EU2B Series: 30mm Hazardous Location Switches EC2B Series: Hazardous Location Control Stations





STANDARDS COMPLIANCE

	Switches	Pilot Lights	Meters	Control Boxes	
UL	Class I, Zone 1 AEx d e IIC T6 Gb Class I Div 2, Groups A, B, C and D				
c-UL	Class I, Zone 1, Ex de IIC T6 Gb Class I, Div 2, Groups A, B, C and D	Class I, Zone 1, Ex de IIB T6 Gb Class I, Div 2, Groups C and D	Class I, Zone 1, Ex Class I, Div 2, Grou	de IIC T6 Gb ıps A, B, C and D	
ATEX	Æ	🔊 II2G Ex de IIC Gb		Ex d e IIC T6 Gb	
	(Ex)				
IECEx		Ex de IIC Gb Ex tb IIIC Db IP65		Ex de IIC T6 Gb Ex tb IIIC T80°C Db (dust)	

CERTIFICATE NUMBERS

UL/c-UL	ATEX	IECEx
E347230	PTB 08 ATEX 1053 U PTB 08 ATEX 1003 U PTB 08 ATEX 1048	IECEx PTB 15.0006U IECEx PTB 15.0007U IECEx PTB 15.0032

APPLICABLE STANDARDS

Control Units	Standards	Mark
	EN60947-5-1	CE
Pushbuttons Selector Switches	UL60079-0 UL60079-1 UL60079-7	
Key Selector Switches Pilot Lights Meters	CAN/CSA C22.2 No. 60079-0 CAN/CSA C22.2 No. 60079-1 CAN/CSA C22.2 No. 60079-7 EN60079-0 EN60079-1	<pre> < x ></pre>
	EN60079-7 EN60079-31	
	IEC60079-0 IEC60079-1 IEC60079-7 IEC60079-31	IECE ×
Emergency Stop Switches	EN60947-5-5	

PRODUCT DESCRIPTION

Complying with UL, IECEx, and ATEX Directives for hazardous environments, new 30mm EU2B Hazardous Location Switches and EC2B Hazardous Location Control Stations provide increased safety for your applications.

Control Unit Options:

- Pushbuttons
- Pilot Lights
- Selector Switches
- Key Selector Switches
- Emergency Stop Switches
- Meters

Control Station Options:

- Pre-configured stations
- Custom-configured stations
- Open control boxes
- Mounting holes for up to 18 control units

KEY FEATURES

- Class I, Zone 1/Division 2
- Applicable in explosive gas atmospheres (AEx de IIC T6 Gb)
- UL Type 4X rated
- Up to 3 contact blocks
- Selector switches available with lever or key
- Selector switches available with overlapping contacts
- Exposed and finger-safe (IP20) screw terminals available
- Corrosion resistant stainless steel enclosure (SUS304)
- Melamine coating
- NPT and Metric reducer options



SPECIFICATIONS

General Specifications

Degree of Protection	IP65 (IEC60529), Type 4X				
Insulation Resistance	$100 M\Omega$ minimum (50	OV DC megger)			
Operating Temperature	–20 to +50°C (no free	zing)			
Operating Humidity	45 to 85% (no conden	sation)			
Altitude	2,000m Maximum				
Pollution Degree	3				
Shock Resistance	Operating Extremes	100-m/s² Emergency Stop Switch: 150-m/s² (without Meter)			
	Damage Limits	1000-m/s ²			
Vibratian Pasistance	Operating Extremes	5 to 55-Hz, amplitude 0.5 mm Emergency Stop Switch: 5 to 500-Hz, amplitude 0.35-mm, acceleration 50-m/s ² (without Meter)			
vioration nesistànce	Damage Limits	30Hz, amplitude 1.5-mm Emergency Stop Switch: 5 to 500-Hz, amplitude 0.35-mm, acceleration 50-m/s ²			

Switches

Rated Insulation Voltag	e	600V			
Contact Resistance		50mΩ maximum (initial value)			
Impulse Withstand Volt	tage (Uimp)	6kV			
Insulation Resistance		100MΩ minimum (500V DC megger)			
Short-Circuit Protectio	n	250V/10A fuse (Type aM IEC60269-1/IEC60269-2)			
Conditional Short-Circu	uit Current	1,000A			
	Pushbutton	1,000,000 operations minimum			
Maahaniaallifa	Selector Switch	500,000 operations minimum			
MechanicalLife	Key Selector Switch	500,000 operations minimum			
	Emergency Stop Switch	50,000 operations minimum			
	Pushbutton	250,000 (switching frequency 1800 operations/hr)			
FlootricalLife	Selector Switch	250,000 (switching frequency 900 operations/hr)			
Electrical Life	Key Selector Switch	250,000 (switching frequency 900 operations/hr)			
	Emergency Stop Switch	50,000 (switching frequency 900 operations/hr)			
Minimum Operator Stroke Required for Direct Opening Action		7.0mm			
Maximum Operator Stroke	Emergency Stop Switch	9.0mm			

Note: Contacts will bounce during operation of pushbuttons and selector switches (reference value: 20ms). Be sure to take contact bounce time into consideration when designing a control circuit.

Contact Rating (Switches)

Rated Insulation	Voltage (Ui)		600V				
Rated Thermal Current (Ith)				10A*			
Rated Operating Voltage (Ue)			24V	120V	240V	500V	
Rated Operating	AC 50/60Hz	Resistive Load (AC12)	10A*	10A*	6A	2.8A	
		Inductive Load (AC15)	10A*	6A	3A	1.4A	
Current (le)	DC	Resistive Load (DC12)	8A	2.2A	1.1A	—	
		Inductive Load (DC13)	4A	1.1A	0.55A		

Note: Up to 2 contacts (per control unit): 10A 3 contacts (per control unit): 9A Minimum applicable load: 3V AC/DC, 5mA Applicable operating locations may vary according to operating conditions and load types.

Contact Rating Code Designation	Thermal Continuous	Maximum current, Amperes						Max Volt-A	kimum Amperes		
	Test Current Amperes	120	Volt	240	Volt	480	Volt	600	Volt	600) Volt
		Make	Break	Make	Break	Make	Break	Make	Break	Make	Break
A600	10	60	6.00	30	3.00	15	1.5	12	1.2	7200	720

Pilot Lights

Rated Insulation Voltage (Ui)	500V			
Poted Operating Voltage (U.s.)	Voltage	6V, 12V, 24V AC/DC		
Rated Operating Voltage (De)	Transformer	120V, 230V, 240V, 380V, 480V AC		
Impulse Withstand Voltage (Uimp)	4kV			
Insulation Resistance		100 MΩ minimum (500V DC)		
Frequency		50/60Hz		
Power Concumption (opprov.)	Full Voltage	0.3W		
Fower consumption (approx.)	Transformer	1.5W		
Life (reference value)	Approx. 40,000 hours			

Note: Because the built-in LED lamp is a high-brightness version, the lamp may light dimly due to induction even when power is off.

Meters

Accuracy Class		2.5			
Insulation Resistance		100 MΩ minimum (500V DC megger)			
	Rated Insulation Voltage (Ui)	300V			
	Operation	Moving core			
neter	Impulse Withstand Voltage (Uimp)	4kV			
AC amm	Power Consumption	1VA			
	Measurement	5A, 10A, 30A, 50A, etc			
	Input (CT Ratio)	1A, 5A			
	Extended Memory	3 times, etc			
	Rated Insulation Voltage (Ui)	150V			
ter	Operation	Moving coil			
t me	Impulse Withstand Voltage (Uimp)	2.5kV			
DC inpu	Input	0 to10V DC, 4 to 20mA, etc.			
	Power Consumption (DC ammeter)	0.15W			
	Consumption Current (DC voltmeter)	1mA			

Note: Use a commercially available CT (current transformer) for all AC ammeters, and install the CT in a non-hazardous location.

