

# Features

- 4:1 Wide Input Voltage Range
- 30 Watts Output Power
- 1.6kVDC Isolation
- UL Certified
- Fixed Operating Frequency
- Six-Sided Continuous Shield
- Standard 50.8 x 40.6 x 10.2mm Package
- Efficiency to 88 %
- Available as Power Module (RPM30-EW)

## Description

The RP30-EW series wide input range DC/DC converters are certified to UL 60950-1 and to cUL 60950-1. This makes them ideal for all telecom and industrial applications where approved safety standards are required. The industry standard 2" x 1.6" package meets military standards for thermal shock and vibration tolerance.

## Selection Guide 24V and 48V Input Types

Part Number	Input Range VDC	Output Voltage VDC	Output Current mA	Input <sup>(4)</sup> Current mA	Efficiency <sup>(5)</sup> %	Capacitive <sup>(6)</sup> Load max.
RP30-243.3SEW	10-40	3.3	6000	994	87	19500µF
RP30-2405SEW	10-40	5	6000	1506	87	10200µF
RP30-2412SEW	10-40	12	2500	1506	87	3300µF
RP30-2415SEW	10-40	15	2000	1488	88	1100µF
RP30-483.3SEW	18-75	3.3	6000	497	87	19500µF
RP30-4805SEW	18-75	5	6000	744	88	10200µF
RP30-4812SEW	18-75	12	2500	753	87	3300µF
RP30-4815SEW	18-75	15	2000	744	88	1100µF
RP30-2412DEW	10-40	±12	±1250	1563	84	±1000µF
RP30-2415DEW	10-40	±15	±1000	1543	86	±680µF
RP30-4812DEW	18-75	±12	±1250	772	85	±1000µF
RP30-4815DEW	18-75	±15	±1000	762	86	±680µF

\* no suffix for CTRL function with Positive Logic (1=ON, 0=OFF), this is standard

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

\* add suffix -HC for premounted heatsink and clips

### Ordering Examples

RP30-2405SEW = 24V Input, 5V Output, Positive Logic CTRL pin.

RP20-4812DEW/N-HC = 48V Input, ±12V Output, Negative Logic CTRL pin, Heatsink fitted

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](mailto:info@recom-development.at)

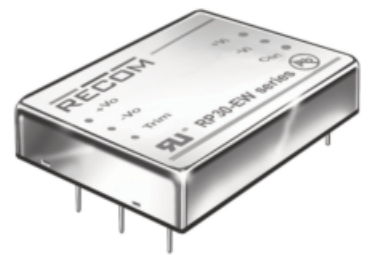
# POWERLINE

DC/DC-Converter

with 3 year Warranty

# RECOM

## 30 Watt Single & Dual Output



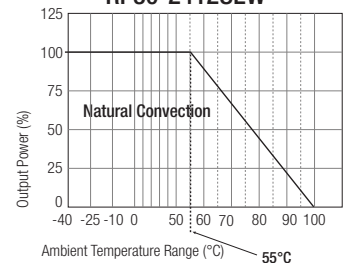
**UL-60950-1 Certified  
E196683**

# RP30-EW

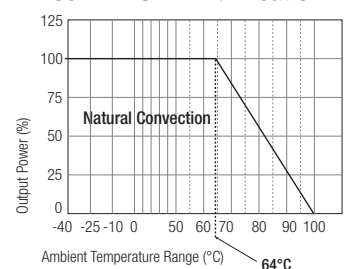
## Derating-Graph

(Ambient Temperature)

