

Features

- 4:1 Wide Input Voltage Range
- 10 Watts Output Power
- 1.6kVDC Isolation
- Fixed Operating Frequency
- Six-Sided Continuous Shield
- Standard 50.8 x 25.4 x 10.2mm Package
- Efficiency to 84%

Description

The RP10-EW series wide input range DC/DC converters are certified to UL 60950-1 and cUL 60950-1. This makes them ideal for all telecom and industrial applications where approved safety standards are required.

The industry standard 2" x 1" package meets military standards for thermal shock and vibration tolerance and is available with an optional remote on/off control pin.

This series is also available with the /M2 option which is particularly suitable for extended temperature range applications.

Selection Guide 24V and 48V Input Types

Part Number	Input Range VDC	Output Voltage VDC	Output Current mA	Input ⁽⁴⁾ Current mA	Efficiency ⁽⁵⁾ %	Capacitive ⁽⁶⁾ Load max.
RP10-2405SEW	9-36	5	2000	548	80	4700µF
RP10-2412SEW	9-36	12	830	532	82	690µF
RP10-2415SEW	9-36	15	670	551	80	470µF
RP10-4805SEW	18-75	5	2000	274	80	4700µF
RP10-4812SEW	18-75	12	830	259	84	690µF
RP10-4815SEW	18-75	15	670	262	84	470µF
RP10-2405DEW	9-36	±5	±1000	548	80	±680µF
RP10-2412DEW	9-36	±12	±416	547	80	±330µF
RP10-2415DEW	9-36	±15	±333	548	80	±110µF
RP10-4805DEW	18-75	±5	±1000	271	81	±680µF
RP10-4812DEW	18-75	±12	±416	281	78	±330µF
RP10-4815DEW	18-75	±15	±333	270	81	±110µF

* add suffix /M2 for higher efficiencies and extended temperature range.

* add suffix /P for CTRL function with Positive Logic (1=ON, 0=OFF)

* add suffix /N for CTRL function with Negative Logic (0=ON, 1=OFF)

* add suffix -HC for premounted heatsink and clips

Ordering Examples

RP10-2405SE/P = 24V 4:1 Input, 5V Output, Standard Temp. Range, Positive Logic CTRL pin fitted

RP10-4805DE/M1-HC = 48V 4:1 Input, ±5V Output, Extended Temp. Range, No CTRL, Heatsink fitted

POWERLINE

DC/DC-Converter

with 3 year Warranty

RECOM

10 Watt
2" x 1"
Single &
Dual Output



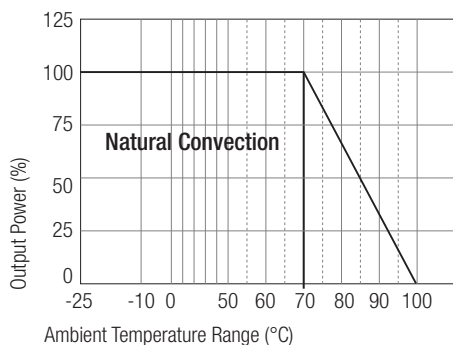
UL-60950-1 Certified
E196683

RP10-EW

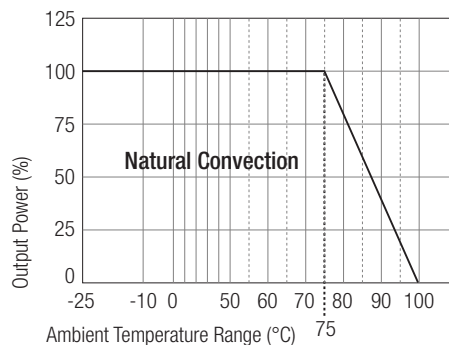
Refer to Application Notes

Derating Graph (Ambient Temperature)