Control Boxes

Degree of protection	IP65 (IEC60529), Type 4X
Housing Material	Stainless steel (SUS304)
Standard Coating	Melamine 1-column: Outside coating 2-, 3-column: Inside and outside coating
Rated Insulation Voltage	600V (with pilot light or ET2A-8PE screw terminal block: 500V) Meter AC input: 300V Meter DC input: 150V
Insulation Resistance	100 M Ω minimum (500V DC megger)
Operating Temperature	–20 to +50°C (no freezing)
Operating Humidity	45 to 85% (no condensation)
Altitude	2000m maximum

Agency Approvals		UL/c-UL, IECEx/ATEX certified			
Applicable Enclosure		All enclosures except for 6 Control Units x 3 Column			
Mounting Style		Wall Mount			
	Pilot Light	Yes ¹			
l Unit	Pushbutton	Yes			
	Emergency Pushbutton	Yes			
ontro	Selector Switch	Yes			
ŭ	Key Selector Switch	Yes			
	Meter	Yes			
Reduce	r Screw	NPT Thread (standard)			
		Metric Thread			
Degree	of Protection	IP65, TYPE4X (UL)			
Grounding Terminal Screw Material		Stainless Steel			
le	Stranded Wire (mm2)	1.5 to 2.5			
Applicab Wire	Solid Wire (mm2)	1.2 to 1.6			
	Solid/Stranded Wire (AWG)	16-14			

1: c-UL explosion protection is different when pilot light is installed.

SWITCHES (CONTROL UNITS)





Emergency Stop Switches



Pilot Lights







Key Selector Switches



Meters

Pushbuttons

Operator (style / function)-B1 : Flush pushbutton / Momentary B2 : Extended pushbutton / Momentary B3 : Mushroom pushbutton / Momentary 20 : 2NO D0 : 2NO D0

EU2B - YB1 11 F S - D 01:1NC 02:2NC 30 : 3N0 11 : 1N0-1NC 21 : 2N0-1NC 03 : 3NC 12 : 1NO-2NC

Button color Blank: Red, Green, Black, and White included Y: Yellow S: Blue -Terminals F : Finger-safe terminal (IP20) C : Exposed screw terminal

Part Number	Style and Function	Contact Arrangement	(Approx.)	① Button Color
EU2B-YB110@1-D		1N0	60.4	
EU2B-YB101@1-D		1NC	boy	
EU2B-YB111@①-D		1NO-1NC		① Blank - supplied with
EU2B-YB120@①-D	F 1 1	2N0	92g	red, green, black, and white buttons
EU2B-YB102@①-D	Flush Momentary	2NC		
EU2B-YB121@①-D	womonicary	2NO-1NC		For yellow or blue buttons,
EU2B-YB112@1-D		1NO-2NC	116a	(blue).
EU2B-YB130@1-D		3N0	riby	
EU2B-YB103@1)-D		3NC		
EU2B-YB210@1-D		1N0	70 a	
EU2B-YB201@10-D	Extended	1NC	70g	
EU2B-YB211@①-D		1NO-1NC	94g	Specify a button color code
EU2B-YB220@①-D		2N0		
EU2B-YB202@①-D		2NC		
EU2B-YB221@10-D	womonicary	2NO-1NC	118g	
EU2B-YB212@①-D		1NO-2NC		in place of (1) in the part
EU2B-YB230@1-D		3N0		hambor
EU2B-YB203@①-D		3NC		B : black
EU2B-YB310@1-D		1N0	76a	R : red
EU2B-YB301@①-D		1NC	70y	S : blue
EU2B-YB311@1-D		1NO-1NC		W : white Y : vellow
EU2B-YB320@1-D		2N0	101g	1. yonow
EU2B-YB302@1-D	Mushroom Momentary	2NC		
EU2B-YB321@①-D	womonitary	2NO-1NC		
EU2B-YB312@①-D		1NO-2NC	125a	
EU2B-YB330@①-D		3N0	izby	
FU2B-YB303@0-D		3NC		

Note: ① Button Color. Specify a contact terminal style in place of ④ in the part number: F (Finger-safe terminal), C (Exposed screw terminal)

Emergency Stop Switches

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Operator (style / function) BV3 : 40mm mushroom/push, pull or twist release	Contact arrangement 01 : 1NC 11 : 1NO-1NC 02 : 2NC 03 : 3NC 12 : 1NO-2NC	Button color R : Red Terminals F : Finger-safe terminal (IP20) C : Exposed screw terminal

Part Number	Operator	Contact Arrangement	Weight (Approx.)	Button Color	
EU2B-YBV301@R		1NC	96g		
EU2B-YBV311@R		1NO-1NC	120~	R : Red	
EU2B-YBV302@R	ø40 Mushroom	2NC	1209		
EU2B-YBV312@R		1NO-2NC	144a		
EU2B-YBV303@R		3NC	144 <u>y</u>		

Specify a terminal style in place of ④ in the part number: F (Finger-safe terminal), C (Exposed screw terminal)

Meters

	EU2B -	Y <u>M 5 3 A 10 F</u> I	Ŗ	
Function M : Meter Input cur	rent		et pointer lank : non -R : with set	pointer
Specifica S: 3 times Type of m	tion of overload scale s 2 : 2 times 5 : 5 times N:Nor eter	Terr F:Fi C:E	ninals Inger-safe terminal (IP20) xposed screw terminal)
A : AC amr	meter Direct measuring ange Direct measuring For current transforme	1:1A 5:5A ers: 10:10A 15:15A 60:60A 75:75,	A 20:20A 30:30A A 100:100A 150:150A	50:50A
Function M : Meter Input volt D10 : 0-10' D01 : 0-1m 420 : 4-20 Terminals C : Expose	EU2B - Y age or current V Type of meter A VD : DC voltmeter mA etc. MD : DC ammeter s afe terminal (IP20) d screw terminal		R-R ank : non -R : with set p Specification of scale -PER : 0-100% -60HZ : 0-60Hz -80HZ : 0-80Hz	nointer
Input	Part Number	Des	cription	Weight (approx.)
AC input meter (amme- ter)	EU2B-YM53A5@ EU2B-YM53A10@ EU2B-YM13A10@ EU2B-YM53A15@ EU2B-YM13A15@ EU2B-YM13A20@ EU2B-YM53A30@ EU2B-YM12A20@	Capacity: 5A Capacity:10/5A Capacity:10/1A Capacity:15/5A Capacity:15/1A Capacity:20/1A Capacity:30/5A Capacity:20/1A	Expansion scale: x3 Expansion scale: x3	
	EU2B-YM53A50@ EU2B-YM53A60@ EU2B-YM53A75@ EU2B-YM53A100@	Capacity:50/5A Capacity:60/5A Capacity:75/5A Capacity:100/5A	Expansion scale: x3 Expansion scale: x3 Expansion scale: x3 Expansion scale: x3	270g
	EU2B-YM53A150@	Capacity:150/5A	Expansion scale: x3	
DC input meter	EU2B-YM010VD@-PER EU2B-YM010VD@-60HZ EU2B-YM001MD@-PER EU2B-YM001MD@-60HZ EU2B-YM001MD@-80HZ EU2B-YM001MD@-PER	0-10V DC Input 0-10V DC Input 0-1mA DC Input 0-1mA DC Input 0-1mA DC Input 4-20mA DC Input	Scale: 0 to 100% Scale: 0 to 60Hz Scale: 0 to 100% Scale: 0 to 60Hz Scale: 0 to 80Hz Scale: 0 to 100%	
	EU2B-YM420MD@-60HZ	4-20mA DC Input	Scale: 0 to 60Hz	

