

Features

- 2:1 Wide Input Voltage Range
- 40 Watts Output Power
- 1.6kVDC Isolation
- Fixed Operating Frequency
- Six-Sided Continuous Shield
- Design Meet Safety Standard
- International Safety Standard Approvals
- Standard 50.8 x50.8x10.2mm Package
- Efficiency to 90%

POWERLINE DC/DC-Converter

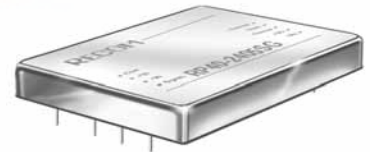
RP40- S_D_TG Series

Selection Guide 12V, 24V and 48V Input Types

Part Number	Input Range	Output Voltage	Output Current	Input ⁽⁴⁾ Current	Efficiency ⁽⁵⁾	Capacitive ⁽⁶⁾ Load max.
	VDC	VDC	mA	mA	%	μF
RP40-121.5SG	9-18	1.5	8000	1351	78	45000
RP40-121.8SG	9-18	1.8	8000	1579	80	37700
RP40-122.5SG	9-18	2.5	8000	2137	82	27000
RP40-123.3SG	9-18	3.3	8000	2750	84	21000
RP40-1205SG	9-18	5	8000	4065	86	13600
RP40-1212SG	9-18	12	3333	4065	86	2360
RP40-1215SG	9-18	15	2666	4015	87	1510
RP40-241.5SG	18-36	1.5	8000	649	81	45000
RP40-241.8SG	18-36	1.8	8000	759	83	37700
RP40-242.5SG	18-36	2.5	8000	1029	85	27000
RP40-243.3SG	18-36	3.3	8000	1325	87	21000
RP40-2405SG	18-36	5	8000	1961	89	13600
RP40-2412SG	18-36	12	3333	2048	88	2360
RP40-2415SG	18-36	15	2666	1985	89	1510
RP40-481.5SG	36-75	1.5	8000	321	82	45000
RP40-481.8SG	36-75	1.8	8000	375	84	37700
RP40-482.5SG	36-75	2.5	8000	508	86	27000
RP40-483.3SG	36-75	3.3	8000	655	88	21000
RP40-4805SG	36-75	5	8000	969	90	13600
RP40-4812SG	36-75	12	3333	1000	89	2360
RP40-4815SG	36-75	15	2666	992	89	1510
RP40-1212DG	9-18	±12	±1800	4444	85	±1200
RP40-1215DG	9-18	±15	±1400	4321	85	±750
RP40-2412DG	18-36	±12	±1800	2169	87	±1200
RP40-2415DG	18-36	±15	±1400	2108	87	±750
RP40-4812DG	36-75	±12	±1800	1084	87	±1200
RP40-4815DG	36-75	±15	±1400	1054	87	±750

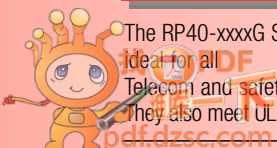
for Triple Output continued on next page

40 Watt Single, Dual, Positive Dual & Triple Output



Description

The RP40-xxxxG Series of DC/DC Converters are fully certified to EN 60950: 2000. This makes them ideal for all Telecom and safety applications where approved isolation is required. They also meet UL 1950 and CSA 950 standards.

