending on the application. It allows to communicate with all the accessories provided by ALTECH CORP. and to develop an independent system for electrical continuity. At the same time, it allows monitoring and control all parameters in the system, even from the other side of the world, by means of application tools on the cloud.

ALTECH CORP. allows you to implement very simple but sophisticated monitoring and control for your energy system and opens your mind to new ways to approach your applications.

### 1 Power View App

System Monitoring Software APP for Tablet "Power View App", is an application for tablet, available in free download. With this App it is possible to connect to ALTECH CORP. cloud and visualize in real time data stored in your own account on the cloud. Data upload is possible through "Power Bus", an ALTECH CORP. MODBUS/Ethernet interface which connects the



DC-UPS MODBUS output to the cloud. Uploaded data can be battery voltage, charge current, discharge current, level of charge, charging mode, alarms, diagnostic signals and more. This allows monitoring of DC-UPS and battery status from any location. It just requires wireless internet connection via tablet.

### 2 Power View System

### Monitoring Software

"Power View System" is a PC-based software developed to monitor in real time every important parameter of the DCUPS/battery system. A simple and intuitive user's interface allows monitoring of battery parameters, load output, temperature sensor, mains presence and all alarm and diagnostic flags. All feature are displayed in a single screen.

### 3 Power View Graphic

### Multifunction Graphic Display

"Power View Graphic" is a Multifunction Graphic Display that can be connected by a single data/power cables to the MODBUS interface of a DC-UPS. It allows to display all parameters of the DC-UPS/battery system that can be accessed by moving through the various screens with a push button user's interface. The screen is back-lit and features a screen saver function for energy saving and longer life.

### 4 Power View Bar Graph

"Power View Bar Graph" is a circular LED display device for panel mount. Simple and sturdy, it displays the current charge mode, state of charge and system diagnostics at a glance.

### **5 Power Bus**

Interface Module MODBUS 485 - Ethernet and Cloud ALTECH CORP. provides a set of educated MODBUS interfaces that allow remote access to DC-UPS/battery data. Both Ethernet and Cloud communication is therefore made feasible.

### 6 Power Storage Devices

No matter how large or small the capacity of the battery storage needed in the system, ALTECH CORP. DC-UPS devices allow simple and effective integration. ALTECH CORP. has been a pioneer in the development of automatic charging and monitoring DC-UPS. Thanks to Adel Battery Care technology every battery will be taken care of and will last longer. Continuous system monitoring and life test checking allows preventive replacement and therefore increased system reliability. For a compact and optimized integration, ALTECH CORP. supplies Batt VRLA battery modules.

### 7 Temperature Compensated Charging

By installing the battery temperature probe "RJ Temp", the charge voltage is automatically adapted to battery temperatures. When the battery temperature is low, the charge voltage increases. Conversely, when battery temperature is high, charge voltage is decreased. Over charge and gassing are thus prevented. This will extend battery life, the specific goal of Adel Battery Care philosophy.

### 8 Load

The DC-UPS unit mission is to always keep the load supplied. The Load Output is the source of power for the whole electric system and has been designed to perform this duty under the most critical conditions, no matter if during stand-by or back-up modes.

### 9 Inverter

Among the loads there are sometime devices which requires AC power. In this case an inverter must be installed. ALTECH CORP. DC-UPSs allow connection of inverters up to 1500W.

### 10 Power View Config

System Configuration Software "Power View Config" is a PC-based software with simple and effective user interface that allows application engineer to configure the system, customize battery charging curve, set alarm thresholds, configure the parameters available for communication on the MODBUS output. Output Voltage: 12, 24, 48 Vdc.

# **Specifications**











**Size 1:** 65 mm x 115 mm x 135 mm Size 2: 100 mm x 115 mm x 135 mm Size 3: 150 mm x 115 mm x 135 mm

### Features:

- · Power supply, battery charger, battery care module and backup module in one device
  - Three charging modes
  - Several output protection modes
  - Compact, rugged metal case
- Available in 12VDC, 24VDC and 48VDC
- Suitable for most common battery types
- Three charging modes
- Adjustable charging current
- High efficiency up to 91% through switching technology
- DIN rail mounting
- Small size
- · 3 year warranty

# 12V DC SSingle Phase DIN Rail All In One UPS Power Solution

Cat. No.	Case*	Input VAC	Outp VDC	ut*   A	Recovery Charge VDC	Trickle Charge VDC	Boost Charge VDC	NOTES
CBI123A	1	115-230-277	12	3	2-9	13.75	14.4	
CBI126A	1	115-230-277	12	6	2-9	13.75	14.4	
CBI1210A	1	115-230-277	12	10	2-9	13.75	14.4	
CBI1235A	3	115-230-277	12	35	2-9	13.75	14.4	

# 24V DC Single Phase DIN Rail All In One UPS Power Solution

Cat. No.	Case*	Input VAC	Outp VDC	ut*   A	Recovery Charge VDC	Trickle Charge VDC	Boost Charge VDC	NOTES
CBI243A	1	115-230-277	24	3	2-16	27.5	28.8	
CBI245A	1	115-230-277	24	5	2-18	27.5	28.8	
CBI2410A	2	115-230-277	24	10	2-16	27.5	28.8	
CBI2420A	3	115-230-277	24	20	2-16	27.5	28.8	

# 48V DC Single Phase DIN Rail All-In-One UPS Power Solution

Cat. No.	Case*	Input VAC	Outp VDC	ut* A 	Recovery Charge VDC	Trickle Charge VDC	Boost Charge VDC	NOTES
CBI485A	2	115-230-277	48	5	2-24	55	57.6	
CBI4810A	3	115-230-277	48	10	2-24	55	57.6	

# Multi-Voltage DIN Rail All-In-One UPS Power Solution

Cat. No.	Case	e* Input VAC	Outr VDC		Recovery Charge VDC	Trickle Charge VDC	Boost Charge VDC	NOTES
CBI280 3648A	2	115-230-277	36/ 48	7/ 5	2-24	41/55	43.2/ 57.6	
CBI280 1224A	2	115-230-277	12/24	15/ 10	2-18	13.75/ 27.5	14.4/ 28.8	
CBI280 1224B	2	230-400-500	12/ 24	15/ 10	2-16	13.75/ 27.5	14.4/ 28.8	

\*= Output Current can be adjusted from 20%-100% of value given above

### Case 1



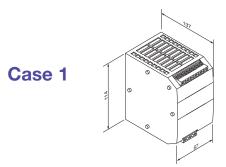
### Case 2



### Case 3



## **SPECIFICATIONS**



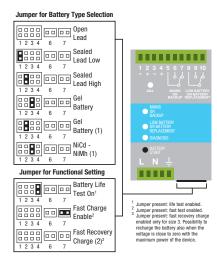
Input Voltage: 115 - 230 - 277 VAC Input Current: 2.8-1.3A (115-230VAC)

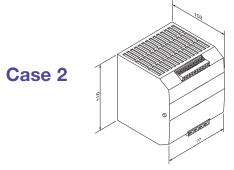
Connection: screw terminal blocks for wires 0.2-2.5mm2 / AWG 24-14

Size (WxHxD): 65x115x135 mm

Packaging:

0.6kg





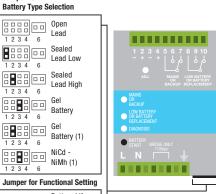
Input Voltage: 115 / 230 - 277 VAC Input Current: 3.3-2.2A (115-230VAC)

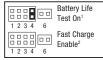
Connection: screw terminal blocks for wires

0.2-2.5mm<sup>2</sup> / AWG 24-14

Size (WxHxD): 100x115x135 mm

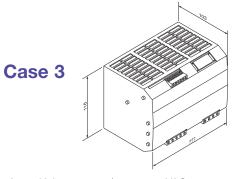
Packaging: 0.85kg





Jumper for





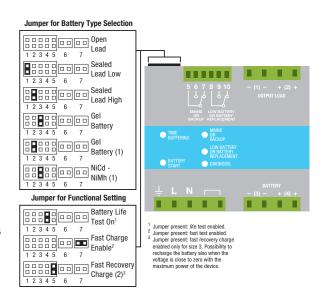
Input Voltage: 115 / 230 - 277 VAC Input Current: 8-4.2A (115-230VAC)

Connection: screw terminal blocks for wires

4mm<sup>2</sup> / AWG 30-10

**Size (WxHxD):** 150x115x135 mm

Packaging: 1.55kg





# **CBI123A** DC UPS









### **Features:**

- Input: Single-phase 115 277 VAC
- Output Load: power supply 12 VDC; 3 A
- Output: Battery charging 12 VDC; 3 A
- Suited for the following battery types: Open Lead Acid, Sealed Lead Acid, lead Gel and Ni-Cd (option)
- · Automatic diagnostic of battery status.
- Switching technology, output voltage 10-14.4 VDC
- Three charging levels: Boost, trickle and recovery
- · Protection degree IP20 DIN rail mountable

# **INPUT**

# **OUTPUT**

### **PROTECTION**

# LOAD OUTPUT

## BATTERY OUTPUT

### **OTHERS**

Gal. NO.	UDITZSA
Nominal Input Voltage	115 ~ 230
Voltago rango	00 205 1//

Voltage range Inrush Current ( $V_n - I_n$  nom. Load).  $I^2t$ Frequency Input Current (115 - 230 VAC) Internal fuse (factory replaceable) External Fuse (recommended) MCB curve B

Start up with Strong Load (capacitive load)

Output Voltage (Vn) / Nominal Current (In) Output Current In Efficiency (at 50% of rated current) Turn-On delay after applying input voltage

Dissipation power load max Short-circuit protection

Over Load protection Over Voltage Output protection Over Temperature protection

Output voltage (at In) Nominal current I<sub>load</sub> Continuous current (without battery)  $I_{\text{load}} = I_n$ Continuous current (with battery)  $I_{\text{load}} {=} \ I_{\text{n}} {+} \ I_{\text{batt}}$ Max. Current Output Load (Main)  $III_{load}$  (4 sec.) Max. Current Output Load (Back Up)  $I_{\text{load}}$  (4 sec.) Push Button or Remote Input Control (RTCONN cable)

Time Buffering; min (switch output off without main input) Protection alarm against total discharge Threshold alarm for battery almost flat

~ 277 VAC - 305 VAC  $\leq$ 11 A  $\leq$  5 msec 47 - 63 Hz $2.8 \sim 1.3 A$ 4 A 10 A

12 VDC / 3A 3 A ≥ 90 % 1 sec. (max) Yes, Unlimited 9 W

Yes

Yes

10 ~ 14.4 VDC  $1.1 \times \ln A \pm 5\%$ 

Yes (typ. 35 VDC)

3 A 6 A 9 A max. 6 A max.

14.4 VDC

Start From Battery Without Main ∞: standard 5 min.: Require SW 9-10V DC battery

Boost charge (25 °C) (at I<sub>n</sub>) Max. time Bust Charge Min. time Bust Charge Trickle charge (25 °C) (at I<sub>n</sub>) Jumper Configuration battery type (V cell) Ni-Cd (optional) Recovery Charge Charging current max Ibatt Charging current limiting I<sub>adj</sub>

Reverse battery protection Sulfated battery check Detection of element in short circuit

Quiescent Current Charging Curve automatic:  $I_{\text{UoUo}}$ Remote Input Control (RTCONN cable) 15 h 1 min. 13.75 VDC 2.23; 2.25; 2.27; 2.30; NiCd: 1.50 (10 elem.)

2 ~ 9 VDC  $3A \pm 5\%$ 20 - 100 % / lbatt Yes Yes by Jumper Yes

 $\leq 100 \text{ mA}$ 

-25 - +70°C

- 2.5%(In) / °C

10-11 V DC battery

3 stage Boost /Trickle / Recovery

Ambient temperature (operation) De Rating Ta > 50°C Ambient temperature Storage Humidity at 25 °C no condensation Cooling MTBF

-40 - +85°C 95% Auto convention > 300.000 h (IEC 61709)

# CBI123A DC UPS

Altech Corp.

The Altech DC-UPS system is built to optimize power management. The available power is automatically allocated between load and battery, supplying power to the load is the first priority. For high inrush applications the charging power will reroute automatically to the load. In this case the maximum available current on the load output is two times the value of the device rated current.

The Battery Care concept based on algorithms that achieve rapid and automatic charging, battery optimization during charging time, flat batteries recovery and real time diagnostic The Real Time Auto-diagnostic system, monitors battery faults, sulfated battery, short circuit battery elements, reverse polarity connection, battery disconnect. This conditions are detected and identified by the number of blinks of the diagnosis Led.

### **Signal Output Contacts**

Main or Backup Power	Yes
Battery Power Low	Yes
Battery Fault	Yes
Max. Current Rating (Resistive Load)	1A 30 VDC/60 VAC
Minimum Permissible Current Rating	1mA @ 5 VDC

### **RJ45 Connection Input / Output**

Temp. Comp. Battery (with ext. probe)	Yes - Optional
Remote monitoring display	Yes - Optional
Can Bus	No

### **Environment**

Insulation voltage (IN/OUT)	3000 VAC
Insulation voltage (input / ground)	1605 VAC
Insulation voltage (Output / ground)	500 VAC
Protection Class (EN/IEC 60529)	IP20
Pollution Degree Environment	2
Connection TB, Screw Terminal	2,5 mm <sup>2</sup> (24-14AWG)
Protection class (Ground Connected)	Class I
Dimensions (WxHxD)	65x115x135 mm
2.56x4.53x5.32 in	
Weight (approx.)	0.6 kg (1.35 Lbs)

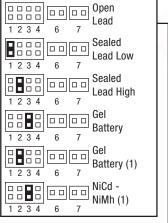
### Safety and EMC

Battery charger standard compliance	IEC/EN 60335-2-29
Safety standards compliance:	EN60950 / UL1950 / CE
Fire Detection and alarm compliance	EN54-4
EMC Directive	89/336/EEC
Charging cycle	DIN41773
Emission	IEC 61000-6-4
Immunity	IEC 61000-6-2

The Altech DC-UPS system is designed to charge and monitor all battery types, by selecting the battery type via jumpers. The predefined curves include Open Lead Acid, Sealed Lead Acid, Gel, Ni-Cd (optional) battery types. The charging curve are programmed to automatically switch between Recovery Charge, Boost charge and Trickle charge. The continuous battery efficiency monitoring, reduces battery damage risk and allows a safe operation in permanent connection.

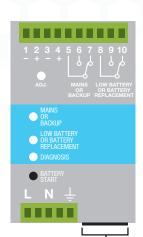
A compact and rugged metal case with DIN rail mounting bracket provide an easy installation and an IP20 protection.

#### **Jumper for Battery Type Selection**



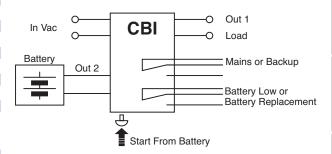
#### **Jumper for Functional Setting**

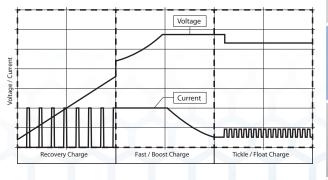
	Battery Life Test On <sup>1</sup>
1 2 3 4	6 7
	Fast Charge Enable <sup>2</sup>
1 2 3 4	6 7
1 2 3 4	Fast Recovery Charge (2) <sup>3</sup>



Jumper present: life test enabled.

Jumper present: fast test enabled.
 Jumper present: fast recovery charge enabled only for size 3. Possibility to recharge the battery also when the voltage is close to zero with the maximum power of the device.





DSC Class 2 Series

PSA FIEX SEries

PSB Flex Series

PS-S Slim Series

os Low Profile Ser.

os Industrial Serie

PSC 8W Series

CBI Type

CB Type Chargers

Accessorie

Appendix



# **CBI126A** DC UPS



Cooling

MTBF (IEC 61709)







### Features:

- Input: Single-phase 115 277 VAC
- Output Load: power supply 12 VDC; 6 A
- Output: Battery charging 12 VDC; 6 A
- · Suited for the following battery types: Open Lead Acid, Sealed Lead Acid, lead Gel and Ni-Cd (option)
- · Automatic diagnostic of battery status.
- Switching technology, output voltage 10-14.4 VDC
- Three charging levels: Boost, trickle and recovery
- Protection degree IP20 DIN rail mountable

# **INPUT**

# **OUTPUT**

## **PROTECTION**

## LOAD OUTPUT

## **BATTERY** OUTPUT

## **OTHERS**

Cat. No.	CBI126A
Nominal Input Voltage	115 ~ 230 ~ 277 VAC
Voltage range	90 – 305 VAC
Inrush Current (V <sub>n</sub> – I <sub>n</sub> nom. Load). I <sup>2</sup> t	≤11 A ≤ 5 msec
Frequency	47 – 63 Hz
Input Current (115 – 230 VAC)	2.8 ~ 1.3 A
Internal fuse (factory replaceable)	4 A
External Fuse (recommended) MCB curve B	10 A
Output Voltage (V <sub>n</sub> ) / Nominal Current (I <sub>n</sub> )	12 VDC / 6A
Output Current I <sub>n</sub>	6 A
Efficiency (at 50% of rated current)	≥ 90 %
Turn-On delay after applying input voltage	1 sec. (max)
Start up with Strong Load (capacitive load)	Yes, Unlimited
Dissipation power load max	17 W
Short-circuit protection	Yes
Over Load protection	Yes
Over Voltage Output protection	Yes (typ. 35 VDC)
Over Temperature protection	Yes
Output voltage (at I <sub>n</sub> )	10 ~ 14.4 VDC
Nominal current I <sub>load</sub>	1.1 x ln A $\pm$ 5%
Continuous current (without battery) $I_{load} = I_n$	6 A
Continuous current (with battery) $I_{load} = I_n + I_{batt}$	12 A
Max. Current Output Load (Main) I <sub>load</sub> (4 sec.)	18 A max.
Max. Current Output Load (Back Up) I <sub>load</sub> (4 sec.)	12 A max.
Push Button or Remote Input Control (RTCONN cable)	Start From Battery Without Main
Time Buffering; min (switch output off without main input)	∞: standard 5 min.: Require SW
Protection alarm against total discharge	9-10 VDC battery voltage
Threshold alarm for battery almost flat	10-11 VDC battery voltage
Boost charge (25 °C) (at I <sub>n</sub> )	14.4 VDC
Max. time Bust Charge	15 h
Min. time Bust Charge	1 min.
Trickle charge (25 °C) (at I <sub>n</sub> )	13.75 VDC
Jumper Configuration battery type (V cell) Ni-Cd (optional)	2.23; 2.25; 2.27; 2.30; NiCd: 1.50 (10 elem.)
Recovery Charge	2 ~ 9 VDC
Charging current max I <sub>batt</sub>	6 A ± 5%
Charging current limiting I <sub>adj</sub>	20 – 100 % / lbatt
Reverse battery protection	Yes
Sulfated battery check	Yes by Jumper
Detection of element in short circuit	Yes
Quiescent Current	≤ 100 mA
Charging Curve automatic: I <sub>UoUo</sub>	3 stage
Remote Input Control (RTCONN cable)	Boost /Trickle / Recovery
Ambient temperature (operation)	-25 - +70°C
De Rating Ta > 50°C	- 2.5%(In) / °C
Ambient temperature Storage	-40 - +85°C
Humidity at 25°C no condensation	95%
Cooling	Auto convention

Auto convention

> 300.000 h



## **CBI126A** DC UPS

The Altech DC-UPS system is built to optimize power management. The available power is automatically allocated between load and battery, supplying power to the load is the first priority. For high inrush applications the charging power will reroute automatically to the load. In this case the maximum available current on the load output is two times the value of the device rated current.

The Battery Care concept based on algorithms that achieve rapid and automatic charging, battery optimization during charging time, flat batteries recovery and real time diagnostic The Real Time Auto-diagnostic system, monitors battery faults, sulfated battery, short circuit battery elements, reverse polarity connection, battery disconnect. This conditions are detected and identified by the number of blinks of the diagnosis Led.

#### **Signal Output Contacts**

Main or Backup Power	Yes
Battery Power Low	Yes
Battery Fault	Yes
Max. Current Rating (Resistive Load)	1A 30 VDC/60 VAC
Minimum Permissible Current Rating	1mA @ 5 VDC

#### **RJ45 Connection Input/Output**

Temp. Comp. Battery (with ext. probe)	Yes - Optional
Remote monitoring display	Yes - Optional
Can Bus	No

#### **Environment**

Insulation voltage (IN/OUT)	3000 VAC
Insulation voltage (input / ground)	1605 VAC
Insulation voltage (Output / ground)	500 VAC
Protection Class (EN/IEC 60529)	IP20
Pollution Degree Environment	2
Connection TB, Screw Terminal	2,5 mm <sup>2</sup> (24-14AWG)
Protection class (Ground Connected)	Class I
Dimensions (WxHxD)	65x115x135 mm
2.56x4.53x5.32 in	
Weight (approx.)	0.6 kg (1.35 Lbs)

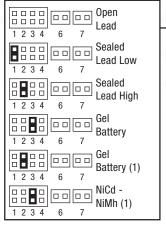
#### Safety and EMC

Battery charger standard compliance	IEC/EN 60335-2-29
Safety standards compliance:	EN60950 / UL1950 / CE
Fire Detection and alarm compliance	EN54-4
EMC Directive	89/336/EEC
Charging cycle	DIN41773
Emission	IEC 61000-6-4
Immunity	IEC 61000-6-2

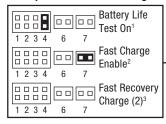
The Altech DC-UPS system is designed to charge and monitor all battery types, by selecting the battery type via jumpers. The predefined curves include Open Lead Acid, Sealed Lead Acid, Gel, Ni-Cd (optional) battery types. The charging curve are programmed to automatically switch between Recovery Charge, Boost charge and Trickle charge. The continuous battery efficiency monitoring, reduces battery damage risk and allows a safe operation in permanent connection.

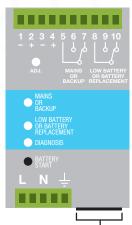
A compact and rugged metal case with DIN rail mounting bracket provide an easy installation and an IP20 protection.

#### **Jumper for Battery Type Selection**



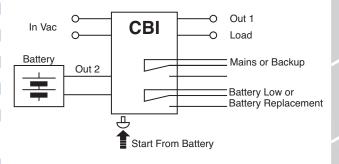
#### **Jumper for Functional Setting**

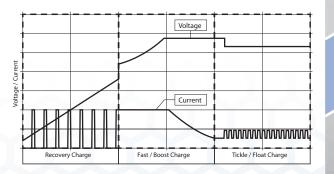




Jumper present: life test enabled Jumper present: fast test enabled. Jumper present: fast recovery charge enabled only for size 3. Possibility to recharge the battery also when the voltage is close to zero with the

maximum power of the device.







## **CBI1210A** DC UPS









#### **Features:**

- Input: Single-phase 115 277 VAC
- Output Load: power supply 12 VDC; 10 A
- Output: Battery charging 12 VDC; 10 A
- Suited for the following battery types: Open Lead Acid, Sealed Lead Acid, lead Gel and Ni-Cd (option)
- · Automatic diagnostic of battery status.
- Switching technology, output voltage 10-14.4 VDC
- Three charging levels: Boost, trickle and recovery
- · Protection degree IP20 DIN rail mountable

### **INPUT**

## **OUTPUT**

## **PROTECTION**

## LOAD **OUTPUT**

### BATTERY OUTPUT

### **OTHERS**

Cat. No.	CBI1210A	
Nominal Input Voltage	115 ~ 230 ~ 277 VAC	
Voltage range	90 – 305 VAC	
Inrush Current (V <sub>n</sub> – I <sub>n</sub> nom. Load). I <sup>2</sup> t	≤11 A ≤ 5 msec	
Frequency	47 – 63 Hz	
Input Current (115 – 230 VAC)	2.8 ~ 1.3 A	
Internal fuse (factory replaceable)	4 A	
External Fuse (recommended) MCB curve B	10 A	
Output Voltage (V <sub>n</sub> ) / Nominal Current (I <sub>n</sub> )	12 VDC / 10A	
Output Current I <sub>n</sub>	10 A	
Efficiency (at 50% of rated current)	≥ 90 %	
Turn-On delay after applying input voltage	1 sec. (max)	
Start up with Strong Load (capacitive load)	Yes, Unlimited	
Dissipation power load max	17 W	
Short-circuit protection	Yes	
Over Load protection	Yes	
Over Voltage Output protection	Yes (typ. 35 VDC)	
Over Temperature protection	Yes	
Output voltage (at In)	10 ~ 14.4 VDC	
Nominal current I <sub>load</sub>	1.1 x ln A $\pm$ 5%	
Continuous current (without battery) $I_{load} = I_n$	10 A	
Continuous current (with battery) $I_{load} = I_n + I_{batt}$	20 A	
Max. Current Output Load (Main) I <sub>load</sub> (4 sec.)	30 A max.	
Max. Current Output Load (Back Up) I <sub>load</sub> (4 sec.)	20 A max.	
Push Button or Remote Input Control (RTCONN cable)	Start From Battery Without Main	
Time Buffering; min (switch output off without main input)	∞: standard 5 min.: Require SW	
Protection alarm against total discharge	9-10V DC battery	
Threshold alarm for battery almost flat	10-11 V DC battery	
Boost charge (25 °C) (at I <sub>n</sub> )	14.4 VDC	
Max. time Bust Charge	15 h	
Min. time Bust Charge	1 min.	

Trickle charge (25 °C) (at I<sub>n</sub>) Jumper Configuration battery type (V cell) Ni-Cd (optional) 2.23; 2.25; 2.27; 2.30; NiCd: 1.50 (10 elem.) Recovery Charge 2 ~ 9 VDC Charging current max Ibatt  $10 A \pm 5\%$ Charging current limiting  $I_{adj}$ 20 - 100 % / lbatt Reverse battery protection Yes Sulfated battery check Yes by Jumper Detection of element in short circuit Yes Quiescent Current  $\leq 100 \text{ mA}$ 

Charging Curve automatic:  $I_{\text{UoUo}}$ 3 stage Boost /Trickle / Recovery Remote Input Control (RTCONN cable)

Ambient temperature (operation) -25 - +70°C De Rating Ta > 50°C - 2.5%(In) / °C -40 - +85°C Ambient temperature Storage Humidity at 25°C no condensation 95% Cooling Auto convention MTBF > 300.000 h (IEC 61709)

# Altech Corp.

## CBI1210A DC UPS

The Altech DC-UPS system is built to optimize power management. The available power is automatically allocated between load and battery, supplying power to the load is the first priority. For high inrush applications the charging power will reroute automatically to the load. In this case the maximum available current on the load output is two times the value of the device rated current.

The Battery Care concept based on algorithms that achieve rapid and automatic charging, battery optimization during charging time, flat batteries recovery and real time diagnostic The Real Time Auto-diagnostic system, monitors battery faults, sulfated battery, short circuit battery elements, reverse polarity connection, battery disconnect. This conditions are detected and identified by the number of blinks of the diagnosis Led.