Specify a terminal style in place of ④ in the part number: F (Finger-safe terminal), C (Exposed screw terminal)

Pilot Lights

Part Number	Туре	Operating Voltage	Weight (Approx.)	① Illumination Color Code			
EU2B-YL1126@D1		120V AC					
EU2B-YL1236@D1		230V AC		B · red			
EU2B-YL1246@D1	Transformer	240V AC	150g	G : green A : amber Y : yellow PW : white S : blue			
EU2B-YL1386@D①		380V AC					
EU2B-YL1486@D1		480V AC					
EU2B-YL166@D1		6V AC/DC					
EU2B-YL111@D①	Full Voltage	12V AC/DC	108g				
EU2B-YL122@D1		24V AC/DC					

Note: ① Illumination Color. Specify a contact terminal style in place of ④ in the part number: F (Finger-safe terminal), C (Exposed screw terminal)

2 Position Selector Switches



				Selector	Switches	Key Select					Selector Switches	Key Selector Switches	
		Operato	r Position	Maintained	Spring Return from Right	Maintained	Spring Return from Right			Operator Position		Maintained	Maintained
Con- tact	Mount- ing	×	R	L R		L R		Con- tact	Mount- ing	×	R	L	LR
NO	1		•	ELI2B VS210@	ELI2B V\$2110@	FU2B-VSK210@3	FU2B-VSK2110@3	NO	1	•			
				1020-10210	L020-1021100	LOZD TORZIO	LOZD TORZHOUS					EU2B-YS2J10④	EU2B-YSK2J10@3
				FI12B-YS201(4)	FU28-V\$2101@	FU28-YSK201@3	FU2B-YSK2101@3						
NC	3	•		1020102010	1020 1021010	LOED TOKEDTOO	LOED TOKETOTOO					EU2B-YS2J01@	EU2B-YSK2J01@3
NO	1		•					NC	3		•		
				EU2B-YS220④	EU2B-YS2120④	EU2B-YSK220@3	EU2B-YSK2120@3	NO	1	•			
NO	3		•									EU2B-YS2J20④	EU2B-YSK2J20@3
NC	1	•						NU	3	•	-		
NC	2	•		E02B-12202@	E058-425105@	EUZB-YSKZUZ@3	EDSR-A2KSIDS@3	NC	1		•	EI 12B VS2 1020	E112B VSK2 102@3
NO	3 1	•	•					NC	3		•	E02D-132302@	EUZD-T3KZJUZ@@
NO			•	FU2B-YS211@	FU28-YS2111④	FU2B-YSK 211(4)(3)	FU2B-YSK2111@3	NO	1	•	•		
NC	3	•		LOED TOLING	1020 1021110	2020 10121100	2020 101211000					EU2B-YS2J11④	EU2B-YSK2J11@3
NO	1		٠					NC	3		•		
NO	2		•	EU2B-YS230④	EU2B-YS2130④	EU2B-YSK230@3	EU2B-YSK2130@3	NO	1	•			
NO	3		•					NO	2	•		EU2B-YS2J30④	EU2B-YSK2J30@3
NC	1	•						NO	3	•			
NC	2	•		EU2B-YS203④	EU2B-YS2103④	EU2B-YSK203@3	EU2B-YSK2103@3	NC	1		•		
NC	3	•	-					NC	2		•	EU2B-YS2J03@	EU2B-YSK2J03@3
NU	1		•					NC	ل 1		•		
NU	2	•	•	EDSR-12551@	EOSB-1221514	EUZB-YSKZZI@3	EUZB-YSKZIZI@3	NO	2			EI 120 VS2 1210	E112B VCK2 121@@
NO	1	•	•					NC	2	•	•	LUZD-TOZJZT@	LUZD-TUKZUZT®®
NC	2	•	•	FU2B-YS212(4)	FU2B-YS2112④	FU2B-YSK212@3	FU2B-YSK2112@3	NO	1	•	•		
NC	3	•		LOED TOLILO	10210 1021120	LOLD TONELLOW	LOLD TONETTE W	NC	2	-	•	EU2B-YS2J12④	EU2B-YSK2J12@3
NO	1							NC	3		•		
				EU2B-YS2R11@	N/A	EU2B-YSK2R11@3	N/A						

NC 2 Key is removable in all maintained positions. Specify key removal position in place of ③ in the part number. See table. Specify a terminal style in place of ④ in the part number: F (Finger-safe terminal), C (Exposed screw terminal).

2-position, 2-position/inverse cam Selector Switch Key Sel





③ Key Removable Option Codes (2-position)

Code	Description
А	Key removable in any position
В	Key removable in left position
С	Key removable in right position

Λ		
4		

EU2B - Y<u>L1 22 F</u> D <u>R</u>

22 : AC/DC 24V (Full voltage type)

Operator (style / function) L1 : Pilot Light / dome

Operating voltage

126 : AC 120V (Transformer type) 246 : AC 240V (Transformer type)

386 : AC 380V (Transformer type)

486 : AC 480V (Transformer type)

-Lens/LED Colors

R:Red G:Green A:Amber Y: Yellow PW: White S: Blue

L 66 : AC/DC 6V (Full voltage type) – Terminals 11 : AC/DC 12V (Full voltage type)

F : Finger-safe terminal (IP20) C : Exposed screw terminal

3 Position Selector Switches

				Selector Switches			Key Selector Switches					
		Operator Position		ition	Maintained	Spring Return from Right	Spring Return from Left	Spring Return Two Way	Maintained	Spring Return from Right	Spring Return from Left	Spring Return Two Way
Con- tact	Mount- ing	Ľ	C ▲	R					L C R			
NO	1	•			EU2B- YS320@	EU2B-YS3120@	EU2B-YS3220@	EU2B-YS3320@	EU2B-YSK320@3	EU2B-YSK3120@3	EU2B-YSK3220@3	EU2B- YSK3320@3
NU	3			•								
NO NO	2 3	•		•	EU2B- YS320N1@	EU2B-YS3120N1④	EU2B- YS3220N1@	EU2B- YS3320N1@	EU2B- YSK320N1@3	EU2B- YSK3120N1@3	EU2B- YSK3220N1@3	EU2B- YSK3320N1@3
NC NC	1 3		_		EU2B- YS302@	EU2B-YS302@	EU2B-YS3202@	EU2B-YS3302@	EU2B-YSK302@3	EU2B-YSK302@3	EU2B-YSK3202@3	EU2B- YSK3302@3
NC NC	2 3		•		EU2B- YS302N1④	EU2B- YS3102N1@3	EU2B- YS3202N1@3	EU2B- YS3302N1④	EU2B- YSK302N1@3	EU2B- YSK3102N1@3	EU2B- YSK3202N1@3	EU2B- YSK3302N1@3
NO NC	1	•			EU2B- YS311④	EU2B-YS311@	EU2B-YS3211@	EU2B-YS3311@	EU2B-YSK311@3	EU2B-YSK311@3	EU2B-YSK3211@3	EU2B- YSK3311@3
NC	1				EU2B- YS311N1@	EU2B-YS3111N1®	EU2B- YS3211N1@	EU2B- YS3311N1@	EU2B- YSK311N1@3	EU2B- YSK3111N1@3	EU2B- YSK3211N1®®	EU2B- YSK3311N1@3
NO NO NC	1 2	٠	٠	•	EU2B- YS311N2④	EU2B-YS3111N2@	EU2B- YS3211N2④	EU2B- YS3311N2④	EU2B- YSK311N2@③	EU2B- YSK3111N2@3	EU2B- YSK3211N2@3	EU2B- YSK3311N2@3
NC NO	2 3		•	•	EU2B- YS311N3④	EU2B-YS3111N3①	EU2B- YS3211N3①	EU2B- YS3311N3①	EU2B- YSK311N3@3	EU2B- YSK3111N3@3	EU2B- YSK3211N3@3	EU2B- YSK3311N3@③
NO NC	2 3	•		٠	EU2B- YS311N4④	EU2B-YS3111N4@	EU2B- YS3211N4@	EU2B- YS3311N4@	EU2B- YSK311N4@③	EU2B- YSK3111N4@3	EU2B- YSK3211N4@3	EU2B- YSK3311N4@3
NO NO NO	1 2 3	•		•	EU2B- YS330@	EU2B-YS3130@	EU2B-YS3230@	EU2B-YS3330@	EU2B-YSK330@3	EU2B-YSK3130@3	EU2B-YSK3230@3	EU2B- YSK3330@3
NC NC NC	1 2 3				EU2B- YS303@	EU2B-YS3103@	EU2B-YS3203@	EU2B-YS3303@	EU2B-YSK303@3	EU2B-YSK3103@3	EU2B-YSK3203@3	EU2B- YSK3303@3
NO NC NO	1 2 3	•	•	•	EU2B-YS3 21N1@	EU2B-YS3121N1@	EU2B- YS3221N1@	EU2B- YS3321N1④	EU2B- YSK321N1@3	EU2B- YSK3121N1@3	EU2B- YSK3221N1@3	EU2B- YSK3321N1@3
NC NO NC	1 2 3	•		•	EU2B-YS3 12N1④	EU2B-YS3112N1@	EU2B- YS3212N1@	EU2B- YS3312N1@	EU2B- YSK312N1@3	EU2B- YSK3112N1@3	EU2B- YSK3212N1®3	EU2B- YSK3312N1@3

