

FAAST Power Supply AUX24V-1.3A

Overview

The **Pertronic FAAST Power Supply AUX24V-1.3A** is a 24 Volt DC self-monitoring power supply suitable for powering ancillary fire alarm equipment including the FAAST range of aspirating smoke detectors. The unit incorporates a switched-mode mains power supply and an automatic voltage monitoring and battery test module.

The internal monitoring system continually checks the power supply's output voltage and verifies that the batteries are connected. At 24-hour intervals, the monitoring system automatically checks the battery capacity.

A changeover relay indicates when the monitoring system has detected a fault. A front panel LED provides local fault identification.

The cabinet will accommodate a pair of 12-Volt sealed lead-acid batteries with a capacity of up to 12 Amp-hours. If larger batteries are needed, a Pertronic 4 Amp power supply (**Auxiliary 24V-4A PSU**) should be used.

The power supply is supplied without batteries. The battery calculator on the Pertronic Industries web site may be used to work out the size of battery needed for a particular application.



FAAST Power Supply

Features

- ▶ Temperature Compensated Output Voltage for Charging Lead-Acid Batteries
- ▶ Mains on LED (green)
- ▶ Auto Test LED (yellow)
- ▶ Battery Fault LED (yellow). (Pulses when a fault is detected)
- ▶ Continuously Monitors DC Voltage
- ▶ Continually Monitors Battery Presence
- ▶ Automatic Battery Capacity Test. (Once every 24 hours)
- ▶ Internal Reset Switch:
 - ▶ Clears Fault Indications
 - ▶ Initiates a one-hour Battery Capacity Test

Specification

- ▶ **Input**
 - ▶ AC Input 200 – 260VAC, 50 – 60 Hz single phase
 - ▶ Input Current 0.3 Amp maximum with 1.2 Amp DC load
 - ▶ Inrush Current Limited by internal thermistor
 - ▶ Turn-On Time 120 ms maximum at 230 VAC, 25 °C

- ▶ Input Protection Internal 1 Amp slow blow fuse

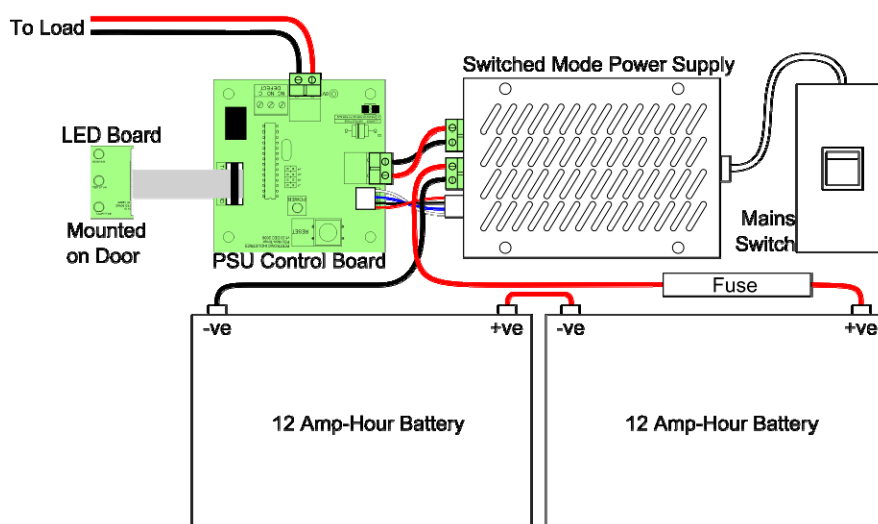
Specification (cont'd)

- ▶ **Output**
 - ▶ Nominal Output Voltage 27.4 VDC $\pm 1\%$ at 20 °C
 - ▶ Power Supply Charger Current Current limited to 1.2 Amp
 - ▶ Maximum Short-Term Output 2.5 Amp with 12 Amp-hour batteries fitted
 - ▶ Temperature Coefficient 0.145 %/°C (set for battery charging)
 - ▶ Voltage Regulation 0.13 % over full load at 20 °C
- ▶ **Batteries**
 - ▶ Number and Type 2 x 12 Volt AGM Valve-Regulated Lead-Acid
 - ▶ Capacity Maximum 12 Amp-hour
- ▶ **General**
 - ▶ Mains Input Connector Termination block with an integral power switch
 - ▶ DC Output Connector Two-way terminal block
 - ▶ Defect Relay Output Change-over contact, 1 Amp @ 24 VDC
 - ▶ Internal Control Reset / Timer initialisation switch
 - ▶ Front Panel Indicator LEDs Mains (Green), Auto Test (Yellow), Battery Fault (Yellow)
 - ▶ Operating Temp. Range 0 °C to 40 °C
 - ▶ Humidity 10 % to 95 % (non-condensing)
- ▶ **Physical**
 - ▶ Dimensions 230 x 350 x 120 (Height x Width x Depth mm)
 - ▶ Weight 2.8 kg (excluding batteries)

Mounting

The power supply is designed to be wall-mounted. It should be mounted in a clean dry area with unobstructed natural convection between the unit and the wall. The cooling slots must not be restricted. Care must be taken to prevent reverse polarity connections between the power supply and load.