#### **Signal Output Contacts**

Main or Backup Power	Yes
Battery Power Low	Yes
Battery Fault	Yes
Max. Current Rating (Resistive Load)	1A 30 VDC/60 VAC
Minimum Permissible Current Rating	1mA @ 5 VDC

#### **RJ45 Connection Input/Output**

Temp. Comp. Battery (with ext. probe)	Yes - Optional
Remote monitoring display	Yes - Optional
Can Bus	No

#### **Environment**

Insulation voltage (IN/OUT)	3000 VAC
Insulation voltage (input / ground)	1605 VAC
Insulation voltage (Output / ground)	500 VAC
Protection Class (EN/IEC 60529)	IP20
Pollution Degree Environment	2
Connection TB, Screw Terminal	2,5 mm <sup>2</sup> (24-14AWG)
Protection class (Ground Connected)	Class I
Dimensions (WxHxD)	65x115x135 mm
2.56x4.53x5.32 in	
Weight (approx.)	0.6 kg (1.35 Lbs)

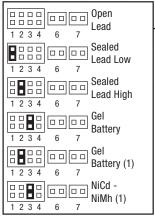
#### Safety and EMC

Battery charger standard compliance	IEC/EN 60335-2-29
Safety standards compliance:	EN60950 / UL1950 / CE
Fire Detection and alarm compliance	EN54-4
EMC Directive	89/336/EEC
Charging cycle	DIN41773
Emission	IEC 61000-6-4
Immunity	IEC 61000-6-2

The Altech DC-UPS system is designed to charge and monitor all battery types, by selecting the battery type via jumpers. The predefined curves include Open Lead Acid, Sealed Lead Acid, Gel, Ni-Cd (optional) battery types. The charging curve are programmed to automatically switch between Recovery Charge, Boost charge and Trickle charge. The continuous battery efficiency monitoring, reduces battery damage risk and allows a safe operation in permanent connection.

A compact and rugged metal case with DIN rail mounting bracket provide an easy installation and an IP20 protection.

#### **Jumper for Battery Type Selection**

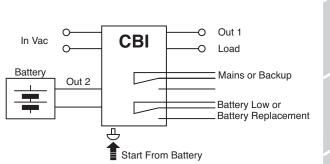


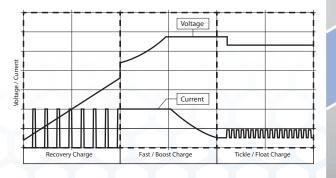
#### Jumper for Functional Setting

Juliipei	ioi runctional setting
	Battery Life Test On <sup>1</sup>
	6 7 Fast Charge Enable <sup>2</sup>
1 2 3 4	6 7 Fast Recovery Charge (2) <sup>3</sup>



Jumper present: life test enabled.
Jumper present: fast test enabled.
Jumper present: fast recovery charge enabled only for size 3. Possibility to recharge the battery also when the voltage is close to zero with the maximum power of the device.





PSC Class 2 Series

OSA FIRX Series

PSB Flex Series

PS-S Slim Series

S LOW Profile Series

os Industrial Serie

PSC 8W Series

CBI TYPE OCUPS SYSTEMS

CB Type Chargers

Accessorie

Appendix



## **CBI1235A** DC UPS









#### **Features:**

- Input: Single-phase 115 277 VAC
- Output Load: power supply 12 VDC; 35 A
- Output: Battery charging 12 VDC; 35 A
- Suited for the following battery types:
  - Open Lead Acid, Sealed Lead Acid, lead Gel and Ni-Cd (option)
- Automatic diagnostic of battery status.

- Switching technology, output voltage 10-14.4 VDC
- Three charging levels: Boost, trickle and recovery
- Protection degree IP20 DIN rail mountable

### **INPUT**

## OUTPUT

## **PROTECTION**

## LOAD OUTPUT

### **BATTERY** OUTPUT

### **OTHERS**

Cat. No.	CBI1235A
Nominal Input Voltage	115 / 230 ~ 277 VAC
Voltage range	90 - 135 / 180-305 VAC

Voltage range Inrush Current ( $V_n - I_n$  nom. Load).  $I^2t$ Frequency Input Current (115 - 230 VAC) Internal fuse (factory replaceable) External Fuse (recommended) MCB curve B

Output Voltage (Vn) / Nominal Current (In) Output Current In Efficiency (at 50% of rated current) Turn-On delay after applying input voltage Start up with Strong Load (capacitive load) Dissipation power load max

Short-circuit protection Over Load protection Over Voltage Output protection Over Temperature protection

Recovery Charge

Charging current max Ibatt

Reverse battery protection

Sulfated battery check

Quiescent Current

De Rating Ta > 50°C

MTBF (IEC 61709)

Cooling

Charging current limiting I<sub>adj</sub>

Detection of element in short circuit

Charging Curve automatic:  $I_{\text{UoUo}}$ 

Ambient temperature (operation)

Humidity at 25°C no condensation

Ambient temperature Storage

Output voltage (at In) Nominal current  $I_{\text{load}}$ Continuous current (without battery)  $I_{\text{load}} = I_n$ Continuous current (with battery)  $I_{\text{load}} {=} \ I_{\text{n}} {+} \ I_{\text{batt}}$ Max. Current Output Load (Main)  $I_{load}$  (4 sec.) Max. Current Output Load (Back Up)  $I_{\text{load}}$  (4 sec.) Push Button or Remote Input Control (RTCONN cable) Protection alarm against total discharge

Time Buffering; min (switch output off without main input) Threshold alarm for battery almost flat Boost charge (25 °C) (at I<sub>n</sub>) Max. time Bust Charge Min. time Bust Charge Trickle charge (25 °C) (at I<sub>n</sub>)

Jumper Configuration battery type (V cell) Ni-Cd (optional)

10-11 V DC battery 14.4 VDC 15 h 1 min. 13.75 VDC 2.23; 2.25; 2.27; 2.30; NiCd: 1.50 (10 elem.) 2 ~ 9 VDC  $35 A \pm 5\%$ 20 - 100 % / lbatt Yes

Remote Input Control (RTCONN cable)

-25 - +70°C - 2.5%(In) / °C -40 - +85°C 95% Auto convention > 300.000 h

12 VDC / 35A 35 A

 $\leq$ 35 A  $\leq$  5 msec

47 - 63 Hz

 $8 \sim 4.2 \, A$ 

10 A

16 A

≥ 91 % 1 sec. (max) Yes, Unlimited 48 W

Yes Yes

Yes (typ. 35 VDC) Yes

10 ~ 14.4 VDC  $1.1 \times \ln A \pm 5\%$ 35 A 70 A

105 A max. 70 A max.

Start From Battery Without Main  $0.5,1,3,5,10,15,20,30,45,60,\infty$ ; Require SW 9-10V DC battery

Yes by Jumper Yes

 $\leq 100 \text{ mA}$ 3 stage Boost /Trickle / Recovery



## CBI1235A DC UPS

The Altech DC-UPS system is built to optimize power management. The available power is automatically allocated between load and battery, supplying power to the load is the first priority. For high inrush applications the charging power will reroute automatically to the load. In this case the maximum available current on the load output is two times the value of the device rated current.

The Battery Care concept based on algorithms that achieve rapid and automatic charging, battery optimization during charging time, flat batteries recovery and real time diagnostic The Real Time Auto-diagnostic system, monitors battery faults, sulfated battery, short circuit battery elements, reverse polarity connection, battery disconnect. This conditions are detected and identified by the number of blinks of the diagnosis Led.

#### **Signal Output Contacts**

Main or Backup Power	Yes
Battery Power Low	Yes
Battery Fault	Yes
Max. Current Rating (Resistive Load)	1A 30 VDC/60 VAC
Minimum Permissible Current Rating	1mA @ 5 VDC

#### **RJ45 Connection Input/Output**

Temp. Comp. Battery (with ext. probe)	Yes - Optional	
Remote monitoring display	Yes - Optional	
Can Bus	Yes - Optional	

#### **Environment**

Insulation voltage (IN/OUT)	3000 VAC
Insulation voltage (input / ground)	1605 VAC
Insulation voltage (Output / ground)	500 VAC
Protection Class (EN/IEC 60529)	IP20
Pollution Degree Environment	2
Connection TB, Screw Terminal	4 mm <sup>2</sup> (30-10AWG)
Protection class (Ground Connected)	Class I
Dimensions (WxHxD)	150x115x135 mm
5.91x4.53x5.32 in	
Weight (approx.)	1.55 kg (3.5 Lbs)

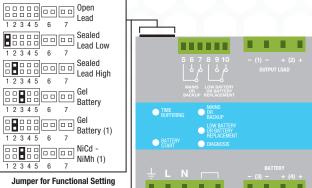
#### Safety and EMC

Salety allu EIVIG	
Battery charger standard compliance	IEC/EN 60335-2-29
Safety standards compliance:	EN60950 / UL1950 / CE
Fire Detection and alarm compliance	EN54-4
EMC Directive	89/336/EEC
Charging cycle	DIN41773
Emission	IEC 61000-6-4
Immunity	IEC 61000-6-2

The Altech DC-UPS system is designed to charge and monitor all battery types, by selecting the battery type via jumpers. The predefined curves include Open Lead Acid, Sealed Lead Acid, Gel, Ni-Cd (optional) battery types. The charging curve are programmed to automatically switch between Recovery Charge, Boost charge and Trickle charge. The continuous battery efficiency monitoring, reduces battery damage risk and allows a safe operation in permanent connection.

A compact and rugged metal case with DIN rail mounting bracket provide an easy installation and an IP20 protection.

#### **Jumper for Battery Type Selection**

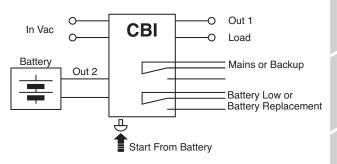


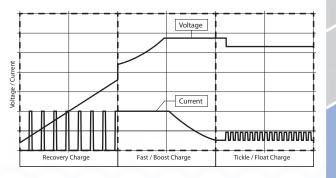
## Pattory Life

Test On	١
1 2 3 4 5 6 7	l
Fast Charge	ļ
1 2 3 4 5 6 7	l
Fast Recovery	

Jumper present: life test enabled.

Jumper present: last recovery charge enabled only for size 3. Possibility to recharge the battery also when the voltage is close to zero with the maximum power of the device.





DSC Class 2 Series

PSA FIEX SEries

PSB Flex Series

PS-S Slim Series

os Low Profile Ser.

os Industrial Serie

PSC 8 W Series

CBI Type

CB Type Chargers

• ccessories

Appendix



## **INPUT**

## **OUTPUT**

## **PROTECTION**

## LOAD OUTPUT

### **BATTERY** OUTPUT

## **OTHERS**

## **CBI243A** DC UPS



MTBF (IEC 61709)









#### Features:

- Input: Single-phase 115 277 VAC
- Output Load: power supply 24 VDC; 3 A
- Output: Battery charging 24 VDC; 3 A
- Suited for the following battery types:
   Open Lead Acid, Sealed Lead Acid, lead Gel and Ni-Cd (option)
- Automatic diagnostic of battery status.
- Switching technology, output voltage 22-28.8 VDC
- · Three charging levels: Boost, trickle and recovery
- Protection degree IP20 DIN rail mountable

Cat. No.	CBI243A
Nominal Input Voltage	115 ~ 230 ~ 277 VAC
Voltage range	90 – 305 VAC
Inrush Current (V <sub>n</sub> – I <sub>n</sub> nom. Load). I <sup>2</sup> t	≤11 A ≤ 5 msec
Frequency	47 – 63 Hz
Input Current (115 – 230 VAC)	2.8 ~ 1.3 A
Internal fuse (factory replaceable)	4 A
External Fuse (recommended) MCB curve B	10 A
Output Voltage (V <sub>n</sub> ) / Nominal Current (I <sub>n</sub> )	24 VDC / 3A
Output Current I <sub>n</sub>	3 A
Efficiency (at 50% of rated current)	≥ 90 %
Turn-On delay after applying input voltage	1 sec. (max)
Start up with Strong Load (capacitive load)	Yes, Unlimited
Dissipation power load max	13 W
Short-circuit protection	Yes
Over Load protection	Yes
Over Voltage Output protection	Yes (typ. 35 VDC)
Over Temperature protection	Yes
Output voltage (at In)	22 ~ 28.8 VDC
Nominal current I <sub>load</sub>	1.1 x ln A ± 5%
Continuous current (without battery) I <sub>load</sub> = I <sub>n</sub>	3 A
Continuous current (with battery) $I_{load} = I_n$ Continuous current (with battery) $I_{load} = I_n + I_{batt}$	6 A
Max. Current Output Load (Main) $I_{load} = I_n + I_{batt}$	9 A max.
Max. Current Output Load (Main) I <sub>load</sub> (4 sec.)  Max. Current Output Load (Back Up) I <sub>load</sub> (4 sec.)	9 A max. 6 A max.
Push Button or Remote Input Control (RTCONN cable)	Start From Battery Without Main
. , , , , , , , , , , , , , , , , , , ,	•
Time Buffering; min (switch output off without main input)	∞: standard 5 min.: Require SW
Protection alarm against total discharge	19-20V DC battery
Threshold alarm for battery almost flat	20-21 V DC battery
Boost charge (25 °C) (at I <sub>n</sub> )	28.8 VDC
Max. time Bust Charge	15 h
Min. time Bust Charge	1 min.
Trickle charge (25 °C) (at I <sub>n</sub> )	27.5 VDC
Jumper Configuration battery type (V cell) Ni-Cd (optional)	2.23; 2.25; 2.27; 2.30; NiCd: 1.50 (20 elem.)
Recovery Charge	2 ~ 16 VDC
Charging current max I <sub>batt</sub>	$3 A \pm 5\%$
Charging current limiting I <sub>adj</sub>	20 - 100 % / Ibatt
Reverse battery protection	Yes
Sulfated battery check	Yes by Jumper
Detection of element in short circuit	Yes
Quiescent Current	≤ 100 mA
Charging Curve automatic: I <sub>UoUo</sub>	3 stage
Remote Input Control (RTCONN cable)	Boost /Trickle / Recovery
Ambient temperature (operation)	-25 - +70°C
De Rating Ta > 50°C	- 2.5%(ln) / °C
Ambient temperature Storage	-40 - +85°C
Humidity at 25°C no condensation	95%
Cooling	Auto convention
MTDE (IEC 61700)	> 200 000 h

> 300.000 h

## Altech Corp.

## CBI243A DC UPS

The Altech DC-UPS system is built to optimize power management. The available power is automatically allocated between load and battery, supplying power to the load is the first priority. For high inrush applications the charging power will reroute automatically to the load. In this case the maximum available current on the load output is two times the value of the device rated current.

The Battery Care concept based on algorithms that achieve rapid and automatic charging, battery optimization during charging time, flat batteries recovery and real time diagnostic The Real Time Auto-diagnostic system, monitors battery faults, sulfated battery, short circuit battery elements, reverse polarity connection, battery disconnect. This conditions are detected and identified by the number of blinks of the diagnosis Led.

#### **Signal Output Contacts**

Main or Backup Power	Yes
Battery Power Low	Yes
Battery Fault	Yes
Max. Current Rating (Resistive Load)	1A 30 VDC/60 VAC
Minimum Permissible Current Rating	1mA @ 5 VDC

#### **RJ45 Connection Input/Output**

Temp. Comp. Battery (with ext. probe)	Yes - Optional
Remote monitoring display	Yes - Optional
Can Bus	No

#### **Environment**

Insulation voltage (IN/OUT)	3000 VAC
Insulation voltage (input / ground)	1605 VAC
Insulation voltage (Output / ground)	500 VAC
Protection Class (EN/IEC 60529)	IP20
Pollution Degree Environment	2
Connection TB, Screw Terminal	2,5 mm <sup>2</sup> (24-14AWG)
Protection class (Ground Connected)	Class I
Dimensions (WxHxD)	65x115x135 mm
2.56x4.53x5.32 in	
Weight (approx.)	0.6 kg (1.35 Lbs)

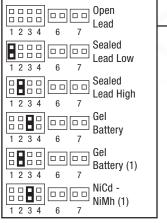
#### Safety and EMC

Battery charger standard compliance	IEC/EN 60335-2-29
Safety standards compliance:	EN60950 / UL1950 / CE
Fire Detection and alarm compliance	EN54-4
EMC Directive	89/336/EEC
Charging cycle	DIN41773
Emission	IEC 61000-6-4
Immunity	IEC 61000-6-2

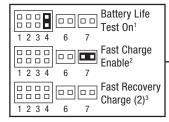
The Altech DC-UPS system is designed to charge and monitor all battery types, by selecting the battery type via jumpers. The predefined curves include Open Lead Acid, Sealed Lead Acid, Gel, Ni-Cd (optional) battery types. The charging curve are programmed to automatically switch between Recovery Charge, Boost charge and Trickle charge. The continuous battery efficiency monitoring, reduces battery damage risk and allows a safe operation in permanent connection.

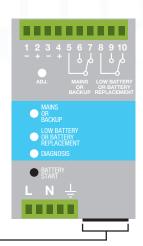
A compact and rugged metal case with DIN rail mounting bracket provide an easy installation and an IP20 protection.

#### **Jumper for Battery Type Selection**



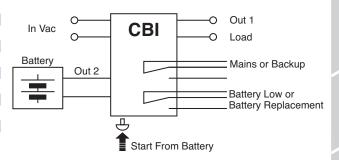
#### **Jumper for Functional Setting**

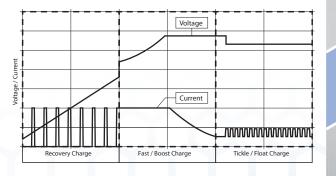




- 1 Jumper present: life test enabled.
- Jumper present: fast test enabled.

  Jumper present: fast recovery charge enabled only for size 3. Possibility to recharge the battery also when the voltage is close to zero with the maximum power of the device.





PSC Class 2 Series

PSA Flex Series

PSB FIEX Series

PS-S Slim Series

SLOW Profile Serversing

os Industrial Serie

PSC & W Series

CBI Type

CB Type Chargers

Accessorie

Appendix



## **CBI245A** DC UPS



Reverse battery protection

Detection of element in short circuit

Remote Input Control (RTCONN cable)

Charging Curve automatic: I<sub>UoUo</sub>

Ambient temperature (operation)

Ambient temperature Storage Humidity at 25°C no condensation

Sulfated battery check

Quiescent Current

De Rating Ta > 50°C

MTBF (IEC 61709)

Cooling





#### Features:

- Input: Single-phase 115 277 VAC
- Output Load: power supply 24 VDC; 5 A
- · Output: Battery charging 24 VDC; 5 A
- Suited for the following battery types: Open Lead Acid, Sealed Lead Acid, lead Gel and Ni-Cd (option)
- · Automatic diagnostic of battery status.
- Switching technology, output voltage 22-28.8 VDC
- Three charging levels: Boost, trickle and recovery
- Protection degree IP20 DIN rail mountable

## **INPUT**

## **OUTPUT**

## **PROTECTION**

## LOAD **OUTPUT**

### **BATTERY** OUTPUT

### **OTHERS**

Cat. No.	CBI245A
Nominal Input Voltage	115 ~ 230 ~ 277 VAC
Voltage range	90 – 305 VAC
Inrush Current (V <sub>n</sub> – I <sub>n</sub> nom. Load). I <sup>2</sup> t	≤11 A ≤ 5 msec
Frequency	47 – 63 Hz
Input Current (115 – 230 VAC)	2.8 ~ 1.3 A
Internal fuse (factory replaceable)	4 A
External Fuse (recommended) MCB curve B	10 A
Output Voltage (V <sub>n</sub> ) / Nominal Current (I <sub>n</sub> )	24 VDC / 5A
Output Current I <sub>n</sub>	5 A
Efficiency (at 50% of rated current)	≥ 90 %
Turn-On delay after applying input voltage	1 sec. (max)
Start up with Strong Load (capacitive load)	Yes, Unlimited
Dissipation power load max	17 W
Short-circuit protection	Yes
Over Load protection	Yes
Over Voltage Output protection	Yes (typ. 35 VDC)
Over Temperature protection	Yes
Output voltage (at I <sub>n</sub> )	22 ~ 28.8 VDC
Nominal current I <sub>load</sub>	1.1 x ln A ± 5%
Continuous current (without battery) $I_{load} = I_n$	5 A
Continuous current (with battery) $I_{load} = I_n + I_{batt}$	10 A
Max. Current Output Load (Main) I <sub>load</sub> (4 sec.)	15 A max.
Max. Current Output Load (Back Up) I <sub>load</sub> (4 sec.)	10 A max.
Push Button or Remote Input Control (RTCONN cable)	Start From Battery Without Main
Time Buffering; min (switch output off without main input)	∞: standard 5 min.: Require SW
Protection alarm against total discharge	19-20V DC battery
Threshold alarm for battery almost flat	20-21 V DC battery
Boost charge (25 °C) (at I <sub>n</sub> )	28.8 VDC
Max. time Bust Charge	15 h
Min. time Bust Charge	1 min.
Trickle charge (25 °C) (at I <sub>n</sub> )	27.5 VDC
Jumper Configuration battery type (V cell) Ni-Cd (optional)	2.23; 2.25; 2.27; 2.30; NiCd: 1.50 (20 elem.)
Recovery Charge	2 ~ 16 VDC
Charging current max I <sub>batt</sub>	5 A ± 5%
Charging current limiting I <sub>adj</sub>	20 – 100 % / lbatt

Yes

Yes

Yes by Jumper

Boost /Trickle / Recovery

 $\leq 100 \text{ mA}$ 

-25 - +70°C

> 300.000 h

- 2.5%(In) / °C -40 - +85°C

3 stage

95% Auto convention



## CBI245A DC UPS

The Altech DC-UPS system is built to optimize power management. The available power is automatically allocated between load and battery, supplying power to the load is the first priority. For high inrush applications the charging power will reroute automatically to the load. In this case the maximum available current on the load output is two times the value of the device rated current.

The Battery Care concept based on algorithms that achieve rapid and automatic charging, battery optimization during charging time, flat batteries recovery and real time diagnostic The Real Time Auto-diagnostic system, monitors battery faults, sulfated battery, short circuit battery elements, reverse polarity connection, battery disconnect. This conditions are detected and identified by the number of blinks of the diagnosis Led.

#### **Signal Output Contacts**

Main or Backup Power	Yes
Battery Power Low	Yes
Battery Fault	Yes
Max. Current Rating (Resistive Load)	1A 30 VDC/60 VAC
Minimum Permissible Current Rating	1mA @ 5 VDC

#### **RJ45 Connection Input/Output**

Temp. Comp. Battery (with ext. probe)	Yes - Optional
Remote monitoring display	Yes - Optional
Can Bus	No

#### **Environment**

Insulation voltage (IN/OUT)	3000 VAC
Insulation voltage (input / ground)	1605 VAC
Insulation voltage (Output / ground)	500 VAC
Protection Class (EN/IEC 60529)	IP20
Pollution Degree Environment	2
Connection TB, Screw Terminal	2,5 mm <sup>2</sup> (24-14AWG)
Protection class (Ground Connected)	Class I
Dimensions (WxHxD)	65x115x135 mm
2.56x4.53x5.32 in	
Weight (approx.)	0.6 kg (1.35 Lbs)

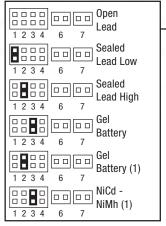
#### Safety and EMC

Battery charger standard compliance	IEC/EN 60335-2-29
Safety standards compliance:	EN60950 / UL1950 / CE
Fire Detection and alarm compliance	EN54-4
EMC Directive	89/336/EEC
Charging cycle	DIN41773
Emission	IEC 61000-6-4
Immunity	IEC 61000-6-2

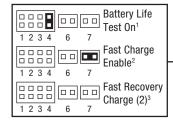
The Altech DC-UPS system is designed to charge and monitor all battery types, by selecting the battery type via jumpers. The predefined curves include Open Lead Acid, Sealed Lead Acid, Gel, Ni-Cd (optional) battery types. The charging curve are programmed to automatically switch between Recovery Charge, Boost charge and Trickle charge. The continuous battery efficiency monitoring, reduces battery damage risk and allows a safe operation in permanent connection.

A compact and rugged metal case with DIN rail mounting bracket provide an easy installation and an IP20 protection.

#### **Jumper for Battery Type Selection**



#### **Jumper for Functional Setting**

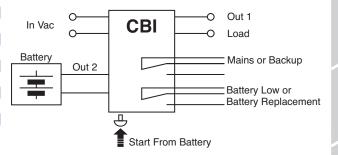


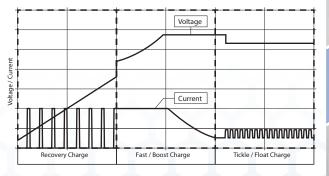


- Jumper present: life test enabled.
- Jumper present: fast test enabled.

  Jumper present: fast test enabled.

  Jumper present: fast recovery charge enabled only for size 3. Possibility to recharge the battery also when the voltage is close to zero with the maximum power of the device.





PSC Class 2 Series

PSA Flex Series

PSB FIEX Series

PS-S Slim Series

os Low Profile Series Low Profile Series Housing

os Industrial Serie

PSC & W Series

CBI Type

Rattery Chargers

· ccessories

Appendix



## CBI2410A\* **CBI2410A/S** DC UPS











UL upon request.

#### Features:

- Input: Single-phase 115 277 VAC
- Output Load: power supply 24 VDC; 10 A
- Output: Battery charging 24 VDC; 10 A
- Suited for the following battery types: Open Lead Acid, Sealed Lead Acid, lead Gel and Ni-Cd (option)
- Automatic diagnostic of battery status.
- Switching technology, output voltage 22-28.8 VDC
- Three charging levels: Boost, trickle and recovery
- Protection degree IP20 DIN rail mountable

#### **INPUT**

## OUTPUT

## **PROTECTION**

## LOAD **OUTPUT**

### **BATTERY** OUTPUT

## **OTHERS**

Cat. No.	CBI2410A
Nominal Input Voltage	115 / 230 ~ 277 VAC

90-135 / 180-305 VAC Voltage range Inrush Current ( $V_n - I_n$  nom. Load).  $I^2t$ ≤16 A ≤ 5 msec Frequency 47 - 63 HzInput Current (115 - 230 VAC)  $3.3 \sim 2.2 \, A$ Internal fuse (factory replaceable) 6.3 A External Fuse (recommended) MCB curve B 16 A

Output Voltage (Vn) / Nominal Current (In) 24 VDC / 10A Output Current In 10 A Efficiency (at 50% of rated current) ≥ 83 % Turn-On delay after applying input voltage 1.5 sec. (max) Start up with Strong Load (capacitive load) Yes. Unlimited Dissipation power load max 28 W

Short-circuit protection Yes Over Load protection Yes Over Voltage Output protection Yes (typ. 35 VDC) Over Temperature protection Yes

22 ~ 28.8 VDC Output voltage (at In) Nominal current  $I_{\text{load}}$ Continuous current (without battery)  $\mathbf{I}_{\text{load}} \mathbf{=} \ \mathbf{I}_{n}$ 10 A Continuous current (with battery)  $I_{load} = I_n + I_{batt}$ 20 A Max. Current Output Load (Main)  $I_{\text{load}}$  (4 sec.) 30 A max. Max. Current Output Load (Back Up)  $\mathrm{I}_{\text{load}}$  (4 sec.) 20 A max.