Specify a terminal style in place of ④ in the part number: F (Finger-safe terminal), C (Exposed screw terminal).

3-position, 3-position/inverse cam Selector Switch Key Selector Switch



Key is removable in all maintained positions. Specify key removal position in place of \circledast in the part number. See table.

③ Key Removable Option Codes (3-Position)

Code	Description
Α	Key removable in any position
В	Key removable in left and center positions
С	Key removable in center and right positions
D	Key removable in center position
E	Key removable in left and right positions
G	Key removable in left position
Н	Key removable in right position)

CONTROL BOXES



STANDARD CONTROL STATIONS

1 Control Unit × 1 Column

1 pushbutton		EC2B-1102BN2N□1-U EC2			C2B-1102BN2N□2-U		EC2B-1102BN2N□3-U		EC2B-1102BN2N□4-U	
	1	Flush momentary 1N0 contact 1NC contact 1NC contact Nameplate ON Button color: black, green, red, and white 1NO-1NC contact		Flush momen 1NC contact Nameplate O Button color: b	Itary Flush momenta IFF INO-1NC conta black, green, red, and white Button color: bl		Flush momentary 1NO-1NC contact Nameplate ON Button color: black, green, red, and white		Flush momentary 1NO-1NC contact Nameplate OFF Button color: black, green, red, and white	
1 pilot light		EC2B-1101BN2□11-U	EC2B-1101BN2	2□12-U E	C2B-1101BN2□3-U	EC2B-1101BN2]13-U	EC2B-1101BN	I2□14-U	EC2B-1101BN2□6-U
	1	D 120V AC 240V AC Illumination color: red Illumination color: r		2 lor: red II	24V AC/DC 12 red Illumination color: red Illi		120V AC 240V AC Illumination color: green Illumination co		olor: green	24V AC/DC Illumination color: green
1 selector switch		EC2B-1106BN2N□1-U	1 key	selector sw	itch EC2B-1106E	3N2N□4-U	1	e-stop switcl	1	EC2B-1102BN2N□7-U
The selector 2-position main- tained 1N0-1NC contact OFF ON 2 4					1 3 1 3 2-position m 2-position m (removable a positions) 1NO-1NC co Nameplate	naintained OFF of the second s				Emergency stop switch 2NC contact Nameplate EMER- GENCY STOP Button color (red)
2 flush pushbuttons		EC2B-2102BN2N□1-U			2 Mushroom Pushbuttons EC2B-210			2102BN2N口4	-U	
	1	lush momentary NO contact, Nameplate ON Button color (black, green, red, and white buttons)				3 1 Mushr 4 2 1 Buttor		oom momentar NC contact, Na color (black)	y meplate ON	
		Flush momentary 1NC contact, Nameplate OFF Button color (black, green, red, and white buttons)					Mushr 1NO-11 Button	oom momentar NC contact, Na color (red)	y meplate OFF	
1 pilot light/1 pushbuttor	1	EC2B-2110BN2N	5-U		EC2B-2110BN2ND6-	U		EC2B-2110BI	N2N□3-U	
	(1 ⊗X2 2 1 1 0 0 120V AC Illumination color: red		ed	240V AC Illumination color: red		24V AC/DC Illumination		24V AC/DC Illumination	color: red	
	@	 Flush momentary 1NO-1NC contact Name plate STOP Button color (black, 	green, red, and	white buttons)	Flush momentary 1NO-1NC contact Name plate STOP Button color (black, gr	een, red, and white	e buttons)	Flush momer 1NO-1NC cor Name plate S Button color	ntary ntact STOP (black, green	, red, and white buttons)

Specify terminal style code in place of \Box in part no. C (standard screw terminal), F (finger-safe screw terminal)

-11

2 Control Units × 1 Column



4 Control Units × 1 C

2 pilot lights / 2 pushbuttor .⊗<u>X2</u> X1 1 -⊗<u>X2</u> X1 2 3||1 3 4 | 2 3 4

olu	imn		
ıs	EC2B-4110BN3N□5-U	EC2B-4110BN3N□6-U	EC2B-4110BN3N□3-U
1	120V AC, Illumination color: red	240V AC, Illumination color: red	24V AC/DC, Illumination color: red
2	120V AC, Illumination color: green	240V AC, Illumination color: green	24V AC/DC, Illumination color: green
3	Flush momentary 1NO-1NC contact, Nameplate ON Button color (black, green, red, and white buttons)	Flush momentary 1NO-1NC contact, Nameplate ON Button color (black, green, red, and white buttons)	Flush momentary 1NO-1NC contact, Nameplate ON Button color (black, green, red, and white buttons)
4	Flush momentary 1NO-1NC contact, Nameplate OFF Button color (black, green, red, and white buttons)	Flush momentary 1NO-1NC contact, Nameplate OFF Button color (black, green, red, and white buttons)	Flush momentary 1NO-1NC contact, Nameplate OFF Button color (black, green, red, and white buttons)

1 pilot light / 2 pushbuttons / 1 selector switch

4



)	1NC But	0-1NC contact, Nameplate OFF ton color (black, green, red, and white buttons)	1NO-1NC contact, Nameplate OFF Button color (black, green, red, and white buttons)	1NO-1NC contact, Nameplate OFF Button color (black, green, red, and white buttons)			
		EC2B-4113BN3N□5-U	EC2B-4113BN3N□6-U	EC2B-4113BN3N□3-U			
	1	120V AC, Illumination color: red	Ilumination color: red 240V AC, Illumination color: red				
	2	Flush momentary 1NO-1NC contact, Nameplate ON Button color (black, green, red, and white buttons)	Flush momentary 1NO-1NC contact, Nameplate ON Button color (black, green, red, and white buttons)	Flush momentary 1NO-1NC contact, Nameplate ON Button color (black, green, red, and white buttons)			
	3	Flush momentary 1NO-1NC contact, Nameplate OFF Button color (black, green, red, and white buttons)	Flush momentary 1NO-1NC contact, Nameplate OFF Button color (black, green, red, and white buttons)	Flush momentary 1NO-1NC contact, Nameplate OFF Button color (black, green, red, and white buttons)			
	4	Knob, 2-position, maintained 1NO-1NC contact Nameplate HAND-AUTO	Knob, 2-position, maintained 1NO-1NC contact Nameplate HAND-AUTO	Knob, 2-position, maintained 1NO-1NC contact Nameplate HAND-AUTO			

