

**powerbox**

**New Products**

# Battery Chargers / DC UPS

## PB251 & PB256



### Features:

PB251 Delivers 13.8V at 275W or 27.6V at 330W

PB256 Delivers 13.8V or 27.6V at 140W

Battery Chargers with Uninterrupted Battery Backup

Wide Input Voltage Range (190-265Vac)

Switch Mode Design with High Efficiency

Low EMI & RFI - Class B

Battery Charge / Discharge Control and Protection

Natural Convection Cooled

High Reliability

Small Size & Light Weight



**PB251 & PB256 FEATURES:**

- PB251 and PB256 are complete DC uninterruptible power supplies (DC UPS)  
When connected to lead-acid batteries, these units provide uninterrupted power to the load in the event of AC mains failure.
- A battery low voltage disconnect switch protects the battery against overdischarge.
- A battery charging current controller limits the battery charging current independently of the load current to extend battery life.
- A self-resetting electronic battery circuit breaker protects against nuisance blowing of the battery fuse on accidental load short circuits.
- DC OK and Battery OK alarms including voltage free changeover contacts.
- Natural convection cooling. No fan bearings to fail or filters which become blocked.
- PB251 series have very low output ripple and noise which is similar to a linear power supply and is suitable for powering radio equipment.
- PB251 series is available in chassis mount (CM) and 2RU 19" rack mount (-RML) variants.
- PB251 output power can be increased by attaching a heatsink to the unit (Option -H) or by cooling the the unit using the external mounting surface via a gear plate (Option -P).
- PB256 models with increased output power are available (PB256-1210CM and PB256-2405CM) for use where the external mounting surface can act as a heatsink.
- PB251-12B incorporates connectors suitable for direct connection to radio base station equipment.

**PB251 / PB256 LIMITED BATTERY CHARGING CURRENT EXTENDS BATTERY LIFE**

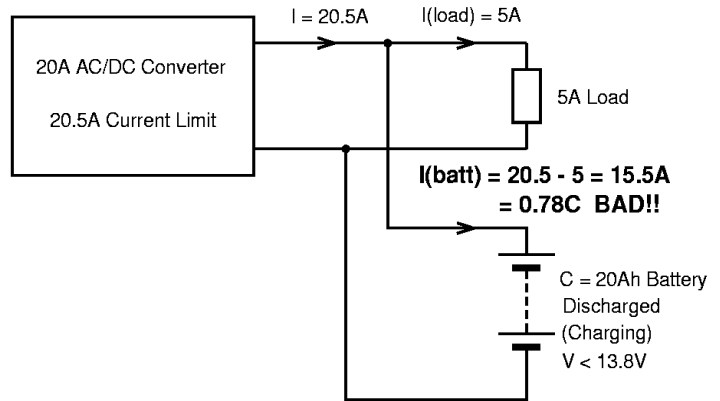
**\*\*\* For Long Life, Maximum Battery Charging Current Should be Limited to 0.1C**

**CONVENTIONAL DC POWER SUPPLY WITH BATTERY BACKUP**

**EXCESSIVE CHARGING CURRENT SHORTENS BATTERY LIFE**

Battery charging current is the difference between the power converter current limit and the load.

This leads to excessive battery charging currents at light loads.



**PB251 (PB256) DC UPS WITH LIMITED BATTERY CHARGING CURRENT**

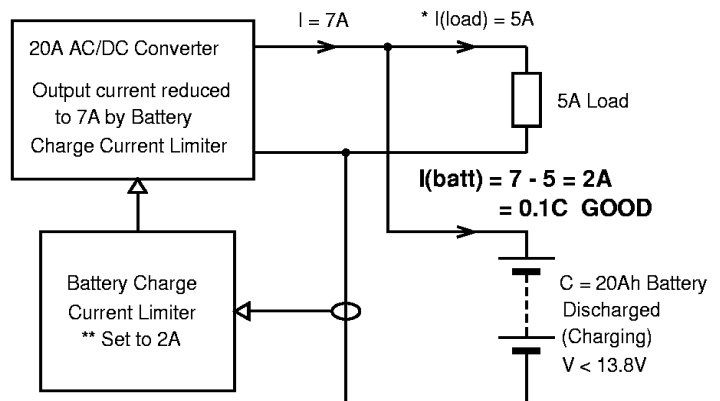
**BATTERY CHARGING CURRENT IS CONTROLLED**

Battery charge current limiter reduces output current from AC/DC converter to control battery charging current only.

