

DPX4/10

DMX Power Pack

- Operates from 110V AC to 230V AC with no adjustment
- Operates on 50Hz or 60Hz supplies
- 10A (2300W) per channel maximum
- 9.2kVA maximum (on 230V AC supply)
- DMX Controlled
- Terminal block input and output connectors
- 5-pin XLR or terminal block DMX connections

IMPORTANT

Installer and Users please note:

These instructions should be read carefully and left with the user of the product for future reference.

INSTALLATION.

The DPX4/10 must be installed by a competent electrician in accordance with the current IEE Wiring Regulations.

Fixing

The DPX4/10 may be fixed to a wall using screws. Three fixing holes are provided, in the two bottom corners, and centrally at the top which may be used with No.8 screws. If used at full capacity, ensure adequate ventilation.

Mains input

Remove the top cover fixing screws, and remove the top cover.

Connect the incoming mains supply (110V to 230V) to the Live, Neutral and Earth terminals of the terminal block using cable rated according to the maximum total load in use.

The 20mm cable grips may be replaced by cable glands if required.

- Live to the terminal marked L
- Neutral to the terminal marked N
- Earth to the terminal marked with the Earth symbol.
- **The DPX4/10 must be earthed.**
- **The DPX4/10 cannot be used with a DC supply.**

If connected to a supply of lower capacity than 40A, the outputs must be reduced as follows:

- **For a 13A 230V supply**, the maximum total load is 2990W which can be made up of:

either: 745W watts on each of the four channels

or: different loads on each channel so that the total does not exceed 2990W (but not more than 2300W on any one channel)

or: 2300W load may be connected to all four channels provided that the unit is operated so that all four channels are not switched on together at full power.

- **For a 15A 110V supply**, the maximum total load is 1650W which can be made up of:

either: 410W watts on each of the four channels

or: different loads on each channel so that the total does not exceed 1650W (but not more than 1100W on any one channel)

or: 1100W load may be connected to all four channels provided that the unit is operated so that all four channels are not switched on together at full power.

- **For a 16A 230V supply**, the maximum total load is 3680W which can be made up of:

either: 920W watts on each of the four channels

or: different loads on each channel so that the total does not exceed 3680W (but not more than 2300W on any one channel)

or: 2300W load may be connected to all four channels provided that the unit is operated so that all four channels are not switched on together at full power.

- **For a 32A 230V supply**, the maximum total load is 7360W which can be made up of:

either: 1840W watts on each of the four channels

or: different loads on each channel so that the total does not exceed 7360W (but not more than 2300W on any one channel)

or: 2300W loads may be connected to all four channels provided that the unit is operated so that all four channels are not switched on together at full power.

- **For a 40A 110V supply**, the maximum total load is 4400W, 1100W watts on each of the four channels

For high-inrush loads (Halogen lamps, motors, transformer operated devices) the outputs should be de-rated appropriately, to 1200W per channel for the most severe inrush loads.

Outputs

Connect the live and neutral cables to the output loads to the terminal blocks. Connect the earths to the Earth terminal block adjacent to the mains input.

Fusing

If connecting multiple loads to each output, reliability will be improved if each load is fitted with its own fuse, of an appropriate rating. In the case of a lamp failure, the lamp fuse will then blow, not the fuse in the power pack. The other loads on the same channel will then continue to operate.

This greatly reduces the chance of a triac failure.

The following loads MAY be connected to the DPX4/10

- 230V filament or halogen lamps
- Low voltage halogen lighting via standard transformers

Connect the output of the DPX4/10 to the input of the transformer. It is also possible to control multiple channels of low-voltage lighting from a single transformer - refer to "Using the DPX4/10 with a low-voltage supply" on page 10.

- Low voltage halogen lighting via "Electronic" Transformers.

*Low voltage halogen lighting powered by so-called "Electronic Transformers" may be connected to the DPX4/10 provided that the transformers are suitable for **Leading-edge-modulated dimmers**. Flickering or failing to dim is a sign that the transformer is not of a suitable type. NJD recommends using standard laminated or toroidal transformers for low voltage halogen lighting.*

- Fluorescent lighting via a dimming ballast

Dimming ballasts are no longer readily available, a better solution would be to use an electronic ballast with a 0-10V or 1-10V input (which are easily obtained) instead of the DPX4/10, and the NJD IF16 or IF32 to convert from DMX to 0-10V.

- Neon

*If using an electronic power supply, it must be suitable for connection to **Leading-edge-modulated** dimmers. Neon will only dim down to about 30% of full brightness, then it will extinguish. At around 30% brightness it may flicker. Connect the input of the neon transformer to the output of the DPX4/10.*

- Universal motors

The DPX4/10 will act as a speed control.

The following are NOT suitable for dimming. They may be connected to the DPX4/10 provided that the channels only operated at zero or full brightness.