5 Control Units × 1 Column

2 pilot lights / 2 pushbuttons / 1 selector switch			EC2B-5113BN3N□5-U	EC2B-5113BN3N□6-U	EC2B-5113BN3N□3-U
	$ \begin{bmatrix} X_1 \\ X_2 \\ X_1 \\ X_1 \\ X_2 \\ 3 \\ 1 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3$		120V AC, Illumination color: red 120V AC, Illumination color: green Flush momentary 1NO-1NC contact, Nameplate ON Button color (black, green, red, and white buttons)	240V AC, Illumination color: red 240V AC, Illumination color: green Flush momentary 1NO-1NC contact, Nameplate ON Button color (black, green, red, and white buttons)	24V AC/DC, Illumination color: red 24V AC/DC, Illumination color: green Flush momentary 1NO-1NC contact, Nameplate ON Button color (black, green, red, and white buttons)
			Flush momentary 1NO-1NC contact, Nameplate OFF Button color (black, green, red, and white buttons)	Flush momentary 1NO-1NC contact, Nameplate OFF Button color (black, green, red, and white buttons)	Flush momentary 1NO-1NC contact, Nameplate OFF Button color black, green, red, and white buttons)
		5	Knob, 2-position, Maintained, 1NO-1NC contact, Name plate HAND-AUTO	Knob, 2-position, Maintained, 1NO-1NC contact Name plate HAND-AUTO	Knob, 2-position, Maintained, 1NO-1NC contact Name plate HAND-AUTO

Specify terminal style code in place of 🗆 in part no. C (standard screw terminal), F (finger-safe screw terminal)

DIMENSIONS

All dimensions in mm

Control Units

Pushbuttons







Pilot Lights

61.4





Emergency Stop Switches

67.7

Shown with finger-safe contacts

13.3





24.5

Meters

19.3

Shown with finger-safe contacts







Mounting Hole Dimensions



Panel thickness: 1.0 to 4.5 mm

*Note: The meter can be mounted on the top mounting holes of a standard 50mm mounting centers. The meter can be mounted on any mounting hole with a 70mm or larger mounting center.



Shown with finger-safe contacts





Key Selector Switch Shown with finger-safe contacts





1, 2 control units x 1 column

weight: 1.2kg/1.4kg

weight: 3.8/4.2/4.6/5.0 kg 115 4 control units 4-ø7 (mounting hole) 1 control unit 110 2 control units 70 95 (mounting hole) 1.5 Mounting tab 230 106 70 220 106 210 20 \oplus \oplus Mounting tab ÷ ¦⊕ |⊕ 3×50P \oplus \oplus Ť ÷ ¢ 142 hele 142 R $\dot{\oplus}$ 4-ø10 2 control units Ý R punting hole) (mounting hole) 20 Reducer M4 grounding terminal 3 control units Hinge 5 control units \oplus Hinge _____ 70 کھے 70 2×50P 0 /M5 lid mounting screw ⊕ Reducer $\oplus | \oplus$ لم 36 ⇔ \oplus 36.5 $\oplus i \oplus$ \oplus \oplus Ô Ô 4×50P M5 lid mounting screw Ф \oplus \oplus \oplus $\dot{\oplus}$ 70 \oplus I⊕ Dimensions А R No. of Control Units 2 or 3 180 250 3 control units x 1 column 2, 3, 4, 5 control units x 3 columns 4 or 5 350 280 weight: 1.8kg weight: 4.8/5.2/6.5/7.1 kg 3 control units 4 control units 2 control units 115 140 140 2×50P 110 4-ø7 (mounting hole) 320 310 95 106 1.5 106 \oplus Φ \oplus 300 (mounting hole) <u>_</u> Mounting tab \oplus ¢ \oplus ⊕ ⊕ 3×50P Mounting tab ÷ ⊕ ቅ \oplus Ð - \oplus ÷ ΦΦ 4-ø10/ untir Nole) 3 control units 220 150 hole) 192 5 control units 140 50P 140 Hinge; ÷ ė ⇔ \oplus \oplus \oplus Reducer ÷ ÷ ÷ Reducer Hinge Ð Ð 36.5 M4 grounding terminal

2, 3, 4, 5 control units x 2 columns

M4 grounding terminal /M5 lid mounting screw

Dimensions No. of Control Units	A	R
2 or 3	250	180
4 or 5	350	280



6 control units x 3 columns







M4 grounding terminal





36

M5 lid mounting screw

Terminal Blocks

Terminal blocks are not supplied with the standard control boxes (without wiring). When wiring inside the control box is required, specify the wiring circuit. The terminal block type used on the control boxes with wiring depends on the terminal style of the control unit.





The number of terminal blocks, poles, and the installation direction that can be installed on the control box are as follows:





1-column 3 units

(1 terminal block

2-column 4,5 units (4 terminal blocks/ 32 poles)







3-column 4, 5, 6 units (6 terminal blocks/ 8 poles)

1-column 4, 5 units

(1 terminal block

/ 8 poles)

2-column 2, 3 units

(2 terminal blocks

/16 poles)

ACCESSORIES

All dimensions in mm

Nameplates

Used for pilot light, pushbutton, selector switch, and key selector switch.

Appearance	Part Number	Dimensions
0	EU9Z-NM	40 (35) (35

Fittings and Reducers

Reducers installed at the bottom of the control box are as follows: 1 column: 1 reducer, 2 columns: 2 reducers, 3 columns: 3 reducers. Material is nickel-plated brass. Use cable lead-in fittings that are commercially available. See the following table for optional reducers

Control Box Style	Part No.	Thread Size	Symbol	UL c-UL
	EC9E-H3M16E-UL	M16	M1	0
	EC9E-H3M20E-UL	M20	M2	0
1 column	EC9E-H3M25E-UL	M25	M3	0
(1 to 3 control units)	EC9E-H3M32E-UL	M32	M4	0
(2, 3 control units)	EC9E-H3NPT1E-UL	NPT 1/2	N1	0
	EC9E-H3NPT2E-UL	NPT 3/4	N2	•
	EC9E-H3NPT3E-UL	NPT 1	N3	0
	EC9E-H4M25E-UL	M25	M3	0
1 2 3 columns	EC9E-H4M32E-UL	M32	M4	0
(4, 5 control units)	EC9E-H4M40E-UL	M40	M5	0
3 columns	EC9E-H4NPT2E-UL	NPT 3/4	N2	0
(6 control units)	EC9E-H4NPT3E-UL	NPT 1	N3	•
	EC9E-H4NPT4E-UL	NPT 1 1/4	N4	0

●: Standard reducer ○: non-standard reducer

The reducers in the table above are for replacement use only. All EC2B boxes are supplied with a reducer that has been secured to the housing per UL regulations. If it is necessary to replace a reducer, the user should follow appropriate UL standards for securing to EC2B housing.

