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New Enhanced Power Supplies

PS0 EL.N III – 24 V DC - Installation Instructions (March 2010 on)

INSTALLATION WARNING – This equipment **MUST BE EARTHED**

**Ensure cable at least 1.5mm is used - alarm or solid core cable MUST NOT be used.
Voltage drop calculations may be required as device takes 16.0 Amp surge current.**

See last page for cable size recommendations

The enclosure must be fixed to a vertical flat surface at a maximum ambient temperature of 45 degrees C in a well ventilated area. This power supply must be installed in accordance with the current IEE regulations covering low voltage power supplies complying with the low voltage directive SI 1994 No 3260 73/23/EEC (LVD)

Features:

- Two stage current protection.
- Short circuit protection.
- Thermal overload protection.
- Constant voltage regulation for battery charging.
- Mains failure or low battery voltage warning, user selectable
- Fire relay interface to fire alarm system.
- Enclosure door 3 LED status indicators.
- PCB mounted engineering status LED indicators, show:
 - Over current
 - Fire alarm relay status
- Battery management electronics providing:
 - Low voltage trip to disconnect battery and extend battery life.
 - Reverse battery polarity protection.

Description:

The power supply is designed to provide the Von Duprin with unregulated 24.0 volts DC at 20 Amps for 300ms. A regulated circuit charges batteries (if fitted) at float voltage of 27.6 V.

First stage current protection

If the load exceeds the power supply current rating, an electronic sensor detects this overload and folds the voltage back to 23.0 volts and provides current limiting, this is indicated by the red overload LED on the circuit board. **Second stage current protection:** A short circuit or severe overload will shut down the regulator & output voltage will be zero until the fault is removed.

Battery management, if battery fitted

Under normal conditions, the battery floats at 27.6 Volts. If the mains power fails, the battery takes the load. Eventually the voltage will drop to 21 volts & a relay disconnects the battery, this is automatically reset once the mains has been re-energised. This feature extends battery life by preventing deep discharging and prevents equipment malfunction.

User selectable voltage free relay warning - terminals WC WNO WNC rated 1.0 Amp

The electronic voltage detection circuit is configured by selecting a link switch on the PCB. The relay will trigger as set: **FR** – Fire relay **MF** - Mains failure or **LB** - Low battery 23.0 volts .

Fire control relay – terminals +NO & +NC rated 15.0 Amps

Terminals FR & FR (Fire relay) can be connected to a voltage free fire system and or access control system. Relay operation is indicated via the external yellow LED. If the fire relay is used, the positive supply is from either +NC (normally closed) and/or +NO (normally open) depending on desired relay operation.

Cabinet dimensions in mm: 325H * 255W * 90D



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Commissioning tests

Initial installation test

Prerequisites:

- Disconnect battery – if supplied with battery
- Disconnect all supplied equipment
- Place the handbag link to LB low battery (on PCB).

Test procedure

Switch on mains power; the following indicators should be illuminated:

- Red and Green – on the front panel
- Green on the PCB

Fire alarm relay

Switch off mains power & connect a link between terminals FR & FR
Switch on mains power – the yellow LED on front panel should now be lit,
Connect a meter between terminals 0V & +NO - this should be live at PSU output voltage

Switch off mains power & remove the link between terminals FR & FR, switch on mains power and connect a meter between terminals 0V & +NO which should be live at PSU output voltage. Observe LEDs switch off in the following sequence: Red then green on PCB then green on front panel last

Battery functionality – optional if fitted

Switch off mains power & connect the battery, place handbag link to MF (mains failure) switch on mains power, then switch off. The power supply is now running on the battery, note the green LED on PCB will be off but the green LED on the front panel will be on. The relay contacts WNO to WNC will change over

Tests with the load connected – battery not connected (if supplied): With the load connected, switch on the mains. The following LEDs should be on: red & green on front panel, green on PCB and yellow if using relay FR, this indicates the test & the power supply loading is correct.

If only the red LED is illuminated there is a short circuit with the load connected. If red, & green on the front panel with green and red (over load) on the PCB illuminated the connected load has exceeded the power supply rated output & must be reduced.

