

Features

Unregulated Converters

- 12.5kVAC/1 minute isolation
- Compact SIP16 case with >30mm pin separation
- Low 4pF max. isolation capacitance
- Wide operating temperature range from -40°C to +85°C at full load
- Efficiency up to 81%

RECOM
DC/DC Converter

RHV2

**2 Watt
SIP16
Single and Dual
Output**



IEC/EN62368-1 certified
IEC/EN61010-1 certified

Description

The RHV2 is a DC/DC converter with exceptionally high 20kVDC (12.5kVAC/1 minute) isolation in a compact SIP16 case. Input voltages can be 5, 12 or 24VDC and outputs 5V, 12V, 24V, $\pm 5V$ or $\pm 12V$. The operating temperature is -40°C to +85°C without derating. Applications include high vacuum monitoring, X-Ray equipment, HVAC dust extraction systems and other high voltage industrial applications where a very high isolation remote power supply is required.

Selection Guide

Part Number	nom. Input Voltage [VDC]	Output Voltage [VDC]	Output Current [mA]	Efficiency typ. ⁽¹⁾ [%]	max. Capacitive Load ⁽²⁾ [μ F]
RHV2-0505S/R20	5	5	400	74	1000
RHV2-0512S/R20	5	12	167	77	330
RHV2-0524S/R20	5	24	84	81	100
RHV2-1205S/R20	12	5	400	75	1000
RHV2-1212S/R20	12	12	167	76	330
RHV2-1224S/R20	12	24	84	77	100
RHV2-2405S/R20	24	5	400	76	660
RHV2-2412S/R20	24	12	167	81	330
RHV2-2424S/R20	24	24	84	78	100
RHV2-0505D/R20	5	± 5	± 200	74	± 680
RHV2-0512D/R20	5	± 12	± 84	75	± 150
RHV2-1205D/R20	12	± 5	± 200	74	± 680
RHV2-1212D/R20	12	± 12	± 84	76	± 150
RHV2-2405D/R20	24	± 5	± 200	77	± 680
RHV2-2412D/R20	24	± 12	± 84	81	± 150

Notes:

Note1: Efficiency is tested at nominal input and full load at +25°C ambient

Note2: The capacitive load is tested at minimum input and constant resistive load

Model Numbering



Specifications (measured @ Ta= 25°C, nom. Vin, full load and after warm-up unless otherwise stated)

BASIC CHARACTERISTICS

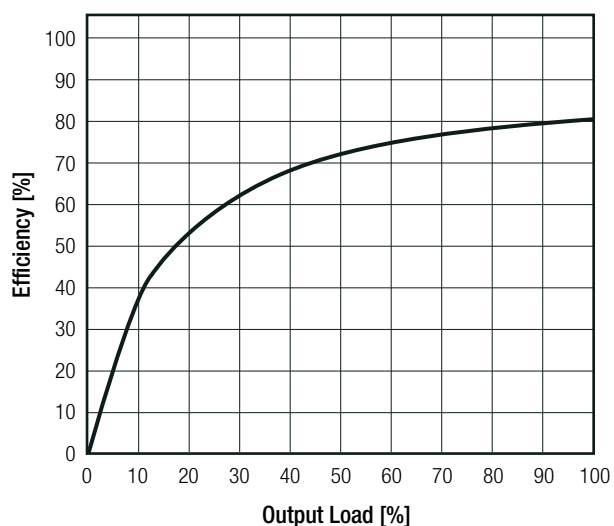
Parameter	Condition	Min.	Typ.	Max.
Internal Input Filter		capacitors		
Input Voltage Range			±10%	
Minimum Load		0%		
Internal Operating Frequency		20kHz	45kHz	
Output Ripple and Noise ⁽³⁾	20MHz BW		150mVp-p	200mVp-p

Notes:

