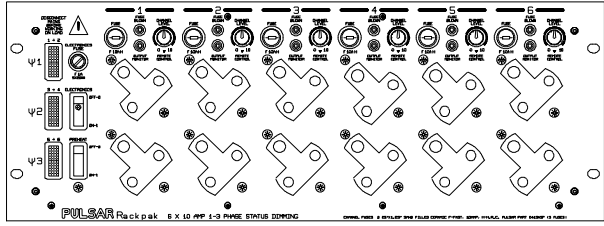
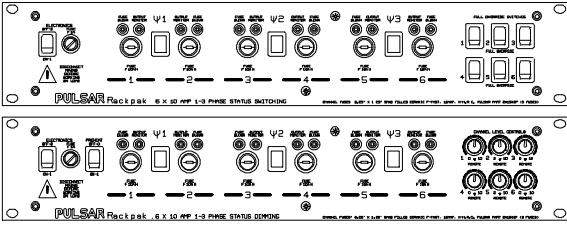


# 2U AND 4U RACKPAKS



## PRODUCT SELECTION GUIDE

Product Code	Output Connection Type	Dimming	Switching	5A per Channel	10A per Channel	Single Phase	3 Phase or 2 Pole Single Phase	Level Controls and Status Neons	2U (88mm) high cabinet	4U (176mm) high cabinet	Resistive and/or Inductive Loads	Optional output socket panels	PMX/DMX to 0-10V Kit (Part 28806)
25902AA	Hardwired	•	•	•	•	•	•	•	•	•	•	•	•
25902ST	Hardwired	•	•	•	•	•	•	•	•	•	•	•	•
28802ST	Hardwired	•	•	•	•	•	•	•	•	•	•	•	•
25802AA	Hardwired	•	•	•	•	•	•	•	•	•	•	•	•
25802ST	Hardwired	•	•	•	•	•	•	•	•	•	•	•	•
28702ST	Hardwired	•	•	•	•	•	•	•	•	•	•	•	•
21112DX	Schuko	•	•	•	•	•	•	•	•	•	•	•	•
21112ST	Schuko	•	•	•	•	•	•	•	•	•	•	•	•
21112TE	Schuko +	•	•	•	•	•	•	•	•	•	•	•	•
21113ST	110V	•	•	•	•	•	•	•	•	•	•	•	•
21115ST	French	•	•	•	•	•	•	•	•	•	•	•	•
21116ST	IEC	•	•	•	•	•	•	•	•	•	•	•	•
21117ST	5A	•	•	•	•	•	•	•	•	•	•	•	•
21118ST	15A	•	•	•	•	•	•	•	•	•	•	•	•
21119ST	CEE17	•	•	•	•	•	•	•	•	•	•	•	•
26452AA	Hardwired	•	•	•	•	•	•	•	•	•	•	•	•

The **Rackpaks** are capable of controlling resistive or inductive loads, making them suitable for running all types of low voltage lamps (including Pincots and projectors), electric motors, neon lights, properly ballasted fluorescent lamps etc. besides ordinary resistive tungsten lamps. These different types of loads may be mixed in any combination.

The **Rackpaks** are not suitable for capacitive loads.

## INSTALLATION

**INSTALLATION AND SERVICE** must only be carried out by suitably skilled and competent persons. The Rackpaks must be connected in accordance with current local and national wiring regulations. When not in use for a period of time or before working on the lighting installation replacing lamps or loads, the Rackpaks should be isolated (disconnected) from the mains supply. If the Rackpaks are not installed or operated according to this instruction leaflet then the protection provided by the Rackpaks may be impaired.

### WARNING - THIS APPLIANCE MUST BE EARTHED

**INSTALLATION AND VENTILATION** All Dimming and Switching Packs generate a certain amount of heat, so it is essential to leave a 25mm air gap around the Rackpak. Rack cabinets should be ventilated or open backed.