Remote Input Control (RTCONN cable) Time Buffering; min (switch output off without main input)

Protection alarm against total discharge Threshold alarm for battery almost flat

 $1.1 \times \ln A \pm 5\%$ Start From Battery Without Main (only for CBI2410/S) ∞: standard 5 min.: Require SW

19-20V DC battery 20-21 V DC battery

Boost charge (25 °C) (at I<sub>n</sub>) 28.8 VDC Max. time Bust Charge 15 h Min. time Bust Charge 1 min. Trickle charge (25 °C) (at I<sub>n</sub>) Jumper Configuration battery type (V cell) Ni-Cd (optional)

Recovery Charge Charging current max Ibatt Charging current limiting I<sub>adi</sub> Reverse battery protection Sulfated battery check

Detection of element in short circuit

Quiescent Current

Charging Curve automatic: I<sub>UoUo</sub> Remote Input Control (RTCONN cable) 27.5 VDC 2.23; 2.25; 2.27; 2.30; NiCd: 1.50 (20 elem.) 2 ~ 16 VDC

 $10 A \pm 5\%$ 20 - 100 % / lbatt Yes

Yes by Jumper

Yes ≤ 100 mA 3 stage

Boost /Trickle / Recovery

Ambient temperature (operation) De Rating Ta > 50°C

Ambient temperature Storage Humidity at 25°C no condensation

Cooling MTBF (IEC 61709)

-25 - +70°C - 2.5%(In) / °C -40 - +85°C 95% Auto convention > 300.000 h

<sup>\*</sup> No battery start function available, for battery start option use CBI2410A/S.

## CBI2410A\* CBI2410A/S DC UPS

Altech Corp.®

The Altech DC-UPS system is built to optimize power management. The available power is automatically allocated between load and battery, supplying power to the load is the first priority. For high inrush applications the charging power will reroute automatically to the load. In this case the maximum available current on the load output is two times the value of the device rated current.

The Battery Care concept based on algorithms that achieve rapid and automatic charging, battery optimization during charging time, flat batteries recovery and real time diagnostic The Real Time Auto-diagnostic system, monitors battery faults, sulfated battery, short circuit battery elements, reverse polarity connection, battery disconnect. This conditions are detected and identified by the number of blinks of the diagnosis Led.

#### **Signal Output Contacts**

0.ga. 0a.pa. 00a0.0	
Main or Backup Power	Yes
Battery Power Low	Yes
Battery Fault	Yes
Max. Current Rating (Resistive Load)	1A 30 VDC/60 VAC
Minimum Permissible Current Rating	1mA @ 5 VDC

#### **RJ45 Connection Input/Output**

Temp. Comp. Battery (with ext. probe)	Yes - Optional
Remote monitoring display	Yes - Optional
Can Bus	No

#### **Environment**

Insulation voltage (IN/OUT)	3000 VAC
Insulation voltage (input / ground)	1605 VAC
Insulation voltage (Output / ground)	500 VAC
Protection Class (EN/IEC 60529)	IP20
Pollution Degree Environment	2
Connection TB, Screw Terminal	2,5 mm <sup>2</sup> (24-14AWG)
Protection class (Ground Connected)	Class I
Dimensions (WxHxD)	100x115x135 mm
2.95x4.53x5.32 in	
Weight (approx.)	0.85 kg (1.9 Lbs)

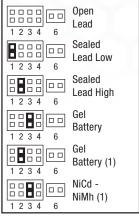
#### Safety and EMC

Battery charger standard compliance	IEC/EN 60335-2-29
Safety standards compliance:	EN60950 / UL1950 / CE
Fire Detection and alarm compliance	EN54-4
EMC Directive	89/336/EEC
Charging cycle	DIN41773
Emission	IEC 61000-6-4
Immunity	IEC 61000-6-2

The Altech DC-UPS system is designed to charge and monitor all battery types, by selecting the battery type via jumpers. The predefined curves include Open Lead Acid, Sealed Lead Acid, Gel, Ni-Cd (optional) battery types. The charging curve are programmed to automatically switch between Recovery Charge, Boost charge and Trickle charge. The continuous battery efficiency monitoring, reduces battery damage risk and allows a safe operation in permanent connection.

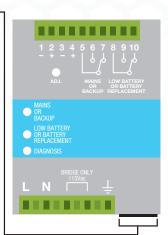
A compact and rugged metal case with DIN rail mounting bracket provide an easy installation and an IP20 protection.

#### Jumper for Battery Type Selection



#### **Jumper for Functional Setting**

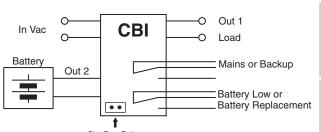
1 2 3 4 6	Battery Life Test On <sup>1</sup>
1 2 3 4 6	Fast Charge Enable <sup>2</sup>



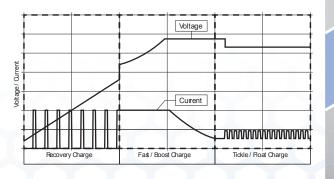
Jumper present: life test enabled.

Jumper present, fast charge enabled (only CBI2410A). This function is used for battery star on CBI2410A/S units.

Jumper present: fast recovery charge enabled only for size 3. Possibility to recharge the battery also when the voltage is close to zero with the maximum power of the device.



Start From Battery only available for part number CBI2410A/S and this unit does not have fast charge enable settings. For start from Battery option use functional setting (jumper) #6 with the CBI-RTCONN cable.



PSC Class 2 Series

osa Flex Series

PSB FIEX Series

PS-S Slim Series

os Low Profile Serve

os Industrial Series

PSC & W Series

CBI Type

CB Type Chargers

Accessorie

Appendix



## **CBI2420A** DC UPS



MTBF (IEC 61709)





#### Features:

- Input: Single-phase 115 277 VAC
- Output Load: power supply 24 VDC; 20 A
- Output: Battery charging 24 VDC; 20 A
- Suited for the following battery types: Open Lead Acid, Sealed Lead Acid, lead Gel and Ni-Cd (option)
- Automatic diagnostic of battery status.
- Switching technology, output voltage 22-18.8 VDC
   Three charging levels: Boost, trickle and recovery
- Protection degree IP20 DIN rail mountable

## **INPUT**

## **OUTPUT**

## **PROTECTION**

## LOAD **OUTPUT**

#### BATTERY **OUTPUT**

## **OTHERS**

Cat. No.	CBI2420A
Nominal Input Voltage	115 / 230 ~ 277 VAC
Voltage range	90-135 / 180-305 VAC
Inrush Current (V <sub>n</sub> – I <sub>n</sub> nom. Load). I <sup>2</sup> t	≤35 A ≤ 5 msec
Frequency	47 – 63 Hz
Input Current (115 – 230 VAC)	8.0 ~ 4.2 A
Internal fuse (factory replaceable)	10 A
External Fuse (recommended) MCB curve B	16 A
Output Voltage (V <sub>n</sub> ) / Nominal Current (I <sub>n</sub> )	24 VDC / 20A
Output Current I <sub>n</sub>	20 A
Efficiency (at 50% of rated current)	≥ 91 %
Turn-On delay after applying input voltage	1 sec. (max)
Start up with Strong Load (capacitive load)	Yes, Unlimited
Dissipation power load max	48 W
Short-circuit protection	Yes
Over Load protection	Yes
Over Voltage Output protection	Yes (typ. 35 VDC)
Over Temperature protection	Yes
Output voltage (at I <sub>n</sub> )	22 ~ 28.8 VDC
Nominal current I <sub>load</sub>	1.1 x ln A $\pm$ 5%
Continuous current (without battery) $I_{load} = I_n$	20 A
Continuous current (with battery) $I_{load} = I_n + I_{batt}$	40 A
Max. Current Output Load (Main) I <sub>load</sub> (4 sec.)	60 A max.
Max. Current Output Load (Back Up) I <sub>load</sub> (4 sec.)	40 A max.
Push Button or Remote Input Control (RTCONN cable)	Start From Battery Without Main
Time Buffering; min (switch output off without main input)	0.5,2,5,10,15,20,30,45,60,∞; Require SW
Protection alarm against total discharge	19-20V DC battery
Threshold alarm for battery almost flat	20-21 V DC battery
Boost charge (25 °C) (at I <sub>n</sub> )	28.8 VDC
Max. time Bust Charge	15 h
Min. time Bust Charge	1 min.
Trickle charge (25 °C) (at I <sub>n</sub> )	27.5 VDC
Jumper Configuration battery type (V cell) Ni-Cd (optional)	2.23; 2.25; 2.27; 2.30; NiCd: 1.50 (20 elem.)
Recovery Charge	2 ~ 16 VDC
Charging current max I <sub>batt</sub>	20 A ± 5%
Charging current limiting I <sub>adi</sub>	10 – 100 % / Ibatt
Reverse battery protection	Yes
Sulfated battery check	Yes by Jumper
Detection of element in short circuit	Yes
Quiescent Current	≤ 100 mA
Charging Curve automatic: I <sub>llollo</sub>	3 stage
Remote Input Control (RTCONN cable)	Boost /Trickle / Recovery
	05 . 7090
Ambient temperature (operation)	-23 - +/U°C
Ambient temperature (operation) De Rating Ta > 50°C	-25 − +70°C - 2.5%(In) / °C
De Rating Ta > 50°C	- 2.5%(ln) / °C

> 300.000 h



## **CBI2420A** DC UPS

The Altech DC-UPS system is built to optimize power management. The available power is automatically allocated between load and battery, supplying power to the load is the first priority. For high inrush applications the charging power will reroute automatically to the load. In this case the maximum available current on the load output is two times the value of the device rated current.

The Battery Care concept based on algorithms that achieve rapid and automatic charging, battery optimization during charging time, flat batteries recovery and real time diagnostic The Real Time Auto-diagnostic system, monitors battery faults, sulfated battery, short circuit battery elements, reverse polarity connection, battery disconnect. This conditions are detected and identified by the number of blinks of the diagnosis Led.

#### **Signal Output Contacts**

Main or Backup Power	Yes
Battery Power Low	Yes
Battery Fault	Yes
Max. Current Rating (Resistive Load)	1A 30 VDC/60 VAC
Minimum Parmissible Current Rating	1m/\ @ 5 VDC

#### **RJ45 Connection Input/Output**

Temp. Comp. Battery (with ext. probe)	Yes - Optional
Remote monitoring display	Yes - Optional
Can Bus	No

#### **Environment**

Insulation voltage (IN/OUT)	3000 VAC
Insulation voltage (input / ground)	1605 VAC
Insulation voltage (Output / ground)	500 VAC
Protection Class (EN/IEC 60529)	IP20
Pollution Degree Environment	2
Connection TB, Screw Terminal	4 mm <sup>2</sup> (30-10 AWG)
Protection class (Ground Connected)	Class I
Dimensions (WxHxD)	150x115x135 mm
5.91x4.53x5.32 in	
Weight (approx.)	1.55 kg (3.5 Lbs)

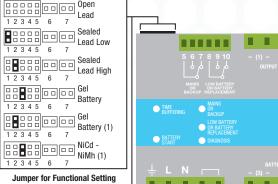
#### Safety and EMC

Battery charger standard compliance	IEC/EN 60335-2-29
Safety standards compliance:	EN60950 / UL1950 / CE
Fire Detection and alarm compliance	EN54-4
EMC Directive	89/336/EEC
Charging cycle	DIN41773
Emission	IEC 61000-6-4
Immunity	IEC 61000-6-2

The Altech DC-UPS system is designed to charge and monitor all battery types, by selecting the battery type via jumpers. The predefined curves include Open Lead Acid, Sealed Lead Acid, Gel, Ni-Cd (optional) battery types. The charging curve are programmed to automatically switch between Recovery Charge, Boost charge and Trickle charge. The continuous battery efficiency monitoring, reduces battery damage risk and allows a safe operation in permanent connection.

A compact and rugged metal case with DIN rail mounting bracket provide an easy installation and an IP20 protection.

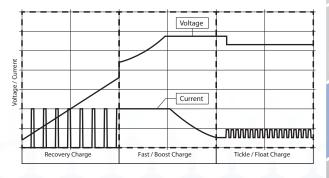
#### **Jumper for Battery Type Selection**



	Battery Life Test On <sup>1</sup>
12345 6 7	
1 2 3 4 5 6 7	Fast Charge Enable <sup>2</sup>
	ast Recovery Charge (2) <sup>3</sup>

Jumper present: fast test enabled. Jumper present: fast recovery charge enabled only for size 3. Possibility to recharge the battery also when the voltage is close to zero with the maximum power of the device

#### Out 1 In Vac CBI Load Battery Mains or Backup Out 2 Battery Low or Battery Replacement П Start From Battery





## **CBI485A** DC UPS









#### Features:

- Input: Single-phase 115 277 VAC
- Output Load: power supply 48VDC; 5A
- Output: Battery charging 48VDC; 5A
- Suited for the following battery types: Open Lead Acid, Sealed Lead Acid, lead Gel and Ni-Cd (option)
- Automatic diagnostic of battery status.
- Switching technology, output voltage 44-57.6VDC
   Three charging levels: Boost, trickle and recovery
- Protection degree IP20 DIN rail mountable

### **INPUT**

## **OUTPUT**

## **PROTECTION**

## LOAD **OUTPUT**

### BATTERY **OUTPUT**

## **OTHERS**

Cat. No.	CBI485A
Nominal Input Voltage	115 / 230 ~ 277 VAC
Voltage range	90-135 / 180-305 VAC
Inrush Current ( $V_n - I_n$ nom. Load). $I^2t$	≤16 A ≤ 5 msec
Frequency	47 – 63 Hz
Input Current (115 – 230 VAC)	3.3 ~ 2.2 A
Internal fuse (factory replaceable)	6.3 A
External Fuse (recommended) MCB curve B	16 A
Output Voltage (V <sub>n</sub> ) / Nominal Current (I <sub>n</sub> )	48 VDC / 5A
Output Current I <sub>n</sub>	5 A
Efficiency (at 50% of rated current)	≥ 83 %
Turn-On delay after applying input voltage	1.5 sec. (max)
Start up with Strong Load (capacitive load)	Yes, Unlimited
Dissipation power load max	28 W
Short-circuit protection	Yes
Over Load protection	Yes
Over Voltage Output protection	Yes (typ. 90 VDC)
Over Temperature protection	Yes
Output voltage (at I <sub>n</sub> )	44 ~ 57.6 VDC
Nominal current I <sub>load</sub>	$1.1 \times \ln A \pm 5\%$
Continuous current (without battery) $I_{load} = I_n$	5 A
Continuous current (with battery) $I_{load} = I_n + I_{batt}$	10 A
Max. Current Output Load (Main) I <sub>load</sub> (4 sec.)	30 A max.
Max. Current Output Load (Back Up) I <sub>load</sub> (4 sec.)	15 A max.
Push Button or Remote Input Control (RTCONN cable)	Start From Battery Without Main
Time Buffering; min (switch output off without main input)	∞: standard 5 min.: Require SW
Protection alarm against total discharge	38-40V DC battery
Threshold alarm for battery almost flat	40-42V DC battery
Boost charge (25 °C) (at I <sub>n</sub> )	56.6 VDC
Max. time Bust Charge	15 h
Min. time Bust Charge	1 min.
Trickle charge (25 °C) (at I <sub>n</sub> )	55 VDC
Jumper Configuration battery type (V cell) Ni-Cd (optional) Recovery Charge	2.23; 2.25; 2.27; 2.30; NiCd: 1.50 (40 elem.) 2 ~ 24 VDC
Charging current max I <sub>batt</sub>	2 A ± 5%
Charging current limiting I <sub>adi</sub>	20 – 100 % / lbatt
Reverse battery protection	Yes
7.7	
Sulfated battery check	Yes by Jumper
Detection of element in short circuit	Yes
Quiescent Current	≤ 100 mA
Charging Curve automatic: I <sub>UoUo</sub>	3 stage
Remote Input Control (RTCONN cable)	Boost /Trickle / Recovery
Ambient temperature (operation)	-25 - +70°C
De Rating Ta > 50°C	- 2.5%(ln) / °C
Ambient temperature Storage	-40 - +85°C
Humidity at 25°C no condensation	95%
Cooling	Auto convention > 300.000 h
MTBF (IEC 61709)	



## CBI485A DC UPS

The Altech DC-UPS system is built to optimize power management. The available power is automatically allocated between load and battery, supplying power to the load is the first priority. For high inrush applications the charging power will reroute automatically to the load. In this case the maximum available current on the load output is two times the value of the device rated current.

The Battery Care concept based on algorithms that achieve rapid and automatic charging, battery optimization during charging time, flat batteries recovery and real time diagnostic The Real Time Auto-diagnostic system, monitors battery faults, sulfated battery, short circuit battery elements, reverse polarity connection, battery disconnect. This conditions are detected and identified by the number of blinks of the diagnosis Led.

#### **Signal Output Contacts**

Main or Backup Power	Yes
Battery Power Low	Yes
Battery Fault	Yes
Max. Current Rating (Resistive Load)	1A 30 VDC/60 VAC
Minimum Parmissible Current Rating	1m/ @ 5 VDC

#### **RJ45 Connection Input/Output**

Temp. Comp. Battery (with ext. probe)	Yes - Optional
Remote monitoring display	Yes - Optional
Can Rus	No

#### **Environment**

Insulation voltage (IN/OUT)	3000 VAC
Insulation voltage (input / ground)	1605 VAC
Insulation voltage (Output / ground)	500 VAC
Protection Class (EN/IEC 60529)	IP20
Pollution Degree Environment	2
Connection TB, Screw Terminal	2.5 mm <sup>2</sup> (24-14 AWG)
Protection class (Ground Connected)	Class I
Dimensions (WxHxD)	100x115x135 mm
2.95x4.53x5.32 in	
Weight (approx.)	0.85 kg (1.9 Lbs)

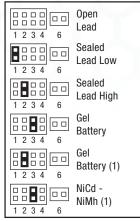
#### Safety and EMC

Battery charger standard compliance	IEC/EN 60335-2-29
Safety standards compliance:	EN60950 / UL1950 / CE
Fire Detection and alarm compliance	EN54-4
EMC Directive	89/336/EEC
Charging cycle	DIN41773
Emission	IEC 61000-6-4
Immunity	IEC 61000-6-2

The Altech DC-UPS system is designed to charge and monitor all battery types, by selecting the battery type via jumpers. The predefined curves include Open Lead Acid, Sealed Lead Acid, Gel, Ni-Cd (optional) battery types. The charging curve are programmed to automatically switch between Recovery Charge, Boost charge and Trickle charge. The continuous battery efficiency monitoring, reduces battery damage risk and allows a safe operation in permanent connection.

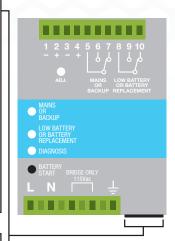
A compact and rugged metal case with DIN rail mounting bracket provide an easy installation and an IP20 protection.

#### Jumper for Battery Type Selection

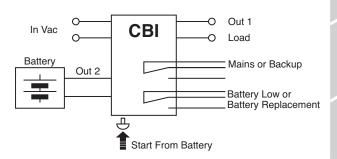


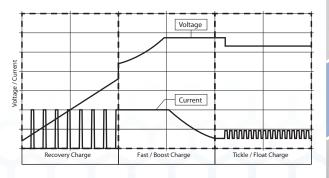
#### **Jumper for Functional Setting**

1 2 3 4 6	Battery Life Test On <sup>1</sup>
1 2 3 4 6	Fast Charge Enable <sup>2</sup>



Jumper present: life test enabled.
Jumper present: fast test enabled.
Jumper present: fast test enabled and present: fast recovery charge
enabled only for size 3. Possibility to
recharge the battery also when the
voltage is close to zero with the
maximum power of the device.





PSC Class 5 Series

PSA Flex Series

PSB FIEX Series

PS-S Slim Series

os Low Profile Serve

PS Industrial Ser.

PSC & W Series

CBI Type

CB Type Chargers

, ccessories

Appendix



## **CBI4810A** DC UPS









#### **Features:**

- Input: Single-phase 115 277 VAC
- Output Load: power supply 48VDC; 10AOutput: Battery charging 48VDC; 10A
- Suited for the following battery types:
   Open Lead Acid, Sealed Lead Acid, lead Gel and Ni-Cd (option)
- Automatic diagnostic of battery status.
- Switching technology, output voltage 44-57.6VDC
- Three charging levels: Boost, trickle and recovery
- Protection degree IP20 DIN rail mountable

## **INPUT**

## **OUTPUT**

## **PROTECTION**

## LOAD OUTPUT

### **BATTERY OUTPUT**

## **OTHERS**

Cat. No.	CBI4810A
Nominal Input Voltage	115 / 230 ~ 277 VAC
/oltage range	90-135 / 180-305 VAC
nrush Current (V <sub>n</sub> – I <sub>n</sub> nom. Load). I <sup>2</sup> t	≤35 A ≤ 5 msec
requency	47 – 63 Hz
nput Current (115 – 230 VAC)	8.0 ~ 4.2 A
nternal fuse (factory replaceable)	10 A
External Fuse (recommended) MCB curve B	16 A
Output Voltage (V <sub>n</sub> ) / Nominal Current (I <sub>n</sub> )	48 VDC / 10A
Output Current In	10 A
Efficiency (at 50% of rated current)	≥ 91 %
Furn-On delay after applying input voltage	1 sec. (max)
Start up with Strong Load (capacitive load)	Yes, Unlimited
Dissipation power load max	54 W
Short-circuit protection	Yes
Over Load protection	Yes
Over Voltage Output protection	Yes (typ. 90 VDC)
Over Temperature protection	Yes
Output voltage (at In)	44 ~ 57.6 VDC
Nominal current I <sub>load</sub>	$1.1 \text{ x In A} \pm 5\%$
Continuous current (without battery) I <sub>load</sub> = I <sub>n</sub>	10 A
Continuous current (with battery) $I_{load} = I_n + I_{batt}$	20 A
Max. Current Output Load (Main) I <sub>load</sub> (4 sec.)	30 A max.
Max. Current Output Load (Back Up) I <sub>load</sub> (4 sec.)	20 A max.
Push Button or Remote Input Control (RTCONN cable)	Start From Battery Without Main
Fime Buffering; min (switch output off without main input)	0.5,1,3,5,10,15,20,30,45,60,∞; Require SW
Protection alarm against total discharge	38-40V DC battery
Threshold alarm for battery almost flat	40-42V DC battery
Boost charge (25 °C) (at I <sub>n</sub> )	56.6 VDC
Max. time Bust Charge	15 h
Min. time Bust Charge	1 min.
Trickle charge (25 °C) (at I <sub>n</sub> )	55 VDC
Jumper Configuration battery type (V cell) Ni-Cd (optional)	2.23; 2.25; 2.27; 2.30; NiCd: 1.50 (40 elem.)
Recovery Charge	2 ~ 24 VDC
Charging current max I <sub>batt</sub>	10 A ± 5%
Charging current limiting I <sub>adi</sub>	10 – 100 % / Ibatt
Reverse battery protection	Yes
Sulfated battery check	Yes by Jumper
Detection of element in short circuit	Yes
Quiescent Current	≤ 100 mA
Charging Curve automatic: I <sub>UoUo</sub>	3 stage
Remote Input Control (RTCONN cable)	Boost /Trickle / Recovery
Ambient temperature (operation)	-25 - +70°C
De Rating Ta > 50°C	- 2.5%(In) / °C
Ambient temperature Storage	-40 - +85°C
lumidity at 25°C no condensation	95%
Cooling	Auto convention



## **CBI4810A** DC UPS

The Altech DC-UPS system is built to optimize power management. The available power is automatically allocated between load and battery, supplying power to the load is the first priority. For high inrush applications the charging power will reroute automatically to the load. In this case the maximum available current on the load output is two times the value of the device rated current.

The Battery Care concept based on algorithms that achieve rapid and automatic charging, battery optimization during charging time, flat batteries recovery and real time diagnostic The Real Time Auto-diagnostic system, monitors battery faults, sulfated battery, short circuit battery elements, reverse polarity connection, battery disconnect. This conditions are detected and identified by the number of blinks of the diagnosis Led.

#### **Signal Output Contacts**

Main or Backup Power	Yes
Battery Power Low	Yes
Battery Fault	Yes
Max. Current Rating (Resistive Load)	1A 30 VDC/60 VAC
Minimum Permissible Current Rating	1mA @ 5 VDC

#### **RJ45 Connection Input/Output**

Temp. Comp. Battery (with ext. probe)	Yes - Optional
Remote monitoring display	Yes - Optional
Can Bus	Yes - Optional

#### **Environment**

Insulation voltage (IN/OUT)	3000 VAC
Insulation voltage (input / ground)	1605 VAC
Insulation voltage (Output / ground)	500 VAC
Protection Class (EN/IEC 60529)	IP20
Pollution Degree Environment	2
Connection TB, Screw Terminal	4 mm <sup>2</sup> (30-10 AWG)
Protection class (Ground Connected)	Class I
Dimensions (WxHxD)	150x115x135 mm
5.91x4.53x5.32 in	
Weight (approx.)	1.55 kg (3.5 Lbs)

#### Safety and EMC

Battery charger standard compliance	IEC/EN 60335-2-29
Safety standards compliance:	EN60950 / UL1950 / CE
Fire Detection and alarm compliance	EN54-4
EMC Directive	89/336/EEC
Charging cycle	DIN41773
Emission	IEC 61000-6-4
Immunity	IEC 61000-6-2
iiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiii	1L0 01000 0 L

The Altech DC-UPS system is designed to charge and monitor all battery types, by selecting the battery type via jumpers. The predefined curves include Open Lead Acid, Sealed Lead Acid, Gel, Ni-Cd (optional) battery types. The charging curve are programmed to automatically switch between Recovery Charge, Boost charge and Trickle charge. The continuous battery efficiency monitoring, reduces battery damage risk and allows a safe operation in permanent connection.

A compact and rugged metal case with DIN rail mounting bracket provide an easy installation and an IP20 protection.

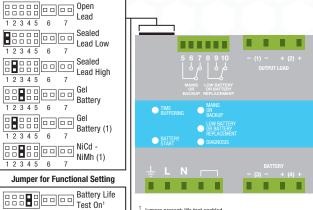
#### **Jumper for Battery Type Selection**

1 2 3 4 5 6 7

7

6

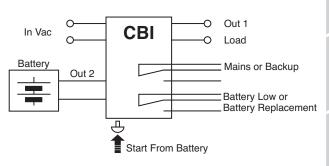
1 2 3 4 5

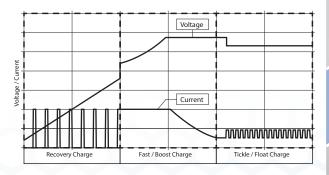


Jumper present: fast test enabled.

Jumper present: fast test enabled.

Jumper present: fast recovery charge enabled only for size 3. Possibility to Fast Charge Fast Cha recharge the battery also when the voltage is close to zero with the Fast Recovery Charge (2)3 maximum power of the device.