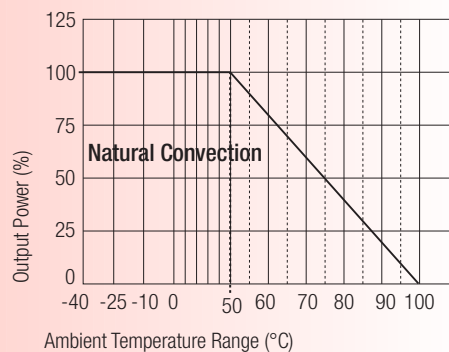


Selection Guide 12V, 24V and 48V Input Types

Part Number	Input Range VDC	Output Voltage VDC	Output Current mA	Input ⁽⁴⁾ Current mA	Efficiency ⁽⁵⁾ %	Capacitive ⁽⁶⁾ Load max. μF
RP40-123.305DG	9-18	3.3 / 5	4A / 4A (total 8A) ⁽¹²⁾	3416	85	11000 / 6800
RP40-243.305DG	18-36	3.3 / 5	4A / 4A (total 8A) ⁽¹²⁾	1689	86	11000 / 6800
RP40-483.305DG	36-75	3.3 / 5	4A / 4A (total 8A) ⁽¹²⁾	823	88	11000 / 6800
RP40-123.312TG	9-18	3.3 / ±12	6000 / ±400	3063	84	13000 / ±330
RP40-123.315TG	9-18	3.3 / ±15	6000 / ±300	3000	84	13000 / ±110
RP40-120512TG	9-18	5 / ±12	6000 / ±400	4024	86	6800 / ±330
RP40-120515TG	9-18	5 / ±15	6000 / ±300	3963	86	6800 / ±110
RP40-243.312TG	18-36	3.3 / ±12	6000 / ±400	1512	85	13000 / ±330
RP40-243.315TG	18-36	3.3 / ±15	6000 / ±300	1481	85	13000 / ±110
RP40-240512TG	18-36	5 / ±12	6000 / ±400	1989	87	6800 / ±330
RP40-240515TG	18-36	5 / ±15	6000 / ±300	1958	87	6800 / ±110
RP40-483.312TG	36-75	3.3 / ±12	6000 / ±400	747	86	13000 / ±330
RP40-483.315TG	36-75	3.3 / ±15	6000 / ±300	732	86	13000 / ±110
RP40-480512TG	36-75	5 / ±12	6000 / ±400	982	88	6800 / ±330
RP40-480515TG	36-75	5 / ±15	6000 / ±300	967	88	6800 / ±110

Derating-Graph (Ambient Temperature)

RP40-4805SG

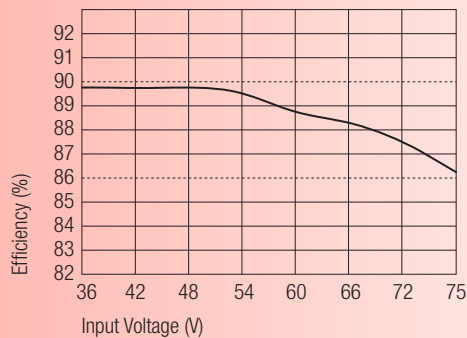


Derating graphs are valid only for the shown part numbers. If you need detailed derating-information about a part-number not shown here please contact our technical customer service at info@recom-development.at