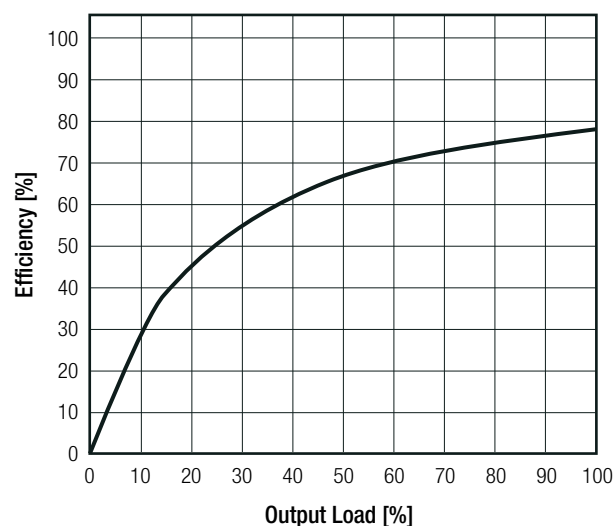
Note3: Measurements are made with a 0.1µF MLCC across output (low ESR)

Efficiency vs. Load

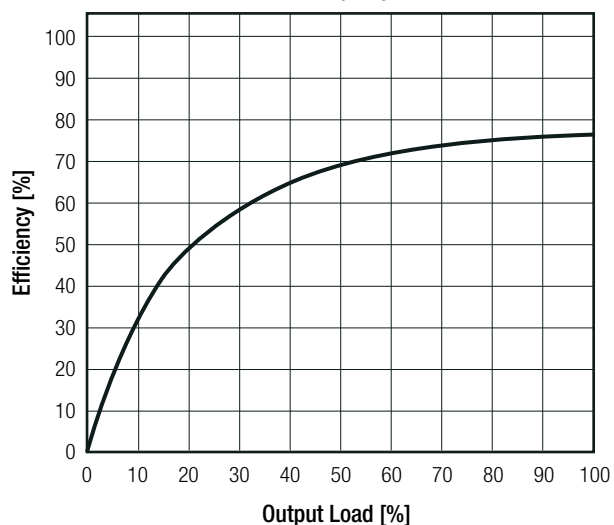
RHV2-0524S/R20



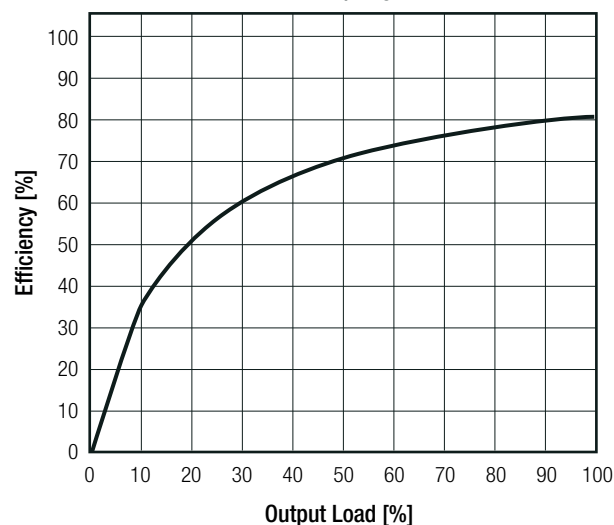
RHV2-2424S/R20



RHV2-1212D/R20



RHV2-2412D/R20



Specifications (measured @ Ta= 25°C, nom. Vin, full load and after warm-up unless otherwise stated)

