

650W Fan cooled

550W Convection cooled

AC-DC power supplies

Designed for medical (BF) applications, the chassis mount PBR650, has medical 2 x MOPP (Input to Output), 1 x MOPP (Input to Ground) & ITE safety approvals. Available in two case styles: as a U channel for convection (500-550W) or external 30CFM fan cooling (600-650W) (model numbers with suffix B); or enclosed (model numbers with suffix C) with built-in fan cooling (600-650W).

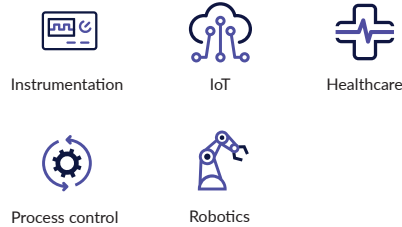
With BF class insulation the PBR650 achieves EN55011/32 Level B conducted emissions compliance whilst maintaining very low earth leakage currents making it suitable for medical (BF), industrial electronics and ITE applications where a 550/600W chassis mount power supply is required.



Features

- ▶ 600/650W fan cooled 500/550W convection cooled
- ▶ 203.2 x 101.6mm (8.0" x 4.0") footprint, 65.5mm profile
- ▶ Regulated single outputs 12V to 57VDC
- ▶ Input range 80 to 264VAC
- ▶ Medical (BF) safety approvals
- ▶ Class B conducted & radiated emissions
- ▶ AC OK, inhibit & remote sense
- ▶ 5VDC 0.2A standby
- ▶ -10°C to +70°C operating temperature
- ▶ Full load to +50°C
- ▶ 3 year warranty

Applications



Dimensions

203.2 x 101.6 x 65.5mm (8.00" x 4.00" x 2.58")

Documentation

Click the link or scan the code

→ xppower.com



Models & ratings

Model number ⁽⁴⁾	Output voltage	Output current V1 ⁽²⁾		Standby Supply V2	Ripple & Noise ⁽¹⁾
		Nominal	Peak ⁽³⁾		
PBR650PS12C	12.0VDC	50.00A	55.00A	5.0VDC/0.2A	120mV
PBR650PS15C	15.0VDC	40.00A	44.00A		150mV
PBR650PS18C	18.0VDC	36.12A	40.00A		180mV
PBR650PS24C	24.0VDC	27.09A	30.00A		240mV
PBR650PS28C	28.0VDC	23.22A	25.50A		280mV
PBR650PS36C	36.0VDC	18.06A	20.00A		360mV
PBR650PS48C	48.0VDC	13.55 A	15.00 A		480mV
PBR650PS57C	57.0VDC	11.41 A	12.50 A		570mV

Notes:

1. Ripple and noise is the maximum peak-to-peak voltage value measured at the output with 20MHz bandwidth, at rated line voltage and output load, and with a 10µF tantalum capacitor in parallel with a 0.1µF ceramic capacitor.
2. All models may be operated at no-load without damage. At no load, output voltage fluctuates beyond 5% due to burst-mode operation of the control IC for energy saving.
3. Peak current available for 15s max, 10% duty cycle, average power not to exceed nominal power rating.
4. For single fuse option add suffix -SP, e.g. PBR650PS12C-SP

Input

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Input Voltage	80		264	VAC	Derate to 90% at 85VAC & 80% at 80VAC
Input Frequency	47		63	Hz	
Input Current - Full Load		8.4/4.2		A (rms)	115/230VAC, 60/50Hz
Earth Leakage Current		225	275	μA	264VAC/60Hz

Output

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Output voltage	12		57	VDC	See models and ratings table
Tolerance			±2	%	Line and load regulation, 0.1% minimum load required to meet specification
Transient response			4	%	Recovery within 1% in less than 500μs for a 25% step load change
Ripple & noise			1	% pk-pk	20MHz bandwidth, see model table notes
Overvoltage protection	115		140	%	Latching
Overcurrent protection	115		140	%	Trip & restart characteristic
Thermal shutdown	Protected for overtemperature conditions, latching				
Temperature coefficient			±0.04	%/°C	
5VDC standby supply			5	VDC	At 200mA
Patient leakage current		50	80	μA	264VAC, 63Hz