Typical Characteristics

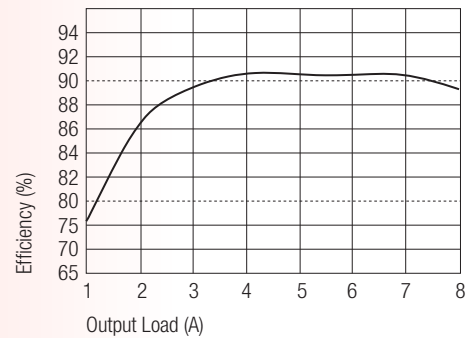
RP40-4805SG

Efficiency VS Input Voltage



RP40-4805SG

Efficiency VS Output Load



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

Input Voltage Range	12V nominal input	9-18VDC
	24V nominal input	18-36VDC
	48V nominal input	36-75VDC
Under Voltage Lockout	12V input	DC-DC ON 9VDC
		DC-DC OFF 8VDC
	24V input	DC-DC ON 17.8VDC
		DC-DC OFF 16VDC
	48V input	DC-DC ON 36VDC
		DC-DC OFF 34VDC
Input Filter (see note 1)	L-C Type	
Input Voltage Variation dv/dt	(Complies with ETS300 132 part 4.4)	5V/ms max
Input Surge Voltage (100 ms max.)	12V Input	36VDC
	24V Input	50VDC
	48V Input	100VDC
Input Reflected Ripple (nominal Vin and full load see note 3)	40mA _{p-p}	
Start Up Time (nominal Vin and constant resistor load)	25ms typ.	
Remote ON/OFF (see note 7)	DC-DC ON	Open or 3.5V < Vr < 12V
	DC-DC OFF	Short or 0V < Vr < 1.2V
Remote OFF input current	Nominal input	2.5mA
Output Power	40W max.	
Output Voltage Accuracy (full Load and nominal Vin)	Single & Dual	±1%
	Triple Main	±1%
	Auxiliary	±5%
Voltage Adjustability	±10%	
Minimum Load	Single and Dual Positive	0%
	Dual and Triple	10% of FL
Line Regulation (LL-HL at full load)	Single & Dual	±0.5%
	Triple Main	±1%
	Triple Auxiliary	±5%

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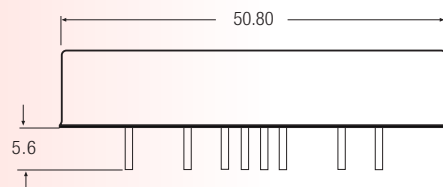
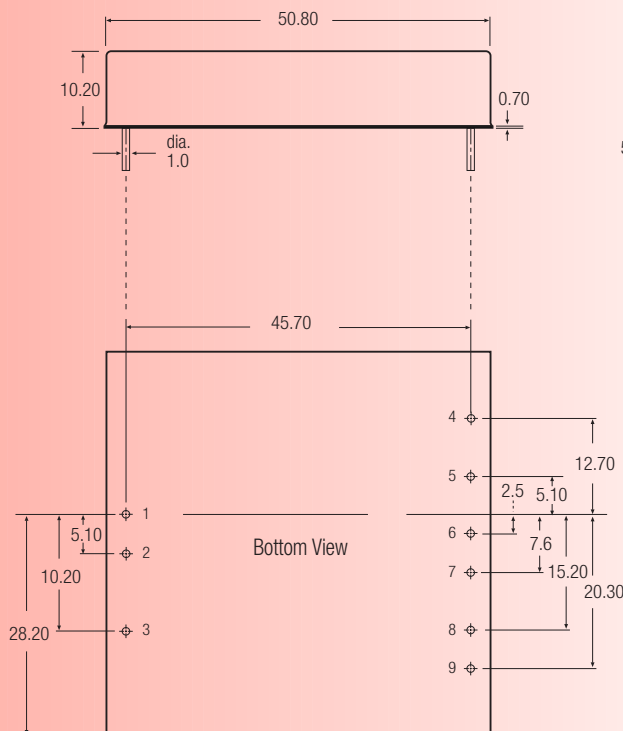
Specifications (typical at nominal input and 25°C unless otherwise noted)

