



Four-channel
DC Controller DMX
Instruction & Maintenance
Manual

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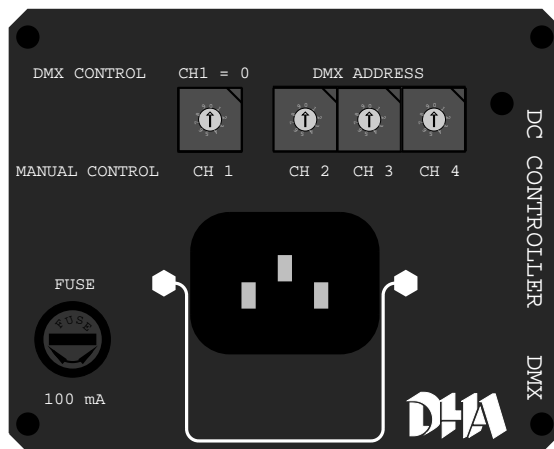
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Four Channel DC Controller DMX

The DHA Lighting DC Controller DMX supplies power for up to four Varispeed moving effects units. Speed and direction of the effects are remotely controlled via a DMX512 input port or can be preset from the front-panel controls.

The controller can drive one Varispeed effect per channel. Typical speeds obtained are 0–20rpm for Gobo Rotators (0–10rpm for the Double Gobo Rotator) and 0–5rpm for Yoyos and Animation units.



Front Panel Controls

The front panel controls comprise four rotary switches, each marked 0–9, and a status indicator LED. Also on the front panel are an IEC mains input socket and fuse. The mains supply voltage (non-dim) is selectable internally. The set voltage is marked on the base of the unit.

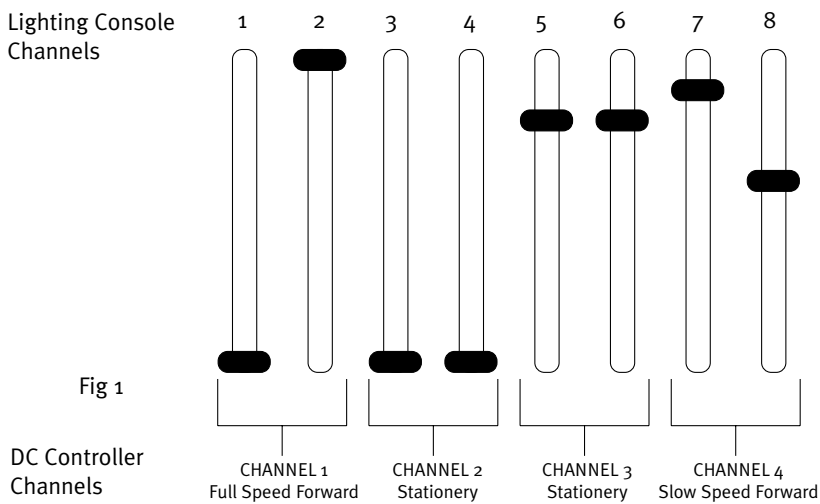
DMX Operation

With switch 1 (far left) in position 0, the DC controller DMX can be remotely controlled from a lighting console, or similar device, capable of producing a DMX512 signal. Switches 2, 3 & 4 are used to set the DMX address. Eight consecutive DMX channels are required.

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Rotation Direction

Two DMX channels are used to control each DC controller channel – one for forward speed and one for reverse. The speed and direction of the DC controller output are derived from the difference between the levels of these two signals (see example in Fig.1). Effect speed is continuously variable from zero to maximum in either direction. The response has been tailored to give greater control at the lower end of the speed range. Where more than one effect unit is used, the direction of motor rotation will remain consistent between units. However, the apparent direction of the on-stage lighting effect is dependent on the focus of the individual effect and on the viewpoint of the observer.



Manual Operation

Where switch 1 is set to any value other than zero, the outputs of the effect channels 1 to 4 are directly controlled by switches 1 to 4 respectively and any DMX signal is ineffective.

The speed of each effect is variable in discreet increments from zero to nine ranging from stationary to maximum speed for the effect. There is no control over direction in this operating mode and all effects will move in the nominal 'forward' direction.

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Status LED

DMX Mode (Switch 1 = 0)

When the unit is operating correctly the status LED will be on continuously except for a blink every 2.5 seconds. If the device detects any faults or error conditions the LED changes to a flashing pattern consisting of two flashes then a pause. Each flash corresponds to a particular type of error and will be a long flash if that error has occurred or a short flash if it has not.

If the DC Controller DMX is not receiving all eight channels of DMX, error 1 will be signalled and the device will not function in DMX mode.

The DC Controller DMX requires eight consecutive channels of DMX to operate, eg.