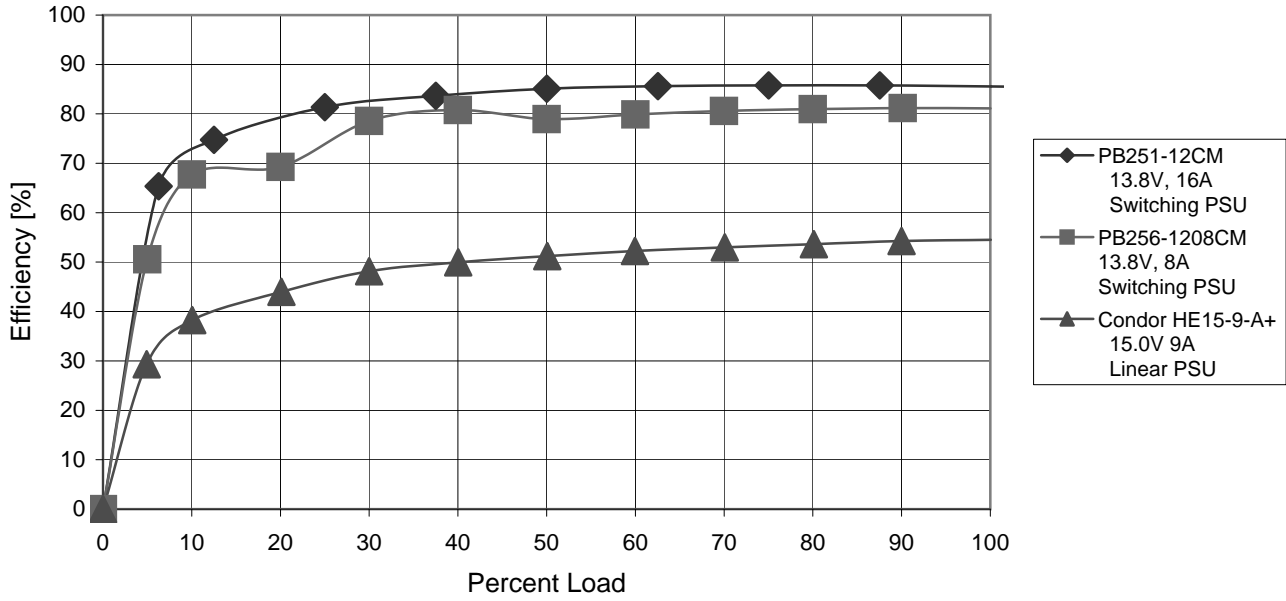
Maximum battery charging current is no longer excessive at light load currents.

\* Load current can vary between 0A and 18.5A without affecting battery charging current.

\*\* PB251 series battery charge current limit is adjustable between 10% and 100% of AC/DC converter current rating.



**PB251 / PB256 SERIES SWITCHING DC UPS HAVE HIGH EFFICIENCY  
UNLIKE LINEAR POWER CONVERTERS**

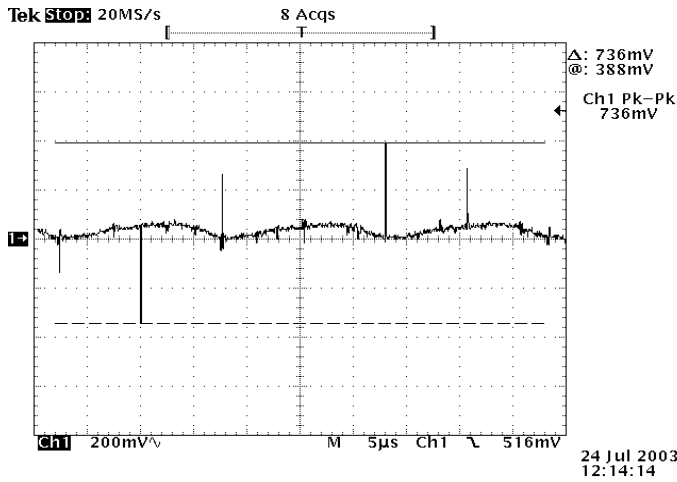


**PB251 SERIES VERY LOW OUTPUT NOISE IS SIMILAR TO LINEAR POWER CONVERTERS**

\*\*\* PB251 Series is Suitable to Power Radio Equipment Unlike Most Switching Power Converters

