



Installation Manual for D1551 & D1553, 12V Switched Mode Power Supplies Ideal for Access Control Systems

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 D1551 and D1553 are 1A and 3A switched mode power supplies with an opto-relay output for signalling the status of the unit with PCB-mounted, LED status indicators. Both units provide a nominal 12V when powered from a 230V AC supply with battery backup.

The power supplies have the following features:

- ON/OFF power switching control input with pull-up, compatible with voltage-free contacts
- Jumper for selecting normally OPEN or normally CLOSED for switched output operation
- ON (OK) LED display indicating normal operation and ON/OFF switching status
- Battery LED indicating standby operation and ON/OFF output switched status
- Fault LED and separate fault opto-relay output for comprehensive fault monitoring
- Battery connection monitoring
- Battery deep discharge protection
- Inductive and capacitive load switching surge protection and snubbing
- Electronic overload protection with automatic reset
- Highly efficient power conversion – better than 84% at full load
- Low voltage drop when in standby mode

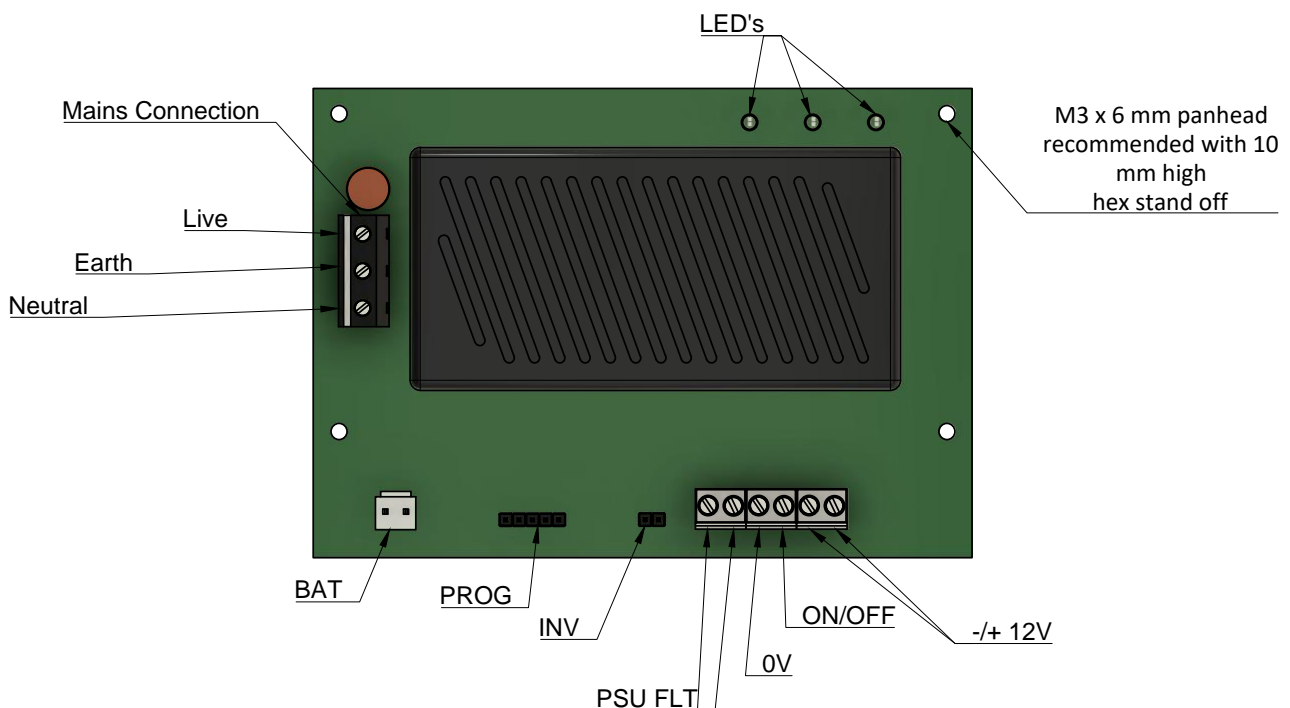
The ON/OFF switched output

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

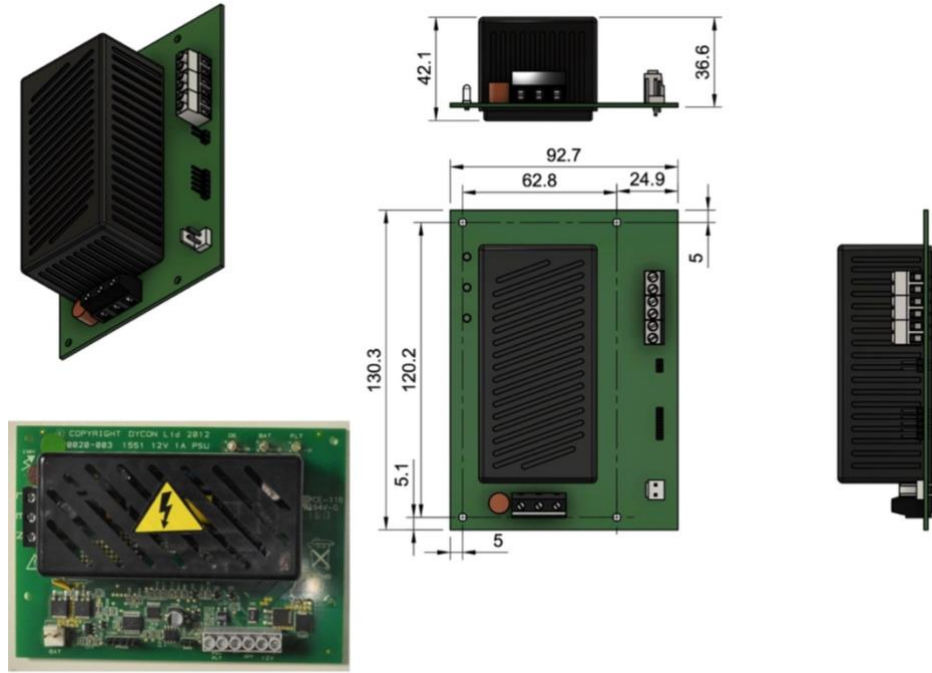
Battery types

All standard VRLA (lead acid) batteries are supported. The standard battery connector for 2.1Ah & 7/8Ah batteries is a FASTON 4.75. For 17Ah & 24Ah batteries, please specify M5 connectors when ordering