Front panel LED	PCB LED	Means
Red + Green	None	Normal operation
Red + Green + Yellow	None	Normal operation with fire relay energised
Green	Green if MFW *	Power supply on battery
Green + Yellow	Green if MFW *	Power supply on battery with fire relay energised
Red only	None	Dead short on output
Red + Green	Red	Current rating exceeded

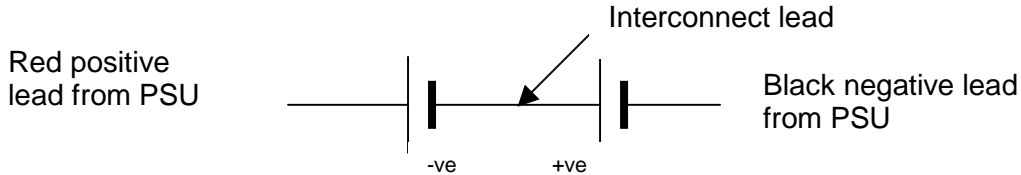
* MFW – mains failure warning if configured



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Battery connection, please note batteries must be used for 2 or 3 point devices

With the power supply switched off, connect the two 7A/hr batteries in series to provide 24 V DC using the black interconnect lead as shown below:



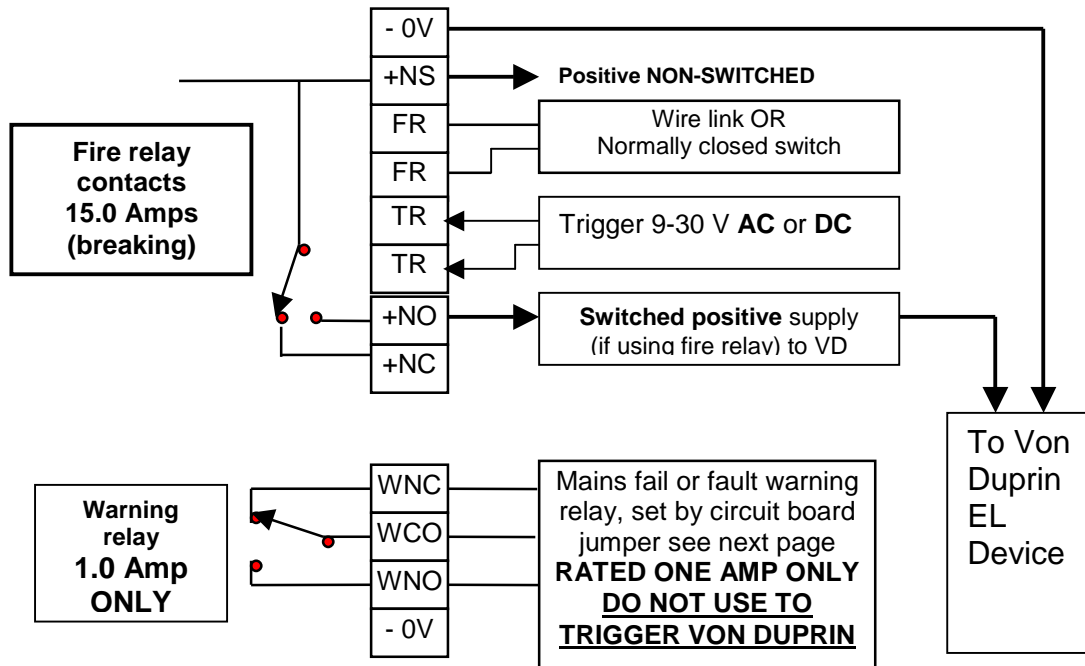
Von Duprin connection

The Von Duprin device is non polarity sensitive & requires a current of 16 Amps for 300ms to operate the latch electrically. It needs to be supplied from 0V & + NS or may be connected to 0V & either +NO or +NC for fire alarm relay switching – please consult for local fire alarm switching requirements. Ensure the device is connected with cable capable of carrying the initial surge current of 16 Amps.

Power supply connections - description

Please note:

- The fire alarm connection is now voltage free
- For fire alarm relay connection, connect volt free contacts FR & FR to normally open fire alarm relay contact see examples P3
- Trigger – to trigger the relay with a voltage connect a 9-30 V voltage source to terminals TR & TR
- Positive and negative (non switched) supplied from +NS & 0V



