Features

Regulated Converters

- 4:1 Wide Input Voltage Range
- 20 Watts Regulated Output Power
- 1.6kVDC Isolation
- Over Current and Over Voltage Protection
- Six-Sided Shield
- No Derating to 63°C
- Standard 2" x 1" Package and Pinning
- Efficiency to 86%

POWERLINE
DC/DC-Converter
with 3 year Warranty

RECOM

20 Watt 2" x 1" Single & Dual Output



RoHS 2002/95/EC 6/6

c UL us

UL-60950-1 Certified
E196683

RP20-FW

Description

The RP20-FW series wide rangew input 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" package meets military standards for thermal shock and vibration tolerance.

Selection Guide 24V and 48V Wide Input Types

Part Number	Input Range VDC	Output Voltage VDC	Output Current mA	Input[4,5] Current mA	Efficiency[6] %	Capacitive[7] Load max.
RP20-243.3SFW	9-36	3.3	5500	60/922	84	18000µF
RP20-2405SFW	9-36	5	4000	60/1016	86	9600µF
RP20-2412SFW	9-36	12	1670	75/1031	85	1650µF
RP20-2415SFW	9-36	15	1330	75/1014	86	1050µF
RP20-483.3SFW	18-75	3.3	5500	30/461	84	18000µF
RP20-4805SFW	18-75	5	4000	30/508	86	9600µF
RP20-4812SFW	18-75	12	1670	40/515	85	1650µF
RP20-4815SFW	18-75	15	1330	40/507	86	1050µF
RP20-2405DFW	9-36	±5	±2000	85/1068	82	±4800µF
RP20-2412DFW	9-36	±12	±833	100/1028	85	±625µF
RP20-2415DFW	9-36	±15	±667	100/1017	86	±525µF
RP20-4805DFW	18-75	±5	±2000	45/534	82	±4800µF
RP20-4812DFW	18-75	±12	±833	50/514	85	±825µF
RP20-4815DFW	18-75	±15	±667	50/508	86	±525µF

* 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

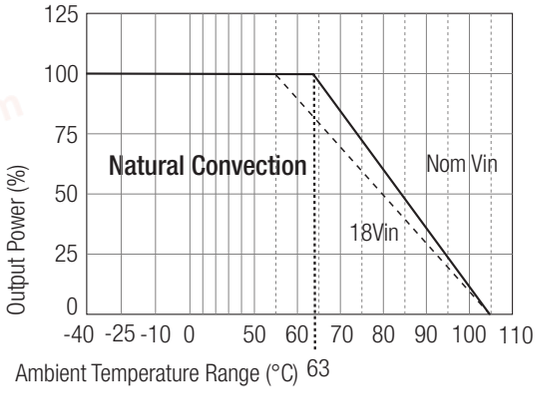
Ordering Examples

RP20-2405SFW = 24V 4:1 Input, 5V Output, Positive Logic CTRL pin fitted

RP20-4812DFW/N-HC = 48V 4:1 Input, ±12V Output, Negative Logic CTRL pin fitted, Heatsink fitted

Derating Graph (Ambient Temperature)

RP20-4805SFW



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 customer support at info@recom-development.at