Do not obstruct the cooling air inlets on both the sides and base of the 2U Rackpaks. The 2U 6x10A Dimming Rackpak contains a fan.

If three or more 4U Rackpaks are used together in a stack and are more than 50% loaded, they should be separated by a 1U vent panel - see **Accessories**. (If in doubt use a vent panel).

4U wall mounting brackets (Stock No.25033) are available to mount on and suitably space your Rackpak from a wall.

## CONNECTIONS

### MAINS SUPPLY

**Important:** For your Safety the Pulsar Rackpak must be Earthed. We recommend a Residual Current Circuit Breaker and Local Isolator fused for the maximum current taken by the load. You might find a Pulsar Mains Distribution Unit suitable.

**Mains Supply:** 100-240VAC +/-10%, 48-62Hz, auto-sensing.

**Phases:** 1 Phase or 1-3 Phase - see table and/or lid printing.

**Power Consumption:** The Pulsar Rackpak itself uses very little power, so the maximum power consumed (when all the lights are on full) = the total wattage of lamps connected. The maximum load per channel is 5 or 10 Amps - see Front Panel.

### MAINS CONNECTIONS

**Live, Neutral and Earth Inputs:** Use the internal brass connection blocks to connect the incoming mains supply cables. See lid or back panel printing for 1 Phase / 3 Phase Delta / 3 Phase Star / 2 Pole 1 Phase arrangements.

**Important:** when connecting your live phase cables be sure to re-connect the ring connectors which take this supply to the front panel fuse holders. The ring connectors must be in direct contact with your incoming cable.

### OUTPUT CONNECTIONS

**4U Rackpaks** are provided with socket options on the front panel. The **21112TE** version is also provided with a 16 pin Harting socket on the rear panel. The connections for the Harting socket are:

CHANNEL No.	1	2	3	4	5	6
LIVE	1	2	3	4	5	6
NEUTRAL	9	10	11	12	13	14
EARTH/GROUND	CHASSIS					

Suitable Harting Top Entry Cable Plugs are available from Pulsar (Stock No. 24461SP).

**2U Rackpaks** are provided with lever operated terminal blocks, two terminals per channel, for connection to your lamps etc.. Use a small bladed screwdriver or similar to operate the lever.

**Max cable size:** 2.5 sq.mm. Various pre-wired socket panel options to replace the cable gland panels supplied are available (see **Accessories**).

**Important:** when using a 2U Rackpak with a 3 phase delta supply use the correct neutral terminal block - see lid printing for channel numbers.

### SIGNAL CONNECTIONS

are made using the socket provided (8 pin DIN) on the back panel. The **Optional PMX/DMX KIT (Part 28806)** may be fitted, allowing Digital Control of the Rackpak via XLR connectors.

**Analogue Control Signals:** One 8 pin DIN socket is provided. The pin connections are:

Pin 1 = Low Voltage Supply Out	Pin 5 = Channel 3
Pin 2 = Chassis Earth	Pin 6 = Channel 4
Pin 3 = Channel 1	Pin 7 = Channel 5
Pin 4 = Channel 2	Pin 8 = Channel 6

**Digital Control Signals:** Two 5 pin XLR connectors (in / thru) are provided for the digital inputs. The pin connections are:

<b>PMX SIGNAL AND LV SUPPLY</b>	<b>DMX SIGNAL AND LV SUPPLY</b>
Pin 1 = Chassis Earth - Screen	Pin 1 = Chassis Earth - Screen
Pin 2 = Signal	Pin 2 = Signal -
Pin 3 = Signal Earth	Pin 3 = Signal +
Pin 4 = no connection	Pin 4 = no connection
Pin 5 = Low Voltage Supply Out male XLR only	Pin 5 = Low Voltage Supply Out male XLR only

**Note:**  
 • Pins 4 and 5 are occasionally used by other manufacturers for data. We recommend the use of 2 core plus screen cable, leaving pins 4 and 5 open circuit, to connect to this type of equipment. However, the Low Voltage Supply on pin 5 of the male XLR is limited to cause no harm to such equipment