## CBI2803648A DC UPS



MTBF (IEC 61709)







#### **Features:**

- Input: Single-phase 115 277 VAC
- Output Load: power supply 36/48VDC; 7/5A
- Output: Battery charging 36/48VDC; 7/5A
- Suited for the following battery types:
   Open Lead Acid, Sealed Lead Acid, lead Gel and Ni-Cd (option)
- Automatic diagnostic of battery status.
- Switching technology, output voltage 33-43.2/44-57.6VDC
- Three charging levels: Boost, trickle and recovery
- Protection degree IP20 DIN rail mountable

## **INPUT**

## **OUTPUT**

### **PROTECTION**

### LOAD OUTPUT

### BATTERY OUTPUT

### **OTHERS**

Cat. No.	CBI2803648A
Nominal Input Voltage	115 ~ 230 ~ 277 VAC
Voltage range	90 ~ 305 VAC
Inrush Current ( $V_n - I_n$ nom. Load). $I^2t$	≤16 A ≤ 5 msec
Frequency	47 – 63 Hz
Input Current (115 – 230 VAC)	3.3 ~ 2.2 A
Internal fuse (factory replaceable)	6.3 A
` , , ,	
External Fuse (recommended) MCB curve B	16 A
Output Voltage (V <sub>n</sub> ) / Nominal Power (W)	36 / 48 VDC / 270W (jumper selection)
Output Current I <sub>n</sub>	7 A @36VDC / 5A @48VDC
Efficiency (at 50% of rated current)	≥ 91 %
Turn-On delay after applying input voltage	1.5 sec. (max)
Start up with Strong Load (capacitive load)	Yes, Unlimited
Dissipation power load max	30 W
Short-circuit protection	Yes
Over Load protection	Yes
Over Voltage Output protection	Yes (typ. 90 VDC)
•	
Over Temperature protection	Yes
Output voltage (at I <sub>n</sub>	33 ~ 43.2 / 44 ~ 57.6 VDC
Nominal current I <sub>load</sub>	1.1 x ln A ± 5%
Continuous current (without battery) $I_{load} = I_n$	7 A @ 36VDC / 5A @ 48VDC
Continuous current (with battery) $I_{\text{load}} = I_{\text{n}} + I_{\text{batt}}$	14 A @ 36VDC / 10A @ 48VDC max.
Max. Current Output Load (Main) $I_{load}$ (4 sec.)	21 A @ 36VDC / 15A @ 48VDC max.
Max. Current Output Load (Back Up) I <sub>load</sub> (4 sec.)	14 A @ 36VDC / 10A @ 48VDC max.
Push Button or Remote Input Control (RTCONN cable)	Start From Battery Without Main
Time Buffering; min (switch output off without main input)	0.5,2,5,10,15,20,30,45,60,∞
Protection alarm against total discharge	26-28 / 38-40V DC battery
Threshold alarm for battery almost flat	29-31 / 40-42V DC battery
The short alarm for battery aimost hat	29-31 / 40-42V DO Ballery
Boost charge (25 °C) (at I <sub>n</sub> )	43.2 @ 36VDC / 57.6 @ 48VDC
Max. time Bust Charge	15 h
Min. time Bust Charge	1 min.
Trickle charge (25 °C) (at I <sub>n</sub> )	41.4 @ 36VDC / 55.2 @ 48VDC
G (	
Jumper Configuration battery type (V cell) Ni-Cd (optional)	2.23; 2.25; 2.27; 2.30; NiCd: 1.50V/element
Recovery Charge	2 ~ 18 / 2 ~ 24VDC
Charging current max I <sub>batt</sub>	7 A @ 36VDC / 5A @ 48VDC ± 5%
Charging current limiting I <sub>adi</sub>	10 – 100 % / lbatt
Reverse battery protection	Yes
Sulfated battery check	Yes by Jumper
Detection of element in short circuit	Yes
Quiescent Current	≤ 100 mA
Charging Curve automatic: I <sub>UoUo</sub>	4 stage
Remote Input Control (RTCONN cable)	Boost / Trickle
Ambient temperature (operation)	-25 - +70°C
1 1 1	
De Rating Ta > 50°C	- 2.5%(In) / °C
Ambient temperature Storage	-40 - +85°C
Humidity at 25°C no condensation	95%
Cooling	Auto convention
÷	

> 300.000 h



## CBI2803648A DC UPS

The Altech DC-UPS system is built to optimize power management. The available power is automatically allocated between load and battery, supplying power to the load is the first priority. For high inrush applications the charging power will reroute automatically to the load. In this case the maximum available current on the load output is two times the value of the device rated current.

The Battery Care concept based on algorithms that achieve rapid and automatic charging, battery optimization during charging time, flat batteries recovery and real time diagnostic The Real Time Auto-diagnostic system, monitors battery faults, sulfated battery, short circuit battery elements, reverse polarity connection, battery disconnect. This conditions are detected and identified by the number of blinks of the diagnosis Led.

#### **Signal Output Contacts**

Main or Backup Power	Yes
Battery Power Low	Yes
Battery Fault	Yes
Max. Current Rating (Resistive Load)	1A 30 VDC/60 VAC
Minimum Permissible Current Rating	1mA @ 5 VDC

#### **RJ45 Connection Input/Output**

Temp. Comp. Battery (with ext. probe)	Yes - Optional	
Remote monitoring display	Yes - Optional	
Can Bus	Yes - Optional	

#### **Environment**

Insulation voltage (IN/OUT)	3000 VAC
Insulation voltage (input / ground)	1605 VAC
Insulation voltage (Output / ground)	500 VAC
Protection Class (EN/IEC 60529)	IP20
Pollution Degree Environment	2
Connection TB, Screw Terminal	2.5 mm <sup>2</sup> (24-14 AWG)
Protection class (Ground Connected)	Class I
Dimensions (WxHxD)	115x115x135 mm
2.95x4.53x5.32 in	
Weight (approx.)	0.85 kg (1.9 Lbs)

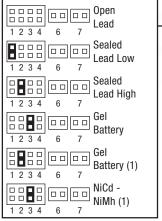
#### Safety and EMC

Battery charger standard compliance	IEC/EN 60335-2-29
Safety standards compliance:	EN60950 / UL1950 / CE
Fire Detection and alarm compliance	EN54-4
EMC Directive	89/336/EEC
Charging cycle	DIN41773
Emission	IEC 61000-6-4
Immunity	IEC 61000-6-2

The Altech DC-UPS system is designed to charge and monitor all battery types, by selecting the battery type via jumpers. The predefined curves include Open Lead Acid, Sealed Lead Acid, Gel, Ni-Cd (optional) battery types. The charging curve are programmed to automatically switch between Recovery Charge, Boost charge and Trickle charge. The continuous battery efficiency monitoring, reduces battery damage risk and allows a safe operation in permanent connection.

A compact and rugged metal case with DIN rail mounting bracket provide an easy installation and an IP20 protection.

#### **Jumper for Battery Type Selection**



#### **Jumper for Functional Setting**

1 2 3 4	6 7	Battery Life Test On <sup>1</sup>
1 2 3 4	6 7	Fast Charge Enable <sup>2</sup>
1 2 3 4	6 7	Fast Recovery Charge (2) <sup>3</sup>

Modbus / Can

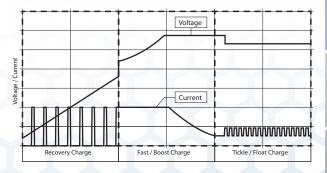


Jumper present: life test enabled Jumper present: fast test enabled. Jumper present: fast recovery charge enabled only for size 3. Possibility to recharge the battery also when the voltage is close to zero with the maximum power of the device.

Mains or BackUp

Battery Fault

Start from Battery



Д



## CBI2801224A DC UPS









#### Features:

- Input: Single-phase 115 277 VAC
- Output Load: power supply 12 VDC; 15 A / 234VDC; 10A
- Output: Battery charging 12 VDC; 15 A / 24VDC; 10A
- Suited for the following battery types:
  - Open Lead Acid, Sealed Lead Acid, lead Gel and Ni-Cd (option)
- Automatic diagnostic of battery status.
- Switching technology, output voltage 10-14.4 VDC / 22-28.8VDC
- Three charging levels: Boost, trickle and recovery
- Protection degree IP20 DIN rail mountable

## INPUT

## **OUTPUT**

## **PROTECTION**

### LOAD **OUTPUT**

### BATTERY OUTPUT

## **OTHERS**

Cat. No.	CBI2801224A
Nominal Input Voltage	115 ~ 230 ~ 277 VAC
Voltage range	90 ~ 305 VAC
Inrush Current ( $V_n - I_n$ nom. Load). $I^2t$	≤16 A ≤ 5 msec
Frequency	47 – 63 Hz
Input Current (115 – 230 VAC)	3.3 ~ 2.2 A
Internal fuse (factory replaceable)	6.3 A
External Fuse (recommended) MCB curve B	16 A
External ruse (recommended) wood curve of	10 A
Output Voltage (V <sub>n</sub> ) / Nominal Power (W)	12 / 24 VDC / 270W (jumper selection)
Output Current I <sub>n</sub>	15 A @ 12VDC / 10A @ 24VDC
Efficiency (at 50% of rated current)	≥ 91 %
Turn-On delay after applying input voltage	1 sec. (max)
Start up with Strong Load (capacitive load)	Yes, Unlimited
Dissipation power load max	28 W
Dissipation power load max	20 W
Short-circuit protection	Yes
Over Load protection	Yes
Over Voltage Output protection	Yes (typ. 35 VDC)
Over Temperature protection	Yes
oral composition protection	100
Output voltage (at I <sub>n</sub> )	10-14.4 / 22-28.8 VDC
Nominal current I <sub>load</sub>	1.1 x ln A ± 5%
Continuous current (without battery) $I_{load} = I_{n}$	15 A @ 12VDC / 10A @ 24VDC
Continuous current (with battery) $I_{load} = I_{n} + I_{batt}$	30 A @ 12VDC / 20A @ 24VDC max.
Max. Current Output Load (Main) I <sub>load</sub> (4 sec.)	45 A @ 12VDC / 30A @ 24VDC max.
Max. Current Output Load (Back Up) I <sub>load</sub> (4 sec.)	30 A @ 12VDC / 20A @ 24VDC max.
Push Button or Remote Input Control (RTCONN cable)	Start From Battery Without Main
Time Buffering; min (switch output off without main input)	0.5,2,5,10,15,20,30,45,60,∞
Protection alarm against total discharge	10-11 / 20-21V DC battery
Threshold alarm for battery almost flat	•
The shold didill for battery almost flat	9-10 / 19-20V DC battery
Boost charge (25 °C) (at In)	14.4 @ 12VDC / 28.8 @ 24VDC
Max. time Bust Charge	15 h
Min. time Bust Charge	1 min.
Trickle charge (25 °C) (at I <sub>n</sub> )	13.8 @ 12VDC / 27.6 @ 24VDC
Jumper Configuration battery type (V cell) Ni-Cd (optional)	2.23; 2.25; 2.27; 2.30; NiCd: 1.50V / element
Recovery Charge	2 ~ 18 / 2 ~ 24VDC
Charging current max I <sub>batt</sub>	15 A @ 12VDC / 10A @ 24VDC ± 5%
Charging current limiting I <sub>adi</sub>	10 – 100 % / lbatt
Reverse battery protection	Yes You have harmony
Sulfated battery check	Yes by Jumper
Detection of element in short circuit	Yes
Quiescent Current	≤ 100 mA
Charging Curve automatic: I <sub>UoUo</sub>	4 stage
Remote Input Control (RTCONN cable)	Boost / Trickle
Ambient temperature (operation)	-25 - +70°C
De Rating Ta > 50°C	- 2.5%(ln) / °C
=	` '
Ambient temperature Storage	-40 - +85°C
Humidity at 25°C no condensation	95%
Cooling	Auto convention
Cooling MTBF (IEC 61709)	> 300.000 h



## CBI2801224A DC UPS

The Altech DC-UPS system is built to optimize power management. The available power is automatically allocated between load and battery, supplying power to the load is the first priority. For high inrush applications the charging power will reroute automatically to the load. In this case the maximum available current on the load output is two times the value of the device rated current.

The Battery Care concept based on algorithms that achieve rapid and automatic charging, battery optimization during charging time, flat batteries recovery and real time diagnostic The Real Time Auto-diagnostic system, monitors battery faults, sulfated battery, short circuit battery elements, reverse polarity connection, battery disconnect. This conditions are detected and identified by the number of blinks of the diagnosis Led.

#### **Signal Output Contacts**

3	
Main or Backup Power	Yes
Battery Power Low	Yes
Battery Fault	Yes
Max. Current Rating (Resistive Load)	1A 30 VDC/60 VAC
Minimum Permissible Current Rating	1mA @ 5 VDC

#### **RJ45 Connection Input/Output**

Temp. Comp. Battery (with ext. probe)	Yes – (Aux 1)
ModBus / Can Bus	Yes - (Aux 2)
ModBus / Can Bus	Yes - (Aux 3)

#### **Environment**

Insulation voltage (IN/OUT)	3000 VAC
Insulation voltage (input / ground)	1605 VAC
Insulation voltage (Output / ground)	500 VAC
Protection Class (EN/IEC 60529)	IP20
Pollution Degree Environment	2
Connection TB, Screw Terminal	2.5 mm <sup>2</sup> (24-14 AWG)
Protection class (Ground Connected)	Class I
Dimensions (WxHxD)	115x115x135 mm
2.95x4.53x5.32 in	
Weight (approx.)	0.85 kg (1.9 Lbs)

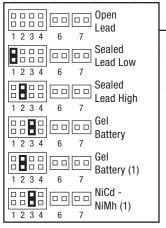
#### Safety and EMC

Battery charger standard compliance	IEC/EN 60335-2-29
Safety standards compliance:	EN60950 / UL1950 / CE
Fire Detection and alarm compliance	EN54-4
EMC Directive	89/336/EEC
Charging cycle	DIN41773
Emission	IEC 61000-6-4
Immunity	IEC 61000-6-2

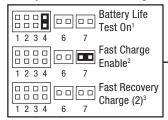
The Altech DC-UPS system is designed to charge and monitor all battery types, by selecting the battery type via jumpers. The predefined curves include Open Lead Acid, Sealed Lead Acid, Gel, Ni-Cd (optional) battery types. The charging curve are programmed to automatically switch between Recovery Charge, Boost charge and Trickle charge. The continuous battery efficiency monitoring, reduces battery damage risk and allows a safe operation in permanent connection.

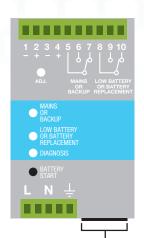
A compact and rugged metal case with DIN rail mounting bracket provide an easy installation and an IP20 protection.

#### **Jumper for Battery Type Selection**

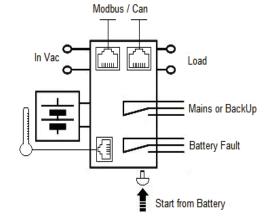


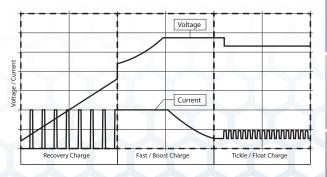
#### **Jumper for Functional Setting**





- Jumper present: life test enabled.
- 2 Jumper present: fast test enabled.
  3 Jumper present: fast recovery charge enabled only for size 3. Possibility to recharge the battery also when the voltage is close to zero with the maximum power of the device.





PSC Class 5 Series

PSA Flex Series

PSB FIEX Series

PS-S Slim Series

S LOW Profile Serv

os Industrial Serie

PSC 8W Series

CBI Type

CB Type Chargers

ACCESSOITE

Appendix



## CBI2801224B DC UPS









#### Features:

- Input: Single-phase 230 500 VAC
- Output Load: power supply 12 VDC; 15 A / 24VDC; 10A
- Output: Battery charging 12 VDC; 15 A / 24VDC; 10A Suited for the following battery types:
- - Open Lead Acid, Sealed Lead Acid, lead Gel and Ni-Cd (option)
- Automatic diagnostic of battery status.
- Switching technology, output voltage 10-14.4 VDC / 22-28.8 VDC
- Three charging levels: Boost, trickle and recovery
- Protection degree IP20 DIN rail mountable

### **INPUT**

## **OUTPUT**

## **PROTECTION**

## LOAD OUTPUT

### **BATTERY** OUTPUT

## **OTHERS**

	Cat. No.	CBI2801224B
	Nominal Input Voltage	230 ~ 400 ~ 500 VAC
	Voltage range	180-264 / 330-550 VAC
	Inrush Current ( $V_n - I_n$ nom. Load). $I^2t$	≤16 A ≤ 5 msec
	Frequency	47 – 63 Hz
	Input Current (115 – 230 VAC)	2.2 -1.4 -1.0 A
	Internal fuse (factory replaceable)	4 A
	External Fuse (recommended) MCB curve B	16 A
	Output Voltage (V <sub>n</sub> ) / Nominal Power (W)	12 / 24 VDC / 270W (jumper selection)
	Output Current I <sub>n</sub>	15 A @ 12VDC / 10A @ 24VDC
	Efficiency (at 50% of rated current)	≥ 91 %
	Turn-On delay after applying input voltage	1 sec. (max)
	Start up with Strong Load (capacitive load)	Yes, Unlimited
	Dissipation power load max	28 W
	Short-circuit protection	Yes
	Over Load protection	Yes
	Over Voltage Output protection	Yes (typ. 35 VDC)
	Over Temperature protection	Yes
_	'	
	Output voltage (at I <sub>n</sub> )	10-14.4 / 22-28.8 VDC
	Nominal current I <sub>load</sub>	1.1 x ln A $\pm$ 5%
	Continuous current (without battery) I <sub>load</sub> = I <sub>n</sub>	15 A @ 12VDC / 10A @ 24VDC
	Continuous current (with battery) $I_{load} = I_n + I_{batt}$	30 A @ 12VDC / 20A @ 24VDC max.
	Max. Current Output Load (Main) I <sub>load</sub> (4 sec.)	45 A @ 12VDC / 30A @ 24VDC max.
	Max. Current Output Load (Back Up) I <sub>load</sub> (4 sec.)	30 A @ 12VDC / 20A @ 24VDC max.
	Push Button or Remote Input Control (RTCONN cable)	Start From Battery Without Main
	Time Buffering; min (switch output off without main input)	0.5,2,5,10,15,20,30,45,60,∞
	Protection alarm against total discharge	10-11 / 20-21V DC battery
	Threshold alarm for battery almost flat	9-10 / 19-20V DC battery
	Deach charge (OF CO) (ch.)	14.4 @ 10\/D0 / 00.0 @ 04\/D0
	Boost charge (25 °C) (at I <sub>n</sub> )	14.4 @ 12VDC / 28.8 @ 24VDC
	Max. time Bust Charge	15 h
	Min. time Bust Charge	1 min.
	Trickle charge (25 °C) (at I <sub>n</sub> )	13.8 @ 12VDC / 27.6 @ 24VDC
	Jumper Configuration battery type (V cell) Ni-Cd (optional)	2.23; 2.25; 2.27; 2.30; NiCd: 1.50 / element
	Recovery Charge	2 ~ 18 / 2 ~ 24VDC
	Charging current max I <sub>batt</sub>	15 A @ 12VDC / 10A @ 24VDC ± 5%
	Charging current limiting I <sub>adj</sub>	10 – 100 % / Ibatt
	Reverse battery protection	Yes
	Sulfated battery check	Yes by Jumper
	Detection of element in short circuit	Yes
	Quiescent Current	≤ 100 mA
	Charging Curve automatic: I <sub>UoUo</sub>	4 stage
	Remote Input Control (RTCONN cable)	Boost / Trickle
		05 7000
	Ambient temperature (operation)	-25 - +70°C
	De Rating Ta > 50°C	- 2.5%(ln) / °C
	Ambient temperature Storage	-40 - +85°C
	Humidity at 25°C no condensation	95%
	Cooling	Auto convention
	MTBF (IEC 61709)	> 300.000 h



## CBI2801224B DC UPS

The Altech DC-UPS system is built to optimize power management. The available power is automatically allocated between load and battery, supplying power to the load is the first priority. For high inrush applications the charging power will reroute automatically to the load. In this case the maximum available current on the load output is two times the value of the device rated current.

The Battery Care concept based on algorithms that achieve rapid and automatic charging, battery optimization during charging time, flat batteries recovery and real time diagnostic The Real Time Auto-diagnostic system, monitors battery faults, sulfated battery, short circuit battery elements, reverse polarity connection, battery disconnect. This conditions are detected and identified by the number of blinks of the diagnosis Led.

#### **Signal Output Contacts**

3	
Main or Backup Power	Yes
Battery Power Low	Yes
Battery Fault	Yes
Max. Current Rating (Resistive Load)	1A 30 VDC/60 VAC
Minimum Permissible Current Rating	1mA @ 5 VDC

#### **RJ45 Connection Input/Output**

Temp. Comp. Battery (with ext. probe)	Yes – (Aux 1)
ModBus / Can Bus	Yes - (Aux 2)
ModBus / Can Bus	Yes - (Aux 3)

#### **Environment**

Insulation voltage (IN/OUT)	3000 VAC
Insulation voltage (input / ground)	1605 VAC
Insulation voltage (Output / ground)	500 VAC
Protection Class (EN/IEC 60529)	IP20
Pollution Degree Environment	2
Connection TB, Screw Terminal	2.5 mm <sup>2</sup> (24-14 AWG)
Protection class (Ground Connected)	Class I
Dimensions (WxHxD)	115x115x135 mm
2.95x4.53x5.32 in	
Weight (approx.)	0.85 kg (1.9 Lbs)

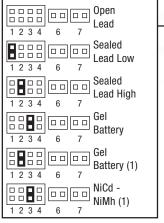
#### Safety and EMC

Battery charger standard compliance	IEC/EN 60335-2-29
Safety standards compliance:	EN60950 / UL1950 / CE
Fire Detection and alarm compliance	EN54-4
EMC Directive	89/336/EEC
Charging cycle	DIN41773
Emission	IEC 61000-6-4
Immunity	IEC 61000-6-2

The Altech DC-UPS system is designed to charge and monitor all battery types, by selecting the battery type via jumpers. The predefined curves include Open Lead Acid, Sealed Lead Acid, Gel, Ni-Cd (optional) battery types. The charging curve are programmed to automatically switch between Recovery Charge, Boost charge and Trickle charge. The continuous battery efficiency monitoring, reduces battery damage risk and allows a safe operation in permanent connection.

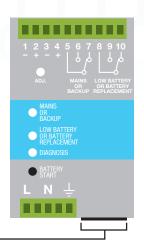
A compact and rugged metal case with DIN rail mounting bracket provide an easy installation and an IP20 protection.

#### **Jumper for Battery Type Selection**



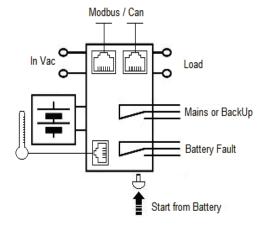
#### **Jumper for Functional Setting**

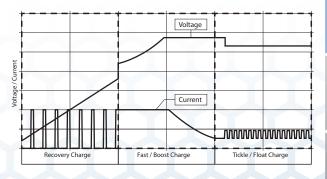
		attery Life est On¹
1 2 3	4 6 7	
		ast Charge nable²
1 2 3	4 6 7	
1 2 3		ast Recovery charge (2) <sup>3</sup>



Jumper present: life test enabled Jumper present: fast test enabled

Jumper present: fast recovery charge enabled only for size 3. Possibility to recharge the battery also when the voltage is close to zero with the maximum power of the device.







**CB** Type Intelligent Battery Chargers

The CB type battery chargers are designed and manufactured with a wide input voltage, single or two phase 115-230-277 VAC.



flexibility

## **Technology**

The CB series is a new range of battery chargers based on two strategic know-how elements.

#### Switching technology

We have 25 year experience in design of advanced stabilized switching technology power supplies. A battery charger based on this technology is much more efficient and much smaller and lighter than traditional linear technology battery chargers.

#### Micro-processor and Battery Care

Unlike most other state-of-the-art battery chargers, the CB series is equipped with a micro-processor which controls the charging process and enables several monitoring functions.

## Maximum safety and protection

The CB series is designed to provide safe operation and long battery life. The following protections are standard features:

- -Output protected against short circuit and overload -High insulation between primary and secondary
- -Protection against deep battery discharge
- -Protection against reverse polarity connection
- -Detection of batteries with wrong rated voltage
- -Protection against the effect of parallel connection with other power sources, e.g. gensets.

All protections have automatic reset. No thermal fuse to be replaced.

## One device for all battery types

Completely automatic, the battery chargers of the CB series are microprocessor controlled devices suited to charging most batteries types thank to factory pre-set and selectable charging curves.

The can charge open lead acid, sealed lead acid, Bel and Ni-Cd, Ni-MH batteries. It is possible to change or add other charging curves connecting the device to a portable PC.

## Mutli-Stage charging Three charging modes

Automatic multi-stage operation and real time diagnostic allow fast recharge and recovery of deep discharged batteries, adding value and reliability to the system hosting the CB device. The type of charging it is Voltages stabilized and current stabilized IUoUo.

CB battery chargers feature three charging modes, identified by a flashing code on a LED.

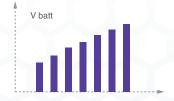
- Boost (Boost-Bulk) (Blink 2/sec)
- Trickle (also known as float or maintenance charging) (Trickle - Float) (Blink 1/sec)
- Recovery (Recovery) (Blink 5/sec)

## Recovery charging

Automatic multi-stage operation optimizes and adapt to battery status, even when the battery voltage is very low. CB can recharge batteries even when their voltage is close to zero. It allows recharge and complete recovery of flat batteries.

### Setting of battery maximum charging current

The maximum battery charging current can be set from 20% to 100% of the device rated value. Not available on LC models.





## **CB Type Intelligent Battery Chargers**

## Altech Corp.

## Diagnostic of battery and device

All CB devices support the user during installation and operation. An LED flashing sequence code allows to discriminate among various possible faults.

#### **LED Diagnosis:**

- 1 flash Reverse polarity, wrong battery voltage.
- 2 flashes Disconnected battery.
- 3 flashes Battery element in short circuit.
- 5 flashes Battery to be replaced (Internal impedance

Bad or Bad battery wire connection.)

## Diagnostic checks

#### Check for accidental disconnection of the battery cables

- If happen the devices switch off immediately the output power.

#### **Battery not connected**

- If the battery it is not connected no output power.

#### Test of quality wire connections

- During trickle charge the quality(resistance) on the battery connection is checked

every 20 sec. this to detect if the cable connection has been properly made.

#### Test of battery voltage connections

- Appropriate voltage check, to prevent connection of wrong battery types.

#### End of charging check

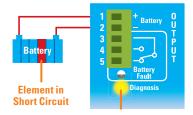
- When the battery it is completely full, the device automatically switch in trickle charging mode.

#### Reverse polarity check

- If the battery it is connected with inverted polarity, the devices are automatically protected.

#### Check for elements in short circuit

- Thanks to specific algorithms of evaluation, the CBs recognize batteries worth element in short circuit.



## Monitor signals

#### Signal contracts

- CB chargers indicate battery status and faults also via a change-over contact with galvanic isolation.
- Battery common fault.
- Unit disconnected from mains.

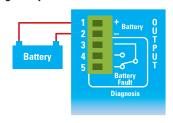


#### Visual indication

- Battery common fault
- Unit disconnected from mains
- Charging mode
- CV device self-diagnostic



#### Single output devices



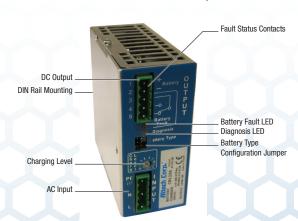
With the CB Battery Charger Line, Altech offers a highly reliable battery management solution. Operating at single phase Input Voltages of 115-230-277 VAC, the devices supply an Output of 12VDC and up to 35A or 24VDC and up to 20A.

Equipped with microcontrollers, the CB line offers fully automated multi-stage charging that will expand the battery's life significantly. Several diagnostic and monitoring features ensure easy handling and a high amount of transparency during daily operation.

Altech's CB line battery chargers are based on the switching technology which allows much higher efficiency as well as smaller and lighter devices. Additionally, several standard safety and protection features ensure safe installation and operation.

