APC-16PD Integrated Multi Function Power System

Mini AC-DC Power Shelf with Distribution & Charger

Advanced Power Conversion PLC

Product Specification

The 1U high, 19" shelf rack mount, APC-16PD is designed to operate as a key element in a complete distributed power system.

The power shelf generates a precisely regulated DC bus voltage when assembled with APC power modules and provides a number of protections, alarms and control features.

One power shelf can house up to two APC power modules to supply 800W / 1000W of redundant power or 1600W / 2000W of total power depending on configuration of power modules.

The DC output is distributed to 8 fuse protected output terminals. The system is also equipped with low voltage disconnect and constant current charger for lead acid battery applications.

Designed for integration into end-use equipment, the flexible features of APC-16PD make this mini power system an excellent choice for telecom, base station and as distributed power applications requiring modular AC-to-DC power system.

MODULE FEATURES

- **19" Rack Mount**
- **Low profile: only 1U High**
- **Constant Current Charger for battery**
- **AC Input: 85V to 264V or 180V to 264V**
- **DC Output: 56.2V 1600W or 56.2V 2000W**
- **1,000W or 800W N+1 redundant operation OR**
- **2000W or 1600W Total Power**
- **8 channel DC distribution with GMT fuse protection**
- **Individual GMT fuses on Front Panel**
- **LVD Low Voltage Disconnect for battery deep discharge protection**
- **Front Panel Power fail Warning & Fault Alarm**
- **Restart Button after battery replacement without utility**
- **Battery circuit breaker for battery string disconnection**

Two Year Warranty

CE

ADVANCED POWER CONVERSION PLC

Jan 2004

Product Specification

INPUT CONNECTOR

The APC-16PD power shelves can work normally with any standard global line voltages. The standard AC input connection to the shelf is through two IEC320 type connector rated at 10A / 250Vac in Europe/Asia and 15A / 120Vac in North America.

OUTPUT CONNECTOR

The APC-16PD shelf has terminal block for battery connection (each with two M3 screws). They are labelled B+ and B-, respectively. It is suggested to disconnect the output from the battery terminal block, by turning off the front access breaker, while the battery is being connected or disconnected.

There are 8 fused outputs, which are labelled V+ and V- respectively. The V+ and V- are floating with respect to frame GND. Frame GND may be floated or connected to either bus depending upon the application.

Temperature

Operating Range 0°C to 60°C
Storage Range -40°C to 85°C

Charger

Charging ending voltage 55+-0.5V
Charging current 7~10A maximum. The total charging current and the output current will be limited by the module output wattage.

Make sure the battery capacity is big enough to withstand the charging current. The recommended charging current is 0.1C of battery capacity. Keep the charging current under 0.3C for better battery life.

Breaker

Current rating 15A

There is one circuit breaker between the battery and the power system for over current protection. It also acts as the switch to disconnect the battery from the power system for battery replacement or battery voltage check.

Low Voltage Disconnect

Current rating 60A
Disconnect voltage 42+-0.5V

The LVD is used to protect battery from deep discharge. When the battery voltage is as low as the Disconnect voltage, battery will be disconnected from the power system.

Output Fuse Protection

Current rating 15A

GMT type, 8 channel

Battery restart

There is a switch to restart the system after the battery replaced at no AC input condition. The switch can be found on the front-panel and can be switched by a pen or a clip.

Office Alarm

Power Supply Module Power Failure Alarm

The power system will support a Form 1C relay for generating a module failure alarm. There shall be NO, COM, and NC contacts. The interface is through wire wrap posts on the rear of the power supply unit. The relay will be in NO when power supply module power fails.

AC Input Failure Alarm

The power system will support a Form 1C relay for generating an AC input failure alarm. There shall be NO, COM, and NC contacts. The interface is through wire wrap posts on the rear of the power supply unit. The relay will be in NO when AC input fails.

Output GMT Fuse Failure Alarm

The power system will support a Form 1C relay for generating a fuse failure alarm. There shall be NO, COM, and NC contacts. The interface is through wire wrap posts on the rear of the power supply unit. The relay will be in NO when fuse fails.