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#### Technical Details:

- 0V = Off (Dimming and Switching Rackpaks)
- >+3V = Full On (Switching Rackpaks)
- +10V = Full On (Dimming Rackpaks)
- The input impedance is 100k ohms.
- The **Low Voltage Supply (LV Supply)** available for a Controller from pin 1 of the DIN socket or pin 5 of the XLR male chassis connector is +13...25VDC at up to 40mA.  
Note: With mains voltages <110VAC, the LV Supply may fall below the +16.5VDC needed to run a Pulsar Touch Panel - use a Pulsar Power Supply Unit to power it.
- Analogue control cables do not need to be screened as the inputs of the Rackpak are filtered against hum and interference.
- The cables may be as long as necessary and the minimum size of their conductors is limited only by considerations of mechanical strength.

### FRONT PANEL CONTROLS AND INDICATORS

**Phase Supply Neons** show when there is mains voltage present at the Rackpak. Disconnect the Rackpak from the mains supply before working on the lights.

**Fuse Blown Neons (Red)** light when channel fuse has blown.

**Channel Fuses:** If a channel fuse blows, isolate the Rackpak from the supply. A suitably skilled and competent person must then locate and rectify the fault in the lighting system before changing the fuse. These fuses normally only blow if the output is overloaded. Do not exceed the maximum load stated on the Front Panel per channel and do not short circuit the outputs. We recommend that you check your lighting equipment regularly for damaged wiring, loose connections and potential short circuits.

**Important** - Only the type of fuse specified on the front panel may be used - other types will not protect the triacs.  
Fuses are available in packs of 5 from your distributor or direct from Pulsar (5A - 24153SP, 10A - 24154SP).

**Electronics On/Off switch with built in indicator neon** controls the power to the electronics.

**Electronics Fuse:** Failure indicates an internal fault and servicing by a qualified engineer will be required.

#### Dimming versions only

**Lamp Preheat switch** prevents the lamp filaments from cooling right down. This prevents the heavy surge currents that occur when cold filaments are switched on and thus extends lamp life.

#### ST Dimming versions only

**Level Controls** allow checking of lamps etc. and the use of "stand alone" mode. For use with a Remote Desk the Level Controls should be set to the Remote Control position.

#### ST Switching versions only

**Full Override Switches** allow checking of lamps etc. and the use of "stand alone" mode. For use with a Remote Desk the switch should be set to the off position.

#### ST versions only

**Output Monitor Neons (Green)** show the status of the output.

### OTHER INFORMATION

**WARNING - FUSING OF INDUCTIVE LOADS** In the unlikely event of a fault developing in your Pulsar Rackpak, it is possible that damage could occur to incorrectly fused transformers or ballasts of inductive loads if you do not switch off within about one minute of the fault occurring. Make sure that your inductive loads are fitted with the lowest value of **anti-surge** fuse that does not blow in normal use. If in doubt contact Pulsar.

**WARNING - CAPACITIVE LOADS** Remove all Power Factor Correction capacitors. Damage to your load may occur if this is not done. Pulsar cannot be held responsible for damage to capacitive loads under these circumstances. If in doubt contact Pulsar.

**INTERFERENCE SUPPRESSION** The Dimming Rackpaks have a comprehensive choke/capacitor interference suppression system and the Switching Rackpaks have zero voltage switching which reduce the level of interference produced to below the levels required by EN55014, BS800, VDE0875 etc.. However, a small amount of residual interference always exists with this type of equipment, so it is advisable to keep all lighting and mains leads associated with the Rackpak as far away as possible from sensitive microphone or guitar pick up leads and A.M. radios; by doing this we do not envisage any problems.

**MAINTENANCE** Pulsar Rackpaks use the very latest techniques (pioneered by us) to eliminate completely the need for routine adjustments. The sophisticated circuits we have developed are self stabilising against changes in mains voltage, mains frequency, top and bottom control voltage levels, preheat drift, drifting of component values, etc..