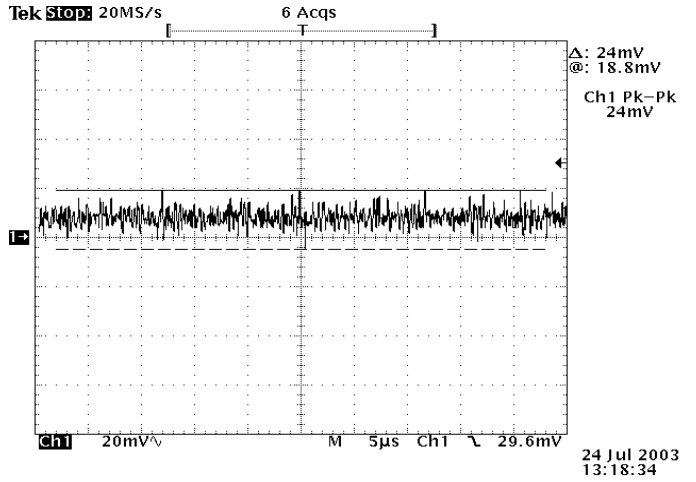
Typical Switching Power Supply (700mVp-p)

Mascot 9041-12: 13.5V, 20A Switching Battery Charger

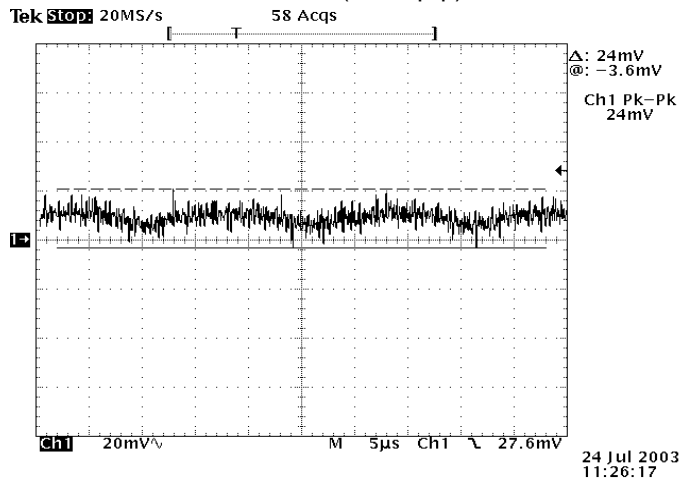


Linear Power Supply (24mVp-p)

Condor HE15-9-A+: 15.0V, 9.0A Linear Power Supply



PB251-12CM (24mVp-p)



**PB251 Ordering Information**

PB251 -12 CM -  -

1 2 3 4 5

- 1 Series name
- 2 Output voltage  
12  
24
- 3 Enclosure  
CM: chassis mount  
RML: rack mount  
B: rack mount with radio connectors
- 4 Optional  
H: additional heatsink  
P: gear plate
- 5 Optional  
<##>: non-standard battery charging current

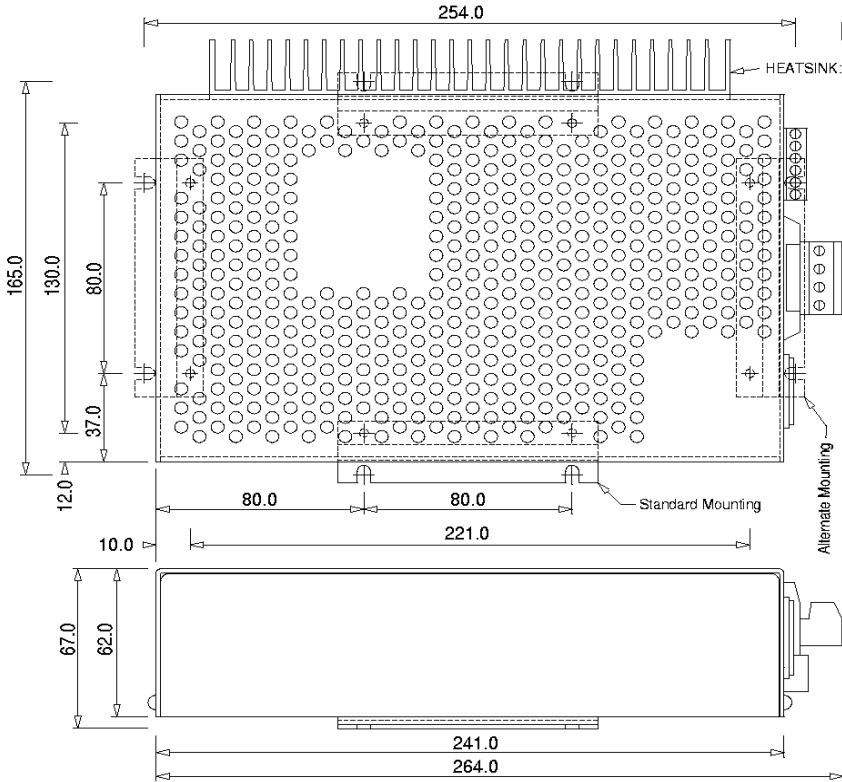
MODEL	PB251-12CM	PB251-12CM-H	PB251-24CM	PB251-24CM-H	PB251-12RML / PB251-12B	PB251-24RML
MAX OUTPUT [W]	220	275	300	330	275	330
DC OUTPUT	13.8V 16A	13.8V 20A	27.6V 11A	27.6V 12A	13.8V 20A	27.6V 12A