## Features:

- Fully automated charging
- Three charging modes
- · Compact, rugged metal case Available in 12VDC and 24VDC
- Suitable for most common battery types
- Adjustable charging current
- · Easy battery diagnosis and fault identification either by LED or external devices connected to fault status contacts
- High efficiency up to 91% through switching technology
- · Several output protection features such as short circuit, overload, deep battery discharge etc.
- · DIN rail mounting
- Small size
- 3 year warranty



## **CB Battery Chargers - Single Phase Specifications**













Case 1



Case 2



Case 3



## 12V DC Single Phase DIN Rail Battery Charger

Cat. No.	Case	Input VAC	Outp VDC	ut A	Recovery Charge VDC	Trickle Charge VDC	Boost Charge VDC	NOTES
CB123A	0	115-230-277	12	3	2-7	13.75	14.4	
CB126A*	0	115-230-277	12	6	2-7	13.75	14.4	
CB1210A	1	115-230-277	12	10	2-9	13.75	14.4	
CB1235A	3	115-230-277	12	35	2-9	13.75	14.4	

<sup>\*</sup> Not for new designs. See CB12245A for new design.

## 24V DC Single Phase DIN Rail Battery Charger

Cat. No.	Case	Input VAC	Outp VDC	out A	Recovery Charge VDC	Trickle Charge VDC	Boost Charge VDC	NOTES
CB243A	0	115-230-277	24	3	2-16	27.5	28.8	
CB245A	1	115-230-277	24	5	2-18	27.5	28.8	
CB2410A	2	115-230-277	24	10	2-18	27.5	28.8	
CB2420A	3	115-230-277	24	20	2-18	27.5	28.8	

## Multi Voltage Single Phase DIN Rail Battery Charger

Cat. No.	Case	Input VAC			Recovery Charge VDC	Trickle Charge VDC	Boost Charge VDC	NOTES
CB12245A	0	115-230-277	12/24	6/5	2-7/2-16	13.75/27.5	14.4/28.8	3

#### **Case Sizes**

**Size 0:** 45 mm x 100 mm x 100 mm (1.78 x 3.94 x 3.94 in.)

**Size 1:** 65 mm x 115 mm x 135 mm (2.56 x 4.53 x 5.32 in.)

Size 2: 100 mm x 115 mm x 135 mm (3.94 x 4.53 x 5.32 in.)

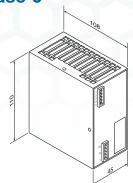
Size 3: 150 mm x 115 mm x 135 mm (5.91 x 4.53 x 5.32 in.)

Output Current can be adjusted from 20%-100% of value given above.

## **SPECIFICATIONS**

## Altech Corp.

## Case 0



Input Voltage 115-230 277VAC

**Input Current** 

0.5-0.3A (115-230VAC)

Connection

Plugable screw terminal blocks

Wire Range

0.2 - 2.5mm<sup>2</sup> / AWG 24-14

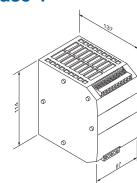
Size (WxHxD)

45x110x100 mm (1.78 x 3.94 x 3.94 in.)

**Packaging** 

1/box; 0.30kg (0.66 lbs)

## Case 1



Input Voltage 115-230 277VAC

Input Current

2.4-1.2A (115-230VAC)

Connection

Screw terminal blocks

Wire Range

0.2 - 2.5mm<sup>2</sup> / AWG 24-14

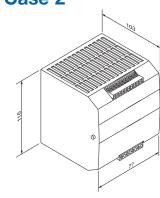
Size (WxHxD)

65x115x135 mm (2.56 x 4.53 x 5.32 in.)

Packaging

1/box; 0.65kg (1.43 lbs)

## Case 2



Input Voltage 115-230 277VAC

Input Current

3.3-2.2A (115-230VAC)

Connection

Screw terminal blocks

Wire Range

0.2 - 2.5mm<sup>2</sup> / AWG 24-14

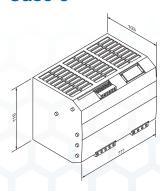
Size (WxHxD)

100x115x135 mm (3.94 x 4.53 x 5.32 in.)

**Packaging** 

1/box; 0.85kg (1.87 lbs)

## Case 3



### **Input Voltage**

115-230 277VAC

**Input Current** 

8-4.2A (115-230VAC)

Connection

screw terminal blocks

Wire Range

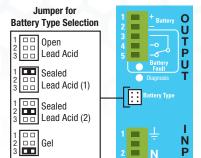
0.2 - 4mm2 / AWG 30-10

Size (WxHxD)

150x115x135 mm (5.91 x 4.53 x 5.32 in.)

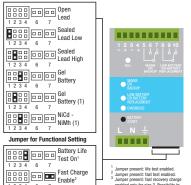
**Packaging** 

1/box; 1.5kg (3.31 lbs)



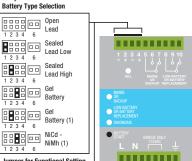
Optional: Ni/Cd

#### **Jumper for Battery Type Selection**



Fast Recover Jumper for

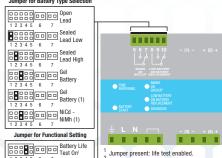
6 7



Jumper for Functional Setting

1 2 3 4 6	Battery Life Test On <sup>1</sup>
1 2 3 4 6	Fast Charge Enable <sup>2</sup>

## Jumper for Battery Type Selection



Jumper present: life test enabled. Jumper present: fast test enabled. Jumper present: fast recovery charge enabled only for size 3. Possibility to recharge the battery also when the voltage is close to zero with the maximum power of the device. Fast Charge Enable<sup>2</sup> Fast Recover Charge (2)<sup>3</sup>



## **CB123A Battery Charger**





Max. current can be switched (EN60947.4.1): Max. DC1: 30 VDC 1 A; AC1: 60 VAC 1A

Min.1mA at 5 VDC





#### Features:

- Input: Single-phase 115 230 277 VAC
- Output: Battery charging 12 VDC; 3 A
- Suited for the following battery types:
- Open Lead Acid, Sealed Lead Acid, lead Gel and Ni-Cd (option)
- Automatic diagnostic of battery status. Charging curve IUoUo, constant voltage and current
- Switching technology, output voltage 14.4 VDC
- Three charging levels: Boost, Trickle, Recovery.
- Protected against short circuit, inverted polarity, over load.
- Signal output (contact free) for fault battery state
- Protection degree IP20 DIN rail mountable

### INPUT

## **BATTERY OUTPUT**

#### **GENERAL DATA**

### **ENVIRONMENT**

### **SAFETY & EMC**

#### **OTHERS**

Cat. No.	CB123A
Input Data	
Nominal Input Voltage (2 x VAC) Input Voltage range (VAC)	115 ~ 230 ~ 277 VAC 90 ~ 305 VAC
Inrush Current (Vn and In Load) I2t Frequency Input Current	11 A ≤ 5 msec. 47 ~ 63 Hz ±6% 0.5 A ~ 115 VAC; 0.3A ~ 230 VAC
Internal Fuse External Fuse (recommended)	4 A 10 A (MCB curve B)
Battery Output (Battery Care) Boost charge (25°C) (typ. at I <sub>n</sub> ) Max. time Bust Charge (tpy. at I <sub>n</sub> ) Min. time Bust Charge (tpy. at I <sub>n</sub> ) Trickle charge (25°C) (typ. at I <sub>n</sub> ) Recovery Charge Charging. Max I <sub>batt</sub> (I <sub>n</sub> ) Adjustable charging current I <sub>adj</sub> (% In)	14.4 VDC 15 h 70 min. 13.75 VDC 2 ~ 7 VDC 3 A ±5% 20 - 100
Efficiency (50% - I <sub>n</sub> ) Quiescent Current Charging Curve automatic: IUoUo Detection of element in short circuit Short-circuit protection Over Load protection Over Voltage Output protection Jumper Configuration battery type	81% ≤ 100 mA 3 stage Yes Yes Yes Yes 2.23;2,25;2,27;2,3;
(V cell) Ni-Cd (optional)  General Data	1,41–1,5 (20 elem.)
Insulation voltage (In /Out) Insulation voltage (In / PE) Insulation voltage (Out / PE) Insulation voltage (Out / PE) Protection Class (EN/IEC 60529) Protection class Reliability: MTBF IEC 61709 Pollution Degree Environment Connection Terminal Blocks screw Type Dimensions (W-H-D) Weight	3000 VAC 1605 VAC 500 VAC IP20 I, with PE connected > 300.000 hours 2 2,5mm (24~14AWG) 45x100x100 mm (1.78 x 3.94 x 3.94 in.) 0.30 Kg approx. (0.65 lbs.)
Climate Data Ambient temperature (operation) De Rating Ta > 50°C Ambient temperature Storage Humidity at 25°C no condensation Cooling	-25 - +70°C (-13~158°F) -2.5%(In) / °C -40 - +85°C (-40~185°F) 95% to 25°C Auto Convention
Norms and Certifications Conforming to:	IEC/EN 60335-2-29,EN60950/UL1950, Electrical safety, 89/336/EEC, EMC Directive, 2006/95/EC (Low Voltage), DIN41773 (Charging cycle), Emission:IEC 61000-6-4,Immunity: IEC 61000-6-2.CE
Signal Output (free switch contact) Main or Backup Power Low Battery Fault Battery	Yes Yes Yes
Type of Signal Output Contact  May ourrent can be evitabled (ENGODAT 4.1)	

Resistive load

Min load

## CB123A Battery Charger

# Altech Corp.®

#### **Technical Features**

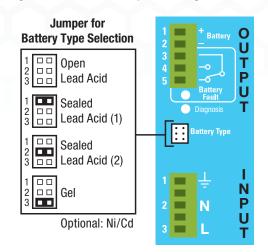
The CB series battery chargers are designed with advanced multistage battery charging method, completely automatic and suited to meet the most advanced requirements of battery manufacturers. The Battery Care concept is base on algorithms that implement rapid and automatic charging, battery charge optimization during time, flat batteries recovery and real time diagnostic during installation and operation. The Real Time Autodiagnostic system, monitoring battery faults such as, elements in short circuit, accidental reverse polarity connection, disconnection of the battery, they can easily be detected and removed by help of Blink Code of Diagnosis Led; during the installation and after sell. Each device is suited for all battery types, by means of jumpers it is possible setting predefined curves for Open Lead Acid, Sealed Lead Acid, Gel, Ni-Cd(option). They are programmed for two charging levels, boost and trickle. A rugged casing with bracket for DIN rail mounting provide IP20 protection degree. They are extremely compact and cost-effective.

#### Charging

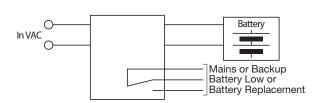
Automatic multi-stage charging and real time diagnostic allow fast recharge and recovery of deep discharged batteries, adding value and reliability to the system hosting. Type of charging is Voltages and current stabilized IUoUo. The state of charging battery and Autodiagnosis of the systems are identified by a flashing code on a Diagnosis LED and Fault Battery LED:

	State	Diagnosis LED	Battery Fault LED
Charging	Trickle	1 Blink/sec	0FF
Type	Boost	2 Blink/sec	0FF
	Recovery	5 Blink/sec	0FF
Auto	Reverse polarity	<b> </b>	ON
diagnosis	Battery No connect	<b>Л</b> L2 Blink	ON
	Element in Short C.	<b>∭</b> 3 Blink	ON
	Replace Battery	<b>JMM</b> L5 Blink	ON

#### Wiring Terminals and Jumper Settings



#### **Wiring Diagram**



osc Class 2 series

DSA FIRX Series

PSB FIEX Series

PS-S Slim Series

SCLOW Profile Serve

os Industrial Series

PSC & W Series

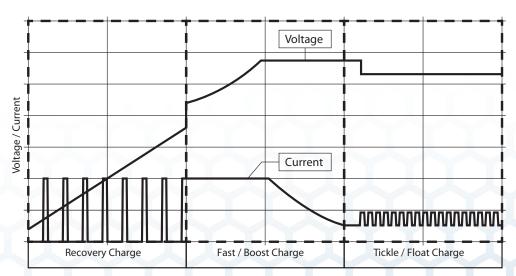
CBI TYPE

CB Type Chargers

Accessories

anpendix

### **CB Charging Diagram**





## **CB126A Battery Charger**



Cot No







## \* Not for new designs.

#### Features:

~ 277 VAC

CD10CA

- Input: Single-phase 115 230 277 VAC
- Output: Battery charging 12 VDC; 6 A
- Suited for the following battery types:
- Open Lead Acid, Sealed Lead Acid, lead Gel and Ni-Cd (option)
- Automatic diagnostic of battery status. Charging curve IUoUo, constant voltage and current
- Switching technology, output voltage 14.4 VDC
- Three charging levels: Boost, Trickle, Recovery.
- Protected against short circuit, inverted polarity, over load.
- Signal output (contact free) for fault battery state
- Protection degree IP20 DIN rail mountable.

#### INPUT

## **BATTERY** OUTPUT

### **GENERAL DATA**

#### **ENVIRONMENT**

#### SAFETY & EMC

#### **OTHERS**

Gat. No.	UB120A
Input Data	
Nominal Input Voltage (2 x VAC)	115 ~ 230 ~ 277 V
Input Voltage range (VAC)	90 ~ 305 VAC
Inrush Current (Vn and In Load) I2t	$\leq$ 11 A $\leq$ 5 msec.
Frequency	47 ~ 63 Hz ±6%

Input Current 1 A ~ 115 VAC; 0.7 A 230 VAC Internal Fuse 4 A External Fuse (recommended) 10 A (MCB curve B)

**Battery Output (Battery Care)** Boost charge (25°C) (typ. at  $I_n$ ) 14.4 VDC Max. time Bust Charge (tpy. at  $I_n$ ) 15 h Min. time Bust Charge (tpy. at In) 70 min. Trickle charge (25°C) (typ. at In) 13.75 VDC Recovery Charge 2 ~ 7 VDC Charging. Max  $I_{batt} < 40^{\circ}C$  ( $I_{n}$ )  $6 A \pm 5\%$ Charging. Max  $I_{batt} > 40^{\circ} \text{C (I}_{\text{n}})$ 4 A Efficiency (50% - In) 81%

Charging current limiting ladi  $20 - 100 \% I_n$ Quiescent Current ≤ 100 mA Charging Curve automatic: IUoUo 3 stage Detection of element in short circuit Yes Short-circuit protection Yes Over Load protection Yes

Over Voltage Output protection Yes Jumper Configuration battery type 2.23;2,25;2,27;2,3; (V cell) Ni-Cd (optional) 1,41-1,5 (20 elem.)

**General Data** 

Insulation voltage (In /Out) 3000 VAC Insulation voltage (In / PE) 1605 VAC Insulation voltage (Out / PE) 500 VAC Protection Class (EN/IEC 60529) IP20 Protection class I, with PE connected

Reliability: MTBF IEC 61709 > 300.000 hours Pollution Degree Environment Connection Terminal Blocks screw Type 2,5mm (24~14AWG)

Dimensions (W-H-D) 45x100x100 mm (1.78 x 3.94 x 3.94 in.) Weight 0.30 Kg approx. (0.65 lbs.)

**Climate Data** Ambient temperature (operation)

-25 - +70°C (-13~158°F) De Rating Ta > 50 °C - 2.5%(In) / °C Ambient temperature Storage -40 - +85°C (-40~185°F) Humidity at 25°C no condensation 95% to 25°C **Auto Convention** Cooling

**Norms and Certifications** 

Conforming to:

IEC/EN 60335-2-29,EN60950/UL1950, Electrical safety, 89/336/EEC, EMC Directive, 2006/95/EC (Low Voltage), DIN41773 (Charging cycle), Emission:IEC 61000-6-4,Immunity: IEC 61000-6-2.CE

Signal Output (free switch contact)

Main or Backup Power Yes Low Battery Yes **Fault Battery** Yes

**Type of Signal Output Contact** 

Max. current can be switched (EN60947.4.1): Max. DC1: 30 VDC 1 A; AC1: 60 VAC 1A Min.1mA at 5 VDC

Resistive load Min load

# CB126A Battery Charger

## Altech Corp.

## \* Not for new designs.

#### **Technical Features**

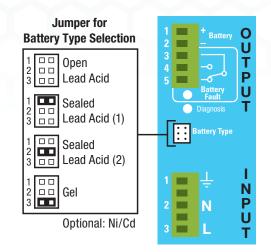
The CB series battery chargers are designed with advanced multistage battery charging method, completely automatic and suited to meet the most advanced requirements of battery manufacturers. The Battery Care concept is base on algorithms that implement rapid and automatic charging, battery charge optimization during time, flat batteries recovery and real time diagnostic during installation and operation. The Real Time Autodiagnostic system, monitoring battery faults such as, elements in short circuit, accidental reverse polarity connection, disconnection of the battery, they can easily be detected and removed by help of Blink Code of Diagnosis Led; during the installation and after sell. Each device is suited for all battery types, by means of jumpers it is possible setting predefined curves for Open Lead Acid, Sealed Lead Acid, Gel, Ni-Cd(option). They are programmed for two charging levels, boost and trickle. A rugged casing with bracket for DIN rail mounting provide IP20 protection degree. They are extremely compact and cost-effective.

#### Charging

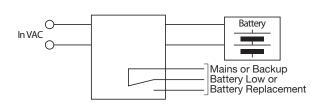
Automatic multi-stage charging and real time diagnostic allow fast recharge and recovery of deep discharged batteries, adding value and reliability to the system hosting. Type of charging is Voltages and current stabilized IUoUo. The state of charging battery and Autodiagnosis of the systems are identified by a flashing code on a Diagnosis LED and Fault Battery LED:

	State	Diagnosis LED	Battery Fault LED
Charging	Trickle	1 Blink/sec	0FF
Type	Boost	2 Blink/sec	0FF
	Recovery	5 Blink/sec	0FF
Auto	Reverse polarity	<b> </b>	ON
diagnosis	Battery No connect	<b>Л</b> —2 Blink	ON
	Element in Short C.	<b>∭</b> 3 Blink	ON
	Replace Battery	<b>JMM</b> L5 Blink	ON

#### **Wiring Terminals and Jumper Settings**



#### **Wiring Diagram**



SC Class 2 Series

DSA FIRX Series

PSB FIEX Series

PS-S Slim Series

CLOW Profile Series

os Industrial Series

PSC & W Series

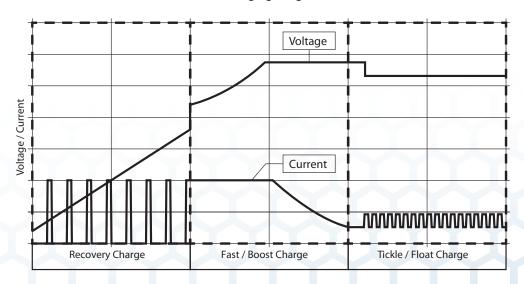
CBI Type

CB Type Chargers

Accessories

Appendix

#### **CB Charging Diagram**





## **CB1210A Battery Charger**









#### Features:

- Input: Single-phase 115 230 277 VAC
- Output: Battery charging 12 VDC; 10 A
- Suited for the following battery types:
- Open Lead Acid, Sealed Lead Acid, lead Gel and Ni-Cd (option)
- Automatic diagnostic of battery status. Charging curve IUoUo, constant voltage and current
- Switching technology, output voltage 14.4 VDC
- Three charging levels: Boost, Trickle, Recovery.
- Protected against short circuit, inverted polarity, over load.
- Signal output (contact free) for fault battery state
- Protection degree IP20 DIN rail mountable

#### INPUT

### **BATTERY OUTPUT**

#### **GENERAL DATA**

### **ENVIRONMENT**

### SAFETY & EMC

## **OTHERS**

Cat. No.	CB1210A
Input Data	
Nominal Input Voltage (2 x VAC)	115 ~ 230 ~ 277 VAC
Input Voltage range (VAC)	90 ~ 305 VAC
Inrush Current (Vn and In Load) I2t	$\leq$ 16 A $\leq$ 5 msec.
Frequency	47 ~ 63 Hz ±6%
Input Current	2.4 A ~ 115 VAC; 1.2 A 230 VAC
Internal Fuse	ΛΔ

External Fuse (recommended)	10 A (MCB curve B)
Battery Output (Battery Care)	
Boost charge (25°C) (typ. at In)	14.4 VDC
Max. time Bust Charge (tpy. at In)	15 h
Min. time Bust Charge (tpy. at In)	1 min.
Trickle charge (25°C) (typ. at In)	13.75 VDC
Recovery Charge	2 ~ 9 VDC
Charging. Max I <sub>batt</sub> (I <sub>n</sub> )	10 A ±5%
Efficiency (50% - In)	89%
Charging current limiting ladi	20 – 100 % I <sub>n</sub>
Quiescent Current	≤ 100 mA

Charging Curve automatic: IUoUo 3 stage Detection of element in short circuit Yes Short-circuit protection Yes Over Load protection Yes Over Voltage Output protection Yes Jumper Configuration battery type 2.23;2,25;2,27;2,3; (V cell) Ni-Cd (optional) 1,41-1,5 (20 elem.)

#### **General Data** Insulation voltage (In /Out) 3000 VAC Insulation voltage (In / PE) 1605 VAC Insulation voltage (Out / PE) 500 VAC Protection Class (EN/IEC 60529) IP20

Protection class I, with PE connected Reliability: MTBF IEC 61709 > 300.000 hours Pollution Degree Environment Connection Terminal Blocks screw Type 2,5mm(24-14AWG)

Dimensions (W-H-D) 65x115x135 mm (2.56 x 4.53 x 5.32 in.) Weight 0.65 Kg approx. (1.43 lbs.)

Climate Data Ambient temperature (operation) -25 - +70°C (-13~158°F) De Rating Ta > 50°C - 2.5%(In) / °C Ambient temperature Storage -40 - +85°C (-40~185°F) Humidity at 25°C no condensation 95% to 25°C Cooling Auto Convention

**Norms and Certifications** Conforming to: IEC/EN 60335-2-29,EN60950/UL1950, Electrical safety, 89/336/EEC, EMC Directive, 2006/95/EC (Low Voltage), DIN41773 (Charging cycle), Emission:IEC 61000-6-4,Immunity: IEC 61000-6-2.CE

Signal Output (free switch contact) Main or Backup Power Yes Low Battery Yes **Fault Battery** Yes

**Type of Signal Output Contact** Max. current can be switched (EN60947.4.1): Max. DC1: 30 VDC 1 A; AC1: 60 VAC 1A Min.1mA at 5 VDC

Resistive load Min load

## **CB1210A Battery Charger**

# Altech Corp.

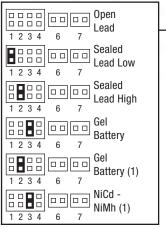
#### **Technical Features**

The CB series battery chargers are designed with advanced multistage battery charging method, completely automatic and suited to meet the most advanced requirements of battery manufacturers. The Battery Care concept is base on algorithms that implement rapid and automatic charging, battery charge optimization during time, flat batteries recovery and real time diagnostic during installation and operation. The Real Time Autodiagnostic system, monitoring battery faults such as, elements in short circuit, accidental reverse polarity connection, disconnection of the battery, they can easily be detected and removed by help of Blink Code of Diagnosis Led; during the installation and after sell. Each device is suited for all battery types, by means of jumpers it is possible setting predefined curves for Open Lead Acid, Sealed Lead Acid, Gel, Ni-Cd(option). They are programmed for two charging levels, boost and trickle. A rugged casing with bracket for DIN rail mounting provide IP20 protection degree. They are extremely compact and cost-effective.

#### Charging

Automatic multi-stage charging and real time diagnostic allow fast recharge and recovery of deep discharged batteries, adding value and reliability to the system hosting. Type of charging is Voltages and current stabilized IUoUo. The state of charging battery and Autodiagnosis of the systems are identified by a flashing code on a Diagnosis LED and Fault Battery LED:

	State	Diagnosis LED	Battery Fault LED
Charging	Trickle	1 Blink/sec	0FF
Type	Boost	2 Blink/sec	0FF
	Recovery	5 Blink/sec	0FF
Auto	Reverse polarity	<b>⅃</b> L1 Blink	ON
diagnosis	Battery No connect	<b>∭</b> 2 Blink	ON
	Element in Short C.	<b>ЛЛ</b> L3 Blink	ON
	Replace Battery	<b>JUUUL</b> 5 Blink	ON



#### **Jumper for Functional Setting**

Battery Life Test On <sup>1</sup> 1 2 3 4 6 7
Fast Charge Enable <sup>2</sup>

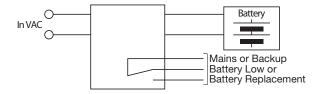
#### **Jumper for Battery Type Selection**



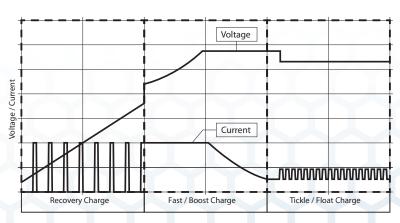
Jumper present: life test enabled.

Jumper present: fast test enabled. Jumper present: fast recovery charge enabled only for size 3. Possibility to recharge the battery also when the voltage is close to zero with the maximum power of the device.

## Wiring Diagram



## **CB Charging Diagram**





## CB1235A **Battery Charger**





Max. current can be switched (EN60947.4.1): Max. DC1: 30 VDC 1 A; AC1: 60 VAC 1A

Min.1mA at 5 VDC





#### Features:

- Input: Single-phase 115 230 277 VAC
- Output: Battery charging 24 VDC; 35 A
- Suited for the following battery types:
- Open Lead Acid, Sealed Lead Acid, lead Gel and Ni-Cd (option)
- Automatic diagnostic of battery status. Charging curve IUoUo, constant voltage and current
- Switching technology, output voltage 28.8 VDC
- Three charging levels: Boost, Trickle, Recovery.
- Protected against short circuit, inverted polarity, over load.
- Signal output (contact free) for fault battery state
- Protection degree IP20 DIN rail mountable

#### **INPUT**

### **BATTERY** OUTPUT

## **GENERAL DATA**

#### **ENVIRONMENT**

## **SAFETY & EMC**

### **OTHERS**

Cat. No.	CB1235A
nput Data Nominal Input Voltage (2 x VAC) nput Voltage range (VAC)	115 / 230 ~ 277 VAC 90 ~ 135 / 180 ~ 305 VAC
Inrush Current (Vn and In Load) I²t Frequency Input Current Internal Fuse External Fuse (recommended)	$\leq$ 35 A $\leq$ 5 msec. 47 ~ 63 Hz $\pm$ 6% 1.0 A ~ 115 VAC; 0.7 A 230 VAC 10 A 16 A (MCB curve B)
Battery Output (Battery Care) Boost charge (25°C) (typ. at I <sub>n</sub> ) Max. time Bust Charge (tpy. at I <sub>n</sub> ) Min. time Bust Charge (tpy. at I <sub>n</sub> ) Frickle charge (25°C) (typ. at I <sub>n</sub> ) Recovery Charge Charging. Max I <sub>batt</sub> (I <sub>n</sub> ) Efficiency (50% - I <sub>n</sub> ) Charging current limiting I <sub>adj</sub> Quiescent Current Charging Curve automatic: IUoUo Detection of element in short circuit Short-circuit protection Over Voltage Output protection Power Supply Mode Jumper Configuration battery type V cell) Ni-Cd (optional)	14.4 VDC 15 h 1 min. 13.75 VDC 2 ~ 9 VDC 35 A ±5% 91% 20 - 100 % I <sub>n</sub> ≤ 100 mA 3 stage Yes Yes Yes Yes Yes Yes Yes Yes Yes Ye
General Data nsulation voltage (In /Out) nsulation voltage (In / PE) nsulation voltage (Out / PE) Protection Class (EN/IEC 60529) Protection class Reliability: MTBF IEC 61709 Pollution Degree Environment Connection Terminal Blocks screw Type Dimensions (W-H-D) Weight	3000 VAC 1605 VAC 500 VAC IP20 I, with PE connected > 300.000 hours 2 4mm(30–10AWG) 150x115x135 mm (5.91 x 4.53 x 5.32 in.) 1.5 Kg approx. (3.31 lbs.)
Climate Data Ambient temperature (operation) De Rating Ta > 50°C Ambient temperature Storage Humidity at 25°C no condensation Cooling	-25 - +70°C (-13~158°F) - 2.5%(In) / °C -40 - +85°C (-40~185°F) 95% to 25°C Auto Convention
Norms and Certifications Conforming to:	IEC/EN 60335-2-29,EN60950/UL1950, Electrical safety, 89/336/EEC, EMC Directive, 2006/95/EC (Low Voltage),DIN41773 (Charging cycle), Emission:IEC 61000-6-4,Immunity: IEC 61000-6-2.CE
Signal Output (free switch contact) Main or Backup Power Low Battery Fault Battery	Yes Yes Yes

Resistive load

Min load

## CB1235A **Battery Charger**

# Altech Corp.

#### **Technical Features**

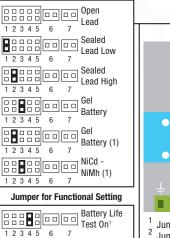
The CB series battery chargers are designed with advanced multi-stage battery charging method. completely automatic and suited to meet the most advanced requirements of battery manufacturers. The Battery Care concept is base on algorithms that implement rapid and automatic charging, battery charge optimization during time, flat batteries recovery and real time diagnostic during installation and operation. The Real Time Autodiagnostic system, monitoring battery faults such as, elements in short circuit, accidental reverse polarity connection, disconnection of the battery, they can easily be detected and removed by help of Blink Code of Diagnosis Led; during the installation and after sell. Each device is suited for all battery types, by means of jumpers it is possible setting predefined curves for Open Lead Acid, Sealed Lead Acid, Gel, Ni-Cd(option). They are programmed for two charging levels, boost and trickle, A rugged casing with bracket for DIN rail mounting provide IP20 protection degree. They are extremely compact and cost-effective.

