RANK STRAND

INSTRUCTION LEAFLET

PERMA 12

Thyristor

Dimmer

Racks

PUBLICATION P12/1

ISSUE 4/7705

1 MOUNTING

Perma 12 racks are designed for permanent installation with 'hard' external wiring. Avoid acoustically 'live' locations. Fixing holes are provided on the top flange to secure a rack to a wall. In an adequately ventilated environment two racks can be mounted one on top of another. In this case the upper rack should also be secured through the bottom fixing holes provided which coincide with the top fixing holes of the lower rack. Remember to remove the adjacent cable entry plates at the rear, right-hand side, before joining and fixing. Space should be available at the right-hand side of each rack for mounting the external switchfuse isolator.

The total heat dissipated by convection does not exceed 2% of the maximum load capacity or the maximum supply capacity. The ambient temperature must not exceed 35°C, which is not onerous. Exceptionally, in confined spaces, external ventilation may be necessary.

Only the bottom right-hand panel giving access to the connection chamber needs to be removed for electrical connections. All other covers should be in place to prevent cable ends, etc., lodging in printed circuit cards.

2 POWER SUPPLY

Each Perma 12 dimmer rack has twelve 2000 watt maximum Thyristor dimmer modules each with a single pole fuse. These modules are internally wired, and permanentely grouped by solid copper busbars behind each row of fuses, into three groups of four dimmer channels. Each group of four can be fed from a different phase of three phase and neutral supply but removable links are provided at the supply terminals to allow all channels in a rack to be fed from a 220/240v single phase and neutral supply. THE SUPPLY CURRENT AVAILABLE MUST NEVER BE LESS THAN THE CONNECTED LOAD.

For a three phase and neutral supply the solid link fitted between the three phase terminals must be removed. Subsequently the three phase conductors should be connected to the phase terminals and the neutral conductor to the clamp terminal on the neutral busbar.

For a single phase and neutral supply do not disturb the link but connect the phase conductor to the large terminal.

An earth/ground conductor is a necessity and must be connected to the earth stud — it is not sufficient to rely on the continuity of metallic mechanical protection for the supply cables.

A switchfuse for the supply should be provided for each dimmer rack, preferably mounted at the right hand side. Where a number of racks are mounted adjacent to each other it may be more convenient to use a sub-main distribution board with an isolator switch adjacent to each rack. The spare label reading 'High Voltage Insulation Testers Not to be Used On this Equipment' provided with each rack should be fixed to the switchfuse or isolator.

3 LOAD WIRING

The load line connections are to numbered load terminals mounted horizontally at the top of the connection chamber. The load neutral connections terminate on the vertical neutral block. The two conductors to each channel load must be run as a pair of adjacent and equal-length conductors in order

that each conductor in the pair carries equal and opposite current components. If any form of patching panel or load-selection unit is to be used then it is necessary to divert the neutral as well as the line conductor of each channel and each load to this unit. Cable systems with an earthed/grounded metallic mechanical protection will normally be required by local regulations, and are to be preferred.

The load wiring should terminate in socket outlets to provide a safe means of isolation of the load luminaire(s) for lamp replacement. For the flexibility required of stage and studio lighting a standard socket outlet should be adopted for all dimmer-controlled lighting. In the U.K. the accepted standard for theatres is 15 amp 3-pin-in-triangle (B.S.546). The dimmer and the load wiring is protected by the 10A close-excess current fuse-link fitted to the Perma 12.

4 LAMP LOADS

These dimmers are designed to control 200/240 volt tungsten filament lamps. They are not suitable for transformer-fed extra-low voltage lamps, nor for fluorescent tubes. Subject to an adequate supply being available each dimmer is rated for 2000 watt maximum; one, two or any number of tungsten filament lamps can be connected to any dimmer providing the total does not exceed 2000 watt. The minimum load is 150 watt and therefore small test lamps, or neon indicators, should **never** be used with this type of equipment as they give a completely false indication.