Please Read Application Notes

POWERLINE
DC/DC-Converter

RP20-S_DFW Series

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)		20mAp-p
Start Up Time (nominal Vin and constant resistor load)		20ms typ.
Remote ON/OFF (see Note 1)	DC-DC ON	Open or 3.0V < Vr < 12V
	DC-DC OFF	Short or 0V < Vr < 1.2V
Remote OFF input current	Nominal input	2.5mA
Output Power		20W max.
Output Voltage Accuracy (full Load and nominal Vin)		±1%
Minimum Load		0%
Line Regulation (low line, high line at full load)		±0.2%
Load Regulation (0% to 100% full load)	Single	±0.5%
	Dual	±1%
Cross Regulation Dual Output (asymmetrical load 25% <>100% load)		±5%
Ripple and Noise (20MHz bandwith)	3.3V	60mVp-p
	5.0, 12, 15V	75mVp-p
	±5, ±12, ±15V	100mVp-p
Temperature Coefficient		±0.02%/°C max.
Transient Response (25% load step change)		250µs
Input Voltage Variation, dv/dt	complies with ETS300 132, part 4.4	5V/ms
Over Load Protection (% of full load at nominal Vin)		150% typ
Overvoltage Protection (Single)		Zener Diode Clamp
Undervoltage Protection		See Application Notes
Short Circuit Protection		Continuous, automatic recovery
Efficiency		see „Selection Guide“ table
Isolation Voltage (rated for one minute)	In to Out and I/O to case	1600VDC
Isolation Resistance		10 GΩ min.
Isolation Capacitance		1500pF max.
Operating Frequency		400kHz typ.
Operating Temperature Range	no derating	-40°C to +63°C
	with derating	-40°C to +105°C
Maximum Case Temperature		+105°C
Storage Temperature Range		-55°C to +125°C
Thermal Impedance (see Note 8)	Natural convection	12°C/Watt
	with Heatsink	10°C/Watt
Case Material		Nickel plated copper
Base Material		Non-conductive black plastic
Potting Material		Epoxy (UL94-V0)
Weight		27g
Packing Quantity	Refer to App Notes for tube dimensions	9 pcs per Tube

continued on next page

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POWERLINE
DC/DC-Converter

RP20-S_DFW Series

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

Conducted Emissions (see Note 3)	EN55022	Class A
Radiated Emissions (see Note 3)	EN55022	Class A
ESD	EN61000-4-2	Perf. Critera B
Radiated Immunity	EN61000-4-3	Perf. Critera A
Fast Transient	EN61000-4-4	Perf. Critera B
Surge	EN61000-4-5	Perf. Critera B
Conducted Immunity	EN61000-4-6	Perf. Critera A

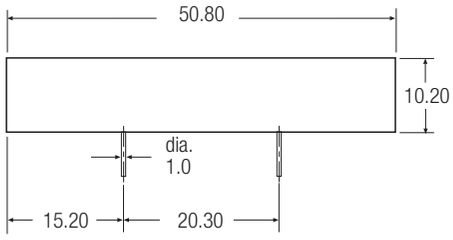
Thermal Shock		MIL-STD-810D
Vibration		10-55Hz, 10G, 30 Min. along X, Y and Z
Relative Humidity		5% to 95% RH
MTBF (see Note 2)	Bellcore-TR-NWT-000332	2350 x 10^3 hours

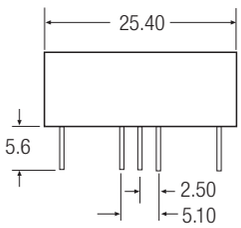
Notes :

1. The RP20-S_DFW series requires a minimum of 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.
2. BELLCORE TR-NWT-000332. Case I: 50% Stress, Temperature at 40°C (Ground fixed and controlled environment).
3. Requires external filter to meet EN55022 Class A and B. Refer to Application Notes.
4. Typical value at nominal input voltage and no load.
5. Maximum value at nominal input voltage and full load
6. Typical value at nominal input voltage and full load.
7. Test by minimum Vin and constant resistor load.
8. Optional Heatsink Part Number 7G-0020-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 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. RP20-2405SF)
   Negative logic ON/OFF is marked with suffix-N (Ex. RP20-2405SF/N).

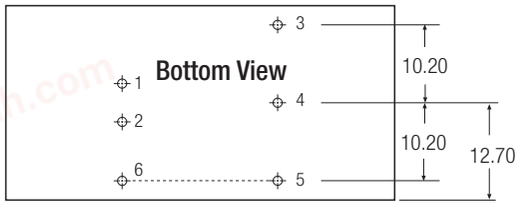
RP20-FW

Package Style and Pinning (mm)





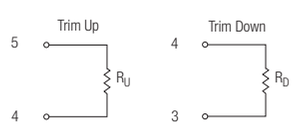
3rd angle projection



Pin Connections

Pin #	Single	Dual
1	+Vin	+Vin
2	-Vin	-Vin
3	+Vout	+Vout
4	Trim	Com
5	-Vout	-Vout
6	CTRL	CTRL

Pin Pitch Tolerance ±0.35 mm



External Output Trimming

Single Output can be trimmed ±10% by using external resistors

See Application Notes for details