Unit 1 Forward	DMX Address	
Unit 1 Reverse	Address + 1	
Unit 2 Forward	Address + 2	
Unit 2 Forward	Address + 2	etc until
Unit 4 Forward	Address +6	
Unit 4 Forward	Address +7	

Manual Mode (Switch 1 ≠ 0)

The LED is off except for a short flash every 2.5 seconds. No program detectable errors are possible in this mode.

Status LED Codes

Flash	Error	Explanation
1	No DMX Data	No DMX has been received for over a second.
2	DMX Data Error	Bad data on DMX line (framing error). – resets automatically 10 seconds after last occurrence.

Load Compensation

Each channel of the DC controller has automatic, load-compensation circuitry. When operating at slow speeds, the mechanical load on the motor being driven is monitored, and compensated when necessary, by an automatic increase in output voltage to maintain constant speed. This occurs for heavy or uneven loads (eg. the Yoyo effect which has greater resistance during its upward travel).

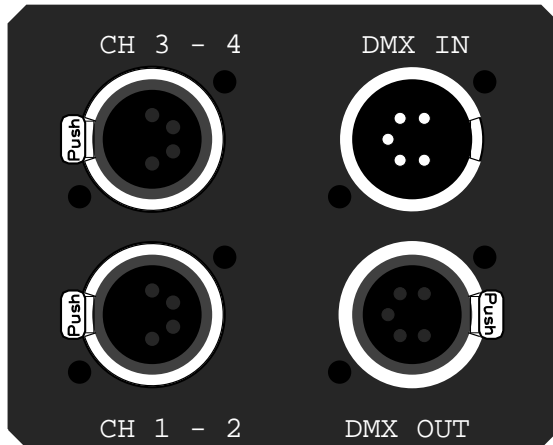
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Rear Panel Connections

The rear panel of the DMX to Light Talk convertor carries four XLR-type connectors. To the right are two DMX standard XLR-5 connectors – male for DMX input and female for DMX output. These two are simply connected through internally so the DMX cabling can be daisy chained from device to device in the normal way. The unit contains no termination and an external DMX terminator must be fitted if this is the last device in the DMX chain.

Motor drive output from the unit is via the two XLR 4-pin female connectors to the left. Each connector carries two channels. The lower connector feeds the drive for channel 1 on pins 1&2 and for channel 2 on pins 3&4. Similarly, the upper connector feeds the drive for channel 3 on pins 1&2 and for channel 4 on pins 3&4.

Due to the operation of the load-compensation circuitry, **no more than one effect unit must be powered from each channel.**



When making up cabling note that DHA Varispeed Moving Effects are supplied fitted with XLR 4-pin male connectors. With older effects, the motor will operate on channel 1 or 3 (pins 1&2); more recent equipment has a switch to select between channels.

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Cross - Over Splitter

To connect effects to all four channels it is necessary to use 2-way crossover splitters – These should be wired as shown in fig.2.

External cables should be 0.75mm cross section (18 AWG) to minimise voltage loss, particularly over long runs.
DHA can supply extension cables and 2-way crossover splitters which combine to greatly simplify wiring runs to remote locations. An example is shown in fig.3.

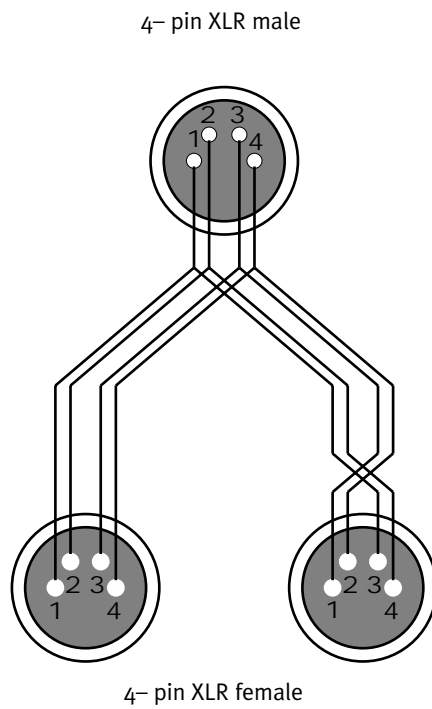
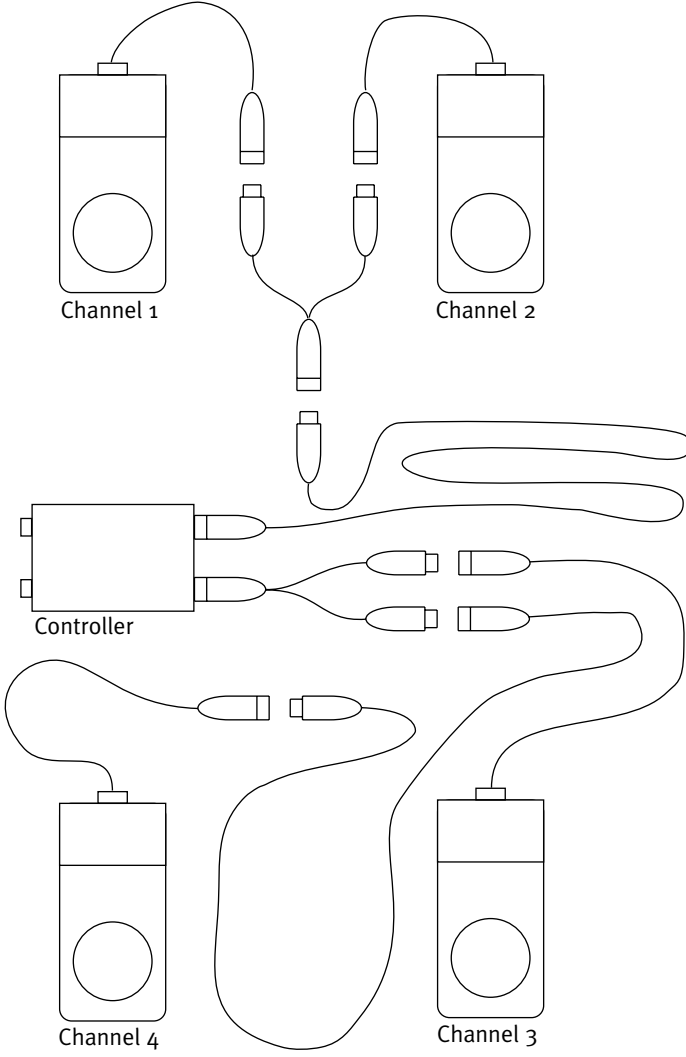