Wiring Diagram



Commissioning

1. Before powering up the power supply, thoroughly check the wiring for polarity and safety.
2. Check Jumper J1 on the PSU control board:
 - a. J1 absent (NZ Mode): A 'Mains Lost' condition is reported immediately upon loss of the mains power supply.
 - b. J1 fitted (AUS Mode): A 'Mains Lost' condition is reported only if the mains power supply has been disconnected for at least 55 minutes.
3. It is recommended that the power supply should be initially connected to the mains without load. The green Mains On LED should light up. The two yellow LEDs should not light up. The power supply output voltage should be about 27.4 Volts.
4. Switch off the power. Connect the load, but not the batteries. Power up the power supply. The Mains On LED should light up, but not the yellow LEDs. Check the power supply output voltage.
5. Connect the two 12 Volt batteries to the power supply. Take care to observe the correct polarity. Allow the batteries to charge up in accordance with the manufacturer's recommendation.
6. Press the Reset switch for about 2 seconds. After a few seconds the Auto Test LED should light up, indicating that the one-hour battery test has started. The Battery Fault LED should not light up.
7. Cancel the one-hour battery test by briefly pressing the Reset switch.
8. Provided the battery has adequate charge and no fault/defect has been detected, activate the load and check that it works OK. Measure the voltage supplied to the load.
9. Put the power supply into battery test mode by pressing the Reset switch for two seconds. Check that the load continues working OK. Also check that the battery voltage drops when the battery test starts. If the batteries are charged, the voltage should not fall below 23.5 Volts.
10. Cancel the one-hour battery test by briefly pressing the Reset switch.
11. If applicable, ensure the Fault/Defect output contacts are connected to the Fire Alarm 'External Defect/Fault input' to ensure that power supply or battery problems can be monitored remotely.

Monitoring System Operation

The monitoring system automatically checks the power supply and batteries. There are two separate fault indicating devices:

- ▶ The Battery Fault LED flashes in groups of four if any fault has been detected. The fault type is indicated by the position of long flash(es) in the group (refer to the Fault Table). The LED continues indicating the fault(s) until either the power supply is powered down, or the Reset switch is momentarily pressed.
- ▶ The fault relay contacts change over if any fault is detected. The fault relay is non-latching. If the fault goes away, the fault relay contacts go back to normal. Note that fault relay indication is delayed. Refer to the Fault Table for details.

Voltage

During normal operation the monitoring system continuously monitors the power supply output voltage. If the voltage goes outside the range defined by the high and low charger voltages (refer to Fault Table) the monitor reports a fault. This function is disabled during the one-hour battery capacity test, and if the mains power supply is lost.

Battery Connected

Every ten seconds the monitoring system briefly reduces the output voltage of the switched-mode power supply. If the power supply output voltage falls below the threshold (See Fault Table), the monitoring system indicates a "Battery Disconnected" fault. This function is disabled if the mains power supply is lost.

Battery Capacity Test

Every 24 hours, the monitoring system initiates a one-hour automatic battery capacity test. During this test, the switched-mode power supply operates at reduced voltage and the yellow Autotest LED lights. If the power supply output voltage falls below the threshold (See Fault Table), the monitoring system indicates a fault. This test does not take place if the mains power supply is lost.

Mains Lost

If the mains power is lost the Battery Fault LED immediately indicates a Mains Lost fault. In “NZ Mode”, the fault relay contacts change over immediately. In AUS mode, the fault relay contacts indicate a fault only if the Mains supply voltage has been continuously absent for more than 55 minutes.

Monitoring System Fault Table			
Fault	Threshold	Position in Encoded Pulse Stream	Relay Contact Changeover Delay
High Charger Voltage	> 28.8 V	1st	20 seconds
Low Battery Voltage (In auto-test mode, or when mains absent) Low Charger Voltage	< 24.3 V	2nd	20 seconds
Battery Capacity Failure or Battery Absent	< 23.6 V	3rd	30 – 40 seconds
Mains Lost		4th	Aus: 55 minutes NZ: no fault if battery OK

Reset Switch Operation

The Reset Switch is mounted on the PSU Control Board. It provides the following functions:

- ▶ A momentary press resets and restarts the 24-hour timer and clears any fault conditions indicated by the Battery Fault LED. The next one-hour battery capacity test will start 23 hours after reset, and then it will recur at 24 hour intervals.
- ▶ Pressing the Reset switch for at least 2 seconds starts the one-hour battery capacity test immediately. The Auto Test LED lights up during the test.
- ▶ With the power supply in Auto-Test mode, pressing the Reset switch for about half a second cancels the one-hour battery capacity test. The next battery test will then start 23 hours from this time. This provides a method of checking that the batteries are properly connected. Start the test by pressing the Reset switch for at least two seconds. If the Auto Test LED lights up, and the Battery Fault LED does not, then the batteries are connected and working properly.