**SPECIFICATIONS**

	MODEL	PB251-12CM	PB251-12CM-H	PB251-24CM	PB251-24CM-H	PB251-12RML / PB251-12B	PB251-24RML	
<b>INPUT</b>	VOLTAGE [V]	AC190 - 265 1ø or DC225 - 400						
	CURRENT [A]	3.0 max.						
	FREQUENCY [Hz]	50/60 (45 - 65)						
	EFFICIENCY [%]	85 min.		88 min.		85 min.		88 min.
	INRUSH CURRENT [A]	10 max. (cold start)						
<b>OUTPUT (AC Mains Operation)</b>	VOLTAGE [VDC]	13.8		27.6		13.8	27.6	
	Adjustment Range	12.0 - 16.0V		24.0 - 31.0V		12.0 - 16.0V / 24.0 - 31.0V		
	CURRENT [A] <sup>1</sup>	16.0	20.0	11.0	12.0	20.0	12.0	
	CURRENT LIMIT [A] <sup>1</sup>	20.5	20.5	12.5	12.5	20.5	12.5	
	Adjustment Range	10 - 20.5A		5.0 - 12.5		10 - 20.5A / 5.0 - 12.5		
	<b>BATTERY CHARGING CURRENT LIMIT [A]<sup>2</sup></b>	2.0	4.0	2.0	2.0	4.0 / 20.0	2.0	
	Adjustment Range	2.0 - 20.5A		1.0 - 12.5		2.0 - 20.5A / 1.0 - 12.5		
	LINE REGULATION [%]	0.2 typ.						
	LOAD REGULATION [%]					1.0 typ.		
	RIPPLE [mVp-p] <sup>3</sup>	28 max.		55 max.		28 max.		55 max.
	NOISE [mVp-p] <sup>3</sup>	28 max.		55 max.		28 max.		55 max.
	OVERVOLTAGE SHUTDOWN	17.5 - 20.0 (Latching)		31.5 - 39.0 (Latching)		17.5 - 20.0 (Latching)		31.5 - 39.0 (Latching)
	OUTPUT SHORT CIRCUIT PROTECTION	Indefinite (Autoresetting)						
	BATTERY CHARGER SHORT CIRCUIT PROTECTION	Indefinite (Autoresetting)						
OVERTEMPERATURE SHUTDOWN [°C] <sup>4</sup>	100 typ. (Autoresetting)							
<b>OUTPUT (Battery Operation)</b>	VOLTAGE DROP BATTERY TO OUTPUT [V]	0.2 typ.				0.25 typ.		
	LOW VOLTAGE DISCONNECT [V]	10.5 typ.		21.0 typ.		10.5 typ. / 21.0 typ.		
	Adjustment Range	9.6 - 12.0		19.2 - 24.0		9.6 - 12.0 / 19.2 - 24.0		
	OUTPUT OVERLOAD PROTECTION	Battery Electronic Circuit Breaker						
	BATTERY REVERSE POLARITY PROTECTION	Internal Fuse						
<b>DISPLAYS AND ALARMS</b>	DC OK	LED (Green) ON=OK, Voltage-free Changeover Contact (32V,1A) Alarm on loss of mains or failure of AC/DC Converter						
	BATTERY OK	LED (Green) ON=OK, Voltage-free Changeover Contact (32V,1A) Alarm on battery low voltage or on failure of battery fuse.						
	Alarm Voltage (Falling) [V]	11.0		22.0		11.0 / 22.0		
	Adjustment Range	10.2 - 12.6		20.4 - 25.2		10.2 - 12.6 / 20.4 - 25.2		
<b>METERS</b>	N/A					(3) Output / Battery Voltage, Load Current, Battery Current		
<b>ISOLATION</b>	INPUT - OUTPUT	4242 VDC, 1 minute						
	INPUT - GROUND	2121 VDC, 1 minute						
	OUTPUT - GROUND	707 VDC, 1 minute						
<b>SAFETY AND EMC</b>	SAFETY	AS/NZS 60950, Class I						
	EMC	Complies with ACA EMC Scheme - C-Tick Emissions Comply with AS/NZS CISPR11 Group1, Class B						
<b>ENVIRONMENT AND OTHERS</b>	OPERATING TEMP AND HUMIDITY	0 to 70°C, 5 to 90%RH (Non condensing) (Refer to DERATING CURVE)						
	CASE SIZE / WEIGHT	-CM Models: 264 x 172 x 67mm (LxWxH) / 1.9 kg -CM-H Models: 264 x 186 x 67mm (LxWxH) / 2.1 kg				19" x 2RU x 232mm rack mount enclosure 483 x 88.1 x 250mm (WxHxD) / 5.5 kg		
	COOLING METHOD	Natural Convection						