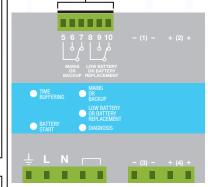
#### Charging

Automatic multi-stage charging and real time diagnostic allow fast recharge and recovery of deep discharged batteries, adding value and reliability to the system hosting. Type of charging is Voltages and current stabilized IUoUo. The state of charging battery and Autodiagnosis of the systems are identified by a flashing code on a Diagnosis LED and Fault Battery LED:

	State	Diagnosis LED	Battery Fault LED
Charging	Trickle	1 Blink/sec	0FF
Type	Boost	2 Blink/sec	0FF
	Recovery	5 Blink/sec	0FF
Auto	Reverse polarity	1 Blink	ON
diagnosis	Battery No connect	<b>Ⅲ</b> 2 Blink	ON
	Element in Short C.	<b>∭</b> 3 Blink	ON
	Replace Battery	<b>JUUIL</b> 5 Blink	ON

#### **Jumper for Battery Type Selection**





Jumper present: life test enabled. Jumper present: fast test enabled. Jumper present: fast recovery charge enabled only for size 3. Possibility to recharge the battery also when the voltage is close to zero with the maximum power of the device.

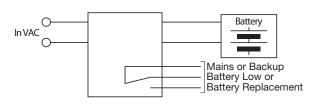
## Wiring Diagram

Fast Charge Enable<sup>2</sup>

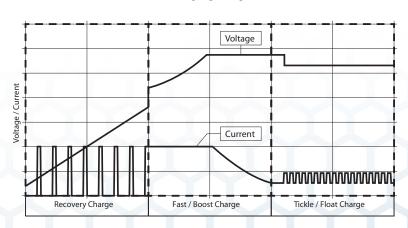
Fast Recovery Charge (2)<sup>3</sup>

1 2 3 4 5 6 7

12345 6 7



### **CB Charging Diagram**





## **CB243A Battery Charger**





Max. current can be switched (EN60947.4.1): Max. DC1: 30 VDC 1 A; AC1: 60 VAC 1A

Min.1mA at 5 VDC





#### Features:

- Input: Single-phase 115 230 277 VAC
- Output: Battery charging 24 VDC; 3 A
- Suited for the following battery types:
- Open Lead Acid, Sealed Lead Acid, lead Gel and Ni-Cd (option)
- Automatic diagnostic of battery status. Charging curve IUoUo, constant voltage and current
- Switching technology, output voltage 28.8 VDC
- Three charging levels: Boost, Trickle, Recovery.
- Protected against short circuit, inverted polarity, over load.
- Signal output (contact free) for fault battery state
- Protection degree IP20 DIN rail mountable

### INPUT

## **BATTERY** OUTPUT

#### **GENERAL DATA**

#### **ENVIRONMENT**

### SAFETY & EMC

### **OTHERS**

115 ~ 230 ~ 277 VAC 90 ~ 305 VAC $\leq$ 7 A $\leq$ 5 msec. 47 ~ 63 Hz $\pm$ 6% (115 ~ 230 VAC) 1 ~ 0.7 A 4 A 10 A (MCB curve B)		
47 ~ 63 Hz ±6% (115 ~ 230 VAC) 1 ~ 0.7 A 4 A		
28.8 VDC 15 h 70 min. 27.5 VDC 2 ~ 16 VDC 3 A ±5% 20 − 100 81% ≤ 100 mA 3 stage Yes Yes Yes Yes Yes 2.23;2,25;2,27;2,3; 1,41−1,5 (20 elem.)		
3000 VAC 1605 VAC 500 VAC IP20 I, with PE connected > 300.000 hours 2 2,5mm(24–14AWG) 45x100x100 mm (1.78 x 3.94 x 3.94 in.) 0.30 Kg approx. (0.66 lbs.)		
-25 - +70°C (-13~158°F) - 2.5%(ln) / °C -40 - +85°C (-40~185°F) 95% to 25°C Auto Convention		
IEC/EN 60335-2-29,EN60950/UL1950, Electrical safety, 89/336/EEC, EMC Directive, 2006/95/EC (Low Voltage),DIN41773 (Charging cycle), Emission:IEC 61000-6-4,Immunity: IEC 61000-6-2.CE		
Yes Yes Yes		

Resistive load

Min load

# CB243A Battery Charger

# Altech Corp.

#### **Technical Features**

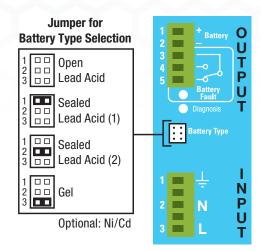
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#### Charging

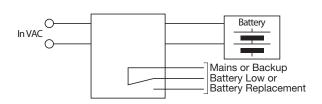
Automatic multi-stage charging and real time diagnostic allow fast recharge and recovery of deep discharged batteries, adding value and reliability to the system hosting. Type of charging is Voltages and current stabilized IUoUo. The state of charging battery and Autodiagnosis of the systems are identified by a flashing code on a Diagnosis LED and Fault Battery LED:

	State	Diagnosis LED	Battery Fault LED
Charging	Trickle	1 Blink/sec	0FF
Type	Boost	2 Blink/sec	0FF
	Recovery	5 Blink/sec	0FF
Auto	Reverse polarity	<b></b> ■ 1 Blink	ON
diagnosis	Battery No connect	<b>Л</b> 2 Blink	ON
	Element in Short C.	<b>∭</b> 3 Blink	ON
	Replace Battery	<b>JUUU</b> L 5 Blink	ON

#### Wiring Terminals and Jumper Settings



#### Wiring Diagram



OSC Class 2 Series

DSA FIRX Series

PSB FIEX Series

PS S Slim Series

as Low Profile Serve

PS Industrial Series

PSC & W Series

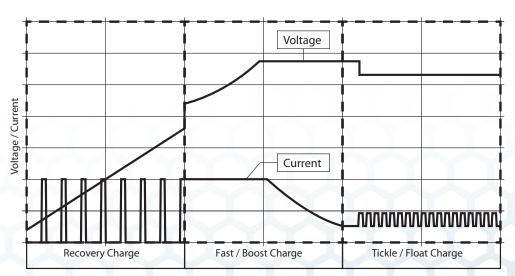
CBI Type nc ups systems

CB Type Chargers

Accessories

nendix

#### **CB Charging Diagram**





# **CB245A Battery Charger**



Min.1mA at 5 VDC









- Input: Single-phase 115 230 -277 VAC
- Output: Battery charging 24 VDC; 5 A
- Suited for the following battery types:
- Open Lead Acid, Sealed Lead Acid, lead Gel and Ni-Cd (option)
- Automatic diagnostic of battery status. Charging curve IUoUo, constant voltage and current
- Switching technology, output voltage 28.8 VDC
- Three charging levels: Boost, Trickle, Recovery.
- Protected against short circuit, inverted polarity, over load.
- Signal output (contact free) for fault battery state
- Protection degree IP20 DIN rail mountable

#### INPUT

#### **BATTERY OUTPUT**

#### **GENERAL DATA**

#### **ENVIRONMENT**

#### **SAFETY & EMC**

#### **OTHERS**

Cat. No.	CB245A
Input Data Nominal Input Voltage (2 x VAC) Input Voltage range (VAC)	115 ~ 230 ~ 277 VAC 90 ~ 305 VAC
Inrush Current (Vn and In Load) I <sup>2</sup> t Frequency Input Current Internal Fuse External Fuse (recommended)	≤ 16 A ≤ 5 msec. 47 ~ 63 Hz ±6% 3.3 A - 115 VAC; 2.2 A ~ 2300 AC 4 A 10 A (MCB curve B)
Battery Output (Battery Care) Boost charge (25°C) (typ. at I <sub>n</sub> ) Max. time Bust Charge (tpy. at I <sub>n</sub> ) Min. time Bust Charge (tpy. at I <sub>n</sub> ) Trickle charge (25°C) (typ. at I <sub>n</sub> ) Recovery Charge Charging. Max I <sub>batt</sub> (I <sub>n</sub> ) Efficiency (50% - I <sub>n</sub> ) Charging current limiting I <sub>adj</sub> Quiescent Current Charging Curve automatic: IUoUo Detection of element in short circuit Short-circuit protection Over Voltage Output protection Jumper Configuration battery type (V cell) Ni-Cd (optional)	28.8 VDC 15 h 1 min. 27.5 VDC 2 ~ 18 VDC 5 A ±5% 89% 20 - 100 % I <sub>n</sub> ≤ 100 mA 3 stage Yes Yes Yes Yes Yes Yes 2.23;2,25;2,27;2,3; 1,41-1,5 (20 elem.)
General Data Insulation voltage (In /Out) Insulation voltage (In / PE) Insulation voltage (Out / PE) Protection Class (EN/IEC 60529) Protection class Reliability: MTBF IEC 61709 Pollution Degree Environment Connection Terminal Blocks screw Type Dimensions (W-H-D) Weight	3000 VAC 1605 VAC 500 VAC IP20 I, with PE connected > 300.000 hours 2 2,5mm (24–14AWG) 65x115x135 mm (2.56 x 4.53 x 5.32 in) 0.65 Kg approx. (1.43 lbs.)
Climate Data Ambient temperature (operation) De Rating Ta > 50°C Ambient temperature Storage Humidity at 25°C no condensation Cooling	-25 - +70°C (-13~158°F) - 2.5%(ln) / °C -40 - +85°C (-40~185°F) 95% to 25°C Auto Convention
Norms and Certifications Conforming to:	IEC/EN 60335-2-29,EN60950/UL1950, Electrical safety, 89/336/EEC, EMC Directive, 2006/95/EC (Low Voltage),DIN41773 (Charging cycle), Emission:IEC 61000-6-4,Immunity: IEC 61000-6-2.CE
Signal Output (free switch contact) Main or Backup Power Low Battery Fault Battery	Yes Yes Yes
Type of Signal Output Contact Max. current can be switched (EN60947.4.1): Max. DC1: 30 VDC 1 A; AC1: 60 VAC 1A Min 1mA at 5 VDC	Resistive load

Min load

# **CB245A Battery Charger**

# Altech Corp.

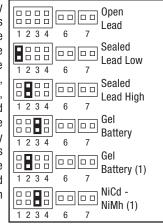
#### **Technical Features**

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#### Charging

Automatic multi-stage charging and real time diagnostic allow fast recharge and recovery of deep discharged batteries, adding value and reliability to the system hosting. Type of charging is Voltages and current stabilized IUoUo. The state of charging battery and Autodiagnosis of the systems are identified by a flashing code on a Diagnosis LED and Fault Battery LED:

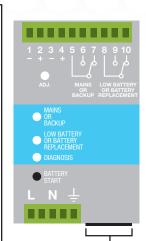
	State	Diagnosis LED	Battery Fault LED
Charging	Trickle	1 Blink/sec	0FF
Type	Boost	2 Blink/sec	0FF
	Recovery	5 Blink/sec	OFF
Auto	Reverse polarity	<b>_</b> 1 Blink	ON
diagnosis	Battery No connect	<b>Л</b> L2 Blink	ON
	Element in Short C.	<b>∭</b> 3 Blink	ON
	Replace Battery	<b>JMM</b> L5 Blink	ON



#### **Jumper for Functional Setting**

	Battery Life Test On <sup>1</sup>
1 2 3 4	Fast Charge Enable <sup>2</sup>
1 2 3 4	Fast Recovery Charge (2) <sup>3</sup>

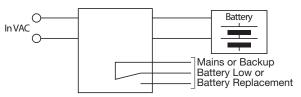
#### **Jumper for Battery Type Selection**



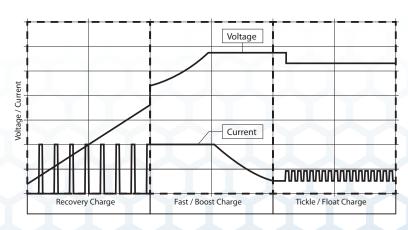
Jumper present: life test enabled. Jumper present: fast test enabled. Jumper present: fast recovery charge enabled only for size 3. Possibility to recharge the battery also when the voltage is close to zero with the

maximum power of the device.

#### Wiring Diagram



#### **CB Charging Diagram**





# **CB2410A Battery Charger**







#### Features:

- Input: Single-phase 115 230 277 VAC
- Output: Battery charging 24 VDC; 10 A
- Suited for the following battery types:
- Open Lead Acid, Sealed Lead Acid, lead Gel and Ni-Cd (option)
- Automatic diagnostic of battery status. Charging curve IUoUo, constant voltage and current
- Switching technology, output voltage 28.8 VDC
- Three charging levels: Boost, Trickle, Recovery.
- Protected against short circuit, inverted polarity, over load.
- Signal output (contact free) for fault battery state
- Protection degree IP20 DIN rail mountable

#### **INPUT**

#### **BATTERY** OUTPUT

#### **GENERAL DATA**

#### **ENVIRONMENT**

#### **SAFETY & EMC**

Low Battery

**Fault Battery** 

Min.1mA at 5 VDC

Type of Signal Output Contact

Max. current can be switched (EN60947.4.1): Max. DC1: 30 VDC 1 A; AC1: 60 VAC 1A

#### **OTHERS**

Cat. No.	CB2410A
Input Data	
Nominal Input Voltage (2 x VAC)	115 / 230 ~ 277 VAC
Input Voltage range (VAC)	90 ~ 135 / 180 ~ 305 VAC
Inrush Current (Vn and In Load) I²t	≤ 16 A ≤ 5 msec.
Frequency	47 ~ 63 Hz ±6%
Input Current	3.3 A ~ 115 VAC; 2.2 A ~ 230 VAC
Internal Fuse	6.3 A
External Fuse (recommended)	16 A (MCB curve B)
Battery Output (Battery Care)	
Boost charge (25°C) (typ. at In)	28.8 VDC
Max. time Bust Charge (tpy. at In)	15 h
Min. time Bust Charge (tpy. at In)	1 min.
Trickle charge (25°C) (typ. at In)	27.5 VDC
Recovery Charge	2 ~ 18 VDC
Charging. Max I <sub>batt</sub> (I <sub>n</sub> )	10 A ±5%
Efficiency (50% - In)	88%
Charging current limiting ladi	20 – 100 % In
Quiescent Current	≤ 100 mA
Charging Curve automatic: IUoUo	3 stage
Detection of element in short circuit	Yes
Short-circuit protection	Yes
Over Load protection	Yes
Over Voltage Output protection	Yes
Jumper Configuration battery type	2.23;2,25;2,27;2,3;
(V cell) Ni-Cd (optional)	1,41–1,5 (20 elem.)
General Data	
Insulation voltage (In /Out)	3000 VAC
Insulation voltage (In / PE)	1605 VAC
Insulation voltage (Out / PE)	500 VAC
Protection Class (EN/IEC 60529)	IP20
Protection class	I, with PE connected
Reliability: MTBF IEC 61709	> 300.000 hours
Pollution Degree Environment	2
Connection Terminal Blocks screw Type	2,5mm(24–14AWG)
Dimensions (W-H-D)	100x115x135 mm (3.94 x 4.53 x 5.32 in)
Weight	0.85 Kg approx. (1.87 lbs.)
Climate Data	
Ambient temperature (operation)	-25 - +70°C (-13~158°F)
De Rating Ta > 50°C	- 2.5%(ln) / °C
Ambient temperature Storage	-40 - +85°C (-40~185°F)
Humidity at 25°C no condensation	95% to 25°C
Cooling	Auto Convention
Norms and Certifications	
Conforming to:	IEC/EN 60335-2-29,EN60950/UL1950, Electrical safety, 89/336/EEC,
	EMC Directive, 2006/95/EC (Low Voltage), DIN41773 (Charging cycle),
	Emission:IEC 61000-6-4,Immunity: IEC 61000-6-2.CE
Signal Output (free switch contact)	
Main or Backup Power	Yes
Low Dottony	Voc

Yes

Yes

Resistive load

Min load

# **CB2410A Battery Charger**

# Altech Corp.

#### **Technical Features**

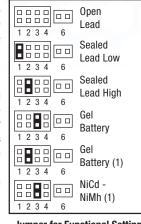
The CB series battery chargers are designed with advanced multistage battery charging method, completely automatic and suited to meet the most advanced requirements of battery manufacturers. The Battery Care concept is base on algorithms that implement rapid and automatic charging, battery charge optimization during time, flat batteries recovery and real time diagnostic during installation and operation. The Real Time Autodiagnostic system, monitoring battery faults such as, elements in short circuit, accidental reverse polarity connection, disconnection of the battery, they can easily be detected and removed by help of Blink Code of Diagnosis Led; during the installation and after sell. Each device is suited for all battery types, by means of jumpers it is possible setting predefined curves for Open Lead Acid, Sealed Lead Acid, Gel, Ni-Cd(option). They are programmed for two charging levels, boost and trickle. A rugged casing with bracket for DIN rail mounting provide IP20 protection degree. They are extremely compact and cost-effective.

#### Charging

Automatic multi-stage charging and real time diagnostic allow fast recharge and recovery of deep discharged batteries, adding value and reliability to the system hosting. Type of charging is Voltages and current stabilized IUoUo. The state of charging battery and Autodiagnosis of the systems are identified by a flashing code on a Diagnosis LED and Fault Battery LED:

	State	Diagnosis LED	Battery Fault LED
Charging	Trickle	1 Blink/sec	0FF
Type	Boost	2 Blink/sec	0FF
	Recovery	5 Blink/sec	0FF
Auto	Reverse polarity	<b> </b>	ON
diagnosis	Battery No connect	<b>Л</b> L2 Blink	ON
	Element in Short C.	<b>∭</b> 3 Blink	ON
	Replace Battery	<b>JMM</b> L5 Blink	ON

#### Jumper for **Battery Type Selection**



#### Jumper for Functional Setting

1 2 3 4 6	Battery Life Test On <sup>1</sup>
1 2 3 4 6	Fast Charge Enable <sup>2</sup>

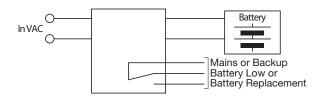
Jumper present: fast test enabled.

recharge the battery also when the voltage is close to zero with the

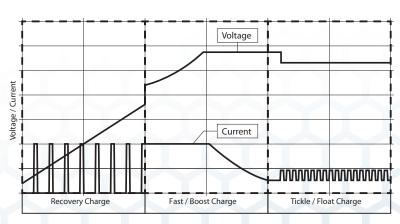
maximum power of the device

Jumper present: fast recovery charge enabled only for size 3. Possibility to

#### Wiring Diagram



#### **CB Charging Diagram**





# **CB2420A Battery Charger**









#### Features:

- Input: Single-phase 115 277 VAC
- Output: Battery charging 24 VDC; 20 A
- Suited for the following battery types:
- Open Lead Acid, Sealed Lead Acid, lead Gel and Ni-Cd (option)
- Automatic diagnostic of battery status. Charging curve IUoUo, constant voltage and current
- Switching technology, output voltage 28.8 VDC
- Three charging levels: Boost, Trickle, Recovery.
- Protected against short circuit, inverted polarity, over load.
- Signal output (contact free) for fault battery state
- Protection degree IP20 DIN rail mountable

#### **INPUT**

#### **BATTERY OUTPUT**

# **GENERAL DATA**

#### **ENVIRONMENT**

#### **SAFETY & EMC**

#### **OTHERS**

#### Cat. No. **CB2420A**

Input Data	
Nominal Input Voltage (2 x VAC)	115 ~ 230 ~ 277 VAC
Input Voltage range (VAC)	90 ~ 135 / 180 ~ 305 VAC
Inrush Current (Vn and In Load) 12t	$\leq$ 35 A $\leq$ 5 msec.
Frequency	47 ~ 63 Hz ±6%
Input Current	(115 ~ 230 VAC) 8 ~ 4.2 A
Internal Fuse	10 A
External Fuse (recommended)	16 A (MCB curve B)

Battery Output (Battery Care)	
Boost charge (25°C) (typ. at In)	28.8 VDC
Max. time Bust Charge (tpy. at In)	15 h
Min. time Bust Charge (tpy. at I <sub>n</sub> )	1 min.
Trickle charge (25°C) (typ. at In)	27.5 VDC
Recovery Charge	2 ~ 18 VDC
Charging. Max I <sub>batt</sub> (I <sub>n</sub> )	20 A ±5%
Adjustable charging current (% In)	20 – 100
Efficiency (50% - In)	91%
Charging current limiting l <sub>adj</sub>	20 – 100 % l <sub>n</sub>
Quiescent Current	≤ 100 mA
Charging Curve automatic: IUoUo	3 stage
Detection of element in short circuit	Yes
Short-circuit protection	Yes
Over Load protection	Yes
Over Voltage Output protection	Yes

Power Supply Mode	Yes
Jumper Configuration battery type	2.23;2,25;2,27;2,3;
(V cell) Ni-Cd (optional)	1,41–1,5 (20 elem.)

General Data	
Insulation voltage (In /Out)	3000 VAC
Insulation voltage (In / PE)	1605 VAC
Insulation voltage (Out / PE)	500 VAC
Protection Class (EN/IEC 60529)	IP20
Protection class	I, with PE connected
Reliability: MTBF IEC 61709	> 300.000 hours
Pollution Degree Environment	2

Connection Terminal Blocks screw Type 4 mm(30-10AWG) 150x115x135 mm (5.91 x 4.53 x 5.32 in.) Dimensions (W-H-D)

Weight 1.5 Kg approx. (3.31 lbs)

**Climate Data** Ambient temperature (operation) -25 - +70°C (-13~158°F)

De Rating Ta > 50°C - 2.5%(In) / °C Ambient temperature Storage -40 - +85°C (-40~185°F) Humidity at 25°C no condensation 95% to 25°C Cooling **Auto Convention** 

#### **Norms and Certifications** Conforming to:

IEC/EN 60335-2-29,EN60950/UL1950, Electrical safety, 89/336/EEC, EMC Directive, 2006/95/EC (Low Voltage), DIN41773 (Charging cycle), Emission:IEC 61000-6-4,Immunity: IEC 61000-6-2.CE

#### Signal Output (free switch contact) Main or Backup Power Yes Yes Low Battery **Fault Battery**

Yes **Type of Signal Output Contact** Max. current can be switched (EN60947.4.1): Max. DC1: 30 VDC 1 A; AC1: 60 VAC 1A Resistive load Min.1mA at 5 VDC Min load

# **CB2420A Battery Charger**

# Altech Corp.

#### **Technical Features**

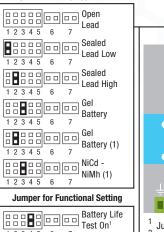
The CB series battery chargers are designed with advanced multi-stage battery charging method, completely automatic and suited to meet the most advanced requirements of battery manufacturers. The Battery Care concept is base on algorithms that implement rapid and automatic charging, battery charge optimization during time, flat batteries recovery and real time diagnostic during installation and operation. The Real Time Autodiagnostic system, monitoring battery faults such as, elements in short circuit, accidental reverse polarity connection, disconnection of the battery, they can easily be detected and removed by help of Blink Code of Diagnosis Led; during the installation and after sell. Each device is suited for all battery types, by means of jumpers it is possible setting predefined curves for Open Lead Acid, Sealed Lead Acid, Gel, Ni-Cd(option). They are programmed for two charging levels, boost and trickle. A rugged casing with bracket for DIN rail mounting provide IP20 protection degree. They are extremely compact and cost-effective.

#### Charging

Automatic multi-stage charging and real time diagnostic allow fast recharge and recovery of deep discharged batteries, adding value and reliability to the system hosting. Type of charging is Voltages and current stabilized IUoUo. The state of charging battery and Autodiagnosis of the systems are identified by a flashing code on a Diagnosis LED and Fault Battery LED:

	State	Diagnosis LED	Battery Fault LED
Charging	Trickle	1 Blink/sec	0FF
Type	Boost	2 Blink/sec	0FF
	Recovery	5 Blink/sec	0FF
Auto	Reverse polarity	<b></b> 1 Blink	ON
diagnosis	Battery No connect	<b>∭</b> 2 Blink	ON
	Element in Short C.	<b>∭</b> 3 Blink	ON
	Replace Battery	<b>JMML</b> 5 Blink	ON

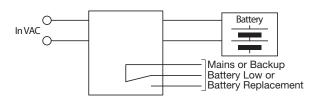
#### **Jumper for Battery Type Selection**



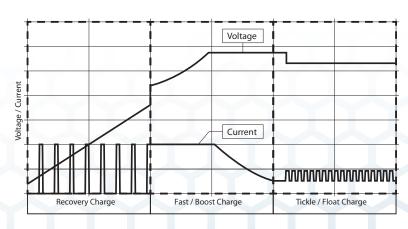
ľ	1	2	3	4	5	6	7	
							•	Fast Charge Enable <sup>2</sup>
ľ		_	3		_	6	7	
					-	00	00	Fast Recovery Charge (2) <sup>3</sup>
ľ	1	2	3	4	5	6	7	oa. go (=)

Jumper present: life test enabled. Jumper present: fast test enabled. Jumper present: fast recovery charge enabled only for size 3. Possibility to recharge the battery also when the voltage is close to zero with the maximum power of the device.

