Permus Dimmer Racks

Analogue or multiplex control

Rank Strand

The Permus Dimmer Rack range, embodying Permus thyristor dimmer modules, is the economic power-handling component for permanent, hard-wired lighting control systems. The shallow racks require only front access, plus top access for the electrical contractor, and can be mounted side by side against a wall, or mounted back to back; either method ensures that only the very minimum of valuable floor space is used.

The rugged and reliable Permus dimmer modules incorporate a temperature-stable trigger card with hard-firing of each pair of tungsten surge-rated thyristors mounted on generous heatsinks. Hard-firing circuitry ensures stable operation on loads as low as 40 watts and for transformer-fed lamps.

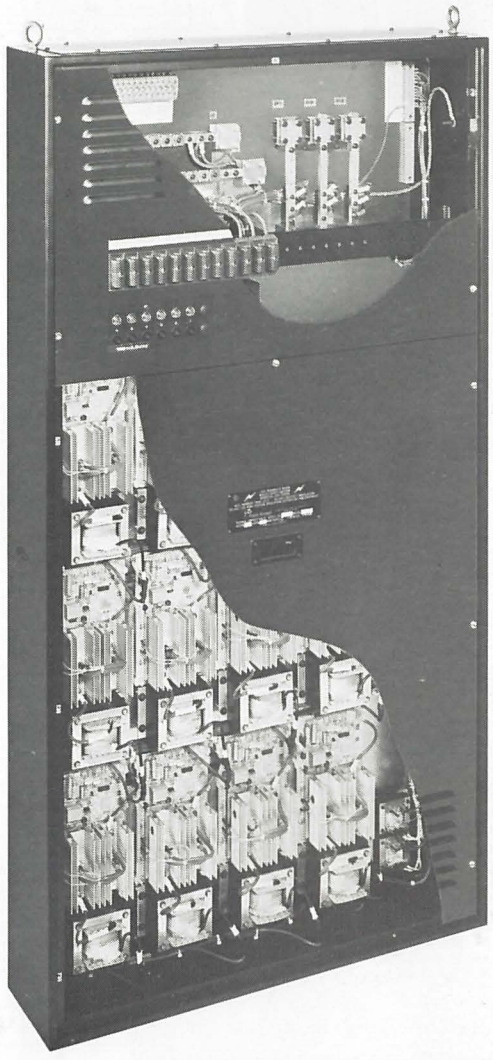
Standard width Permus racks, stocked and ready for despatch, contain either 24 x 10 Amp dimmers in the dual dimmer per module format, or alternatively, 12 x 20/25 Amp single dimmer modules. For maximum flexibility of the total number of dimmer channels, and to allow mixed ratings in a multiple rack installation, there is also a narrower rack available housing either 12 x 10 Amp or 6 x 20/25 Amp dimmers. To complete the range, an enlarged rack accommodates 24 dimmers each rated at 20/25 Amps.

Permus is available in an analogue control form, suitable for connecting to any of the current range of Rank Strand manual or memory controls, or optionally, the dimmers can be supplied in a multiplexed format. Multiplexed Permus interfaces directly with the output from Tempus M24, M24FX and Gemini memory control systems, with no further demultiplex decoding required. This option enables a Permus dimmer installation to take full advantage of multiplex control technology: a single, twin screened cable which loops between each dimmer rack reduces the conventional multicore cable installation; any number of racks can be selected to decode the same group of channels thus expanding the lighting system beyond the channel capacity of the control desk.

All Permus dimmer racks employ natural airflow ventilation, are available with either Reyrolle or Neozed close excess current protection, and are internally wired for a three phase and neutral incoming supply. Provision is made to allow each two adjacent dimmer modules (4 x 10A, 2 x 20/25A) to be changed, on site, to a different phase, or to operate from a single phase and neutral supply.