Relays shown in de-energised state



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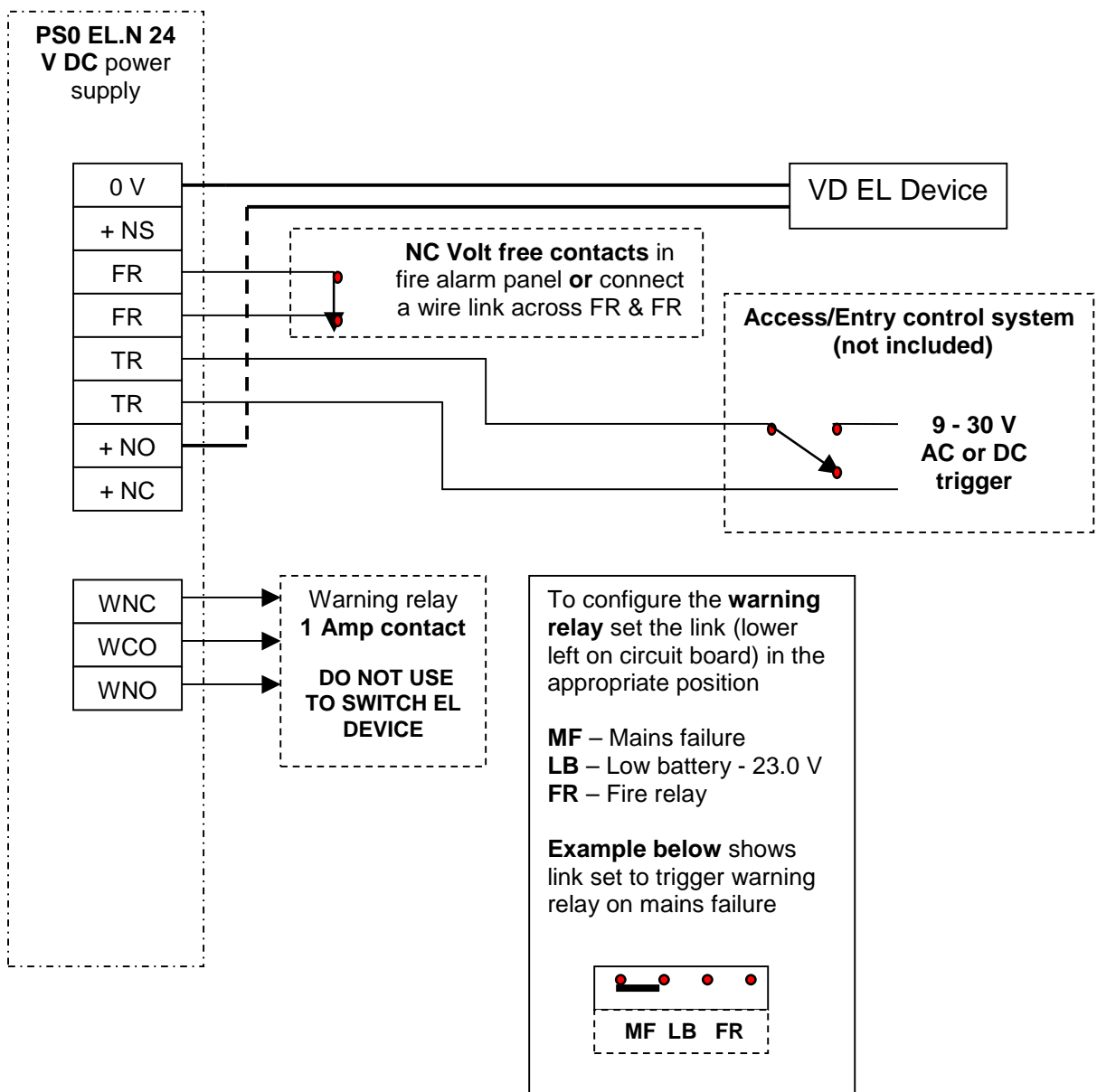
Von Duprin device supplied by PS0 EL - trigger by access control system

The supply is not regulated - access control devices and associated swipe card readers etc may require a separate supply.

In this example connection diagram:

- Von Duprin connected to terminals **0V** & **+NO** - not polarity sensitive.
- Connect a wire link or normally closed fire alarm switch to terminals **FR** & **FR**.
- Connect a trigger voltage - such as access control system or entry phone of 9 - 30 Volts AC or DC to terminals **TR** & **TR** - not polarity sensitive.

This is a sample diagram only and actual installations may be different.