<sup>1</sup> Sum of load + batt. charging current  
<sup>2</sup> This feature limits batt. charging current but not load current.  
<sup>3</sup> Using a 100MHz oscilloscope at the output terminals.  
<sup>4</sup> Internal air temperature

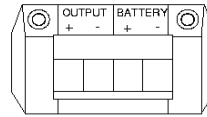
### PB251-\*\*CM (-H) MECHANICAL OUTLINE



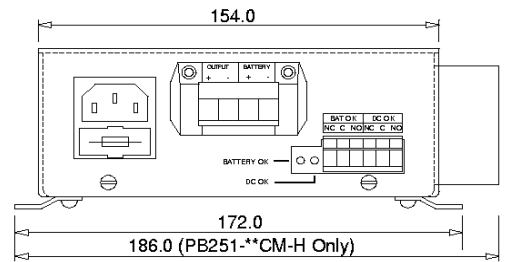
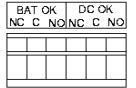
**NOTES:**

1. Mounting Centres: Suitable for M4 Hardware  
Standard: 165 x 80 mm  
Alternate: 254 x 80 mm
2. M3 threaded holes on bottom of base.  
Standard: 130 x 80 mm centres  
Alternate: 221 x 80 mm centres
3. AC Mains: 10A Class 1 IEC60320 power inlet
4. Output and Battery: 4W Pluggable Screw Terminal Block  
Suitable for up to 4 sq. mm wire.
5. Alarms: 6W Pluggable Screw Terminal Block  
Suitable for up to 1.5 sq. mm wire.

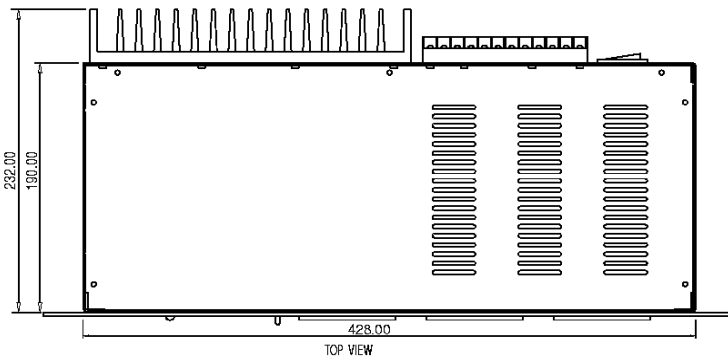
**OUTPUT / BATTERY TERMINATIONS**



**ALARM TERMINATIONS**



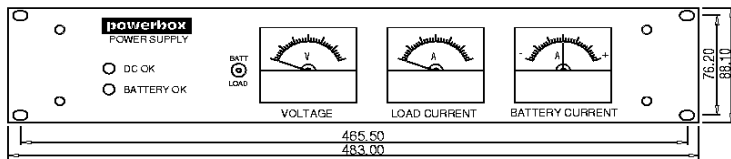
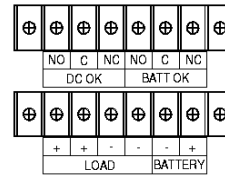
### PB251-\*\*RML & -12B MECHANICAL OUTLINE



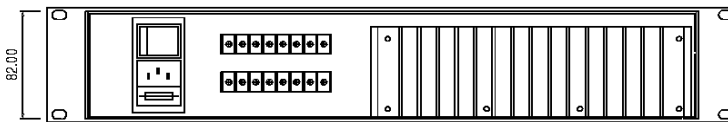
**NOTES:**

1. 2RU x 19" rack enclosure per IEC297
2. Mounting slots are suitable for M6 hardware.
3. Input connector is a 10A Class 1 IEC60320 inlet.
4. 2 meter IEC mains cord with Australian plug is supplied with unit.
5. PB251-12B alarm terminal is DB25 female.
6. PB251-12B output and battery connector is Hirose pn. HS28R-4A. Mating connector is Hirose pn. HS28P-4A (not supplied).
7. PB251-\*\*RML alarm and output terminals are M3.5 screws suitable for ring or fork lugs up to 8 mm wide.

