

Features

Regulated Converters

Rev. 1

- 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 %

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

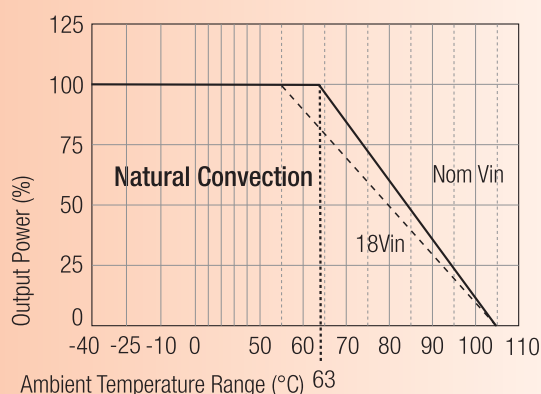
Ordering Examples

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



POWERLINE

DC/DC-Converter

RP20-S_DFW Series

20 Watt

2" x 1"

Single & Dual Output



UL-60950-1 Certified



Derating graphs are valid only for the shown part numbers.

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)		20mA _{p-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% full load)		±5%
Ripple and Noise (20MHz bandwidth)	3.3V	60mV _{p-p}
	5.0, 12, 15V	75mV _{p-p}
	±5, ±12, ±15V	100mV _{p-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	In to Out and I/O to case	1600VDC min.
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

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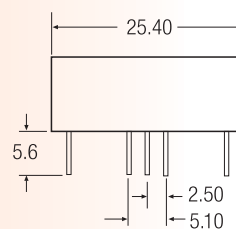
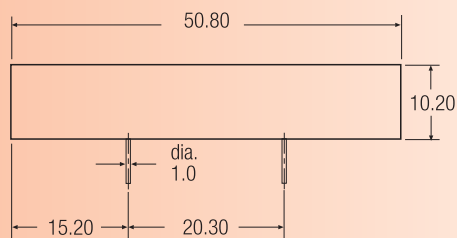
Specifications, cont. (typical at nominal input and 25°C unless otherwise noted)

Conducted Emissions (see Note 3)	EN55022	Class A
Radiated Emissions (see Note 3)	EN55022	Class A
ESD	EN61000-4-2	Perf. 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
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

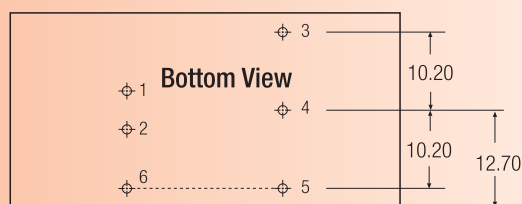
Notes :

- 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.
- BELLCORE TR-NWT-000332. Case I: 50% Stress, Temperature at 40°C (Ground fixed and controlled environment).
- Requires external filter to meet EN55022 Class A
- Typical value at nominal input voltage and no load.
- Maximum value at nominal input voltage and full load
- Typical value at nominal input voltage and full load.
- Test by minimum Vin and constant resistor load.
- Optional Heatsink Part Number 7G-0020A . Powerline DC/DC Converters can be ordered with pre-mounted heatsinks including antivibration fixing clips (add suffix -HC). See Application Notes for heatsink details.
- 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).

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 $\pm 10\%$ by using external resistors

See Application Notes for details

