



DYCON

power solutions

Installation Manual for D244X Series 24-volt Power Supplies

D2400 Series	
D2441-B	1A – 24 volts
D2441-C	1A – 24 volts
D2443-B	3A – 24 volts
D2443-C	3A – 24 volts
D2445-B	5A – 24 volts
D2445-C	5A – 24 volts

Dycon Power Solutions Ltd
Tel: +44 (0)1443 471 900

Unit A - Cwm Cynon Business Park – Mountain Ash – CF45 4ER - UK

www.dyconpower.com
sales@dyconpower.com

Overview

The Dycon D244X series of power supplies are switched mode power supplies with three normally closed volt-free outputs for signalling status and serviceability of the units.

The power supplies all provide a nominal 27.4V when powered from a 230V AC supply and a nominal 24V when powered from standby batteries.

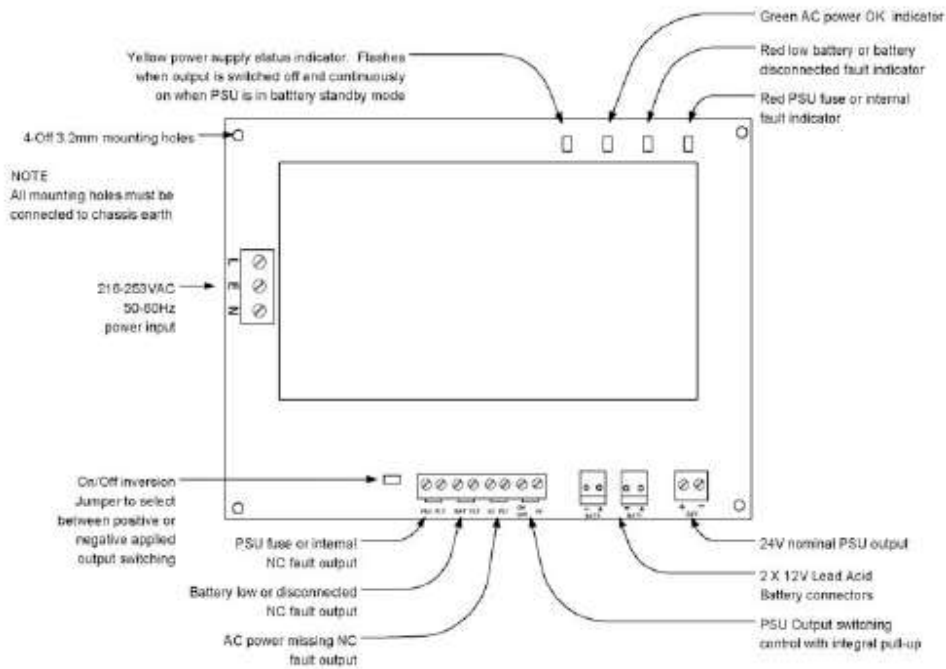
The power supplies have the following features:

- PSU fault volt-free output and LED display
- Battery fault volt-free output and LED display
- AC power status volt-free output and LED display
- On/Off power switching control input with pull-up, compatible with voltage-free contacts
- Jumper for selecting inverted or normal power switching operation
- Status LED display indicating normal/standby operation and On/Off switching status
- Power supply internal fault monitoring
- Over-voltage output protection
- Inductive and capacitive load switching surge protection and snubbing
- Intelligent electronic fuse output protection with automatic reset
- Highly efficient power conversion – better than 85%
- Constant current battery charging

The switched output is designed for highly inductive loads such as access control door strikes and locks and is protected to control high voltage back-EMF spikes.

Layout D2441 / D2443 / D2445

The board is largely enclosed in a screening can.



Installation

Mount the metal enclosure onto the wall.

Connect the Live, Earth and Neutral terminals to an un-switched fused spur.

Connect the On/Off switching control to the control unit. Select the mode of operation using the jumper (see page 4).

Connect the Normally Closed relay outputs to the monitoring equipment used to report and signal equipment faults.

Connect the 24v power output to the system.

Fit the battery connectors as appropriate (2 x 7AH batteries in B box; 2 x 7AH or 2 x 17AH in C box).

Switch on the AC supply and confirm that the "AC OK" LED is lit.

External Power Supply (AC Supply)

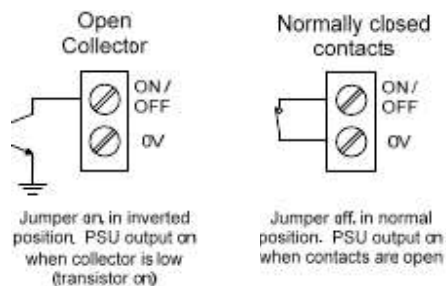
The power supply has a three-way terminal block for Live, Earth and Neutral connections. Mains earth is isolated from the 0v output. When supplied boxed, mains earth is connected to the metal enclosure.