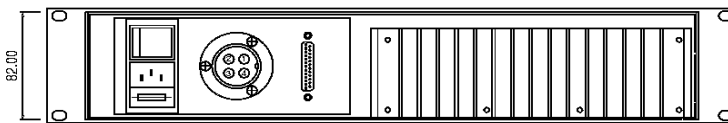
**PB251-\*\*RML ALARM AND OUTPUT TERMINALS**



FRONT VIEW

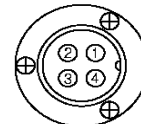


REAR VIEW (PB251-\*\*RML)

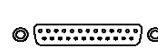


REAR VIEW (PB251-12B)

**PB251-12B OUTPUT & BATTERY CONNECTOR**



**PB251-12B ALARM CONNECTOR**



- PIN 1: COMMON
- PIN 6: DC OK (NC)
- PIN 15: BATTERY OK (NO)

**PB256 Ordering Information**

PB256      -12      08      CM

- |                  |   |                   |   |
|------------------|---|-------------------|---|
| 1                | 2 | 3                 | 4 |
| 1 Series name    |   | 3 Output current  |   |
| 2 Output voltage |   | 4 Enclosure       |   |
| 12               |   | CM: chassis mount |   |
| 24               |   |                   |   |

MODEL	PB256-1208CM	PB256-1210CM	PB256-2404CM	PB256-2405CM
MAX OUTPUT [W]	110	140	110	140
DC OUTPUT	13.8V 8A	13.8V 10A	27.6V 4A	27.6V 5A

**SPECIFICATIONS**

	MODEL	PB256-1208CM	PB256-1210CM	PB256-2404CM	PB256-2405CM
<b>INPUT</b>	VOLTAGE [V]	AC190 - 265 1ø or DC190 - 400			
	CURRENT [A]	1.3 max.	1.4 max.	1.3 max.	1.4 max.
	FREQUENCY [Hz]	50/60 (45 - 65)			
	EFFICIENCY [%]	80 min.			
	INRUSH CURRENT [A]	15 max. (cold start)			
<b>OUTPUT (AC Mains Operation)</b>	VOLTAGE [VDC]	13.8		27.6	
	CURRENT [A] <sup>*1</sup>	8.0	10.0 <sup>*2</sup>	4.0	5.0 <sup>*2</sup>
	CURRENT LIMIT [A] <sup>*1</sup>	9.0 typ.	11.2 typ.	4.8 typ.	5.9 typ.
	BATTERY CHARGING CURRENT LIMIT [A] <sup>*3</sup>	2.0 typ.		1.0 typ.	
	LINE REGULATION [%]	0.2 typ.			
	LOAD REGULATION [%]	1.0 typ.			
	RIPPLE [mVp-p] <sup>*4</sup>	28 max.		55 max.	
	NOISE [mVp-p] <sup>*4</sup>	55 max.		110 max.	
	OVERVOLTAGE SHUTDOWN	15.5 - 19.5 (Latching)		31.5 - 39.0 (Latching)	
	OUTPUT SHORT CIRCUIT PROTECTION	Indefinite (Autoresetting)			
	BATTERY CHARGER SHORT CIRCUIT PROTECTION	Indefinite (Autoresetting)			
	OVERTEMPERATURE SHUTDOWN [°C] <sup>*5</sup>	110 typ. (Autoresetting)			
<b>OUTPUT (Battery Operation)</b>	VOLTAGE DROP BATTERY TO OUTPUT [V]	0.11 typ.		0.06 typ.	
	LOW VOLTAGE DISCONNECT [V]	10.8 typ.		21.6 typ.	
	OUTPUT OVERLOAD PROTECTION	Battery Electronic Circuit Breaker			
	BATTERY REVERSE POLARITY PROTECTION	Internal Fuse			
<b>DISPLAYS AND ALARMS</b>	DC OK	LED (Green) ON=OK, Voltage-free Changeover Contact (32V,1A) Alarm on loss of mains or failure of AC/DC Converter			
	BATTERY OK	LED (Green) ON=OK, Voltage-free Changeover Contact (32V,1A) Alarm on battery low voltage or on failure of battery fuse.			
	Alarm Voltage (Falling) [V]	11.3		22.6	
<b>ISOLATION</b>	INPUT - OUTPUT	4242 VDC, 1 minute			
	INPUT - GROUND	2121 VDC, 1 minute			
	OUTPUT - GROUND	707 VDC, 1 minute			
<b>SAFETY AND EMC</b>	SAFETY	AS/NZS 60950, Class I			
	EMC	Complies with ACA EMC Scheme - C-Tick Emissions Comply with AS/NZS CISPR11 Group1, Class B			
<b>ENVIRONMENT AND OTHERS</b>	OPERATING TEMP AND HUMIDITY	0 to 70°C, 5 to 90%RH (Non condensing) (Refer to DERATING CURVE)			
	CASE SIZE / WEIGHT	189 x 93 x 46mm(LxWxH) / 600g			
	COOLING METHOD	Natural Convection			