RP30-2412SEW



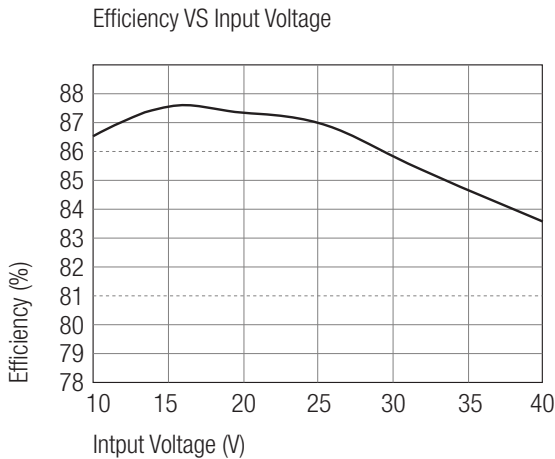
RP30-2412SEW With Heat Sink



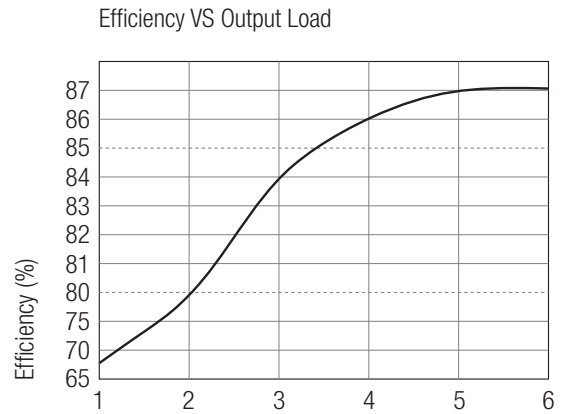
**Refer to Application Notes**

**Typical Characteristics**

**RP30-483.3SEW**



**RP30-483.3SEW**



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

Input Voltage Range	24V nominal input	10-40VDC	
	48V nominal input	18-75VDC	
Under Voltage Lockout	24V input	DC-DC ON	10VDC
		DC-DC OFF	8VDC
	48V input	DC-DC ON	18VDC
		DC-DC OFF	16VDC
Input Filter <sup>(1)</sup>		L-C Type	
Input Voltage Variation dv/dt	(Complies with ETS300 132 part 4.4)	5V/ms max	
Input Surge Voltage (100 ms max.)	24V Input	50VDC	
	48V Input	100VDC	
Input Reflected Ripple (nominal Vin and full load) <sup>(3)</sup>		20mA <sub>p-p</sub>	
Start Up Time (nominal Vin and constant resistor load)		10ms typ.	
Remote ON/OFF <sup>(7)</sup>	DC-DC ON	Open or 3.0V < Vr < 12V	
	DC-DC OFF	Short or 0V < Vr < 1.2V	
Remote OFF input current	Nominal input	3mA	
Output Power		30W max.	
Output Voltage Accuracy (full Load and nominal Vin)		±1%	
Voltage Adjustability		±10%	
Minimum Load	Single	0%	
	Dual	10% of full load	
Line Regulation (low line, high line at full load)		±0.5%	
Load Regulation (25% to 100% full load) <sup>(9)</sup>	Single	±0.5%	
	Dual	±1%	
Cross Regulation (Asymmetrical 25% <> 100% load)	Dual	±5%	

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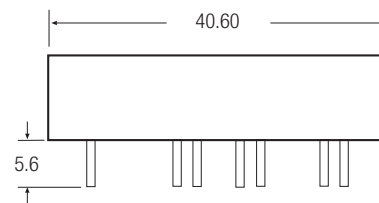
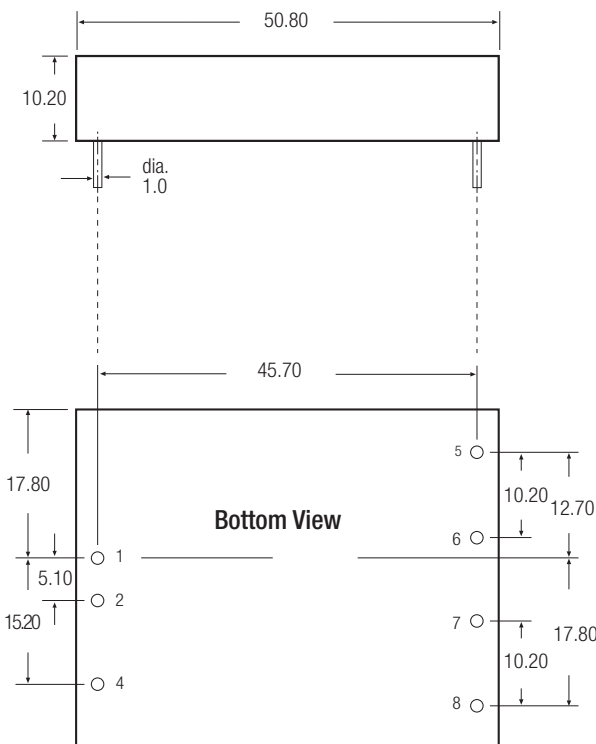
**Specifications** (typical at nominal input and 25°C unless otherwise noted)