REGULATIONS

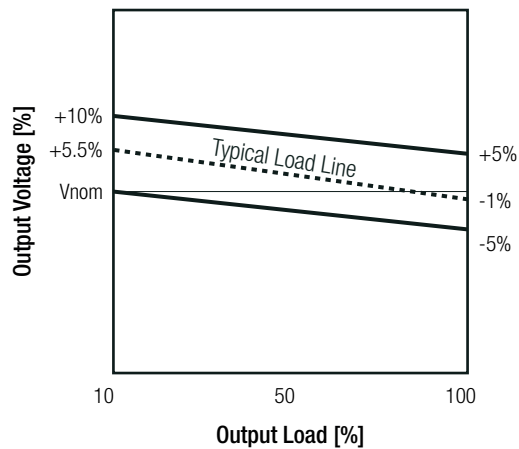
Parameter	Condition		Value
Output Accuracy			±5.0% max.
Line Regulation	low line to high line, full load		±1.2% of 1.0% Vin typ.
Load Regulation ⁽⁴⁾	10% to 100% load	12Vout, 24Vout	10.0% max.
		5Vout	15.0% max.
Cross Regulation	10% to 100% load		±7.5% typ.

Notes:

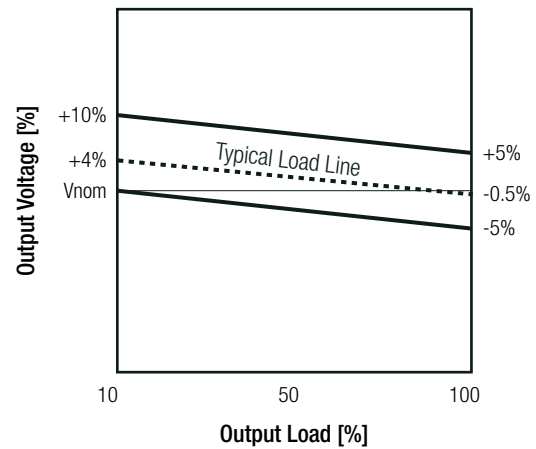
Note4: Operation below 10% load will not harm the converter, but specifications may not be met

Tolerance Envelope

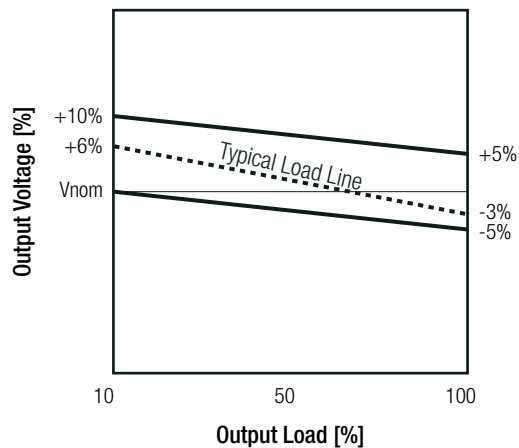
RHV2-0524S/R20



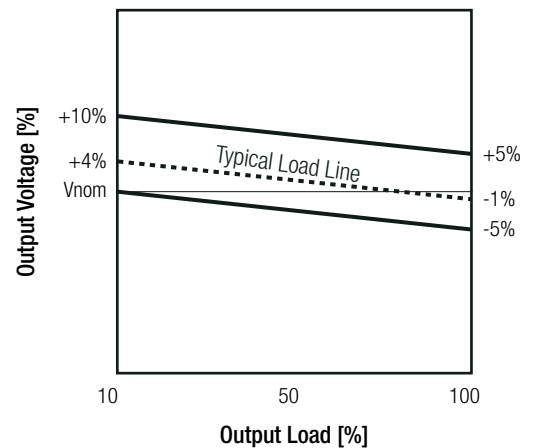
RHV2-2424S/R20



RHV2-1212D/R20



RHV2-2412D/R20



PROTECTIONS

Parameter	Type		Value
Isolation Voltage ⁽⁵⁾	I/P to O/P	tested for 1 second tested for 1 minute	20kVDC 12.5kVAC
Isolation Resistance			15GΩ min.
Isolation Capacitance			3.5pF typ./ 4pF max.
Insulation Grade			reinforced

Notes:

Note5: For repeat Hi-Pot testing, reduce the time and/or the test voltage

Note6: Refer to local safety regulations if input over-current protection is also required. Recommended fuse: slow blow type