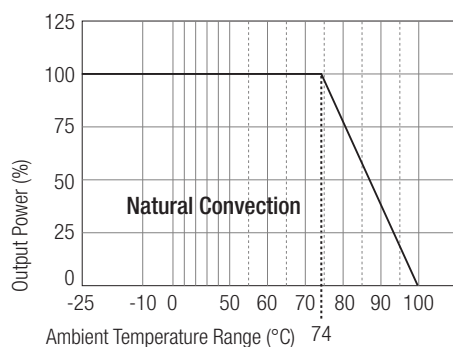
RP10-2405SEW



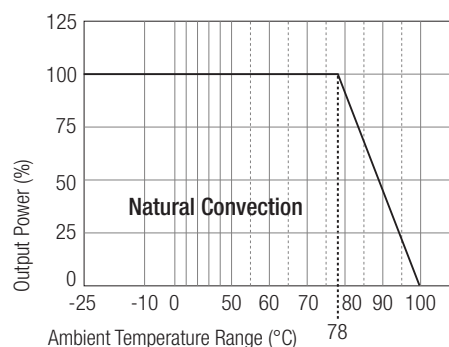
RP10-2405SEW With Heat Sink



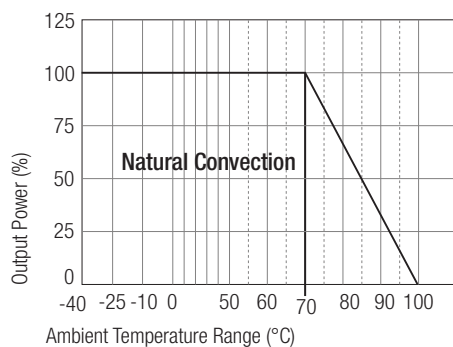
RP10-2405DEW



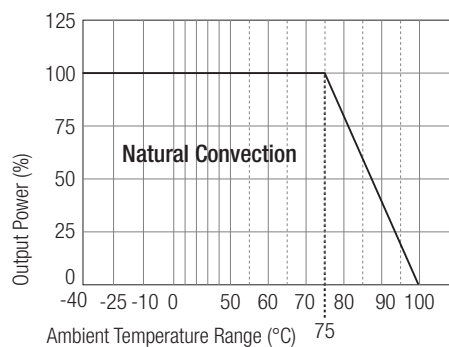
RP10-2405DEW With Heat Sink



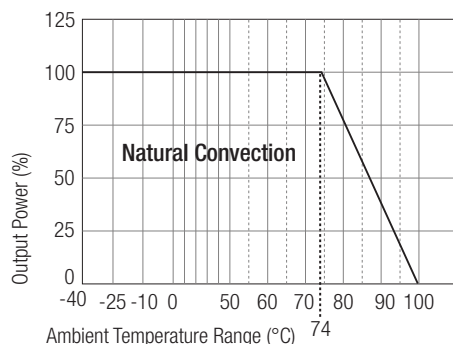
RP10-2405SEW/M2



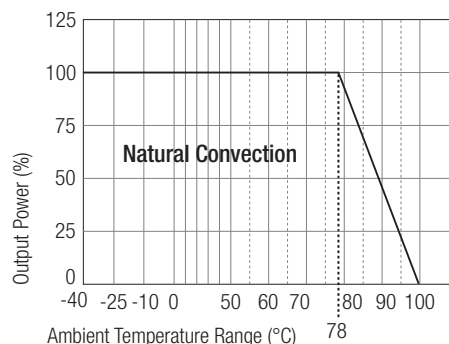
RP10-2405SEW/M2 With Heat Sink



RP10-2405DEW/M2



RP10-2405DEW/M2 With Heat Sink



Derating graphs are valid only for the shown part numbers. If you need detailed derating-information about a part-number not shown here please contact our technical support service at info@recom-development.at

Specifications (typical at nominal input and 25°C unless otherwise noted)

