



## Powerterm L120C-D Dual Voltage PSU/Battery Charger

### Model C2197B 120W 12/24Volt Power Supply/ Battery Charger



- Supply both 12Vdc 1Amp and 24Vdc 3 Amps average power to loads in a single product.
- Ideal for RTU's, dataloggers, remote field instrumentation, alarm systems, etc. where 24Volts is required for instrumentation and 12Volts is required for radios etc.
- Battery Management Functions include Low Voltage Cut-out, temperature compensation and current limited dual mode battery charging

#### FEATURES

- True 12/24Volt Split Battery Charge Equalisation
- Under-voltage cut-out to protect battery from deep discharge.
- AC detect output for mains monitoring.
- Temperature compensation for optimum battery float voltage in changing ambient temperatures.
- Universal 85-264Vac mains supply
- DIN Rail mounting with small panel footprint

#### OVERVIEW

The Powerterm L120C-D is a combined Power Supply and Battery Charger for small uninterruptible instrument supply applications where 12Volts and 24Volts are required. Providing both 24Volts and 12Volts in battery standby systems can be inconvenient and costly. While 12Volts is available in 24Volt battery systems by centre-tapping the two series connected 12Vdc batteries, this has been impractical to use until now because of the different charging requirements of the two batteries.

The unique PTL120C-D dual voltage charger now makes this possible by the provision of true split rail battery charging to provide balanced charging to both batteries even when 12Volts loads are tapped from the battery set. The Powerterm L120C-D is the only charger component required for the system, reducing space and cost. And unlike the use of 24V to 12V converters, the 12Volt load is connected to the battery, providing a low impedance supply required by some radio transmitters. This configuration also allows larger currents to be drawn intermittently from the 12Volts such as radio transmit currents which can be much larger than the average current required when receiving. Applications include RTU's, dataloggers, remote field instruments and alarm systems where the requirement exists to power both 12Volt equipment (such as radios) and 24Volt instruments.

#### BATTERY MANAGEMENT

During prolonged power outages, the back-up batteries will eventually discharge. If the load remains connected, the batteries can enter their "deep" discharge phase, which can cause irreparable damage to the batteries, and reduce their capacity and life expectancy.

The PTL120C-D incorporates a low voltage cut-out that disconnects the loads when either battery voltage falls below its low voltage threshold.

The maximum float voltage necessary to ensure full charge, but not over-charge, is temperature dependent for lead-acid batteries. If the installation is in an environment with widely fluctuating temperature, then fixed voltage chargers will either under-charge or over-charge the batteries.

The PTL120C-D is provided with external temperature compensation so that the float voltage to the batteries is held at its optimum value at all times. Use Model C0003 Temperature probe (supplied separately).

#### DUAL MODE CHARGING

All sealed lead acid battery manufacturers specify a maximum charging current for the correct life and safe operation of sealed lead acid batteries. This maximum charging current for a battery is based upon the Ampere-hour capacity of the battery. Many conventional switch mode power supplies do not control their maximum delivered current and can cause batteries to be charged from flat with current levels that exceed the manufacturer's recommendation. The PTL120C-D provides dual-mode charging, with a well defined battery current limit, so that even when the batteries are discharged, the charging current will be controlled.

#### SYSTEM MONITORING

The PTL120C-D provides an AC OK contact output. This output can be used to detect power failures without the need for an additional mains detection relay.

#### BATTERY TESTING

Using the Test Input, the health of the batteries can be checked. This function can be included in programmable remote equipment for highest availability of the standby system.

# TECHNICAL SPECIFICATIONS

## AC INPUT

AC input voltage range	85-264Vac	
AC input frequency	47-63 Hz	
Input current at full load	<2.2A rms at 115Vac <1.5A rms at 230Vac	
Switch-on inrush current	8A for <10ms	
Surge withstand	2.5kA 8/20us pulse 40 joules max.	
Fast Transients	2 kV	

## DC OUTPUT

Nominal Output Voltage	12V	24V
Output Voltage at	20°C 13.8±0.1V	27.6±0.2V
Voltage change from 20°C	-20mV/°C	-40mV/°C
Maximum load output voltage range over all conditions of battery, temperature and AC input.	10.6V -14.3V	21.2V - 28.6V
Maximum Continuous	120 Watts from 12V and 24V Total Power combined at 60°C	
Rated Load current	1.2A Continuous	4A Continuous
Battery Charging Current (current limited in charger)	1 Amp min1 1.2 Amp typical	1.2A min2 1.5A typical
Total current capacity	1.2A typical	5.2A typical (Load + Battery)
Maximum Peak Load (drawn from the battery)	8A for 10s	8A for 10s

### Charging Notes:

1. Total current available for 12V load and battery charging. The higher the load the longer battery recharging time.
2. 24V charge current is limited independently. Increasing load current up to 5A is permissible but it will reduce battery charging and increase charging time.

AC line regulation	0.5% max over 85-132 & 170-264Vac	
Load Regulation	2% max over 10-100% of total load (output load + battery charge current)	

## RECOMMENDED BATTERIES (not included)

Quantity	2/24V ; 1/12V	
Type	12 Volt Sealed Lead Acid	
Minimum Battery Capacity	7Ah minimum recommended	

## UNDER-VOLTAGE CUTOUT

Output	12V	24V
Cut out Voltage	10.5 +- 0.3 Volt	21 +-0.6 Volt
Battery drain when cut out	1mA max	1mA max

## OK OUTPUT

Type	Normally open contact – closed when AC is ON and DC power is healthy.	
Max. operating voltage	30V dc	
Max. closed circuit current	1A	

## TEMPERATURE SENSOR INPUT

Type	Model C0003 Temperature Sensor (order separately)
Temperature Accuracy	± 2 °C

## TEST INPUT

Type	Connect Test Input to 0V to test.	
Max. open circuit voltage	30V dc	
Max. closed circuit current	5mA	
Test Voltage	12V max	24V max
Test Method	When the test input is closed, the charger float voltages are lowered to just above the cut-out voltages.  If the battery terminal voltages are above these settings, the batteries will take over supply to the loads.  By checking the terminal voltages over a short time interval, the health of the batteries can thus be checked.	

## INDICATOR LIGHTS

AC (Green)	ON when AC input is ON and charger is charging. (indicates OK output is on)
DC (Red)	ON when cut-out relays are closed and DC output is present.

## ENVIRONMENT

Operating Temperature	0 to +60°C at continuous full load
Temperature derating	derate 24V load 0.1A/°C up to 70°C
Storage Temperature	-10°C – 70 °C (+14°F – 158°F)
Design Life at 50°C full load	50 000hours

## MECHANICAL

Width	80mm
Height	110mm
Depth	120mm (including terminals)

## WEIGHT

Unpacked	750gm approx.
Packed	780gm approx.

## COMPLIANCE TO STANDARDS

Safety	IEC950; EN60950:1995
Emissions	EN 55011:1997 Group I, Class A
Immunity - ESD	IEC 61000-4-2:2001, level 3
Immunity - RF Fields	IEC 61000-4-3:2003, level 3
Immunity - Fast Transients	IEC 61000-4-4:2004 2 kV – AC & DC power ports 1 kV – other input/output lines
Insulation Resistance (100% tested)	100Mohm at 500Vdc input to outputs to ground.
Insulation Breakdown (100% tested)	1500Vac input to earth for 1s 1000Vac output to earth for 1s

## ORDERING INFORMATION

ORDER CODE	DESCRIPTION
C2197A	Powerterm L120C-D Dual voltage 12/24Vdc PSU/Charger
C0003	Powerterm Temperature Sensor (with 500mm lead)