#### Wiring Diagram



#### **CB Charging Diagram**





# CB12245A **Battery Charger**











E353241

#### Features:

- Input: Single-phase 115 230 277 VAC
- Output: Battery charging 12 VDC; 24 VDC (switch select)
- Suited for the following battery types: Open Lead Acid, Sealed Lead Acid, lead Gel and Ni-Cd (option)
- Automatic diagnostic of battery status. Charging curve IUoUo, constant voltage and current
- Switching technology, output voltage 14.4 VDC / 28.8 VDC
- Four charging levels: Boost, Absorption, Trickle, Recovery.
- Protected against short circuit, reversed polarity, over load.
- Signal output (contact free) for fault battery state
- Protection degree IP20 DIN rail mountable

#### **INPUT**

#### **BATTERY** OUTPUT

#### **GENERAL DATA**

#### ENVIRONMENT

#### **SAFETY & EMC**

#### **OTHERS**

#### Cat. No. CB12245A **Input Data** Nominal Input Voltage (2 x VAC) 115 ~ 230 ~ 277 VAC Input Voltage range (VAC) 90 ~ 305 VAC Inrush Current (Vn and In Load) 12t $\leq$ 16 A $\leq$ 5 msec. Frequency $47 \sim 63 \text{ Hz } \pm 6\%$ Input Current 2.4 A - 115 VAC; 1.2 A 230 VAC Internal Fuse 4 A External Fuse (recommended) 10 A (MCB curve B) **Battery Output (Battery Care)** Boost charge (25°C) (typ. at In) 14.4 VDC / 28.8 VDC (jumper section) Max. time Bust Charge (tpy. at In) Min. time Bust Charge (tpy. at In) 4 min.

13.75 VDC / 27.5 VDC Trickle charge (25°C) (typ. at In) Recovery Charge 2 ~ 7 VDC / 2 ~ 16 VDC Charging. Max Ibatt (In) 6A@12V / 5A@24V DC Efficiency (50% - I<sub>n</sub>) 90% Charging current limiting ladi  $20 - 100 \% I_n$ **Quiescent Current** ≤ 100 mA Charging Curve automatic: IUoUo 3 stage Detection of element in short circuit Yes Short-circuit protection Yes Over Load protection Yes Over Voltage Output protection Yes Jumper Configuration battery type 2.23;2,25;2,27;2,3; (V cell) Ni-Cd (optional) 1,41-1,5 (20 elem.)

#### **General Data** Insulation voltage (In /Out) 3000 VAC Insulation voltage (In / PE) 1605 VAC Insulation voltage (Out / PE) 500 VAC Protection Class (EN/IEC 60529) IP20 Protection class I. with PE connected Reliability: MTBF IEC 61709

> 300.000 hours Pollution Degree Environment Connection Terminal Blocks screw Type 2,5mm(24-14AWG) Dimensions (W-H-D) 45x105x100 mm (1.78 x 3.94 x 3.94 in.) Weight 0.3 Kg (0.65 lbs) approx.

#### **Climate Data** -25 - +70°C (-13~158°F) Ambient temperature (operation) De Rating Ta > 50°C - 2.5%(In) / °C Ambient temperature Storage -40 - +85°C (-40~185°F)

Humidity at 25°C no condensation 95% to 25°C Cooling Auto Convention **Norms and Certifications** 

Conforming to: IEC/EN 60335-2-29,EN60950/UL1950, Electrical safety, 89/336/EEC, EMC Directive, 2006/95/EC (Low Voltage), DIN41773 (Charging cycle), Emission:IEC 61000-6-4,Immunity: IEC 61000-6-2.CE

Signal Output (free switch contact)	
Main or Backup Power	Yes
Low Battery	Yes
Fault Battery	Yes

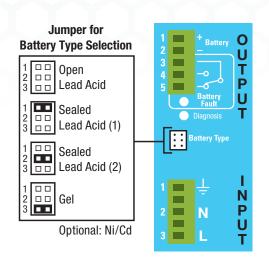
**Type of Signal Output Contact** Max. current can be switched (EN60947.4.1): Max. DC1: 30 VDC 1 A; AC1: 60 VAC 1A Resistive load Min.1mA at 5 VDC Min load

# CB12245A Battery Charger

# Altech Corp.

#### **Technical Features**

The CB series battery chargers are designed with advanced multistage battery charging method, completely automatic and suited to meet the most advanced requirements of battery manufacturers. The Battery Care concept is base on algorithms that implement rapid and automatic charging, battery charge optimization during time, flat batteries recovery and real time diagnostic during installation and operation. The Real Time Autodiagnostic system, monitoring battery faults such as, elements in short circuit, accidental reverse polarity connection, disconnection of the battery, they can easily be detected and removed by help of Blink Code of Diagnosis Led; during the installation and after sell. Each device is suited for all battery types, by means of jumpers it is possible setting predefined curves for Open Lead Acid, Sealed Lead Acid, Gel, Ni-Cd(option). They are programmed for two charging levels, boost and trickle. A rugged casing with bracket for DIN rail mounting provide IP20 protection degree. They are extremely compact and cost-effective.

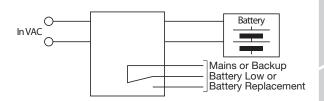


#### Charging

Automatic multi-stage charging and real time diagnostic allow fast recharge and recovery of deep discharged batteries, adding value and reliability to the system hosting. Type of charging is Voltages and current stabilized IUoUo. The state of charging battery and Autodiagnosis of the systems are identified by a flashing code on a Diagnosis LED and Fault Battery LED:

	State	Diagnosis LED	Battery Fault LED
Charging	Trickle	1 Blink/sec	0FF
	Absorption	1 Blink/sec	0FF
Type	Boost	3 Blink/sec	0FF
	Recovery	5 Blink/sec	0FF
Auto	Reverse polarity	1 Blink	ON
diagnosis	Battery No connect	2 Blink	ON
	Element in Short C.	<b>∭</b> 3 Blink	ON
	Replace Battery	<b>∭</b> 5 Blink	ON

#### Wiring Diagram



OSC Class 2 Series

DSA FIEX Series

PSB FIEX SETTE

os sim series

S Low Profile Serve

as Industrial Series

PS C & W Series

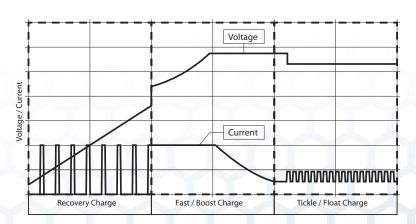
CBI TYPE

CB Type Chargers

nccessories

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#### **CB Charging Diagram**





#### **Accessories**

#### **Power Supply Redundancy Buffer Module**

PS-RDN20 is a 20A redundancy (decoupling) module for the 24V DC power system. Containing 2 sets of 20A Or-ing diodes with wonderful heat dissipation deployment, PS-RDN20 give you a new option for safe connection of 1+1 redundant set-up. Not only perfectly decouple power sources from each other as well as from the load, PS-RDN20 also provides users monitoring signals for both input channels through the built-in relays. Since there's no switching components inside the module, PS-RDN20 will not arise additional EMI issues and should provide you a worry-free application platform!

DC input voltage range 21~28V, 20A max. x 2 channels

Reverse voltage 30V
DC output current 20A max.
DC output voltage drop 0.5V max.

Input voltage alarm When input is  $> 20V(\pm 5\%)$  or  $<30V(\pm 5\%)$ , relay contacts

Relay contact rating 30VDC, 1A Working Temperature  $-20 \sim +70 ^{\circ}$ C

EMC standards EN55022 class B, EN61000-4-2,3,4,5,6,8, ENV50204

Connection I/P: 4 poles, O/P: 2 poles screw DIN terminal,

Single output: 4 poles

#### **UPS Battery Module**

PS-UPS40 is a 40A max. DC UPS (battery control) module for the 24 V DC power system. Accompany with external batteries, it can back-up up to 40A of current to critical loads for certain period of time depending on the capacity of batteries. With complete monitoring signals and LED indicators for DC BUS OK, Battery Fail, Battery Discharge and the repeated Battery Test function to check the situation of external batteries. Users can customize their own DC UPS system to back up critical loads and capture the status of the whole system easily.

DC input / DC bus 24~29V, 40A max.

Battery input voltage 21~29V Battery input current 0~40A Charge current (typ.) 2A

External battery (typ.) 24V, 4AH / 7AH / 12AH

DC bus ok Relay status: Short when DC voltage between 21~29V(±3%),

relay contacts

Battery fail Relay status: Short when battery failure is observed through the

battery test function, relay contacts

LED (red): Battery over-discharge warning or battery broken: light;

battery OK: dark

Battery discharge Relay status: Short when battery in discharge condition,

relay contacts

LED (yellow): Battery discharging: light; battery is not discharging

or discharging current <2A: dark

Working temperature -20~+70°C

EMC standards EN55022 class B, EN61000-4-2,3,4,5,6,8, ENV50204

Connection I/P: 2 poles, O/P: 2 poles screw DIN terminal, Single output: 6 poles

# Redundancy Buffer Module UPS Battery Module





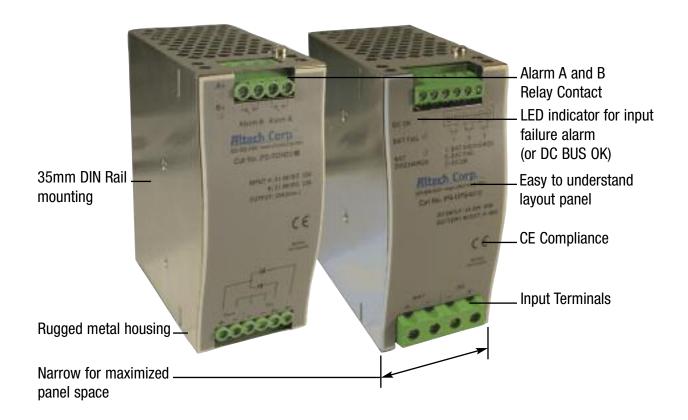


#### **Redundancy Buffer Module Features:**

- Suitable for redundant operation of 24V system
- Installed on 35 x 7.5 mm or 35 x 15 mm DIN Rail
- Relay contact signal output and LED indicator for input failure alarm
- · Cooling by free air convection
- 3 year warranty

#### **UPS Battery Module Features:**

- Battery controller for DIN Rail UPS system
- Installed on 35 x 7.5 mm or 35 x 15 mm DIN Rail
- Parallel connection to DC BUS
- Suitable for 24V system up to 40A
- Built-in battery test function
- Battery polarity protection
- Relay contact signal output and LED indicator for DC BUS OK, battery fail and battery discharge
- Cooling by free air convection
- 3 year warranty



## **Accessories**

- REDUNDANCY BUFFER MODULE
- UPS MODULE









#### **Power Supply Redundancy Buffer Module**

PS-RDN20 is a 20A redundancy (decoupling) module for the 24V DC power system. Containing 2 sets of 20A Oring diodes with excellent heat dissipation deployment. PS-RDN20 give you a new option for safe connection of 1+1 redundant set-up. Not only perfectly decouple power sources from each other as well as from the load, PS-RDN20 also provides users monitoring signals for both input channels through the built-in relays. Since there's no switching components inside the module, PS-RDN20 will not arise additional EMI issues and should provide you a worry-free application platform!

Cat. No.	Voltage Range	Current Range	NOTES
PS-RDN20	21-28V DC	0-20A	

Connection: Terminal 1 - 4 poles, Terminal 2 - 6 poles Size (WxHxD): 55.5x125x100mm (2.19x4.95x3.95 inches)

Packaging: 1/box; 1.1lbs / 0.5Kg

**DC Fail Block Diagram** 



#### **40 AMP UPS Battery Controller**

PS-UPS40 is a 40A max. DC UPS (battery control) module for the 24 V DC power system. Accompany with external batteries, it can back-up up to 40A of current to critical loads for certain period of time depending on the capacity of batteries. With complete monitoring signals and LED indicators for DC BUS OK, Battery Fail, Battery Discharge and the repeated Battery Test function to check the situation of external batteries. Users can customize their own DC UPS system to back up critical loads and capture the status of the whole system easily.

Cat. No.	Voltage Range	Current Range	NOTES
PS-UPS40	21-29V (Battery) 24-29V (DC)	0 - 40A	

Connection: Terminal 1 - 4 poles, Terminal 2 - 6 poles Size (WxHxD): 55.5x125x100mm (2.19x4.95x3.95 inches)

Packaging: 1/box; 1.21lbs / 0.55Kg

#### **SPECIFICATIONS**

#### **PS-RDN20 Series**

# 125.2

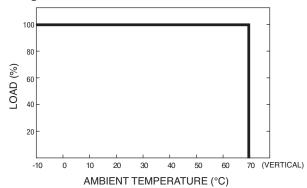
Terminal Pin. No Assign. (TB1)

Pin No.	Assignment		
1	Vout+		
2	Vout-		
3,4	Vin-		
5	Vin B+		
6	Vin A+		

Terminal Pin. No Assign. (TB2)

Pin No.	Assignment
1	Alarm B1
2	Alarm B2
3	Alarm A1
4	Alarm A2

#### **Derating Curve**



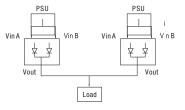
#### Applications:

1. 1+1 Redundancy Using 1 more PSU as the redundant unit

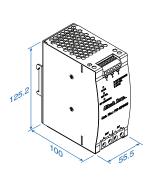
Load

- 2. 1+N Redundancy: Using more PSUs as the redundant units to increase the reliability
- PSU PSU PSU PSU PSU PSU PSU Vin B Vin A Vin B Vin B Vin A Vin B Vin A Vin B Vi

Single Use: Connecting only one PSU to one PS-RDN20 to reduce the stress of the diodes and hence increase the reliability



#### **PS-UPS40 Series**



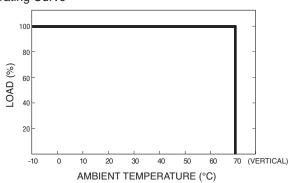
Terminal Pin. No Assign. (TB1)

Pin No.	Assignment
1	BATTERY INPUT +
2	BATTERY INPUT -
3	DC INPUT -
4	DC INPUT +

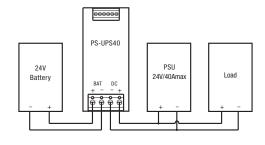
Terminal Pin. No Assign. (TB2)

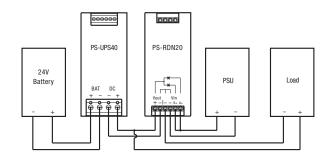
Pin No.	Assignment
1	BAT DISC 1
2	BAT DISC 2
3	BAT OK 1
4	BAT OK 2
5	DC OK 1
6	DC OK 2

**Derating Curve** 



- 1. Backup connection for AC interruption
- 2. Combine redundancy module (PS-RDN20) to back up AC interruption or failure of PSU





Note: All dimensions are in millimeters, to convert to inches multiply by 0.03937.



# PS-RDN20 **Specifications**





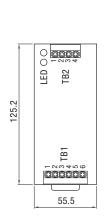


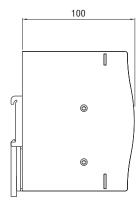
#### Features:

- Suitable for redundant operation of 24V system Installed on DIN Rail TS35 / 7.5 or 15
- Relay contact signal output and LED indicator for input failure alarm
- Cooling by free air convection
- 3 year warranty

DC INPUT/ DC BUS	Cat. No.	PS-RDN20
<u> </u>	REVERSE VOLTAGE (max.)	30V
	OUTPUT CURRENT (max.)	20A
	VOLTAGE DROP	0.5V
BATTERY	LED INDICATORS	Two green LED's indicating each input is OK or fail
IN / OUTPUT		
	INPUT VOLTAGE RANGE	21 ~ 28V
	NUMBER OF INPUTS	Two
	INPUT CURRENT (max.)	20A per input
FUNCTION		
	INPUT VOLTAGE ALARM	When input is $\geq 20V \ (\pm 5\%)$ or $\leq 30V \ (\pm 5\%)$ relay contacts
	RELAY CONTACT RATING (max.)	30VDC, 1A
ENVIRONMENT		
LIVITIONIVILIVI	WORKING TEMP	00 700
	WORKING TEMP. WORKING HUMIDITY	-20 ~ +70°C 20 ~ 90% RH non-condensing
	STORAGE TEMP., HUMIDITY	-40 ~ +85°C, 10 ~ 95% RH
	VIBRATION	10 ~ 500Hz, 2G 10min./1cycle, 60 min. each long X,Y, Z axes
	MOUNTING	Compliance to IEC60068-2-6
<b>SAFETY &amp; EMC</b>		
	WITHSTAND VOLTAGE	Terminal- Chassis: 0.5KVAC, Relay Contacts- Terminal: 0.5KVAC
	ISOLATION RESISTANCE	Terminal- Chassis: ≥100M Ohms / 500VDC (25°C; 70% RH)
	EMI CONDUCTION & RADIATION	Compliance to EN55022 (CISPR22) Class B
	EMS IMMUNITY	Compliance to EN61000-4-2,3,4,5,6,8; ENV50204; heavy industry level; criteria A,
OTHERS		
<u> </u>		
	MTBF	996.8Khrs min. MIL-HDBK-217K (25°C)
	DIMENSION	55.5x125.2x100mm (WxHxD)
	PACKING	0.5Kg; 20pcs / 11Kg / 1.29CUFT
	1	All parameters NOT specially mentioned are measured at 24V DC input, rated load and 25°C of ambient temperature.

#### **Mechanical Specification**

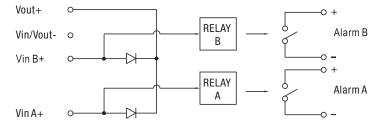




Terminal Pin. No Assignment (TB1		
Pin No.	Assignment	
1	Vout+	
2	Vout-	
3,4	Vin-	
5	Vin B+	
6	Vin A+	

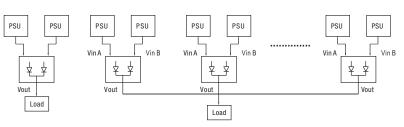
Terminal Pin. No Assignment (TB2)		
Pin No.	Assignment	
1	Alarm B1	
2	Alarm B2	
3	Alarm A1	
4	Alarm A2	

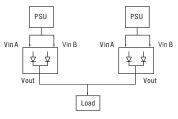
#### **Block Diagram**



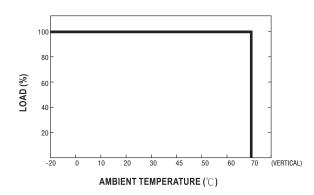
#### **Applications**

- 1. 1+1 Redundancy Using 1 more PSU as the redundant unit
- ${\bf 2.1+N}\ Redundancy: Using\ more\ PSUs\ as\ the\ redundant\ units\ to\ increase\ the\ reliability$
- Single Use: Connecting only one PSU to one PS-RDN20 to reduce the stress of the diodes and hence increase the reliability





#### **Derating Curve**



Note: All dimensions are in millimeters, to convert to inches multiply by 0.03937.



# PS-UPS40 **Specifications**



MTBF

DIMENSION

PACKING





#### Features:

- Battery controller for DIN Rail UPS system
- Parallel connection to DC BUS
- Suitable for 24V system up to 40A
- Installed on DIN Rail TS35/ 7.5 or 15
- Built-in battery test function
- Battery polarity protection
- Relay contact signal output and LED indicator for DC BUS OK,
- Battery fail, and battery discharge
- Cooling by free air convection
- 3 year warranty

DC INPUT/ DC BUS	Cat. No.	PS-UPS40
BATTERY IN / OUTPUT	DC VOLTAGE (Typ.) RATED CURRENT	24 ~ 29V 40A
	VOLTAGE RANGE (Typ.) CURRENT RANGE CHARGE CURRENT (Typ.) EXTERNAL BATTERY (Typ.)	21 ~ 29V 0 ~ 40A 2A 4 / 7 / 12AH / 24V
FUNCTION	I	
	RELAY CONTACT RATING (max.) DC BUS OK	30VDC, 1A Relay contact: Short when DC voltage between 21 ~ 29V (±3%), relay contacts LED (Green): DC BUS OK: light; DC BUS fail: dark
	BATTERY FAIL	Relay contact: Short when battery failure is observed through the battery test function, relay contacts LED (Red): Battery over- discharge warning or battery broken: light; Battery OK: dark Every 25 seconds, unit will send out test signal through Battery Fail relay contact and LED indicator once the battery is fail.
	BATTERY DISCHARGE	Relay contact: Short when battery in discharge condition, relay contacts  LED (Yellow): Battery discharging: light; Battery is not discharging or discharging current ≤2.0A: dark
ENVIRONMENT	1	
	WORKING TEMP. WORKING HUMIDITY STORAGE TEMP., HUMIDITY VIBRATION MOUNTING	-20 ~ +70°C 20 ~ 90% RH -20 ~ +85°C, 10 ~ 95% RH 10 ~ 500Hz, 2G 10min./1cycle, 60 min. each long X,Y, Z axes Compliance to IEC60068-2-6
SAFETY & EMC	'	·
	WITHSTAND VOLTAGE ISOLATION RESISTANCE EMI CONDUCTION & RADIATION EMS IMMUNITY	Terminal- Chassis: 0.5KVAC, Relay Contacts- Terminal: 0.5KVAC  Terminal- Chassis: ≥100M Ohms / 500VDC (25°C; 70% RH)  Compliance to EN55022 (CISPR22) Class B  Compliance to EN61000-4-2,3,4,5,6,8; ENV50204; heavy industry level; criteria A
OTHERS	To the first term of the first	1

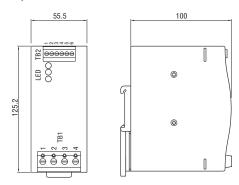
161.9Khrs min. MIL-HDBK-217K (25°C)

All parameters NOT specially mentioned are measured at rated load and 25°C of ambient temperature.

55.5x125.2x100mm (WxHxD)

0.55Kg; 20pcs / 12Kg / 1.29CUFT

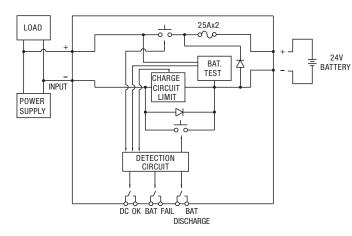
#### **Mechanical Specification**



Terminal Pin. No Assignment (TB1)					
Pin No.	Assignment				
1	BATTERY INPUT +				
2	BATTERY INPUT -				
3	DC INPUT -				
4	DC INPUT +				

Terminal Pin. No Assignment (TB2)				
Pin No.	Assignment			
1	BAT DISC 1			
2	BAT DISC 2			
3	BAT OK 1			
4	BAT OK 2			
5	DC OK 1			
6	DC OK 2			

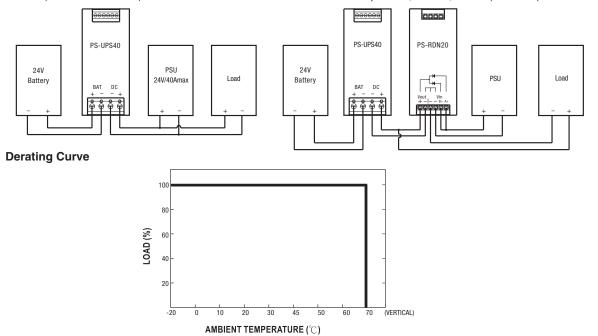
#### **Block Diagram**



#### **Applications**

1. Backup connection for AC interruption

2. Combine redundancy module (PS-RDN20) to back up AC interruption or failure of PSU



Note: All dimensions are in millimeters, to convert to inches multiply by 0.03937.

#### **Battery Backup Enclosures with VRLA Batteries**

Compact and fully enclosed improve safety and maintenance, transmit information on the temperature and type of included valve-regulated acid batteries. They save space and improve the efficiency of the DC UPS.



Cat. No.	Output	Protection Current	Dimensions h x w x d (mm)	Weight kg (approx.)
BAT-1.2VRLA	24V - 1.2Ah	25 A fuse	62 x 175 x 120	1.5
BAT-3.4VRLA	24V - 3.2Ah	25 A fuse	82 x 200 x 160	3
BAT-7.2VRLA	24V - 7.2Ah	25 A fuse	145 x 210 x130	5.5
BAT-12VRLA	24V - 12Ah	25 A fuse	210 x 210x210	9

#### **Battery Housing Without Batteries**

Compact and fully enclosed improve safety and maintenance, transmit information on the temperature and type of batteries. They save space and improve the efficiency of the DC UPS. Size for 24 VDC: 1.2 Ah, 3 Ah, 7.2 Ah and 12 Ah, batteries are not included.



Cat. No.	Battery Type	Protection Current	Dimensions h x w x d (mm)	Weight kg (approx.)
BTH-1.2	2x 12V/1.2AH	25 A fuse	62 x 175 x 120	0.5
BTH-3.4	2x 12V/3.4AH	25 A fuse	82 x 200 x 160	0.9
BTH-7.2	2x 12V/7.2AH	25 A fuse	145 x 210 x130	1.5
BTH-12	2x 12V/12AH	25 A fuse	210 x 210x210	1.9

#### **Battery Holders**

Battery holders for DC UPS system is used in conjunction with a 12 or 24V CBI system. They are designed for maintenance free lead acid batteries (batteries are not included) and protected with a fuse. Units can be installed on a standard 35 mm din rail or wall mounted with a M4 type screw (screws not included).



Photo shown with batteries. Please consult Altech for units with battery options.

Cat. No.	Battery Size AH	Protection A	Dimensions WxHxD (mm)	Weight KG (with battery)	Mounting
BTM-123	12V/3.2Ah	25A fuse	105x136x90	1.6	M4 SCREW
BTM-123D	12V/3.2Ah	25A fuse	105x136x90	1.6	DIN RAIL
BTM-127	12V/7.2Ah	25A fuse	105x153x123	2.4	M4 SCREW
BTM-127D	12V/7.2Ah	25A fuse	105x153x123	2.4	DIN RAIL
BTM-1212	12V/12Ah	25A fuse	170x153x123	3.5	M4 SCREW
BTM-241	2 x 12V/1.2Ah	25A fuse	170x102x80	1.4	M4 SCREW
BTM-241D	2 x 12V/1.2Ah	25A fuse	170x102x80	1.4	DIN RAIL
BTM-243	2 x 12V/3.2Ah	25A fuse	170x136x90	3.1	M4 SCREW
BTM-243D	2 x 12V/3.2Ah	25A fuse	170x136x90	3.1	DIN RAIL
BTM-247	2 x 12V/7.2Ah	25A fuse	170x153x123	4.7	M4 SCREW
BTM-247D	2 x 12V/7.2Ah	25A fuse	170x153x123	4.7	DIN RAIL
BTM-2412	2 x 12V/12Ah	25A fuse	235x153x123	7.9	M4 SCREW

#### **Battery Selection Chart**

Battery Type	1.2 Ah	3 Ah	7.2 Ah	12 Ah
Load 1.5 A	20	60	200	400
	8	30	120	240
Load 3 A Load 5 A	3	15	55	100
	2	10	30	60
Load 7.5 A Load 10 A Load 12 A	No	7	20	45
Load 12 A	No	3	12	30
Load 15 A	No	No	9	20
Load 20 A	No	No	7	13

#### **Ultra Capacitor Modules**

Traditional lead-acid batteries rely on aging technology and toxic chemicals for energy storage. While adequate for many applications, they have limitations for emerging applications that require safe, dependable, quick-back up power, over long periods of time. Ultracapacitors in DC-UPS applications, ensure that critical information and functions are available when supply voltage dips, sags, drops out or surges, or during a battery changeover. Working in conjunction with a complementary power supply, Ultracapacitors modules reliably supply energy in peak power demand conditions, short power outages and reducing stress on the primary power supply and extending its usable life. Benefits:

- · Environmentally safe
- · Virtually maintenance free
- · Operating temperature range -40°C to +65°C
- · Higher power vs. batteries

- · No toxic chemicals
- Lasts up to 15 years\*\*
- Higher energy vs. electrolytic capacitors
- · Resists shock and vibration



#### **C-TEC Ultra capacitor module**

The DC- buffer module of the series C-TEC works with ultra-capacitors as energy storage inside the housing. These capacitors are charge by a external regulated DC-power supply in normal operation. In case of an interruption of the DC-power supply the energy of the capacitors is released. The load is supplied by the buffer module till it is discharged. The back-up time depends on the state of charge of the capacitors and on the discharge current.