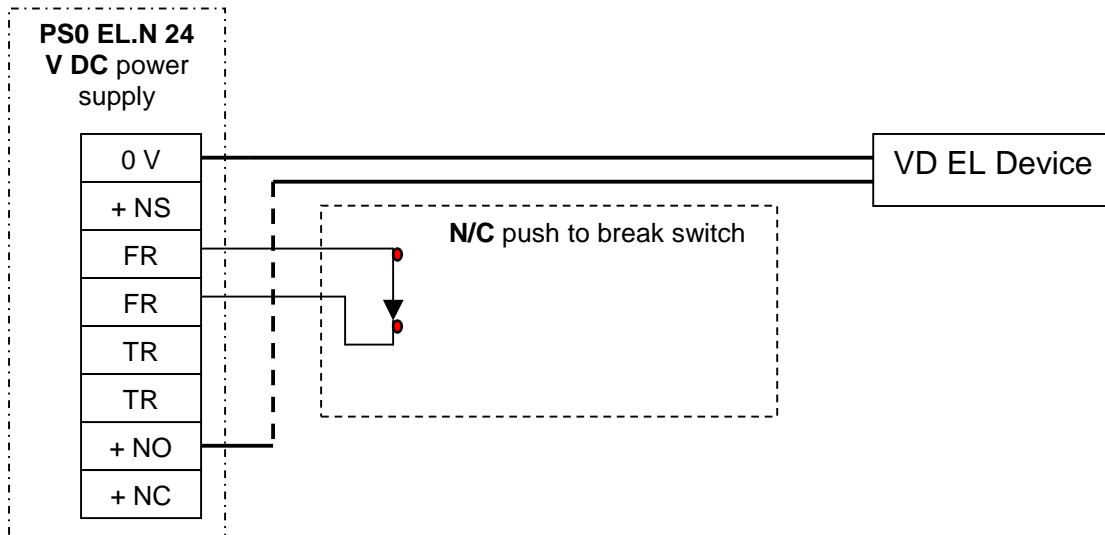
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Von Duprin device supplied by PS0 EL – simple trigger circuit

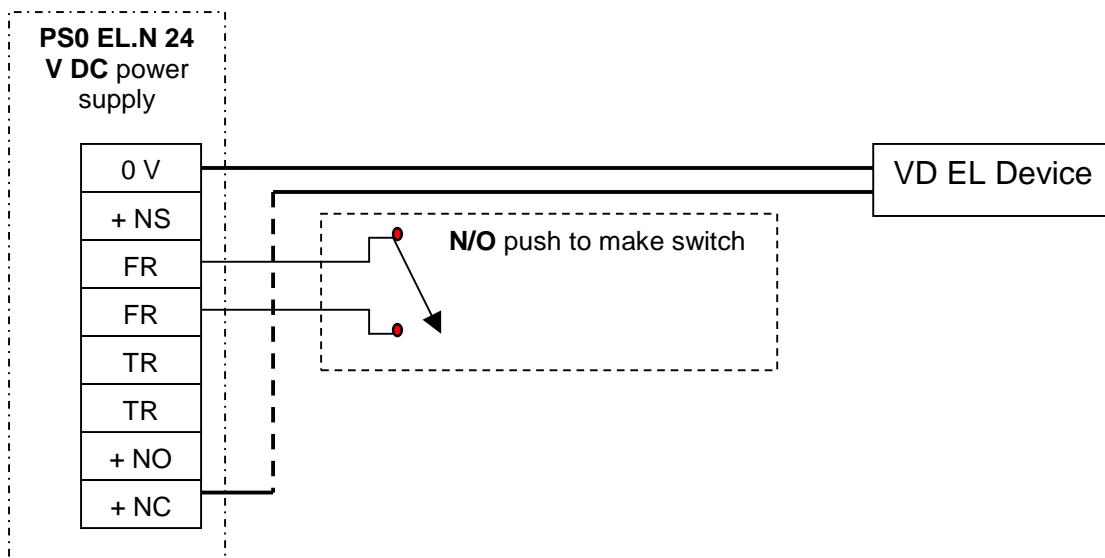
In this example connection diagram:

- Von Duprin connected to terminals **0V** & **+NO** - not polarity sensitive.
- Connect a N/C or N/O push to break or make switch to terminals **FR** & **FR**.

These are sample diagrams only and actual installations may be different.



Or with a push to make switch, connect EL device between 0V & + NC



Cable selection

The Von Duprin device takes a current of 16 Amps for 300 mill-seconds.

Solid core cable, network or alarm cable MUST NOT BE USED

Relcross recommend connecting the Von Duprin device to the power supply with a multi-stranded cable of **at least** 1.5mm for up to 3 metre runs & 2.5mm cable for a cable run up to 5 metres.

For long cable runs voltage drop calculations for a 400W surge must be carried out.