Over Temperature Fail or Power Supply Module Fan Fail Alarm

The power system will support a Form 1C relay for generating an over temperature or power supply module fan fail alarm. There shall be NO, COM, and NC contacts. The interface is through wire wrap posts on the rear of the power supply unit. The relay will be in NO when over temperature fails or power supply module fan fails.

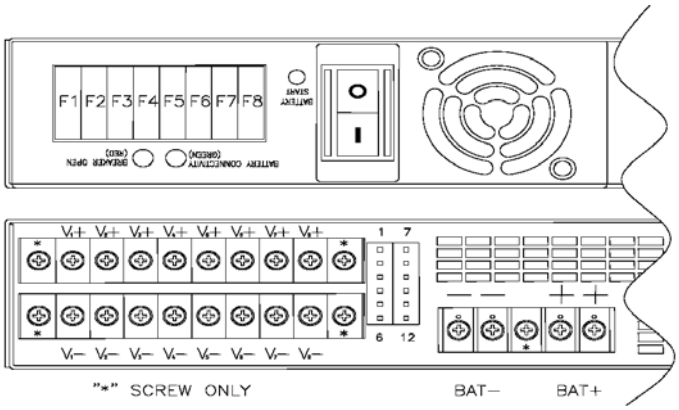
VISUAL INDICATORS

There are two LEDs to provide visual indication. Please see the following table for these indicators.

Name	Colour	Immumination Meaning
Battery Connectivity	Green	Low Voltage disconnect relay is on
Breaker Open	Red	Breaker Contact is Open