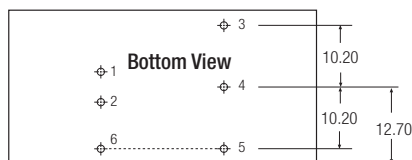
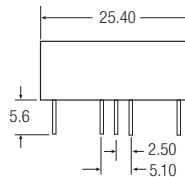
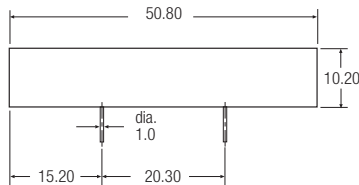
Input Voltage Range	24V nominal input	9-36VDC
	48V nominal input	18-75VDC
Input Filter		Pi Type
Input Surge Voltage (100 ms max.)	24V Input	50VDC
	48V Input	100VDC
Input Reflected Ripple (nominal Vin and full load)		30mA _{p-p}
Start Up Time (nominal Vin and constant resistor load)		20ms typ.
Remote ON/OFF ⁽⁷⁾		
(Positive logic)	DC-DC ON	Open or 3.5V < Vr < 12V
	DC-DC OFF	Short or 0V < Vr < 1.2V
(Negative logic)	DC-DC ON	Short or 0V < Vr < 1.2V
	DC-DC OFF	Open or 3.5V < Vr < 12V
Remote OFF input current	Nominal input	20mA
Output Power		10W max.
Output Voltage Accuracy (full Load and nominal Vin)		±2%
Minimum Load ⁽¹⁾		10% of full load
Line Regulation (low line, high line at full load)		±1%
Load Regulation (25% to 100% full load)	Single	±1%
	Dual	±2%
Cross Regulation (asymmetrical 25%<>100% load)		±5%
Ripple and Noise (20MHz bandwidth, with 1µF MLCC on output)	Single	50mV _{p-p}
	Dual	75mV _{p-p}
Temperature Coefficient		±0.02%/°C max.
Transient Response (25% load step change)		500µs
Over Voltage Protection	5V output	6.2V
Zener diode clamp	12V output	15V
	15V output	18V
Over Load Protection (% of full load at nominal Vin)		150% typ
Undervoltage Lockout		none
Short Circuit Protection		Hiccup, automatic recovery
Efficiency		see „Selection Guide“ table
Isolation Voltage (rated for one minute)		1600VDC
Isolation Resistance		1 GΩ min.
Isolation Capacitance		300pF max.
Operating Frequency		300kHz typ.
Operating Temperature Range ⁽⁹⁾ (Reference Derating Curve)	Standard	-25°C to +85°C(with derating)
	M2	-40°C to +85°C(with derating)
Maximum Case Temperature		+100°C
Storage Temperature Range		-55°C to +125°C
Thermal Impedance ⁽⁸⁾	Natural convection	12°C/Watt
	Natural convection with Heat Sink	10°C/Watt
Thermal Shock		MIL-STD-810D
Vibration		10-55Hz, 10G, 30 Min. along X, Y and Z

continued on next page

Specifications (typical at nominal input and 25°C unless otherwise noted)

Relative Humidity		5% to 95% RH
Case Material		Nickel plated copper
Base Material		Non-conductive black plastic
Potting Material		Epoxy (UL94-V0)
Conducted Emissions ⁽¹⁰⁾	EN55022	Level A
Radiated Emissions	EN55022	Level A
ESD	EN61000-4-2	Perf. Criteria B
Radiated Immunity	EN61000-4-3	Perf. Criteria B
Fast Transient	EN61000-4-4	Perf. Criteria B
Surge	EN61000-4-5	Perf. Criteria B
Conducted Immunity	EN61000-4-6	Perf. Criteria B
Weight		27g
Packing Quantity	Refer to App Notes for tube dimensions	9pcs per Tube
Dimensions		50.8 x 25.4 x 10.2mm
MTBF ⁽²⁾	BELLCORE TR-NWT-000332	1976 x 10 ³ hours
	MIL-HDBK-217F	1416 x 10 ³ hours

Package Style and Pinning (mm)



Pin Connections

Pin #	Single	Dual
1	+Vin	+Vin
2	-Vin	-Vin
3	+Vout	+Vout
4	No Pin	Com
5	-Vout	-Vout
6*	CTRL*	CTRL*

* Optional. See Note 7

Pin Pitch Tolerance ± 0.25 mm
Pin dimension tolerance ± 0.1 mm
Tolerance: X.X ± 0.5 mm
X.XX ± 0.25 mm

Notes :

- The RP10 (M) series required a minimum 10% loading on the output to maintain specified regulation.
Operation under no-load condition will not damage these devices, however they may not meet all listed specification.
- BELLCORE TR-NWT-000332. Case I: 50% Stress, Temperature at 40°C. (Ground fixed and controlled environment).
- Simulated source impedance of 12 μ H. 12 μ H inductor in series with +Vin.
- Maximum value at nominal input voltage and full load of standard type.
- Typical value at nominal input voltage and full load.
- Test by minimum Vin and constant resistor load.
- The ON/OFF control function can be positive or negative logic. The pin voltage is referenced to negative input.
Positive logic ON/OFF is marked with suffix-P (eg. RP10-2405SEW/P)
Negative logic ON/OFF is marked with suffix-N (eg. RP10-2405SEW/N).
If no suffix is specified, the control pin will be omitted.
- Heat sink is optional and P/N: 7G-0020C. Powerline DC/DC Converters can be ordered with pre-mounted heatsinks including antivibration fixing clips (add suffix -HC). See Application Notes for heatsink details.
- M2 version is more efficient, therefore, it can be operated in a more extensive temperature range than standard version.
- See application notes for EMI-filtering.

The product information and specifications are subject to change without prior notice. RECOM products are not authorized for use in safety-critical applications (such as life support) without RECOM's explicit written consent. A safety-critical application is defined as an application where a failure of a RECOM product may reasonably be expected to endanger or cause loss of life, inflict bodily harm or damage property. The buyer 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.