Load Regulation (10% to 100% FL see note 9 and 10)	Single	±0.5%
	Dual	±1%
	Triple Main	±2%
	Auxiliary	±5%
Cross Regulation (Note 11)	Triple Main	±1%
	Dual / Triple Auxiliary	±5%
Ripple and Noise (20MHz bandwidth) (Measured with a 1004pF/50V MLCC)	Single 1.5, 1.8, 2.5, 3.3, 5V	50mVp-p
	Single 12, 15V	75mVp-p
	Dual 12V	120mVp-p
	Dual 15V	150mVp-p
	RP40-xx3.305DG	100mVp-p
	RP40-xxxxxxTG	50 / 75mVp-p
Temperature Coefficient		±0.02%/°C, max.
Transient Response (25% load step change)		300µs
Over Voltage Protection	1.5, 1.8, 2.5, 3.3V	3.9V
Zener diode clamp (only single)	5V	6.2V
	12V	15V
	15V	18V
Over Load Protection (% of full load at nominal Vin)		150% max.
Short Circuit Protection		Hiccup, automatic recovery
Efficiency		see „Selection Guide“ table
Isolation Voltage		1.600VDC min.
Isolation Resistance		10 ⁹ Ω min.
Isolation Capacitance		1000pF max.
Operating Frequency		300kHz typ.
Approved to Safety Standards	Single, Triple	UL 1950, EN60950
	Dual	EN60950
Operating Temperature Range		-40°C to +85°C(with derating)
Maximum Case Temperature		100°C
Storage Temperature Range		-55°C to +105°C
Thermal Impedance (see note 8)	Natural convection	9.2°C/Watt
	Heat Sink with 20LFM	8.5°C/Watt
	Heat Sink with 500LFM	2.8°C/Watt
Thermal Shock		MIL-STD-810D
Vibration		10-55Hz, 2G, 30 Min. along X, Y and Z
Relative Humidity		5% to 95% RH
Case Material		Nickel-Coated copper
Base Material		Non-conductive black plastic FR4
Potting Material		Epoxy (UL94-V0)
Conducted Emissions	EN55022	Level A
Radiated Emissions	EN55022	Level A
ESD	EN61000-4-2	Perf. Criteria 2
Radiated Immunity	EN61000-4-3	Perf. Criteria 2
Fast Transient	EN61000-4-4	Perf. Criteria 2
Surge	EN61000-4-5	Perf. Criteria 2
Conducted Immunity	EN61000-4-6	Perf. Criteria 2
Weight		60g
Dimensions		50.8 x 50.8 x 10.2mm
MTBF (see note 2)		1.398 x 10 ⁶ Hours

Notes :

- Maximum output deviation is 10% inclusive of remote sense and trim. If remote sense is not being used, the +Vsense should be connected to its corresponding +OUTPUT and likewise the sense should be connected to its corresponding -OUTPUT
- BELLCORE TR-NWT-000332. Case I: 50% Stress, Temperature at 40°C (Ground fixed and controlled environment).
- Simulated source impedance of 12uH. 12uH 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 pin voltage is referenced to negative input.
- Heat sink is optional and P/N: 7G-0026A.
- The triple 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.
- Load regulation for triple output: Main output(V1):10 to 100% with 10% to 100% balanced on auxiliaries.
Auxiliary outputs(V2 and V3):10% to 100% balanced on all outputs.
- Cross regulation for triple output: Main output 100% load, auxiliary 100%, other auxiliary 25% to 100%.
Auxiliary outputs(V2 and V3):main output 100% load, auxiliary 100%, other auxiliary 25% to 100% or main output 25%, auxiliary 25%, other auxiliary 25% to 100%.
- The models of RP40-XX3.305DG are specified with a 1uF ceramic output capacitors.
- 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 KMF series, 220μF/100V, ESR 90m Ω.
- Operating frequency for dual output: master (5Vo) 300KHz slave (3.3Vo) 500KHz.
- Any condition of dual output (3.3V/5V) rated lout current, not to exceed 8A of total output currents. The product safety approval pending.
- See application notes for EMI-filtering.

Package Style and Pinning (mm)



3rd angle projection

Pin Connections

Pin #	Single	Dual	Triple	Dual Positive
1	+Vin	+Vin	+Vin	+Vin
2	-Vin	-Vin	-Vin	-Vin
3	CTRL	CTRL	CTRL	CTRL
4	NC	No Pin	+Aux	3.3V
5	-Sense (Note1)	+Vout	Com	3.3V RTN(Com)
6	+Sense (Note1)	Com	-Aux	NC
7	+Vout	Com	+Vout	NC
8	-Vout	-Vout	-Vout(Com)	5V
9	Trim	Trim	NC	5V RTN(Com)

NC = No Connection

Pin Pitch Tolerance ± 0.35 mm

External Output Trimming

Output can be externally trimmed by using the method shown below.

() for dual output trim