General

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Efficiency		90		%	230VAC, 100% load
Isolation: Input to output Input to ground Output to ground	4000			VAC	2 x MOPP
	1500			VAC	1 X MOPP
	1500			VAC	1 X MOPP
Switching frequency	55	65	75	kHz	PFC, fixed
	90		300		Main, variable
	124	132	140		Standby, variable
Hold up time	12	20		ms	At 110VAC & 650W
Inrush current		30/60		VAC	115VAC/230VAC at +25°C, cold start
MTBF		0.19		Mhrs	MIL-HDBK-217F, full load at +25°C GB
Weight		2000 (4.4)		g (lbs)	

Environmental

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Operating temperature	-10		+70	°C	Derate linearly from 100% load at +50°C to 50% load at +70°C
Storage temperature	-40		+85	°C	
Humidity	5		95	%RH	Non-condensing
Cooling	Integral temperature controlled fan. Fan speed based on temperature of transformer T1, internally monitored. Fan will not rotate until T1 temperature reaches approx. +60°C and reaches full speed when T1 temperature reaches approx. +80°C.				

Emissions - EMC

Phenomenon	Standard	Test level	Notes & conditions
Conducted	EN55011/32	Class B	
Radiated	EN55011/32	Class B	
Harmonic current	EN61000-3-2	Class A	
Voltage flicker	EN61000-3-3		

Immunity - EMC

Phenomenon	Standard	Test Level	Criteria	Notes & conditions
ESD	EN61000-4-2	4	A	±8kV contact, ±15kV air
Radiated	EN61000-4-3	10V/m	A	
EFT	EN61000-4-4	±2kV	A	
Surge	EN61000-4-5	Installation class 3	A	±1kV differential, ±2kV common mode
Conducted	EN61000-4-6	10Vrms	A	
Magnetic fields	EN61000-4-8	30A/m	A	
Dips and interruptions	100VAC/60Hz	Dip 30% (70VAC), 500ms	A	
		Dip 60% (40VAC), 100ms	B	
		Int >95% (0VAC), 10ms	A	
		Int 100% (0VAC), 20ms	A	
	230VAC/50Hz	Int 100% (0VAC), 5000ms	B	
		Dip 30% (161VAC), 500ms	A	
		Dip 60% (92VAC), 100ms	A	
		Int >95% (0VAC), 10ms	A	
		Int 100% (0VAC), 20ms	A	
		Int 100% (0VAC), 5000ms	B	

Safety approvals

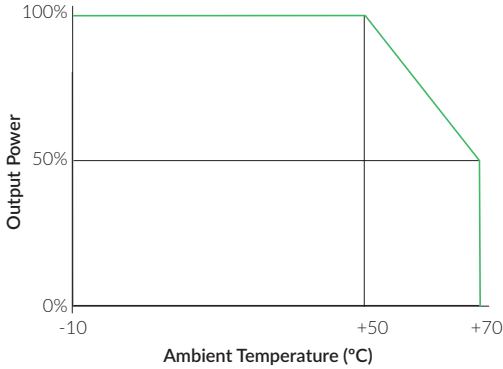
Certification	Standard	Notes & Cconditions
CB	IEC60601-1	Medical
UL	ES60601-1, CSA C22.2 No.60601-1	Medical
EN	EN60601-1	Medical
CE	Meets all applicable directives	
UKCA	Meets all applicable legislation	