<sup>\*1</sup> Sum of load + batt. charging current

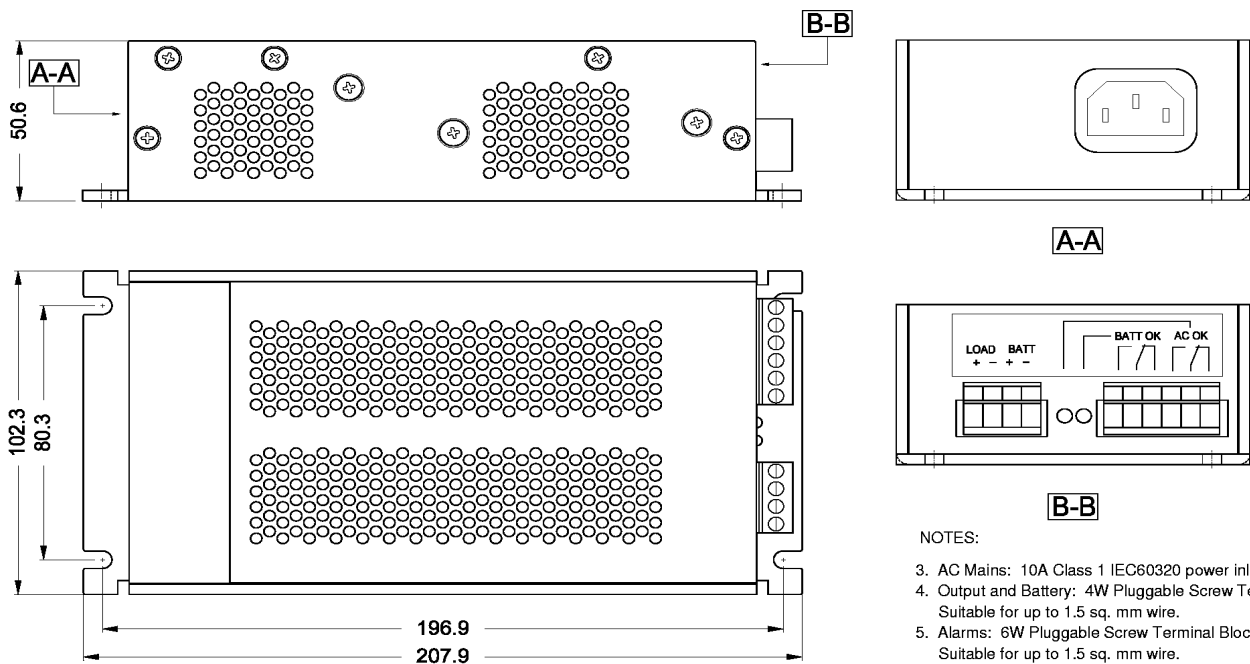
<sup>\*2</sup> To operate at maximum output current, these models must be attached to a 300 x 300 x 2mm Al plate or equivalent heatsink.

<sup>\*3</sup> This feature limits batt. charging current but not load current.

<sup>\*4</sup> Using a 20MHz oscilloscope at the output terminals.