Product Specification

Pin Assignment

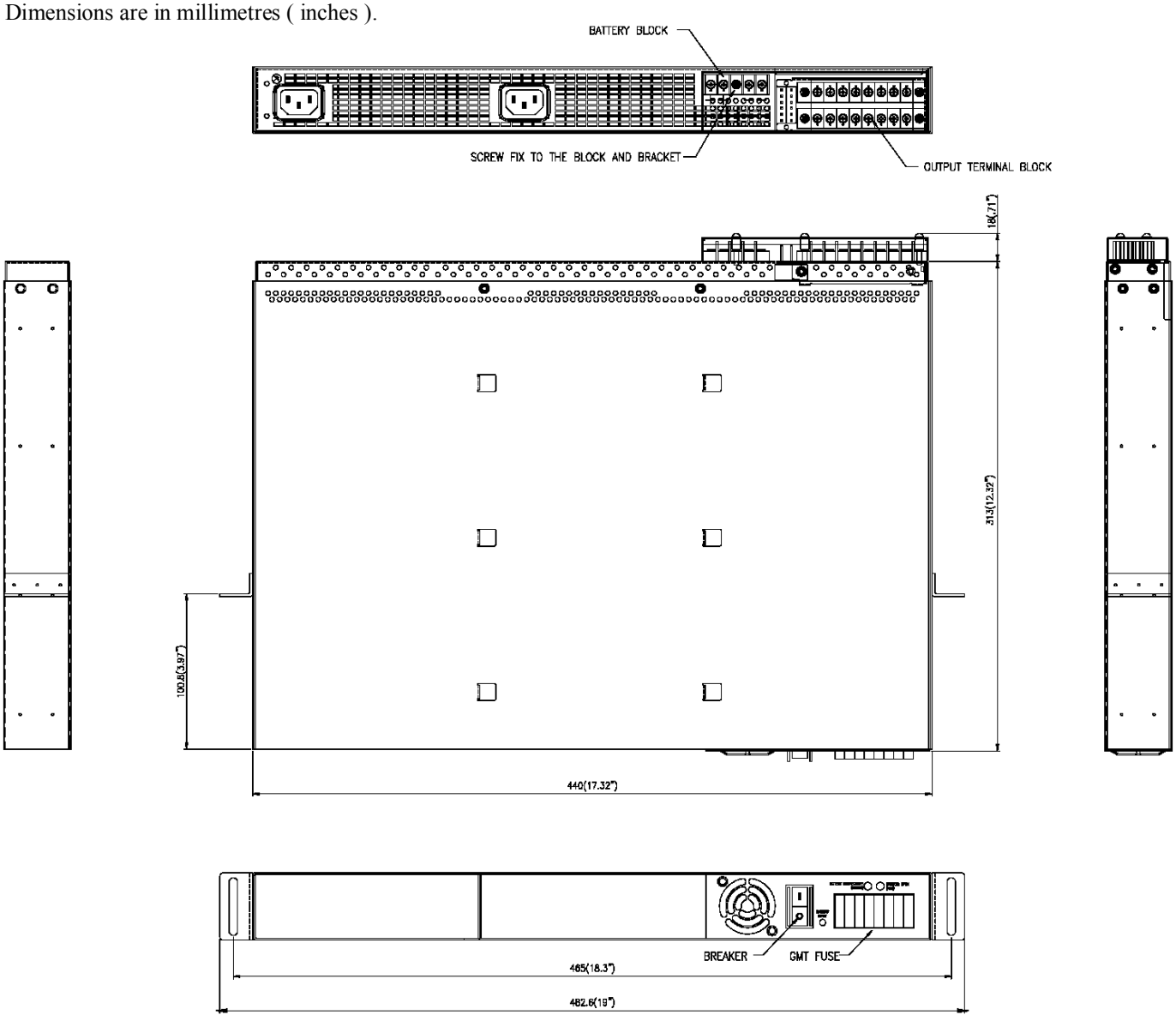


K1 P.S. Power Failure Alarm
K2 Fuse Failure Alarm
K3 Over Temp. or Fan Failure Alarm
K4 Ac Input Failure Alarm

	K4	K2
NO	1	7
COM	2	8
NC	3	9
	K3	K1
NO	4	10
COM	5	11
NC	6	12

Mechanical Outline

Dimensions are in millimetres (inches).



Product Specification

Selection Guide

APC-XXPD - - 0 -

Output Power
16 - 1600W
20 - 2000W

Rack Mount Position

A - Flush (standard)
B - 127mm (5“) back from front panel

Output connector option
1 = Terminal Block

AC Input connector option
1 = IEC320 connector for each module

FUM SERIES POWER MODULES (see FUM data sheet for detail)

The APC-16PD power shelf is designed to working with the APC-A0800 or APC-A1000 power modules. These modules convert the AC input power to a regulated, low-noise DC bus voltage.

ORing diode is used at the output of each module to prevent the module from bringing down the bus voltage either during hot insertion or as the result of a module fault. The connectors between the power module and shelf are selected for blind mating and for convenient hot insertion and removal. Active current sharing between paralleled modules and shelves enable the power system to distribute the load evenly between multiple power units.

FAULT AND STATUS REPORTING

The APC-AXXXX series power modules provide a number of status report and remote control features. Those signals are aggregated to the host interface on the back of the shelf. Please refer to the module’s data sheet for detailed definition of each signal. Host interface is optional for the shelf.

FAULT MANAGEMENT

The modules are fully protected from being damaged by either the load or themselves under single fault or abnormal operating conditions.

Fault or Abnormal Condition	Response
AC Input Surges and Transients	The robust design of these units provides superior immunity to AC line transients and surges.
Loss of AC Input Power	The module will continue operating without interruption or assertion of the POWER FAIL WARNING signal within 1/2 cycle of outages of main ower. Typical holdup time is 20ms.
Output Overvoltage	Under any single fault condition, the output voltage will not exceed 64V.
Internal Overheating	The module is fully protected from being damaged by excessive heat. The unit will automatically recover when cool down.
Output Overload	When output current exceeds maximum limit, the module goes into a constant power mode and output voltage falls. The unit will run in hiccup mode when the output voltage is below 39V (±2V).

VISUAL INDICATORS

Each power module has two LEDs to provide visual indication. Please see the following table for these indicators.

Name	Colour	Immumination Meaning
LED 1 AC OK	Green	Input voltage OK
LED 2 Output OK or Output fail	Green Amber	The unit is powered up and operating normally or The unit has detected an internal fault or overload condition.

EMI PERFORMANCE

The power shelf meets CISPR Class B, conducted emissions – EN55022 stand-alone.