Signals & controls

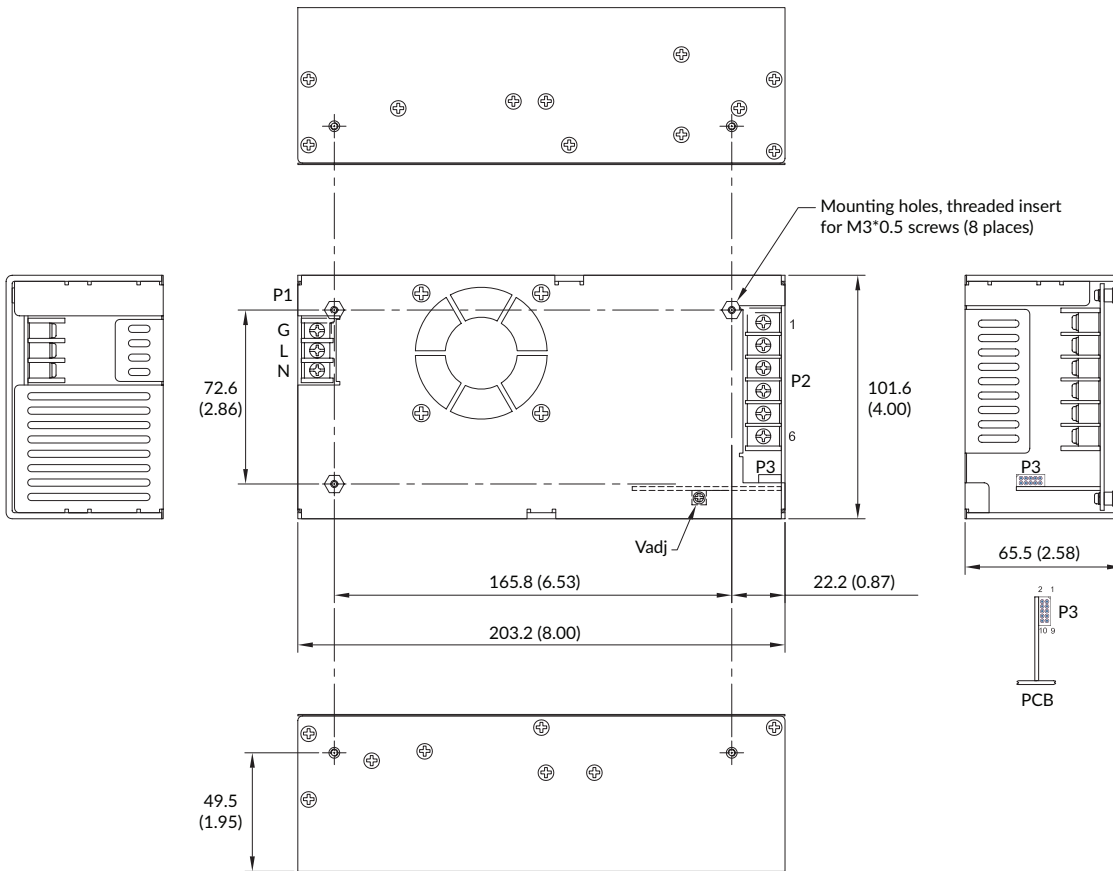
Characteristic	Notes & conditions
Remote sense	Compensates for 0.5VDC total voltage drop.
Inhibit	To inhibit apply TTL high signal .
AC OK	TTL high for normal operation, low upon loss of input power, turn-on delay time 100-1000ms, turn-off delay time 1ms minimum

Application notes

Temperature derating curve



Mechanical details



Input Connector - P1

Pin 1	G
Pin 2	L
Pin 3	N

Output Connector - P2

Pin 1	+V1
Pin 2	+V1
Pin 3	+V1
Pin 4	Com
Pin 5	Com
Pin 6	Com

P3

Pin 1	+V1 sense
Pin 2	+V1 sense
Pin 3	AC OK
Pin 4	Common return
Pin 5	N/C
Pin 6	N/C
Pin 7	Inhibit
Pin 8	N/C
Pin 9	+5VDC standby
Pin 10	+5VDC standby return

Notes:

- Dimensions shown in mm (inches)
- Tolerance 0.5 (0.02) maximum
- Input connector P1 is Dinkle terminal P/N DT-35C-B01W-03, with nickel plated M3 screws.
- Output connector P2 is Dinkle Terminal P/N DT-4N-B01W-06 with nickel plated M3.5 screw.
- Connector P3 is JST Header S10B-PHDSS, or equivalent, mating with JST housing PHDR-10VS or equivalent.
- Weight: 3.1lbs (1.4kg) approx.
- Maximum penetration of fixing screws is 4mm from the outer surface of chassis.