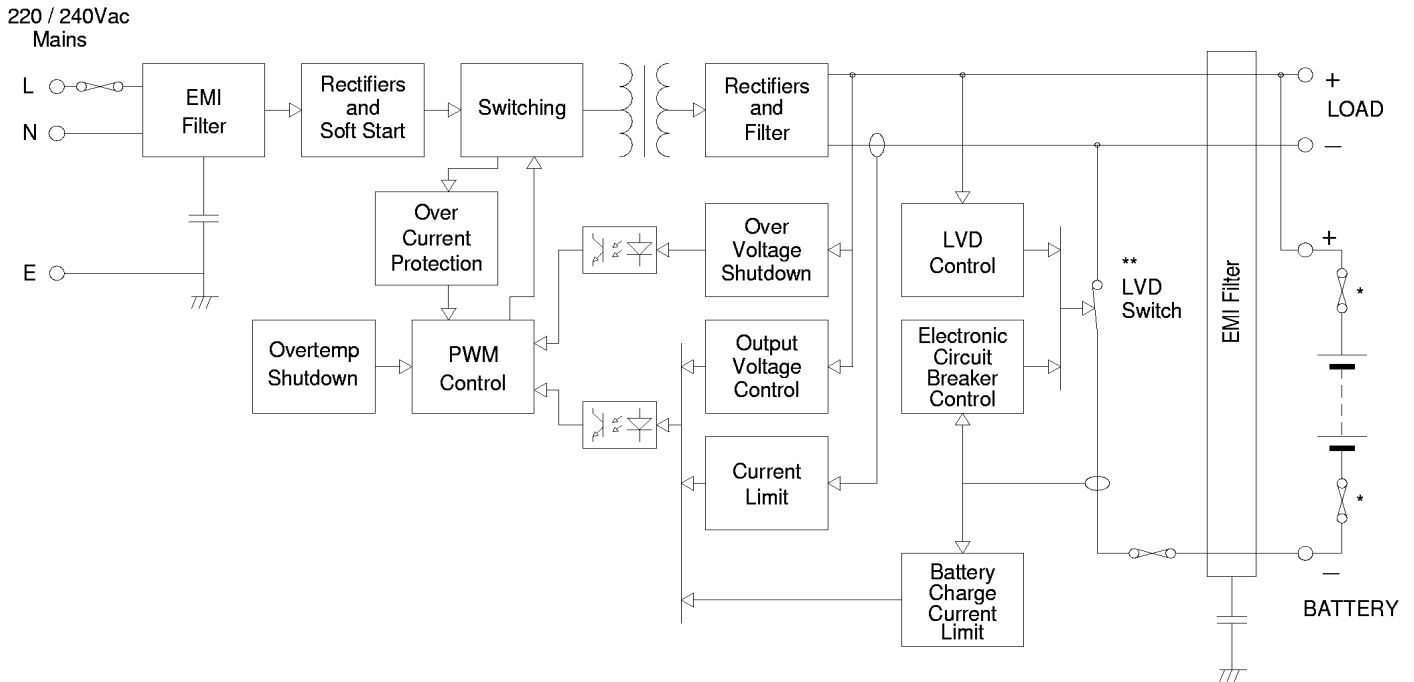
<sup>\*5</sup> Internal air temperature

**PB256-\*\*\*\*CM MECHANICAL OUTLINE**



- NOTES:
- AC Mains: 10A Class 1 IEC60320 power inlet
  - Output and Battery: 4W Pluggable Screw Terminal Block Suitable for up to 1.5 sq. mm wire.
  - Alarms: 6W Pluggable Screw Terminal Block Suitable for up to 1.5 sq. mm wire.

**PB251 / PB256 SERIES BLOCK DIAGRAM**



\* External battery fuses may be required in battery positive or negative leads depending upon system wiring and grounding.  
 \*\* Low voltage disconnect switch is located in series with battery negative terminal. Battery negative terminal must not be connected to load negative terminal or the LVD and battery charge current limit will not operate.

For Critical Applications Requiring Battery Backup

## ***PB251 & PB256 BATTERY CHARGERS***

PB251 Delivers 13.8V at 275W or 27.6V at 330W

PB256 Delivers 13.8V or 27.6V at 110W

Products Available Ex Stock

Designed in Australia

2 Years Manufacturers Warranty

Chassis, Gear Plate & 19" Rack Versions Available

Complies with AS/NZS CISPR11:2002 Group 1, Class B RF Emissions Limits

Complies with ACA EMC Scheme (C-Tick)

**powerbox****AUSTRALIA**

**Sydney** Tel: (02) 9457-2200  
Fax: (02) 9457-2255  
**Melbourne** Tel: (03) 9761-7797  
**Toll Free** 1 800 251 380  
**Email** sales@powerbox.com.au  
**Web Site** www.powerbox.com.au

**MASTER COMMUNICATIONS & ELECTRONICS PTY LTD**

2/136 RAILWAY PDE , GRANVILLE NSW 2142  
P.O.BOX 303, GRANVILLE NSW 2142  
TEL (02) 96825044 , FAX (02) 9682 6763  
WEB: WWW.MASTERCOM.COM.AU