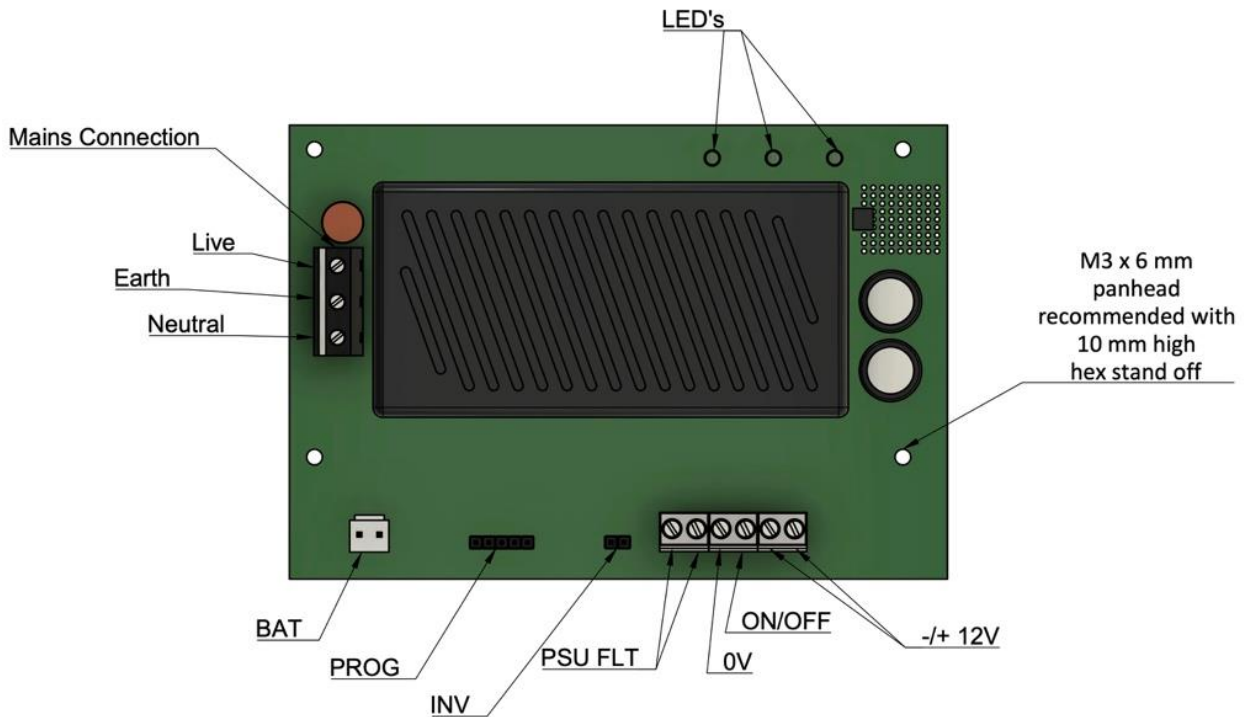
Connection layout for D1551



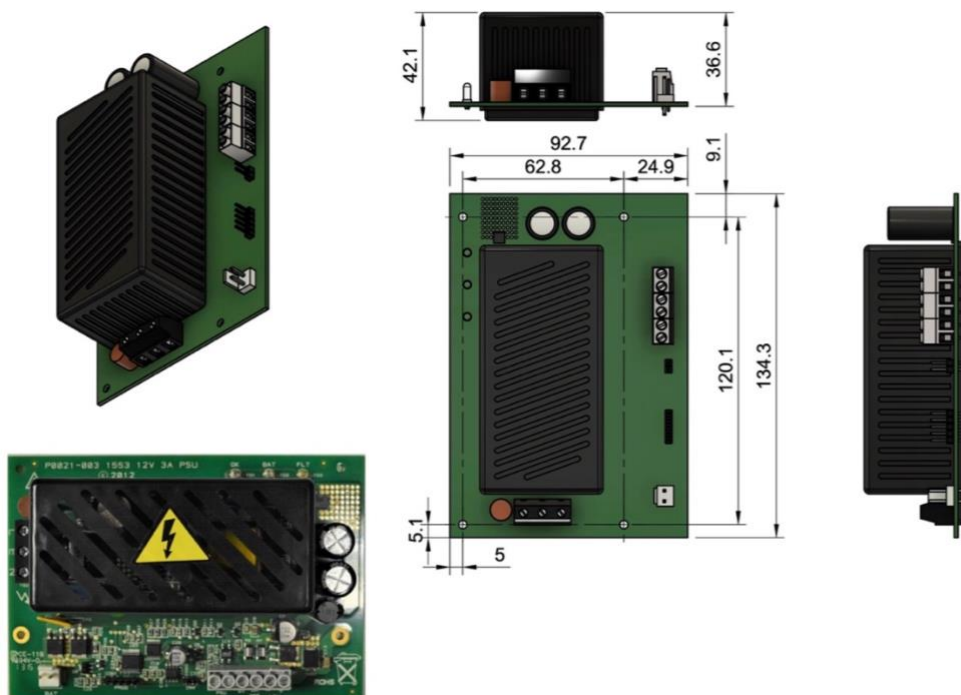
Dimensions for D1551



Connection layout for D1553



Dimensions for D1553



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 below).

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

Connect the 12V power output to the system.

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. When supplied boxed, earth is connected to the metal enclosure and the lid earthed with a flying push-fit lead.

12V Power Output

Terminal blocks are provided to connect to the system. The output is floating and can be referenced to earth if required. The output is controlled by the ON/OFF input (see below). The output is electronically short circuit and overload protected and suitable for switching highly inductive loads. The short circuit protection is intelligent, and power will be restored when a short is removed when still connected to the load, requiring no further user/installer intervention.

The output switch-on retry time is adaptive and will be extended to a maximum of 18 seconds after a long duration short to prevent excessive switch power dissipation.

The PSU power rail is continuously monitored for over-voltage and in the event of a high voltage condition, the output will be automatically switched off and a fault signal