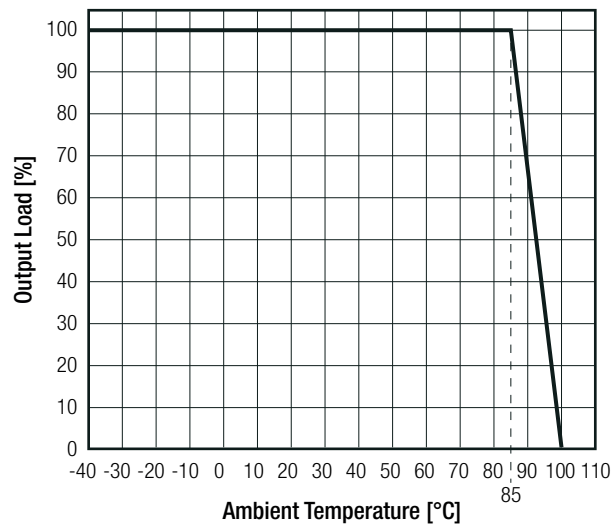
Specifications (measured @ Ta= 25°C, nom. Vin, full load and after warm-up unless otherwise stated)

ENVIRONMENTAL

Parameter	Condition		Value
Operating Temperature Range	without derating @ natural convection 0.1m/s (see graph)		-40°C to +85°C
Operating Altitude			5000m
Operating Humidity	non-condensing		5% - 95% RH max.
Pollution Degree			PD2
Vibration			MIL-STD-202G
MTBF	according to MIL-HDBK-217F,G.B.	+25°C +85°C	14600 x 10 ³ hours 5400 x 10 ³ hours

Derating Graph

(@ Chamber and natural convection 0.1m/s)



SAFETY AND CERTIFICATIONS

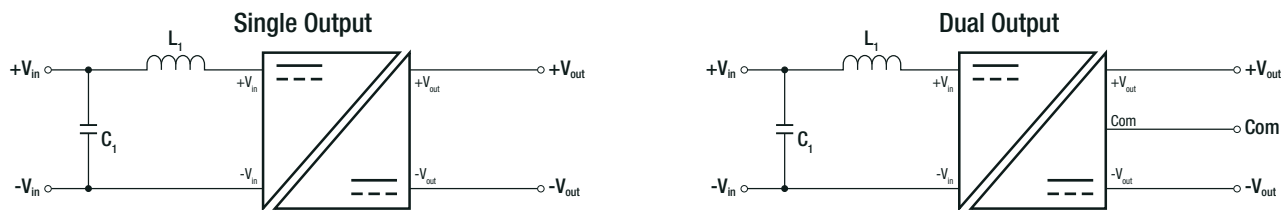
Certificate Type (Safety)	Report / File Number	Standard
Audio/Video, information and communication technology equipment - Part1: Safety requirements	WD-SE-R-190305-A0	IEC62368-1:2014 2nd Edition EN62368-1:2014+AC:2015
Safety requirements for electrical equipment for measurement, control and laboratory use - Part 1: General requirements	WD-SE-R-190305-B0	IEC61010:2010 EN61010:2010
RoHS 2		RoHS 2011/65/EU + AM2015/863

EMC Compliance	Condition	Standard / Criterion
Electromagnetic compatibility of multimedia equipment – Emission Requirements	refer to "EMC Filtering"	EN55032, Class B
Information technology equipment - Immunity characteristics - Limits and methods of measurement		EN55024:2010 + A1:2015
ESD Electrostatic discharge immunity test	Air: ±2, 4, 8kV, Contact: ±2, 4kV	IEC61000-4-2:2009, Criteria A
Radiated, radio-frequency, electromagnetic field immunity test	3V/m	IEC61000-4-3:2006+A2:2010, Criteria A
Fast Transient and Burst Immunity	DC Power Port: ±0.5kV, ±1kV	IEC61000-4-4:2012, Criteria A
Surge Immunity	DC Power (Output) Port: ±0.5kV	IEC61000-4-5:2014+A1:2017, Criteria A
Immunity to conducted disturbances, induced by radio-frequency fields	DC Power (Output) Port: 3V	IEC61000-4-6:2013+C1:2015, Criteria A
Power Magnetic Field Immunity	50Hz, 1A/m	IEC61000-4-8:2010, Criteria A