Nameplate Inserts

Appearance	Legend	Part Number
	Blank	EU9Z-NP0
HAND OFF AUTO	ON	EU9Z-NP1
HAND OFF AUTO	OFF	EU9Z-NP2
	START	EU9Z-NP3
ON	STOP	EU9Z-NP4
	OFF-ON	EU9Z-NP31
OFF	HAND-AUTO	EU9Z-NP35
	HAND-OFF-AUTO	EU9Z-NP53

Material: Aluminum

Installing the Insert to the Nameplate



Removing the Insert from the Nameplate



To remove the Insert, insert a flat screwdriver between the Insert and Nameplate.

/ 8 poles)

Rubber Boots

Appearance	Description/Usage	Part Number
For Flush Pushbuttons	Not for use with name plate	EU9Z-DB1
For Flush Pushbuttons	For use with name plate	EU9Z-DB1N
For Extended Pushbuttons	Not for use with name plate	EU9Z-DB2
For Extended Pushbuttons	For use with name plate	EU9Z-DB2N

Emergency Stop Switch Nameplate Stickers

Appearance	Legend	Part Number	Dimensions
	Blank	EU9Z-NVS0	
CHERGENCL STOP	Emergency Stop	EU9Z-NVS27	STOP 0405

Material: yellow synthetic paper Legend: black

Padlock Cover

EU2B-YB2 extended pushbutton: to maintain latched status EU2B-YB1 flush pushbutton/EU2B-YSK key selector switch: to prevent operation



Note: mounted to outside of enclosure with screws, not provided by IDEC Material: Stainless Steel

Emergency Stop Switch Padlock Cover

Used with EU2B-YBV emergency stop switch to maintain the switch in the latched status.



Coating: yellow Material: Stainless Steel

Mounting Hole Plug

Used to plug unused mounting holes (ø30.5) on the mounting panel.

 Appearance
 Part Number
 Dimensions / Usage



Buttons			
Appearance	Style	Part Number	Button Color Code
	Flush	HW1A-B1①	
	Extended	HW1A-B2①	Specify a color code in place of ① in the Ordering Number. R : red G : green B : black Y : yellow
	ø40 Mushroom	HW1A-B4①	W : white S : blue

Material: Polyacetal

Lenses

Appearance	Lens Color	Part Number
	Red	EU9Z-LR
	Green	EU9Z-LG
	Amber	EU9Z-LA
	Yellow	EU9Z-LY
	White	EU9Z-LW
	Blue	FU97-LS

Material: AS resin (gasket supplied)

LED Lamps



Control Box Shade

Shana	Part No	Applicable	Dimensions (mm)		
onape	Tarrivo.	Control Box	Н	W	D
D 🗻 🥌 W	EC07 E2421M	EC2B-11*B	180	160	160
	EUJZ-FZAZ IIVI	EC2B-21*B			100
	EC9Z-F2A31M	EC2B-31*B	230	160	160
		EC2B-41*B	200	160	160
	EC9Z-FZA51	EC2B-51*B	360		
	EC9Z-F2A32	EC2B-22*B	260	420	160
-		EC2B-32*B			
Matarial: atainlass ataal	EC9Z-F2A52	EC2B-42*B	360	420	160
Thickness: 1mm		EC2B-52*B			
Photo: Part No. EC9Z-F2A52	5007 50400	EC2B-23*B	000	510	400
	EC9Z-F2A33	EC2B-33*B	260		IbU
	EC9Z-F2A53	EC2B-43*B	000	540	
		EC2B-53*B	360	510	160
	EC9Z-F2A63	EC2B-63*B	410	510	160

Protects control units from direct sunlight and rain. The surface of the control box shade is uncoated. Can be installed by tightening to the mounting tabs on the control box.

Operating			iait	Illumination Color Code	Raco
Voltage	AC	DC	Number		Dase
6V AC/ DC±10%	8mA	7mA (A, R, W) 5.5mA (G, PW, S)	LSTD-6①	Specify a color code in place of \bigcirc in the part number R : red G : green	
12V AC/ DC±10%	11mA	10mA	LSTD-11	A : amber PW : white	BA9S/13
24V AC/ DC±10%	11mA	10mA	LSTD-21	Use a white (PW) LED with yellow (Y) lens.	

OPERATING INSTRUCTIONS

Operating Current Draw Part

Installation Area

Do not install the EC2B control box in an environment where more than IP65 protection degree (more than Type 4X in North America) is required.

Use the EC2B control box under ambient temperature of -20 to +50°C. If the control box is exposed to direct sunlight and the surface temperature may rise above 50°C, provide a shade to keep the surface temperature below 50°C.

Installation

Use four M6 bolts for 1-column, four M8 bolts for 2- and 3-column, or other methods with equivalent strength to install the control box. Mounting tab thickness is 1.5mm for 1 column and 2mm for 2, 3, and 4 columns.

- If bolts become may loose due to vibration, use spring washers.
- If bolt corrosion is anticipated, use anti-corrosion bolts or other countermeasures.

Notes on Emergency Stop Switches

When using the emergency stop switches on safety-related parts of the control system, observe safety standards and regulations of the relevant country or region. Also be sure to perform a risk assessment before operation.

Opening/Closing the Lid

Use a Philips screwdriver to loosen lid mounting screws. While holding the unhinged side, open the lid slowly without exerting excessive force on the hinge.

Before closing the lid, make sure of the following:

- No foreign substances are on the packing or joint surfaces.
- No displacement of the waterproof packing.
- Wires are not caught between the joint surfaces.
- Next, close the lid slowly and tighten the screws to a proper torque of 1.6 to 2.4 N m.

Limitation of the Operating Current

Major heat sources comes from the wiring which is connected to the control box. Therefore, not only the operating current but wiring conditions (size, no. of wires, no. of wire bundles) may cause temperature rise. When wiring, observe the following conditions.

Stranded wire: 1.5 to 2.5 mm²(UL-c-UL certified) / Solid wire: ø1.2 to ø1.6 mm (16 to 14 AWG)

- Maximum no. of wires per bundle: 16
- Maximum operating current: 10A

When using the control box under an operating environment of 40°C minimum, use a heat resistant cable of 70°C minimum.

Determine the operating current so that the total heat value of 1 wire bundle is below 300 [$A^2 \times$ wires]. Also, when calculating the heat value, take the current fluctuation (10%) into consideration. [calculation example: EC2B-41**B (8 circuit)]

① Apply 10A to 1 circuit, 1A to the remaining 7 circuits:

 $\{(10A \times 1.1)^2 \times 2 \text{ wires}\} + \{(1A \times 1.1)^2 \times 14 \text{ wires}\} \approx 259 \text{ (can be used because < 300)}$

② Apply 10A to 1 circuit, 2A to the remaining 7 circuits:

{ $(10A \times 1.1)^2 \times 2 \text{ wires}$ } + { $(2A \times 1.1)^2 \times 14 \text{ wires}$ } ≈ 310 (cannot be used because > 300)

See the table below for the allowable operating current when applying current evenly to each control box.

Allowable Operating Current

Control Box	Max. No. of	Max No. of Wires per Bu [wires] ([wires]×[bundle])	Allowable Operating Current	
Part No.	Circuits	Without terminal- blocks	With terminal blocks	(reference) (*2)
EC2B-11	3	16 (16×1)	8 (8×1)	7A
EC2B-21	6	16 (16×1)	8 (8×1)	5A
EC2B-31	9	16 (16×1)	8 (8×1)	4A
EC2B-41	12	16 (16×1)	16 (16×1)	3A
EC2B-51	15	16 (16×1)	16 (16×1)	3A
EC2B-22	12	32 (16×2)	16 (8×2)	5A
EC2B-32	18	32 (16×2)	16 (8×2)	4A
EC2B-42	24	32 (16×2)	32 (16×2)	3A
EC2B-52	30	32 (16×2)	32 (16×2)	3A
EC2B-23	18	48 (16×3)	24 (8×3)	5A
EC2B-33	27	48 (16×3)	24 (8×3)	4A
EC2B-43	36	48 (16×3)	48 (16×3)	3A
EC2B-53	45	48 (16×3)	48 (16×3)	3A
EC2B-63	54	48 (16x3)	48 (16x3)	3A

*1: Make sure that the number of wires per bundle is a maximum of 16 by reducing the wiring or by jumper wiring. The maximum number of wires per bundle may need to be further reduced depending on the wire size, lead-in fitting, or conduit size.