Cat. No.	prim. V	sec. V	output A	imax* A	energy Ws	dimensions h x w x d (mm)	weight kg
C-TEC 2403-1	24	24	3	6	1000	92,5x60x116	0.55
C-TEC 2405-5	24/12	24/12	5	7	5000	163x114x145	1.8
C-TEC 2410-10	24/12	24/12	10	10	10000	163x114x145	2.1
C-TEC 2420-8	24	24	20	20	8000	192x84x192	1.8
C-TEC 2440-4P	24	24	40	40	4000	192x84x198	2.0
AC-TEC 2403-1	115 - 230 VAC	24	3	1.5xIA	1000	152,5 x 72 x 130	0.85
AC-TEC 2420-8	3 x 340 - 550 VAC	24	20	1.5xIA	8000	192,5 x 140 x 198	8 0.55



#### **Capacitor Extension Module**

The CEM-Module is used to increase the back-up energy of the C-TEC series. The charging and discharging of the extension module is monitored and controlled by the C-TEC.

Cat. No.	nominal voltage V DC	sec. V DC	output A	imax* A	energy Ws	dimensions h x w x d (mm)	weight kg
CEM 1	24	24	3	3	1kJ, 1000Ws	92,5x60x116	0.85
CEM 2	24	24	3	3	2kJ, 2000Ws	92,5x60x116	1
CEM 8	24	24	20	20	8kJ, 8000Ws	192x84x192	1.4
CEM 16	24	24	20	20	16kJ, 16000Ws	192x84x192	1.9



#### **AKKUTEC DC-UPS Buffer Unit (without batteries)**

The battery buffered DC power supply is working according the stand-by parallel mode and ensures in connection with a lead-acid battery a safe continuous DC power supply during a determined time interval in case of mains failure. The total output current is shared between supply of the loads and charging of the buffer unit.

Cat. No.	prim. V	sec. V	output A	dimensions h x w x d (mm)	weight kg
AKKUTEC 2402	115 - 230	24	2	60x92,5x116	0.55
AKKUTEC 2405	115-230	24	5	160x75x150	1
AKKUTEC 2412	230	24	12	155x95x183	0.4
AKKUTEC 2440	3x400	24	44	180x290x150	3.3

# **Frequently Asked Questions**

#### Notes on choosing a switching power supply?

- To increase the reliability of the switching power supply, we suggest users choose a unit that has a rating of 30% more power than actual need. For example, if the system needs a 90W source, we suggest that users choose a switching power supply with 120W of output power or more. By doing this, you can effectively boost the reliability of the switching power supply in your system.
- We also need to consider about ambient temperature of the switching power supply and whether there is additional device for dissipating the heat. If the switching power supply is working in a high temperature environment, we need to make some derating to the output power. The derating curve of "ambient temperature" versus "output power" can be found on our spec sheets.
- Choosing functions based on your application:
  - Protection function:
    - Overvoltage Protection (OVP)
    - Overtemperature Protection (OTP)
    - Overload Protection (OLP)
    - Short Circuit Protection (SCP)
  - Application function:
    - Signaling Function (Power Good, Power Fail)
    - DC OK Signal
  - Special function:
    - Power Factor Correction (PFC)
    - Uninterruptible Power Supply (UPS) function
    - · Pick Load Capability
    - Make sure that the model qualifies for the safety standards and EMC regulations you need.

#### Can a power supply used to charge a battery?

ALTECH power supplies are not specificity designed for battery charging, but we offer a full line of intelligent battery chargers and DC UPS solutions. If you decide to choose a Power Supply as a battery charger, our advice is to pick a power supply with over load protection (OLP) which mode is constant current limiting. The models in this mode provide constant current even when the protection circuit is triggered.

The second choice is fold-back current limiting or constant wattage model. In this model, when a battery is running low, the output current of the power supply will gently increase. The level of increase depends on battery's capacity and degree of exhaustion.

Power supplies set to Hiccup mode are not recommended because it will stop to generate current when OLP happens.

#### What is the CB type battery charger?

The CB type intelligent battery charger is a microcontroller equipped device that offers a fully automatic multi stage battery charging that expands the battery life significantly.

#### What is the All in one DC UPS power solution?

The CBI All in One UPS power solution combines the requirements of several applications in one single devise. It can be used as a power supply unit, battery charger, battery care module and back up module. Only think needs to be added it's a battery to create a complete DC UPS system.

#### Does Altech carry NEC class 2 power supplies?

The Altech PSC line of power supplies in addition to meet with the NEC requirements they are also UL1310 tested and recognized. More information can be found on the individual specification sheets.

#### Can ALTECH's power supply be used in the range of 45Hz ~ 440Hz? If YES, what will happen?

ALTECH's power supply can be used within this frequency range. But if the frequency is too low, the efficiency will also be lower. For example, when a PS-12024 is operated under 230VAC and rated load, if the frequency of AC input is 60 Hz, the efficiency is around 84%; however, if the frequency of AC input reduces to 50 Hz, the efficiency will be around 83.8%. If the frequency is too high, the power factor of the switching power supply with PFC (power factor correction) function will reduce and this also will cause higher leakage current. For example, when a PS-12024 is operated under 230VAC and rated load, if the frequency of AC input is 60 Hz, the power factor is 0.93 and the leakage current is around 0.7mA; however, if the frequency of AC input increase to 440 Hz, the power factor will decrease to 0.75 and the leakage current will rise to around 4.3mA.

# If we need a 30VDC output power supply, but ALTECH does not have this model, can we use two 15VDC power supplies connecting in series instead of one 30VDC power supply?

YES, basically you can do this to get the right output voltage, but be careful that the rated output current of the series system should be the rating of the minimum one in these series connected power supplies. Furthermore, we like you to parallel a diode at the output of power supply to prevent possible damage of internal capacitors.

# Why I cannot turn on the power supply smoothly when the loads are motors, light bulbs or capacitive loads?

If you connect the switching power supply to motors, light bulbs, or high capacitive loads, you will have a high output surge current when you turn on the S.P.S. and this high surge current will cause failure of start up. We suggest using switching power supply with over load protection and constant current limiting protection to deal with these loads.

# Why did the power supply shuts down during operation and after turning it off, I can restart the power supply again?

In general there are two circumstances that will cause the power supply to shut down. The first one is the activation of the over-load-protection (OLP). To deal with this situation, we suggest increasing the rating of the output power or modifying the OLP point. The second one is the activation of over-temperature protection (OTP) when the internal temperature reaches the pre-set value. All of these conditions will let the switching power supply enter protection mode and shut down. After these conditions are removed, the switching power supply will be back to normal.

# The output ground (GND) and frame ground (FG) is the same point in my system, can ALTECH's power supplies be used in such system?

Yes. Since our products are designed based on isolation concept, it will be no problem that the output ground (GND) and frame ground (FG) is the same point in your system. But, EMI may be affect by this connection.

# During the operation of ALTECH power supply, there is some leakage current on the case. Is this normal? Will this leakage current hurt human body?

Due to the requirement of EMI, there will be some Y capacitors between line and neutral to the FG (case) to improve EMC. These Y capacitors will cause some leakage current flow from line or neutral to the case (normally case will be connected to earth ground). For example, IEC-60950-1 requires that this current should be less than 3.5mA for IT equipment, so basically the leakage current you find on the case will not hurt human body. Proper connection to Earth ground will solve the leakage current problem.

#### What should be noticed when installing a power supply in vertical and horizontal directions?

Most small wattage power supplies are mainly installed in the horizontal position. If you have to install it vertically because of mechanical limitation, you should consider the output derating due to the heat concern. The temperature derating curve can be found on the spec sheet.

# **Frequently Asked Questions**

#### What is "Input - Inrush Current"? What will we notice?

At input side, there will be  $(1/2 \sim 1 \text{ cycle}, \text{ ex. } 1/120 \sim 1/60 \text{ seconds for } 60 \text{ Hz AC source})$  large pulse current ( $20\sim60A$  based on the design of S.P.S.) at the moment of power on and then back to normal rating. This "Inrush Current" will appear every time you turn on the power. Although it will not damage the power supply, we suggest not turning the power supply ON/OFF very quickly within a short time. Besides, if there are several power supplies turning on at the same time, the circuit breaker of AC source may shut off and go into protection mode because of the huge inrush current. It is suggested that these power supplies start up one by one if possible.

#### What is PFC?

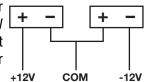
PFC stands for Power Factor Correction. The purpose of PFC is to improve the ratio of apparent power and real power. The power factor is only 0.4~0.6 in non-PFC models. In PFC models, the power factor can reach above 0.95. The calculation formulas are as below:

Apparent Power=Input Voltage x Input Current (VA)

Real Power= Input Voltage x Input Current x Power Factor (W)

From the environment friendly point, the electric power plant needs to generate a power which is higher than apparent power in order to steadily provide electricity to the market. The real usage of

electricity should be defined by real power. Assuming the power factor is 0.5, the power plant needs to produce more than 2VA to satisfy 1W real power. On the contrary, if the power factor is 0.95, the power plant only needs to generate more than 1.06VA to provide 1W real power need. It will be more effective.



# What is the difference between -V, +V and COM which are marked on the output side? Com (COMMON) means common ground.

Single output: Positive pole (+V), Negative pole (-V)

+V; COM and -V can be attained by using two switching power supplies in series.

Example: (2x PS-S2012)

#### In ALTECH's catalog, we see AC and DC at input, what is it all about?

Due to different circuit designs, ALTECH power supply's input consists of three types as below:

 $(\sqrt{2}=1,414 \rightarrow 1.414 \times AC = DC)$ 

A.85~264VAC;120~370VDC

B.176~264VAC;250~370VDC

C.85~132VAC/176~264VAC by Switch; 250~370VDC

- In the case of option A and B inputs models, power supply can work properly no matter under AC or DC input. Some models need correct connection of input poles, positive pole connects to AC/L; negative pole connects to AC/N. Others may require opposite connection, positive pole to AC/N; negative pole to AC/L. If customers make a wrong connection, the power supply will not be broken. You can just reverse the input poles and power supply will still work.
- In the case of option C input models, please make sure that you switch the 115/230V input correctly. If the switch is on the 115V side and the real input is 230V, the power supply will be damaged.

Subjects	Subjects			1
Creepage distance/ Clearance distance	Basic Insulation	2.5mm/2mm	4mm/2.5mm	
Working Voltage: Max. 250Vrms	Supplementary Insulation	5mm/4mm	8mm/5mm	
Flooride Otherwalls Took	Basic Insulation	1500Vac	1500Vac	
Electric Strength Test	Supplementary Insulation	3000Vac	4000Vac	
		Handheld: 0.75mA	_	
	CLASS I	Others: 3.5mA	Leakage current of grounding	0.3mA
Leakage Current			Leakage current of grounding	0.1mA
	CLASS II	0.25mA	Leakage current of grounding	0.1mA
Number of Fuse		1	2	
The Lowest Ambient Temperature		Refer to the definition of Manufacturer	40°C	

# Will ALTECH's products with CE marking meet the EMC requirements after assembling into my system?

We cannot guarantee 100% that the final system can still meet the EMC requirements. The location, wiring and grounding of the switching power supply in the system may influence its EMC characteristics. In different environment or applications, the same switching power supply may have different outcomes. Our test results are based on setup shown in the EMC report.

# What is different between information (EN60950-1) and medical (EN60601-1) safety standard?

According to safety standard, the leakage current in EN60950-1 Class I cannot exceed 3.5mA. Many of ALTECH's power supplies meet this requirement but may not meet the EN60601-1. Others criteria like safe distance and numbers of fuse are also different. Please consult the diagram below:

# Index

Part No.	Page	Part No.	Page	Part No.	Page
AC-TEC 2403-1	199	PS-10012	84	PSA-18024	42
AC-TEC 2420-8	199	PS-10015	84	PSA-36024	44
AKKUTEC 2402	199	PS-10024	84	PSA-60024	46
AKKUTEC 2405 .	199	PS-12012	92	PSB-12024	50
AKKUTEC 2412 .	199	PS-12024	92	PSB-18024	52
AKKUTEC 2440	199	PS-12048	92	PSB-36024	54
BAT-1.2VRLA	198	PS-1505	76	PSB-60024	56
BAT-12VRLA	198	PS-1512	76	PSC-1012	
BAT-3.4VRLA		PS-1515	76	PSC-1015	10
BAT-7.2VRLA			76	PSC-1024	
BTH-1.2			78	PSC-15124	
BTH-12			78	PSC-15148	
BTH-3.4			78	PSC-2012	
BTH-7.2			78	PSC-2015	
BTM-1212			80	PSC-2024	
BTM-123			80	PSC-24124	
BTM-123D			80	PSC-24148	
BTM-123D			80	PSC-4012	
BTM-127			82	PSC-4012	
BTM-241					
			82	PSC-4024	
BTM-2412			82	PSC-4048	
BTM-241D			82	PSC-48124	
BTM-243			90	PSC-48148	
BTM-243D			90	PSC-6012	
BTM-247			90	PSC-6015	
BTM-247D			116	PSC-6024	
C-TEC 2403-1			116	PSC-6048	
C-TEC 2405-5			116	PSC-9612	
C-TEC 2410-10	199	PS-C24024	118	PSC-9615	18
C-TEC 2420-8			118	PSC-9624	
C-TEC 2440-4P	199		120	PSC-9648	18
CB1210A	176	PS-C48048	120	PSH-12024	94
CB12245A	188	PS-C480P24	122	PSH-12048	94
CB1235A	178	PS-C480P48	122	PSP-24024	96
CB123A	172	PS-RDN20	34	PSP-24048	96
CB126A	174	PS-RDN20	194	PSP-48024	100
CB2410A	184	PS-S10012	70	PSP-48048	100
CB2420A	186	PS-S10024	70	PSP-480S24	102
CB243A	180	PS-S10048	70	PSP-480S48	102
CB245A	182	PS-S1005	62	PST-24024	106
CBI1210A	146	PS-S1012	62	PST-24048	106
CBI1235A	148	PS-S1015	62	PST-48024	108
CBI123A	142	PS-S1024	62	PST-48048	108
CBI126A	144	PS-S2005	64	PST-96024	110
CBI2410A	154	PS-S2012	64	PST-96048	110
CBI2420A	156	PS-S2015	64	PST-960P24	110
CBI243A	150	PS-S2024	64	PST-960P48	110
CBI245A	152	PS-S4005	66	PSW-12012	128
CBI2801224A	164	PS-S4012	66	PSW-12024	128
CBI2801224B		PS-S4024	66	PSW-12048	
CBI2803648A	162	PS-S4048	66	PSW-24024	
CBI4810A			68	PSW-24048	
CBI485A			68	PSW-48024	
CEM 1			68	PSW-48048	
CEM 16			68		
CEM 2			196		
CEM 8			40		
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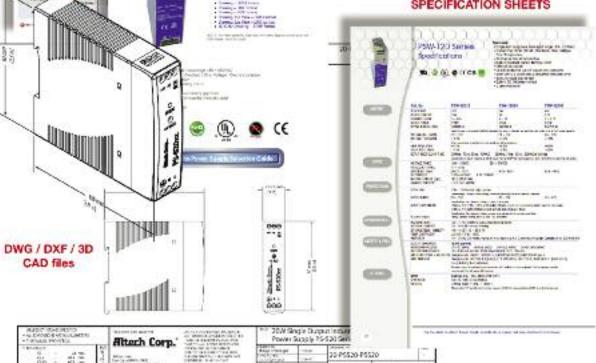
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- Specification sheet
- Product Photo.
- Drawing DWG format
- Drawing DXF format
- Drawing PDF format
- Drawing Top View DWG format
- Drawing Top View DXF format
- 3D CAD-Drawing STEP format

#### SPECIFICATION SHEETS



## **Terms and Conditions**

TITLE - Title to the products of ALTECH shall remain with ALTECH until payment is made in full by Customer. Such reservation of title is for the purpose of securing the purchase price and shall not relieve Customer of the duty to inspect the products upon receipt, to notify ALTECH of any deficiencies or defects, and to exercise due care in the use, installation, operation, and maintenance of the products when on the premise of the Customer or under the control of the Customer. Notwithstanding any reservation of title by ALTECH, risk of loss shall pass to customer at any time of shipment.

SHIPMENT AND DELIVERY - All orders for destination in the mainland United States (less Hawaii, Alaska and non-continental United States possessions) will be shipped F.O.B. Flemington, N.J. All destination, shipping and other charges shall be paid by the Customer in accordance with ALTECH's then current shipping and billing practices.

Delivery dates given in the acceptance of any order are approximate. ALTECH shall not be liable for delays in delivery or in performance due to causes beyond its reasonable control including acts of God, acts of Customer, acts of civil or military authority, fires, strikes or other labor disturbances, war, riot or delays in transportation. In the event of such delay, the date of delivery or performance shall be extended for a period equal to the time lost by reason of the delay.

**PRICE** - PRICES in any ALTECH publication are subject to change without prior notification. Catalog prices are based on prices published in the current price list. All written quotations are valid for thirty (30) days from the date of quotation. Customer shall pay all sales, use, excise or similar taxes whenever ALTECH must itself pay and/or collect such tax from Customer arising out of the sale.

**PAYMENT** - Customer agrees to make payment within thirty (30) days of date of the invoice from ALTECH. Customer agrees to pay a late payment charge of one and one-half percent (1.5% per month, or the maximum late payment charge permitted by applicable law, whichever is less, on any unpaid amount for each calendar month (or fraction thereof) that such payment is in default. Orders amounting to less than \$100.00 will be billed at \$100.00 plus freight. Full carton purchases are required. In the event of referral to an attorney for collection, reasonable attorney's fees for collection of the overdue amount shall be paid by Customer. In the event payment is not received within 30 days from the date of invoice, any discount shall be cancelled and the full list price will be due.

**LIMITED WARRANTY** - ALTECH warrants to Customer that the equipment purchases shall be free from defects in material and workmanship under normal use and service for a period of one year from shipment.

Written notice as an explanation of the circumstances of any claim that the equipment has proved defective in material or workmanship shall be given promptly by the Customer to ALTECH.

ALTECH will not be liable for any misuse, improper operations, improper installation, improper maintenance, alteration, modification, accident or unusual degradation of the equipment or parts due to an unsuitable installation environment.

No representation of other affirmation of facts, including but not limited to statements regarding capacity, suitability for use or performance of the equipment, shall be or be deemed to

suitability for use or performance of the equipment, shall be or be deemed to be a warranty or representation by ALTECH for any purpose, nor give rise to any liability or obligation of ALTECH whatsoever.

Customer's sole and exclusive remedy in the event of breach of warranty, as set forth herein, is expressly limited to (1) the correction of the defect by adjustment, repair, modification, or replacement, or (2) issuance of a credit or refund of the purchase price for the defective equipment at ALTECH's election and sole expense.

EXCEPT AS SPECIFICALLY PROVIDED IN THIS AGREEMENT, THERE ARE NO OTHER WARRANTIES EXPRESSED OR IMPLIED INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTIES OR MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

THIS WARRANTY EXTENDS ONLY TO THE CUSTOMER FROM ALTECH OR ITS AUTHORIZED DISTRIBUTOR.

**LIMITATION OF LIABILITY** - IN NO EVENT, SHALL ALTECH BE LIABLE FOR LOSS OF PROFITS, INDIRECT, SPECIAL, CONSEQUENTIAL OR OTHER SIMILAR DAMAGES ARISING OUT OF ANY BREACH OF THIS AGREEMENT OR OBLIGATIONS UNDER THE AGREEMENT.

ALTECH SHALL NOT BE LIABLE FOR ANY DAMAGES CAUSED BY DELAY IN SHIPMENT, INSTALLATION OR FURNISHING OF EQUIPMENT OR SERVICES UNDER THIS AGREEMENT.

No action arising out of any claimed breach of this Agreement may be brought by either party more than two (2) years after the cause of action has accrued.

PATENT INDEMNITY - ALTECH shall defend or settle any suit or proceeding brought against Customer based on a claim that any equipment made to ALTECH design and furnished hereunder constitutes an infringement of any existing United States patent, provided (ALTECH) is notified promptly in writing and is given complete authorization and information required for the defense, and ALTECH shall pay all damages and costs awarded against Customer, but shall not be responsible for any costs, expense or compromise incurred or made by Customer without ALTECH's prior written consent. If any equipment is in ALTECH's opinion likely to or does become the subject of a claim for patent infringement, ALTECH may at its option and expense procure for Customer the right to continue using the device, modify it to become non-infringing, but in the event ALTECH is not reasonably able to modify, substitute, or otherwise procure for Customer the right to continue using it, ALTECH will remove such equipment and refund to Customer the amount paid in excess of a reasonable rental for past use.

ALTECH shall not be liable for any infringement or claim based upon use of the equipment in combination with other equipment not supplied by ALTECH or with modifications made by Customer.

The foregoing states the entire liability of ALTECH to Customer arising from patent infringement.

SELLER'S REMEDIES - Should Customer fail to make any payment within ten (10) days of its due date, or fail to perform any other of the Customer's obligation hereunder upon thirty (30) days written notice, or should Customer be or become insolvent or be a party to any bankruptcy receivership proceeding prior to full payment of all amounts payable hereunder. ALTECH may: (a) with or without demand or notice to customer declare the entire amount unpaid immediately due and payable; (b) enter upon the premises where the equipment may be found and remove it (Customer shall assemble the equipment and make it available to ALTECH at a place reasonably convenient to both parties and shall permit and assist ALTECH in effecting the retaking and removal of the equipment); and (c) sell any or all the equipment as permitted under applicable law, applying the proceeds of the sale to payment of the expenses of retaking, repairing and selling the equipment, reasonable attorney fees and to the satisfaction of all indebtedness then due and unpaid under this Agreement. Any surplus shall be paid to Customer and any deficiency shall be paid to ALTECH by Customer.

The remedies provided herein shall be cumulative and in addition to all other remedies provided by law or equity or under the Uniform Commercial Code.

 $\label{eq:GOVERNING LAW} \textbf{-} This agreement will be governed by the Laws of the State of New Jersey.$ 

**GENERAL** - This Agreement shall only become effective and binding when either (a) it has been accepted and executed by an authorized representative of ALTECH, or (b) the equipment has been shipped to Customer, with or without acceptance in writing hereon. Notice of acceptance is hereby waived by Customer. Customer hereby acknowledges receipt of a true and complete copy hereof.

No addition to or modification of any of the Terms and Conditions of Sale as they appear herein shall be binding upon ALTECH unless signed in writing by duly authorized representative of ALTECH in Flemington, N.J.

Typographical and clerical errors in quotations, orders and acknowledgments are subject to correction.

This Agreement is not assignable without the prior written consent of ALTECH. Any attempt to assign any of the rights, duties or obligations of this Agreement without such consent is void.

If any provision or provisions of this Agreement shall be held to be invalid, illegal or unenforceable, the validity, legality and enforceability, of the remaining provisions shall not in any way be affected or impaired thereby.

ALTECH is not responsible for failure to fulfill its obligation under this Agreement due to causes beyond its control, or except as agreed herein.

THE CUSTOMER ACKNOWLEDGES THAT HE HAS READ THE AGREEMENT, UNDERSTANDS IT, AND AGREES TO BE BOUND BY ITS TERMS AND CONDITIONS. FURTHERMORE, THE CUSTOMER AGREES THAT IT IS THE COMPLETE AND EXCLUSIVE STATEMENT OF THE AGREEMENT BETWEEN THE PARTIES, WHICH SUPERSEDES ALL PROPOSALS OR PRIOR AGREEMENTS, ORAL OR WRITTEN, EXPRESSED OR IMPLIED, AND ALL OTHER COMMUNICATIONS BETWEEN THE PARTIES RELATING TO THE SUBJECT MATTER OF THIS AGREEMENT.

#### Here are other great products available from Altech!

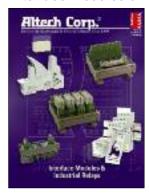
#### **Universal Power Distribution Systems**



Altech Corp's new catalog features various innovative ways to distribute power in your panel.

- Well known UL508 busbars in two sizes and ratings up to 200A/480V AC
- Introducing the UL489 recognized busbar for Altech's line of Miniature Molded Case Circuit Breakers with an industry leading rating of 115A/480V AC
- New ADP distribution system utilizing 0.25 quick-connects
- Extended power distribution block line

#### Interface Modules & Industrial Relays



Altech offers a wide range of DIN Rail or panel mount cable interface modules, relay interface modules, power supplies, carrier modules, and custom designed modules. Cable to connector models include: D-Sub connectors, ribbon cable connectors, and Dip socket connectors to terminals. Standard relay modules from 1 to 16 channels, and safety relay modules from 1 to 16 channels and up to 10 poles are included. The catalog also contains a large selection of industrial relays, and custom designed interface modules.

#### **Terminal Blocks**



Altech offers a NEW Terminal Block catalog with the most competitively priced blocks in the industry. We feature screw and spring clamp models for DIN rail and panel mount applications. This advanced line of wire termination products will increase your design options and help to get the job done more efficiently. Our line of blocks include feed-through (single, double or triple level), distribution, ground, fuse, disconnect, thermocouple, surge suppressor and indicator. A wide variety of accessories, tools and ferrules are available.

#### **Liquid Tight Strain Reliefs**



This 64-page catalog introduces Altech's full line Liquid Tight Strain Reliefs (Cord Grips) which are used to seal cable entries, contaminant's from enclosures, provide strain relief and thus reduce stress on components termination points inside enclosures. Available in standard, high-performance, and economy versions, functions include Straight-Through, Increased Strain Relief, Protection, Pull/Bend Bend Protection, Multi-conductor, Flat Cable and EMI/RFI. They can be used with almost any type of cable, cord or conductor - solid, stranded, flat, shielded, high temperature, etc.

#### **Industrial Enclosures**



Altech's expanded line of TK Industrial Enclosures, with metric knockouts, is here. Now our entire line of industrial enclosures is in metric. Metric knockouts align with international standards making selection easier and more universal Plus the PG standard is still available. All of Altech's enclosures are internationally accepted and stand up to the harshest environments. They protect against dust, water and corrosion while enhancing the value of your product. Rated up to IP66 (NEMA type 4x), Altech enclosures are available in a wide range of sizes.

#### **Motor Disconnect Switches**



Altech's line of Motor Disconnect Switches are UL 508 listed as Manual Motor Controllers for AC Motor Starting Across-the-line and AC General use. This new 16 page catalog includes the 3 different handle designs, which are all available in gray/black or yellow/red housings. Electrical ratings are 25-150A / 600V. The switches are nonfused DIN Rail mountable. Neat features include: snap-on auxiliary switches, door mounting kit and a retrofit 30A fuse holder. Also featured are Enclosed Motor Disconnect Switches & Fused Enclosed Motor Disconnect Switch (30A) in plastic or stainless housings.

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