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Specifications (measured @ Ta= 25°C, nom. Vin, full load and after warm-up unless otherwise stated)

EMC Filtering Suggestions according to EN55032



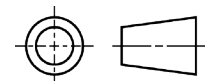
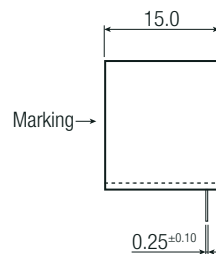
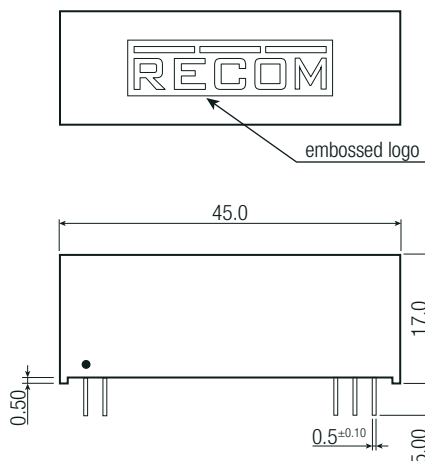
Component List Class B

nom. Input Voltage	C ₁	L ₁
5VDC, 12VDC, 24VDC	10μF, 50VDC MLCC	18μH choke RLS-226

DIMENSION AND PHYSICAL CHARACTERISTICS

Parameter	Type	Value
Material	case PCB potting	black plastic, (UL94V-0) FR4, (UL94V-0) epoxy, (UL94V-0)
Package Dimension (LxWxH)		45.0 x 15.0 x 17.0mm
Weight		19.7g typ.

Dimension Drawing (mm)

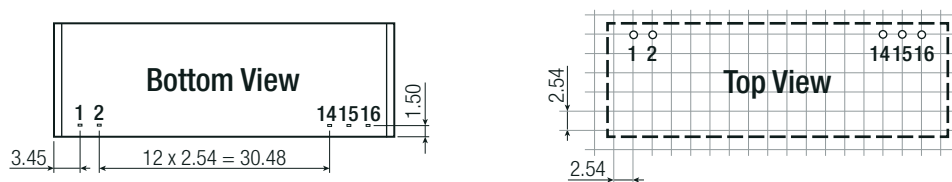


Pinning Information

Pin #	Single	Dual
1	+Vin	+Vin
2	-Vin	-Vin
14	-Vout	-Vout
15	no pin	Com
16	+Vout	+Vout

Tolerance: xx.x = ±0.5mm
xx.xx = ±0.25mm

Recommended Footprint Details



PACKAGING INFORMATION

Parameter	Type	Value
Packaging Dimension (LxWxH)	tube	520.0 x 26.9 x 17.9mm
Packaging Quantity		10pcs
Storage Temperature Range		-55°C to +125°C
Storage Humidity	non-condensing	5% - 95% RH max.

The product information and specifications may be subject to changes even without prior written notice. The product has been designed for various applications; its suitability lies in the responsibility of each customer. The products are not authorized for use in safety-critical applications without RECOM's explicit written consent. A safety-critical application is an application where a failure may reasonably be expected to endanger or cause loss of life, inflict bodily harm or damage property. The applicant shall indemnify and hold harmless RECOM, its affiliated companies and its representatives against any damage claims in connection with the unauthorized use of RECOM products in such safety-critical applications.

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