On/Off Input

This input is 30V tolerant and 5V logic compatible. It has an internal 100K resistor pull-up connected to 5V and is designed to work with 5V logic outputs, NO and NC voltage free contacts and open collector outputs.

If the jumper is not fitted and the On/Off input is left unconnected, the power supply will be switched on and operation as normal.

Switching examples are shown below:



Outputs

24V Power Output

The voltage output varies depending on load from a nominal 27.4V output when operating normally from 230V AC power to a nominal 24V without AC power, depending on load and battery condition, finally dropping to about 21V before automatic battery disconnection. The output is rated at a maximum of 5A (D2445), 3A (D2443) and 1A (D2441).

The output is electronically protected against short-circuit and overload.

Battery Charging Output

Two connectors are provided to connect two 12V lead acid batteries in series to give 24 volts to the PSU. When AC power is present the batteries are float charged at a nominal 27.4 volts current limited to about 300mA. The battery charging output is power limited to prevent short circuit damage.

Relay Outputs

Three optically isolated voltage-free relay outputs are provided. The outputs are rated at 60V at 100mA with a “contact” resistance of 16 Ohms. The relays are normally activated when the PSU is in a “no fault” condition, providing normally closed contacts. The contacts will be opened when the PSU has all power removed from it.

AC Fault

The AC Fault relay will open when a low AC input of below a threshold of $175V \pm 25V$ is detected.

NOTE: The AC supply must be isolated before investigating an AC fault as a high residual voltage may be present.

Battery Fault

The following battery faults are registered:

1. Battery disconnected.
2. Low battery - detected when battery voltage is lower than 22V and reset when battery voltage is higher than 23V.

The relay is opened when either of the above faults is detected.

PSU Fault

The PSU fault relay will open when any of the following faults are detected:

1. Thermal shutdown.
2. Undefined internal fault.
3. Battery charging fault.
4. Output fuse fault.

INDICATIONS

Status LED	Off when operating normally with AC power present and the output switched on Continuously on when operating in standby, battery powered mode Flashing when the output is switched off, in both normal and standby mode Note: the status LED does not display any other PSU information
AC OK LED	Illuminated when AC power is applied, the LED will be extinguished when the AC voltage falls between a threshold of between 200V to 150V
BAT FLT LED	On when any battery faults are detected
PSU FLT LED	On when any PSU faults are detected

Battery Protection

The batteries and electronic circuitry are protected against reverse polarity connection and short-circuits.

Maintenance

There are no user serviceable parts. No maintenance is required other than routine periodic testing and replacement of the standby batteries.

Please note that high voltage is present under the cage – handle with care. Do NOT touch. Do NOT remove the cage.

For further information on routine battery replacement, please contact your battery supplier or manufacturer.

Fault Finding

The LED displays can be used to identify a number of different possible faults on the system as shown in the table below:

Condition	Status LED	Battery LED	AC OK LED	PSU Fault LED
AC power on, output on	OFF	--	ON	--
AC power off	ON	--	OFF	--
AC power on, output off	Flashing	--	ON	--
AC power off, output off	Flashing	--	OFF	--
Batteries disconnected	--	ON	--	--
Batteries failed	--	ON	--	--
Batteries low <22V	--	ON	--	--
PSU fault	--	--	--	ON
Output overvoltage*	--	--	--	ON*
Output fuse fail	--	--	--	ON

*overvoltage is an output voltage over 30V DC. The output will switch off until the unit is powered down and reset by reconnecting the power.

Specifications

Power supply	Type A, Ungraded, Environmental Class 2
Voltage input	195VAC – 265VAC at 50 – 60Hz
AC Input fuse - D2441 - D2443 - D2445	Anti-surge fuse rated at: - 230V, 2.00 A - 230V, 3.15 A - 230V, 3.15 A
Output voltage	Max. 28V, min. 20.0V, nominally 27.4V with AC present
Output ripple	Less than 0.6V peak to peak at full rated output
Maximum current at full load	1A, 3A or 5A depending on model
Power consumption at full load	D2441 – 33W; D2443 – 97W; D2445 -162W
Battery recharge time	Less than 72 hours (2x 17Ah batteries)
Operating temperate range	-10°C to +50°C
Humidity	95% non-condensing

Product Part Numbers

	PCB	B Box	C Box
1 Amp	D2441-P	D2441-B	D2441-C
3 Amp	D2443-P	D2443-B	D2443-C
5 Amp	D2445-P	D2445-B	D2445-C

Sizes and Weights

Dimensions	PCB	“B” Housing	“C” Housing
Size (H x W x D mm) D2445 D2441/3	163 x 123 x 38 130 x 100 x 38	260 x 320 x 90	345 x 430 x 90
Weight (kg)	0.2	3.2	4.3

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