*2: The allowable current value (reference) when applying current evenly to all circuits of the maximum number of circuits.

Wiring

Wiring Construction

Observe the laws and regulations in each country concerning wiring construction.Use cable wiring or metal conduit wiring for installation in hazardous locations. If foreign objects or water may enter the box, install a sealing fitting near the cable entry of the box and seal the control box using a compound. Standard type control boxes do not contain a terminal block. Wire the control units directly.

Applicable Wires

Stranded wire: 1.25 to 2.5 mm², solid wire: \emptyset 1.2 to \emptyset 1.6 mm (AWG16 to 14). Do not connect more than 2 wires to the same terminal.

Applicable crimping terminal

Ring and spade terminals cannot be used for EU2B control units with IP20 finger-safe terminals. Ring and spade terminals cannot be used for IP20 clamp type terminal blocks. When connecting two ferrules to an EU2B control unit, use ferrules without insulating sheath.



(Ring terminal)

Insulation sheath

Recommended crimping terminal (WAGO) Ferrule with insulating sheath: 216-204 Ferrule without insulating sheath: 216-104 Crimping plier: 206-204

Recommended Tightening Torque

EU2B control units (M3.5) and ET2A-8PE terminal block (M4): 1.0 to 1.3 N·m

Warning

Incorrect wiring may cause fire hazard. Observe the following conditions.

Be sure to install an insulating sheath on the crimping terminal or the crimping terminal with insulation.

When connecting solid wires or stranded wires directly, strip the insulation as mentioned below, and insert the wire all the way in.

EU2B Control units: 8.6 mm maximum IP20 crimping terminal: 8 to 9 mm

When using stranded wires, make sure that there are no wire whiskers.

Make sure that the spade crimping terminals and ferrules are inserted all the way in.

Use insulated ring terminals for the ET2A-8PE terminal block. Use only applicable crimping terminals and do not directly connect stranded wires or solid wires.

Removing and Installing the Contact Unit / Lamp Unit

To remove the contact unit or the lamp unit from the operator, pull the protruding yellow part of the locking lever outwards as shown in the figure below using a screwdriver, and turn it to the left. The contact unit or lamp unit can be removed.



When the contact unit is removed from the emergency stop switch operator, the NO contact closes and the NC contact opens.

Do not turn the locking lever when the contact unit is removed from the operator (the red indicator protruding out, see the figure below) or the switch can be damaged.



Panel mounting for the operator, lens unit and meter

Remove the locking ring from the operator and check that the rubber gasket is in place. Insert the operator from the panel front into the panel hole. Place the projection on the operator with TOP (Ring terminal)



marking upward and the recess on the mounting panel in the same direction. Meters have no projection.

Tighten the locking ring using ring wrench XN9Z-T1 to a torque of 2.5 Nm. When using a nameplate or padlocking cover, install it between the operator and panel. Make sure that the groove of the namplate or padlocking cover and the projection on the TOP marking of the operator are in the same direction.

Insulation Sheath

____5.5 to 6.0 _____ All dimensions in mm

Wire

Note: The locking ring for emergency stop switches and meter is metallic. The meter can't mount the nameplate or podlocking cover.

Installing the contact unit and lamp unit

To install the contact unit, place the TOP marking on the operator and the TOP marking on the contact block adapter in the same

direction, and then attach the contact unit to the operator. Then turn the locking lever to the right. Follow the same procedure when installing the lamp unit.

When installing the lamp unit, check that the inner lens is not loose

The contact block adapters for emergency stop switches cannot be used for pushbuttons, selector, or key selector switches.





Removing the Contact Block

To remove the contact block, insert a flat screwdriver under the latch of the contact block adaptor and disengage the latch as shown in the figure below.



Installing the Contact block

When installing the contact block after maintenance or wiring, make sure that the contact configuration is correct. Installing the contact block in the incorrect position or incomplete installation may cause malfunction of the switch.

Remove the contact block from the operator before installing the contact block to the contact block adaptor. Also make sure that the contact block is correctly installed to the contact block adaptor before attaching the operator. Do not install the contact block adaptor with the operator attached. Otherwise, malfunction may result.

Protective Grounding

Protective grounding must be performed according to the installation environment and rating requirements. Observe laws and regulations set by each country.

- Connect the M4 grounding terminal of the EC2B control box to a proper ground (grounding resistance 10Ω maximum). When operating the EC2B control box by connecting to circuits of 300V or below, the grounding resistance must be 100Ω maximum.
- When using cables, connect one of the cable cores to the grounding terminal in the enclosure.
- If the grounding terminal in the enclosure cannot be used, use the M4 grounding terminal on the outside of the enclosure.

Recommended tightening torque:

M4: 1.0 to 1.3 Nm

M6: 3.9 to 5.4 Nm

For grounding, use appropriate wires (size, material, insulation) that can tolerate the expected maximum grounding current. Be sure to protect the grounding wire with protection, such as metal conduit, from external damage.

Accessories

Padlock Cover

The following padlocks and hasps can be used.

(Padlock Size)	а	b	С
Flush/extended pushbutton/key selector switch	ø3.5 to 7.0 mm	15 mm min.	70 mm max.
Emergency Stop Switch	ø5.5 to 7.0 mm	—	—

Recommended Hasp

Manufacturer	Part No.
Panduit	PSL-1, PSL-1A, PSL-1.5, PSL-1.5A, PSL-HD1
Master Lock	420, 421

Padlock and hasp are available in various shapes and sizes. Make sure that they do not interfere with the control units. Note: Not supplied by IDEC.

Keep the total weight of padlock and hasp under 1500g max, otherwise the switch may malfunction or result in failure. No vibration should be applied when padlock or hasp are installed. When padlock or hasp are disfigured, stop usage immediately.

Ensure that no shock or electric sparks are generated.

When using the plate lock padlock cover with the extended pushbutton, the switch contact may turn on/off when the cover is being installed. Ensure to provide functional safety measure to prevent unexpected startup.

When using the padlock cover on the safety-related part of the control system, observe safety standards and regulations of the relevant country or region. Also be sure to perform risk assessment before operation.

Installing EU9Z-PC Padlock Cover

(Flush/extended pushbtton/key selector switch)

EU9Z-PC can be installed in the following two ways.

Remove the cover in the reverse step of installing the cover. Do not install or remove the cover forcefully, or it will cause failure.

[Installation A]



[Installation B]

This method is effective when the neighboring control unit interferes when installing in method A.



Installing EU9Z-DB Rubber Boots

To install the rubber boot on flush and extended pushbuttons, place the rubber boot on the cap and push the rubber boot holder straight. The notches around the rubber boot must show evenly.



Push the rubber boot holder further around on the two notches on the holder so that the holder fits the button completely

Make sure that the rubber boot and rubber boot holder are installed straight.

On Nameplate Types, the EU2B and the rubber boot holder must be aligned so that when installed, the anti-rotation projection on the EU2B comes to the center of the groove on the holder. Make sure that the rubber boot is installed completely, otherwise water droplets might enter the rubber boot, but no water will enter the control box.