LED Indications

The status of the PSU is displayed by three LEDs, see below for their meaning:

KEY:

- LED on
- LED off
- ☼ LED blinking

STATE	OK LED GREEN	BAT LED YELLOW	FLT LED RED
AC ON	●	○	○
AC OFF	○	●	●
Output Off, AC ON	☼	○	○
Output Off, AC Off	○	☼	●
Output Fault, AC ON	●	○	●
Output Fault, AC OFF	○	●	●
Battery Fault, AC ON	●	●	●
Low Battery Fault, AC OFF	○	●	●
Output Off, AC ON, Battery Fault	☼	☼	●
Output Off, AC ON, Output Fault Pending	☼	○	●
Output Off, AC OFF, Output Fault Pending	○	☼	●
Output Off, AC OFF, Low Battery Fault	○	☼	●
Output On, AC ON, Over Voltage Fault	●	○	●
Output Off, AC ON, Over Voltage Fault	☼	○	●
Output Off, AC Off, Low Battery Fault	○	☼	●
Output On, AC ON, Over Voltage Fault	●	○	●
Output Off, AC ON, Over Voltage Fault	☼	○	●

PSU Fault

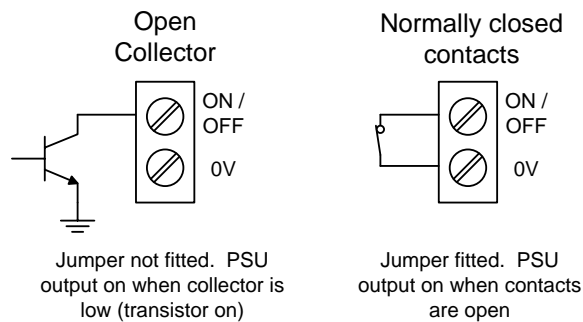
- The normally closed (NC) fault opto-relay will open with the following fault conditions:
- Thermal shutdown due to overload
- Switch mode low-voltage output power fault
- Switch mode over-voltage output power fault
- 12V output either shorted or overloaded
- Battery disconnected fault
- Low battery voltage fault

The relay contacts are voltage-free and floating. The PSU fault relay status will not be changed when the output is switched on or off using the ON/OFF input.