5 CONTROL WIRING

Perma 12 dimmer racks can be controlled by any Rank Strand control desk but are particularly suitable for control by the range of Mini-2+ 2-preset desks and/or the Discoplus because the control power unit necessary for these desks is built into every Perma 12 rack. These control desks have a 2 metre external length of flexible control cable, fitted with an octal plug, for every multiple of six control channels. To interface with these octal plugs a Twin Octal Socket Box (order code 04 799 02) is required to correspond with each Perma 12 dimmer rack. The control wiring is at extra-low voltage and **two** 8-conductor insulated and sheathed control cables (order code 35 600 24) are the most convenient cables for interconnection between each Perma 12 rack and each Twin Octal Socket Box. If more than one location is required for a control desk, either the flexible control cables of the desk can be extended by a 10m (order code 04 739 09) or 30m (order code 04 753 00) 6-channel control extension cable which is fitted with plug and flex socket, or alternatively two, or more, Twin Octal Socket Boxes can be wired in parallel.

Interconnections for Mini-2+ desk range, with recommended colour sequence of 8-conductor cables, are as follows:

First 8-Conductor Cables

Perma 12 Control terminals 1-6 in sequence to Socket terminals 1-6 (colour sequence: Slate, Brown, Pink, Orange, Yellow, Violet)
Perma 12 terminal -15v to Socket terminal 7 (Blue)
Perma 12 terminal C (common) to Socket terminal 8 (Green/Yellow)

Second 8-Conductor Cables

Perma 12 Control terminals 7-12 in sequence to Socket terminals 9-14 (colour sequence: Slate, Brown, Pink, Orange, Yellow, Violet)
Perma 12 terminal -15v* to Socket terminal 15 (Blue)
Perma 12 terminal C* (common) to Socket terminal 16 (Green/Yellow)

* Note parallel connections at Perma 12 control terminals.

For other Rank Strand control desks interconnect like-numbered control terminals, also C terminals at the desk and dimmer rack. Do not connect the rack -15v terminal. Such desks require a local 200/240v supply for internal control power supply generation.

6 OTHER CONSIDERATIONS

All forms of waveform switching control, such as these dimmers, can make apparent previously undetected earth loops in poorly installed sound installations. Care must be taken with the earthing and screening of sound equipment to prevent the formation of earth loops. Each rack and each dimmer output is R.F.I. suppressed in addition to the inductive filter for each dimmer.

Do not attempt to control transformer-fed low voltage lamps or fluorescent tubes, and never attempt to fire any pryotechnic device from any circuit which includes a dimmer of this, or any other kind.

When all external wiring has been completed check all terminal screws for tightness, including the terminal blocks of each dimmer module under the large, louvred cover. Pressure-pad terminals are used throughout but transit vibration may loosen some. Before switching on replace and secure all covers.

7 MAINTENANCE

Never replace a fuse-link without first tracing the fault in the load circuit which caused the fuse to blow; failure of a projection lamp is the most probable cause. Use only fuse-links of the original type supplied i.e. MD.10A 10amp fuse-links for Pullcap holders or 10 amp Neozed Flinke for Neozed holders. The integral extra-low voltage power supply for a Mini-2+, or similar desk, has its own fuse which is 500 mA 20 x 5 mm in a screw type holder adjacent to its associated neon pilot. Each rack supplies the desk in parallel and therefore there would need to be a failure of the control fuse in all racks for the desk to be inoperative.

8 SPARES

	ORDER CODE
Packet of 10 MD.10A 10 amp fuse-links	08 318 06
Packet of 10 black Pullcap fuse carriers	08 071 08
Packet of 10 Neozed Flinke fuse-links*	08 001 31
Packet of 10 Neozed fuse carriers*	08 002 37
Packet of 10 500mA 20 x 5 mm fuse-links	08 142 73
Spare Perma 12 dimmer module complete	01 810 19
Spare printed-circuit trigger card, wire-in	08 911 05

* Applicable only to Perma 12 Neozed-fused racks

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