Ripple and Noise (20MHz bandwidth, with 1µF MLCC on output) (Measured with a 100nF/50V MLCC)	Single 3.3V	60mVp-p
	Single 5V	75mVp-p
	Single 12, 15V	100mVp-p
	Dual 12, 15V	100mVp-p
Temperature Coefficient		±0.02%/°C max.
Transient Response (25% load step change)		250µs
Over Voltage Protection	3.3V	3.9V
Zener diode clamp	5V	6.2V
	12V	15V
	15V	18V
Over Load Protection (% of full load at nominal Vin)		150% max.
Undervoltage Lockout		See Application Notes
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		1000pF max.
Operating Frequency		300kHz typ.
Approved to Safety Standards		EN60950
Operating Temperature Range		-40°C to +85°C(with derating)
Maximum Case Temperature		+100°C
Storage Temperature Range		-55°C to +125°C
Over Temperature Protection		115°C typ.
Thermal Impedance <sup>(8)</sup>	Natural convection	10°C/Watt
	Natural convection with Heat Sink	8.24°C/Watt
Thermal Shock		MIL-STD-810F
Vibration		10-55Hz, 10G, 30 Min. along X, Y and Z
Relative Humidity		5% to 95% RH
Case Material		Nickel plated copper
Base Material		Non-conductive black plastic
Potting Material		Epoxy (UL94-V0)
Weight		48g
Packing Quantity	Refer to App Notes for tube dimensions	5 pcs per Tube
Dimensions		50.8 x 40.6 x 10.2mm
Conducted Emissions <sup>(10)</sup>	EN55022	Class A
Radiated Emissions	EN55022	Class A
ESD	EN61000-4-2	Perf. Criteria B
Radiated Immunity	EN61000-4-3	Perf. Criteria A
Fast Transient	EN61000-4-4	Perf. Criteria B
Surge	EN61000-4-5	Perf. Criteria B
Conducted Immunity	EN61000-4-6	Perf. Criteria A
MTBF <sup>(2)</sup>		1315 x 10 <sup>3</sup> hours

**Notes :**

1. An external filter capacitor is required for normal operation. The capacitor should be capable of handling 1A ripple current for 48V/24V models. RECOM suggest: Nippon chemi-con KY series, 220 $\mu$ F/100V, ESR 90m  $\Omega$ .
2. BELLCORE TR-NWT-000332. Case I: 50% Stress, Temperature at 40°C (Ground fixed and controlled environment).
3. Simulated source impedance of 12 $\mu$ H. 12 $\mu$ H inductor in series with +Vin.
4. Maximum value at nominal input voltage and full load of standard type.
5. Typical value at nominal input voltage and full load.
6. Test by minimum Vin and constant resistor load.
7. The ON/OFF control function can be positive or negative logic. The pin voltage is referenced to negative input.
  - Positive logic ON/OFF is standard, no suffix (Ex. RP30-2405SEW)
  - Negative logic ON/OFF is marked with suffix-N (Ex. RP30-2405SEW/N).
8. Heat sink is optional and P/N: 7G-0011-C. Powerline DC/DC Converters can be ordered with pre-mounted heatsinks including antivibration fixing clips (add suffix -HC). See Application Notes for heatsink details.
9. The dual output 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.
10. See application notes for class B common mode filter suggestion.

**Package Style and Pinning (mm)**



**Pin Connections**

Pin #	Single	Dual
1	+Vin	+Vin
2	-Vin	-Vin
4	CTRL	CTRL
5	No Pin	+Vout
6	+Vout	Com
7	-Vout	-Vout
8	Trim	Trim

Pin Pitch Tolerance  $\pm 0.35$  mm

**External Output Trimming**

Output can be externally trimmed by using the method shown below. ( ) for dual output trim. See Application Notes for details.