- Low energy fluorescent lighting (*with built-in electronic ballast*)
 - Standard fluorescent lighting
 - Synchronous motors
 - Induction motors
 - Lighting effects
 - Strobe lighting
 - Discharge lighting
 - Audio amplification
 - Other lighting controllers
 - Smoke machines.

Use a switching pack such as the NJD SP10000 for these applications.

Interference.

The DPX4/10 is fully suppressed against interference to European Standards, but problems may be encountered if running the output cables too close to sensitive audio circuits. Improved performance can be achieved as follows:

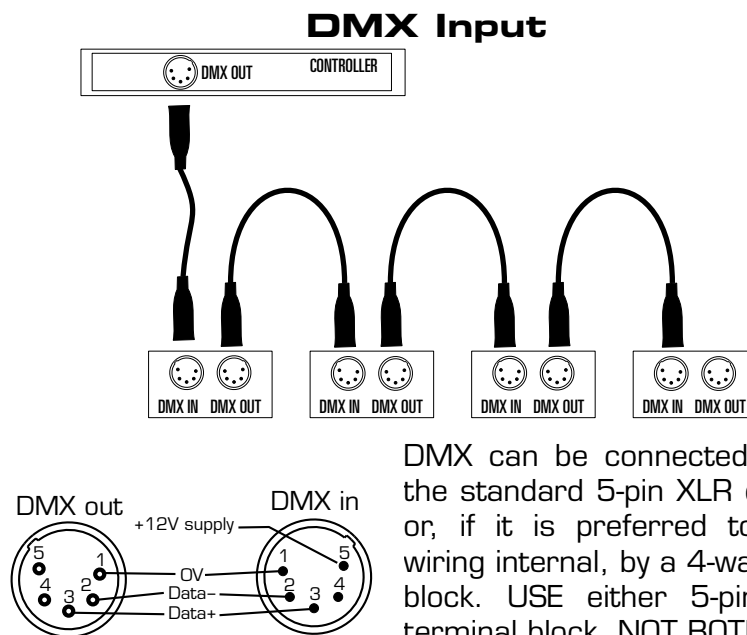
- Each output channel should have its own separate neutral wire of the same length and thickness as the live wire
- Each live output wire should be twisted together with its corresponding Neutral.
- The neutrals from all four channels should be commoned only at the terminal block inside the DPX4/10.

Changing a triac.

Triacs are mounted in terminal blocks to allow them to be changed without dismantling the unit.

First, ascertain the reason for the triac failure. If it was caused by overload or a wiring fault, then the new triac may fail as well. Then, disconnect the power, and remove the lid. Each triac is mounted on the heatsink with an M3 torx-headed screw. Remove the faulty triac and replace with a type BTA16-600B or equivalent.

The replacement triac must have an isolated fixing tab. Ensure all screw connections are tight. Replace the lid, and reconnect the power.



DMX can be connected either by the standard 5-pin XLR connector, or, if it is preferred to keep all wiring internal, by a 4-way terminal block. USE either 5-pin XLR or terminal block, NOT BOTH.

To connect to a controller using 5-pin XLR connectors: Connect a DMX lead from the **DMXout** from the controller to **DMXin** on the first DPX4/10. Connect a DMX lead from the **DMXout** jack on the first DPX4/10 to **DMXin** on the second. Connect from **DMXout** on the second DPX4/10 to **DMXin** on the third, and so on. If the DPX4/10 is the last product in the chain (i.e. it has no plug in its **DMXout** socket) then connect a 120Ω ¼W resistor between Data+ and Data-, on a 5-pin XLR plug connected to the DMXout socket

An extra +12V supply on pin 5 of the DMXin socket to provide power for remote controls. This voltage does not exceed the RS485 maximum voltage specification, so no damage will result if a DMX connection using pins 4 and 5 is connected to the pack.

If using the internal 4-way terminal block, both input and output are connected to the terminal block. Do not connect to the

+12V terminal unless it is required to supply power to a controller. If the DPX4/10 is the last product in the chain then connect a 120Ω $\frac{1}{4}W$ resistor between Data+ and Data- on the terminal block.

A RJ11 connector is also provided so that the DPX4/10 can be controlled by a hand-held remote control.

Additional information on DMX

The DMX system is a high-speed digital data system, which can transmit all the information required for light dimmers, multi-motor lighting effects etc. down a single cable. Up to 32 DMX controlled products may be connected to the DMX signal, and it is recommended that the total cable length should not exceed 250m.

Each unit connected to the DMX signal is given an address, and it compares this to the data being sent on the DMX cable, so it can determine which data is addressed to it. It then uses this data to move a motor or set a brightness level as required by the controller. As the DMX system can transmit as much information as 512 analogue control wires down a single cable, it has to transmit very quickly, in fact, at a frequency 12 times higher than the highest audio frequency. Anyone who has used long leads for audio will realize that it is difficult to do without losing the higher frequencies.