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 ON/OFF input is left unconnected when the jumper is not fitted, the power supply will be switched on.

Switching examples are shown below:



Battery Management

The battery is continuously monitored for connection and the charging output has reverse polarity and safe-area current-limit protection. The battery has deep discharge cut-out protection when operating in standby mode. The charging output uses constant current charging to reduce recharging times.

Maintenance

There are no serviceable parts or fuses. No maintenance is required other than routine periodic testing. **Please note that high voltage is present under the cage – handle with care. Do NOT touch. Do NOT remove the cage.**

Specifications

Power supply	Type A, Ungraded, Environmental Class 2
Voltage input	195VAC – 265VAC at 50 – 60Hz
AC input current	D1551 – 200mA, D1553 – 400mA
AC input fuse	D1551 – 1A, D1553 – 2A
Output voltage with AC power	Maximum 13.9V, minimum 13.5V
Output ripple	Less than 0.25V peak to peak at full rated output
Maximum output current at full load	D1551 – 1A, D1553 – 3A
Battery charging current and voltage	300mA maximum at 13.7V float charge voltage
Minimum standby output voltage	9.6V
Maximum Power input at full load	D1551- 16W ; D1553 – 47W
Fault Relay rating	60V at 100mA, 14ohms closed
Efficiency	85% @ 8A load
Maximum overvoltage cut-out	14.5V \pm 3%
Low battery fault	11V \pm 3%
Low-voltage power output fault	12.3V \pm 3%
Battery deep discharge voltage limit	10V \pm 3%
Automatic output reset time	10ms to 18s (<i>Depending on nature and duration of the fault</i>)
Operating temperate range	-10°C to +40°C
Humidity	95% non-condensing

1A version D1551	3A version D1553	Housing Type	Suitable batteries	Dimensions H x W x D (mm)	Weight (Kg)
D1551-A	D1553-A	Steel, small-size A housing	1 x 7/8Ah	235 x 170 x 85	1.35
D1551-B	D1553-B	Steel, medium-size B housing	2 x 7/8Ah	260 x 320 x 90	2.15
D1551-XB	D1553-B	Steel, Clam-shell lid XB housing	2 x 7/8Ah or 2 x 17Ah	295 x 425 x 90	2.45
D1551-XLB	D1553-XLB	Steel, standard-size XLB housing	2 x 7/8Ah or 2 x 17Ah	295 x 425 x 90	2.45
D1551-XLBD	D1553-XLBD	Steel, extra-deep XLBD housing	Up to 4 x 17Ah	295 x 490 x 165	4.65
D1551-C	D1553-C	Steel, large C-size housing	2 x 7/8Ah or 2 x 17Ah	345 x 430 x 90	3.55
D1551-E	D1553-E	Steel, very-large E-size housing	2 x 7/8Ah or 2 x 17Ah	405 x 500 x 90	6.05
D1551-G	D1553-G	Steel, extra-large G-size housing	2 x 24Ah or up to 4 x 17Ah	690 x 455 x 165	8.75
D1551-W	D1553-W	Plastic IP65, W-size housing	1 x 2.1Ah or 1 x 7/8Ah	245 x 195 x 90	1.70
D1551-P	D1553-P	PCB-only version	Depends on housing	140 x 96 x 42	0.25
Dycon Accessories, suitable for use with both D1551 & D1553, which can be specified to be factory-fitted into the PSU housing					
D15X8-500mA		8-way output splitter (8 x 500mA glass fuses)		49 x 108 x 17	0.70
D15X8-1A		8-way output splitter (8 x 1A glass fuses)		49 x 108 x 17	0.70
D15X4-BNP		4-way output splitter with 4 x BNC sockets & video loop-through		71 x 128 x 15	0.80
DFX4-0P		4-way output splitter with 4 x self-resetting PET fuses		40 x 60 x 19	0.20
DFR-1-12		12VDC universal output relay module		40 x 16 x 19	0.26

In case of problems, please telephone Dycon Technical Support on +44 (0)1443 471 90, or, email sales@dyconpower.com.