**PORTABLE APPLIANCE TESTING** - The Rackpaks may be safely Earth Bond and Insulation Tested (500V).

**STANDARDS** - The Rackpaks comply with the following International and National Standards:

**Electrical Safety** - IEC65, EN60065, BS415

**EMC** - EN50081-1, EN50014, EN55022, EN50082-1

**Rack Mounting** - IEC297

**Index of Protection** - IP20



**Marking Directive 93/68/EEC** - The Rackpaks meet both the EMC Directive 89/336/EEC and the Low Voltage Directive 73/23/EEC.

**GUARANTEE** Your Rackpak is guaranteed for a period of 12 months from the date of original purchase. The guarantee is limited to parts and labour. The guarantee is void if the unit is misused, repairs are performed by unauthorised persons or the incorrect type of fuse has been used. In the unlikely event of a fault occurring in the Rackpak do not use without repair. Return the unit, with a description of the fault, to your supplier or direct to Pulsar for immediate attention.

### ACCESSORIES

The following products have been designed to work with and complement the Pulsar range of 2U and 4U Rackpaks. Please contact us to receive details of these superb products.

#### Digital Control

##### Product No. Controller

23000	48 Ch. Masterpiece Control Desk
24000	108 Ch. Masterpiece Control Desk
27500	48/108 Ch. Masterpiece Replay Unit
27350	18 Ch. Universal Interface
27300	36 Ch. Universal Interface
<b>28806</b>	<b>6 Ch. PMX/DMX to 0-10V kit for Rackpaks</b>

#### Analogue Desks and Controllers

A range of single and two preset Control Desks, Rock Desks, Modulators and Touch Panels.

#### 19" Racks and Accessories

4U, 8U, 12U, 20U, 29U and 38U Racks	
1U, 2U, 3U and 4U 19" Blank and Ventilation panels	
25119	2U rear support bracket
25120	4U rear support bracket

#### Wall Mounting Brackets

25033	4U wall mounting bracket
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#### Pre-wired Socket Panels for 2U Rackpaks

##### Product No. Socket Option

28901.1	2 x Bulgin P552
28901.2	1 x Socapex
28901.3	3 x 110V (USA)
28901.4	3 x IEC (with plugs)
28901.5	6 x IEC in 3 series pairs (with plugs)
28901.6	6 x IEC in 3 parallel pairs (with plugs)
28901.7	1 x Harting (German)
28902.8	3 x Schuko
28902.9	3 x French
23703	4 x IEC (for 26452AA - 8x5A Dimmer)
28902.3	4 x 110V (for 26452AA - 8x5A Dimmer)

#### Bare Socket Panels for 2U Rackpaks

##### Product No. Socket Option

28901	3 x 20mm Knockouts (fitted as standard)
25408	4 x 20mm Knockouts (standard on 26452AA)
25403	1 x Harting (German)
28901.8	3 x Schuko/French/Swiss

#### Cable Plugs for 4U Rackpaks

##### Product No. Plug Option

24461SP	Harting 16 pin Top Cable Entry
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#### Lanterns

A comprehensive range of Stage, Rock and Effects Lanterns, and PAR36 and PAR46 Pinspots.

#### Mains Distribution

A range of Mains Distribution Units allowing up to 360A to be distributed via a Residual Current Circuit Breaker and Miniature Circuit Breakers. These are recommended for your safety.

#### Signal and Mains Patches

##### Product No. Patch

26350	2U Mains Patch for 18 Lanterns
26250	3U Signal Patch

### DIMENSIONS AND WEIGHTS

**2U RACKPAK DIMENSIONS** are 482.6 x 88.9 x 240mm

**2U RACKPAK WEIGHTS** are typically 6.0Kg

**4U RACKPAK DIMENSIONS** are 482.6 x 177.8 x 240mm

**4U RACKPAK WEIGHTS** are typically 8.0Kg