To make the DMX system work at such high frequencies, it requires special circuitry and special cable. Cable can be designed to pass high frequencies with no loss if it has the correct resistance connected at each end. Without it, the signal reflects off the end of the cable and interferes with the new data coming the other way. If the cable is not correct, the system will not work. Most good quality low-capacitance screened twisted pair cables will work, but twin individually screened will not. Also, if the cable is split or joined other than end-to-end, the system will stop working.

Setting up.

DMX Address.

To set the address, add up the numbers of the switches that are ON and add ONE. Example: To set DMX address 41, set switches "32" and "8" ON and all the others off: $32+8+1 = 41$

The Data Present led will light constantly if the DPX4/10 is receiving DMX data or will flash if the pack is powered up but no DMX signal is present. If the pack loses the DMX signal whilst it is operating, it will remember the last settings that were sent.

Output channel #1 will be controlled by the address set on the DMX address switches.

Output channel #2 will be controlled by the next DMX address (42 in the example above)

Output channel #3 will be controlled by the address set on the DMX address display plus 2 (Channel 43 in the example above).

Output channel #4 will be controlled by the DMX address set plus 11 (Channel 44 in the example above)

Preheat.

Preheat allows a small current to be passed through the filaments of lamps which are 'off'. This current is not sufficient to illuminate the lamp, but keeps the filament warm enough to prevent a large surge when the lamp is brought up to full brightness. This increases lamp life.

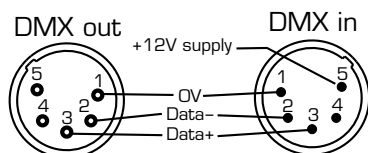
To enable preheat, set the PREHEAT switch ON.

Technical Specifications.

Dimensions:	215 × 210 × 50mm
Weight:	1.5kg
Degree of Protection:	IP30
Power Supply:	110-230V AC 50/60Hz
Rated Insulation voltage:	440V AC
Conditional Short Circuit current:	1500A
Earthing System:	TT or TN-C-S
Power:	9200W @ 230V AC 4400W @ 110V AC
Current:	40A rms.
Maximum load per channel:	10A 2300W @ 230V AC 1100W @ 110V AC
Fuses	F10A HBC to IEC127

(HBC means 'high breaking capacity' - a HBC fuse has a ceramic case.)

DMX input/output:	complies with DMX512 (1990) 4µsec
Connectors:	5-pin XLR
Data+:	Pin 3
Data-:	Pin 2
Earth:	Pin 1



A +12V supply is also provided on Pin 5 of the DMXin socket.

Additional connectors:	4-way terminal block RJ11 connector
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Standards

The DPX4/10 complies with:

EN60439 Part 1 (European Standard for Safety of Electrical Switchgear)

EN55015 (European Standard for Electromagnetic Compatibility)

Fault Finding

- **All outputs permanently off - power indicator off**

Mains supply switched off

- **All outputs permanently off - power indicator on**

DMX address set wrongly, DMX controller is set to zero

- **All outputs permanently off - power indicator flashing**

DMX input not present, or wrongly connected.

DMX address switches set to an address which is above the range of channels output by the controller.

- **Output permanently off - channel led lights normally**

Blown fuse - replace by correct type of fuse.

- **Output permanently on - led lights normally**

Failed triac (most likely)

- **Output permanently on - led permanently on**

DMX channel set to full output

- **Outputs erratic**

DMX connection poor. Could be caused by:

wrong type of cable - twisted pair, preferably screened

Data+ and Data- reversed.

No termination resistor on long cable.

- **Interference on sound system**

Sensitive audio connections run too close to dimmer outputs.

Live and neutral to each channel run separately (live cable should be run as close as possible to the neutral for the same channel),

Neutrals from various channels commoned. (Neutrals should be run separately back to the dimmer pack)

- **Flickering on low voltage lighting supplied by "electronic" transformers**

"Electronic" transformer not suitable for leading-edge modulated dimmer.

- **All outputs remain slightly on when inputs are off**

Preheat On.

- **Motor speed remains constant, but stalls at low output settings**

Only certain types of motor may be speed controlled from a dimming pack. Induction and synchronous motors cannot.

- **Transformers fail in low-voltage lighting connected to the dimming pack**

Lamps are being flashed on and off too quickly.

A "half-wave" failure of a triac may damage transformers in low-voltage lighting, if the low voltage lighting transformers are incorrectly fused.

Guarantee

This product (except fuses and triacs) is guaranteed for a period of 12 months against faulty components or manufacture from the date of purchase. Upon proof of purchase, NJD shall, at its own option, repair or replace the defective item at no cost to the purchaser.

This guarantee is contingent upon the proper use of the product in the application for which it is intended and does not cover products that have been modified, subjected to unusual physical conditions, or electrical conditions outside its specification, or damaged in any way.

This guarantee is limited to the product only and does not cover carriage costs, installation costs or travel expenses. Your statutory rights are not affected.

In the event of any problems with this product contact the retailer from which it was purchased for technical assistance, or e-mail technical@njd.co.uk

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