Fig 2

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Four Channel System

Fig 3



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Power Output Protection

The motor drive outputs are protected by a self-resetting thermal cutout. This provides protection against short circuits and also protects motors from burnout due to stalling by external force or overloading.

When a short circuit or overload occurs on an output channel the output on all channels will be greatly reduced and the main (red) power LED will be dimmed significantly. After a few seconds the thermal cutout will be activated on the short-circuit channel and the remaining channels will return to normal operation. The cut-out time will vary depending on the output settings of the controller but, provided that external wiring conforms to the standard recommended by DHA Lighting, there will be no immediate damage to either the DC controller or any DHA moving effects connected.

While the fault persists the affected channel will remain in shutdown. The controller should not be left in this state for any prolonged period.

The DC controller should recover in a matter of seconds once the source of the fault is removed.

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F u s e R e p l a c e m e n t

Mains input is selectable internally between 100—120V AC or 220—240V AC and is protected by a fuse, accessible from the front panel.

To replace the mains fuse:

- Press and turn the cap of the fuse holder anticlockwise to release the lock and withdraw the cap which holds the fuse itself. Replace the fuse and lock the cap back into the fuse holder (press and turn clockwise). Use only 100mA, 20mm x 5mm, fast-blow HRC fuses.

To change the mains voltage setting:

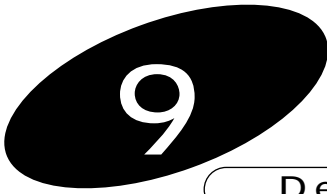
- Disconnect from mains supply before opening case!
- Undo the four retaining screws on the front panel, and gently pull the panel away from the body until the voltage selector switch is visible on the lower printed circuit board.
- For 100-120 V supply set switch to position 2 (left).
- For 220-240 V supply set switch to position 1 (right).
- Carefully replace the front panel and secure with the original screws.

Reference

The DMX512 Digital Data Transmission Standard for Controllers and Dimmers

United States Institute of Theater Technology, July 1986.

Operation of the unit on 220-240V supplies when set for 110V operation will damage the controller and may also damage any Moving Effects units connected. Operation at 110V when set for 220V will not cause damage but the full range of speeds will not be available.



Declaration of Conformity

DECLARATION OF CONFORMITY

According to ISO/IEC Guide 22 and EN 45014

Manufacturer's Name DHA Lighting Limited.

Manufacturer's Address
DHA Lighting Limited
284 - 302 Waterloo Road
London SE1 8RQ
England

declares, that the product(s):

Product Name: DMX DC CONTROLLER
Model Number(s): DCONDMX

Product Options: 115V or 230V 50/60Hz AC

conform(s) to the following Product Specifications:

Safety: Relevant clauses of
EN 60-065: 1993

EMC: EN50081-1 Emissions
EN50082-1 Immunity
EN61000-3-2 Harmonics

Supplementary Information:

The products herewith comply with the requirements of the Low Voltage Directive 73/23/EEC and the EMC Directive 89/336/EEC. The products were tested in a typical configuration.

David K Hersey
Director

Date 30/8/96

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