To remove the rubber boot from the flush and extended pushbuttons, gently insert the slotted screwdriver (0.5t x 4w or below) inside a notch on the rubber boot holder and tilt to the direction shown by the arrow \bigcirc . To prevent damage, do not apply excessive force to the EU2B when removing the rubber boot.

Maintenance and Inspection

EU2B switches should be installed in an appropriate control box.

Maintenance and Inspection Method

Perform daily or periodical maintenance and inspection for items such as damage and temperature rise of the EU2B switches listed in the Maintenance and Inspection table below.

Observe laws and regulations set by each country. Do not open the lid when inspecting the EC2B while it is energized. Never disassemble the control box. Do not use tools that cause sparks during maintenance and inspection. When using measuring devices, use explosion-protected types. When the EC2B needs to be disassembled or assembled for maintenance or repair, contact IDEC.

Maintenance and Inspection

Inspection Items	Inspection Method	Inspections	Measures
Enclosure base	Visual	No rusting No damages	Cleaning Rust-resistant treat- ment
Tightening bolt, screws	Visual, tactile	No loosening No rusting	Tightening Cleaning
Packings	Visual	No cracks No apparent deforma- tion	Replacement
Connecting parts	Visual, tactile	No loosening of screws No dirt on insulation materials	Tightening Cleaning
Temperature rise	Thermometer, tactile	Surface temperature 80°C max.	Investigate the cause

Disposal

Observe laws and regulations set by each country concerning refuse disposal.

Safety Precautions

EU2B Control Units

Use EU2B switches that are applicable for use in hazardous areas (potentially explosive atmosphere where explosive gas or vapor may exist), otherwise explosion or fire hazard may result.

- EU2B switches can be installed only in zones 1 and 2. Do not use in zone 0.
- Turn power off to the EU2B switches before installation, removal, wiring, or maintenance, otherwise explosion, fire hazard, or electric shock may result.
- Do not disassemble, repair, or modify, otherwise damage or accident may result.
- Do not use damaged EU2B switches, otherwise damage or accident may result.
- When connecting external devices, make sure that each cable is connected to the correct terminal, otherwise electric shock, fire hazard, or explosion may result.
- Use wires of a proper size to meet voltage and current requirements. Incorrect wiring may cause abnormal temperature rise and lead to fire hazard and explosion.
- Connect the grounding terminal to a proper ground, otherwise electric shock, fire hazard, or explosion may result.
- Operate the EU2B switches at the rated current and voltage specified in this catalog, otherwise short-circuiting, fire hazard, or explosion may result.
- Stop operation immediately if abnormal operation occurs. Otherwise, a secondary accident may occur.
- Use explosion-proof electrical equipment that are applicable for use in hazardous areas (potentially explosive atmosphere where explosive gas or vapor may exist), otherwise explosion or fire hazard may result.

EC2B Control Boxes

- EC2B control boxes can be installed only in zones 1 and 2. Do not use in zone 0. In North America, the EC2B can be installed in Division 2 areas, but cannot be installed in Division 1 areas.
- Turn power off to the EC2B control box before installation, removal, wiring, or maintenance, otherwise explosion, fire hazard, or electric shock may result.
- Special skills and knowledge of explosion protection, electric system installation, and relevant laws/regulations are required to transport, install, wire, operate, repair, and inspect the EC2B control box. People without such expertise must not use the EC2B control box, otherwise damage or accident may result.
- Do not modify the EC2B, otherwise damage or accident may result.
- Do not use a damaged EC2B control box, otherwise damage or accident may result.
- When connecting external devices, make sure that each cable is connected to the correct terminal, otherwise electric shock, fire hazard, or explosion may result.
- Use wires of a proper size to meet voltage and current requirements. Incorrect wiring may cause abnormal temperature rise and lead to fire hazard and explosion.
- Connect the grounding terminal to a proper ground, otherwise electric shock, fire hazard, or explosion may result.
- Do not sit on or hang from the EC2B control box, otherwise damage, personal injury, or accident may result.
- Do not open the lid of the EC2B control box when it is energized, otherwise electric shock, fire hazard, or explosion may result.
- Operate the EC2B control box at the rated current and voltage specified in this catalog, otherwise short-circuiting, fire hazard, or explosion may result.
- When measuring the insulation resistance of the EC2B control box, make sure that
 potentially explosive atmosphere of explosive gas or vapor does not exist in the vicinity,
 otherwise explosion may result. Also, do not touch the terminals without paying attention,
 otherwise electric shock will result.
- Do not place any obstacles in front of the nameplate.
- Do not remove the nameplate.
- When opening the lid for wiring, maintenance or inspection, make sure that substances such as dust, concrete powder, or metal powder do not enter inside the box, otherwise contact failure or insulation failure may result.
- Do not drop the EC2B control box during transportation.
- Be sure to open the carton the right way up, otherwise damage or personal injury may result.
- Check that the product is what you have ordered. Using an incorrect model might result in malfunction or accident.
- Stop operation immediately if abnormal operation occurs. Otherwise, a secondary accident may occur.
- The surface temperature of the EC2B control box may become extremely hot during operation. Before maintenance or inspection of the EC2B, be sure to wear gloves to prevent burning your hand.

IDEC					EC2	B				
TO: IDEC Corp	oration						1-colu	mn Contro	ol Box Speci	ification Sheet
	Company:				TEL:					No. of Control Box
V	 Contact Pers 	on:			FAX:					
Select the required specifications by checking the checkboxes, and specify the details.										
Control box	x size									
	EC2B-110		□ EC2B-210		□ EC2B-310			EC2B-410		EC2B-510
			2 E1		2 3 E1			(2) (3) (4) E2		3 4 5 E2
								<u> </u>		
Nameplate (NP) Material: Acrylic (53 mm × 12 mm, plate thickness 2 mm) Legend color: black letter, white background Maximum no. of letters: 19 letters per line (up to 2 lines)										
□ No nan	neplate	9			🗆 2 lii	nes - 2r	t line 1d line			
Control Uni	ts									
Position	n Control	Unit Par	t No.			Contro	ol Unit Na	meplate		
				□ 0N	ON OFF START STOP EMERGENCY			CY STOP		
					□ OFF ON □ HAND AUTO □ HAND OFF AUTO □ Blank					
						s(START			
(2)					□ HAND AUTO		HAND OF	F AUTO	□ Blank	
				🗆 No namep	late 🗆 Specify letter	s ()		
				🗆 0N	OFF		START	□ STOP		CY STOP
(3)						□ ~/	HAND OFF AUTO Blank			
						s(START			CY STOP
(4)					□ HAND AUTO		HAND OF	F AUTO	□ Blank	
				🗆 No namep	late 🗆 Specify letter	s ()		
							START			CY STOP
(5)				UFF ON	HAND AUTO ⊔ HAND AUTO late □ Specify letter	⊡ । s(hand Of	+ AUIO)	∐ Blank	
L	1							,		
Lead-in Fitt	ing <mark>(E1/E2)</mark>			c 1	EC2B-110, 2	10, 310			EC2B-410, 510	
UL/c-UL, IECEX/ATEX certi		tied	red NPT 3/4 NPT 1							
(standard reducer)		Check Specification Code Cable lead-in me		ead-in method	Check Specification					
(otalia)					M16				M:	25
					M20		E2 Reducer			40
E With specification		E1	Reducer		M32	E2				PT 3/4
					NPT 1/2					PT 1
					NPT 3/4				NPT 1 1/4	
• Speci	fy wiring diagram w	nen wir	ing is required.		 Specify when o 	ther acc	essories	are required	l.	



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