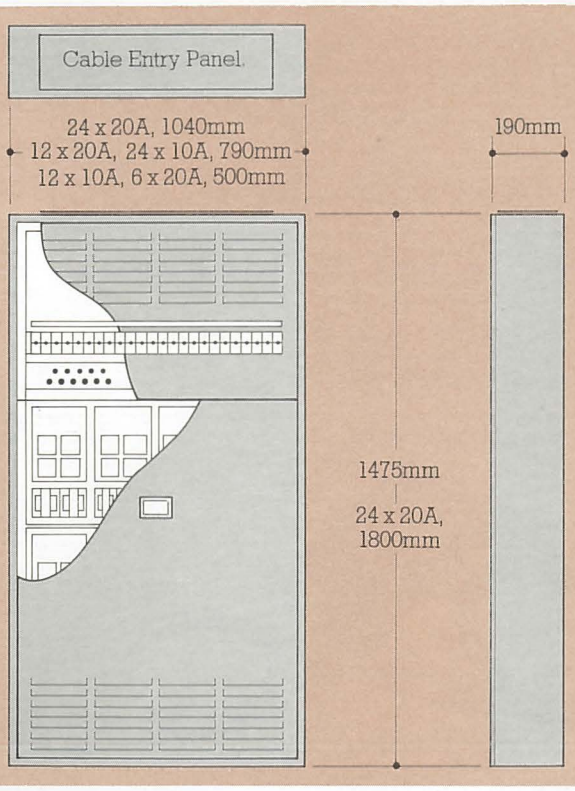
Item Numbers

Permus Dimmer Racks (narrow width)	
12 x 10A dimmers Reyrolle fused	06 020 03
12 x 10A dimmers Neozed fused	06 021 17
6 x 20A dimmers Reyrolle fused	06 050 13
6 x 25A dimmers Neozed fused	06 051 19
Permus Dimmer Racks (standard width)	
24 x 10A dimmers Reyrolle fused	06 020 11
24 x 10A dimmers Neozed fused	06 021 09
12 x 20A dimmers Reyrolle fused	06 050 05
12 x 25A dimmers Neozed fused	06 051 00
Permus Dimmer Racks (extended width)	
24 x 20A dimmers Reyrolle fused	06 052 06
24 x 25A dimmers Neozed fused	06 052 12



Dimensions

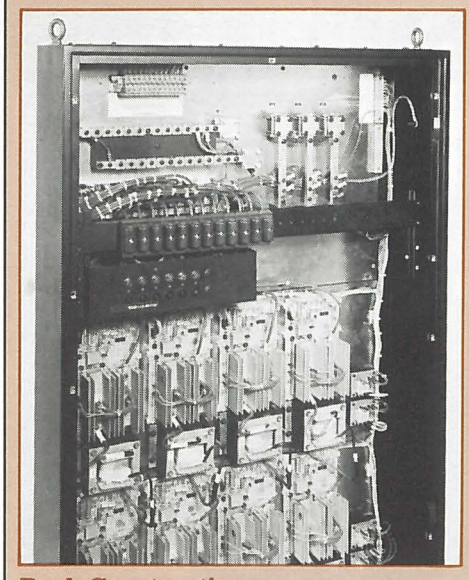
Scale 1:20



Weights

24 x 20A: 187kg
24 x 10A, 12 x 20A: 90kg
12 x 10A, 6 x 20A: 65kg

Specification



Rack Construction
Totally enclosed, with 2-part rebated front cover. External cable entry through large top panel, removable to adapt to different cabling systems. Top front cover provides tool-access to full width area for all external connections. Top fitted with lifting eyes to facilitate transport and on-site positioning. Wall mounting, and back-to-back mounting brackets, supplied in internal packet to replace lifting eyes.

Ventilation
Natural air-flow ventilation through multiple louvres at bottom and top front of each rack. Air inlet temperature must not exceed 35°C. In exceptional situations, and climates, it may be necessary for others to provide dimmer room ventilation to achieve 35°C max. ambient.

Close Excess Current Protection
Single pole Reyrolle 440v rated Pullcap with shrouded contacts, or Neozed DO.2, as ordered. HBC fuse links and carriers supplied in internal packet to prevent transit damage.

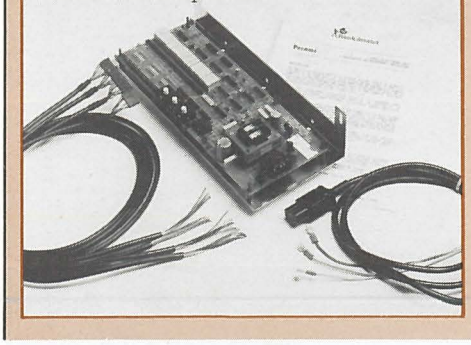
Control Fuses
Common to no more than 2 modules (4 x 10A). 100mA 20 x 5mm fuse links.

Internal Wiring
All internal wiring provided from 3 phase, neutral and earth busbars to numbered terminals for load connections and control signal connections.

Power Terminations
Full-width racks (24 x 10A or 12 x 20/25A) have large capacity compression clamps allowing vertical or horizontal alignment of power cables to busbars. Adaptor supplied to link the 3 phase busbars for a single phase supply (adaptable 2 phase).

Narrow racks (12 x 10A or 6 x 20/25A) have heavy duty clamp terminals for vertical entry tightened by Allan key (supplied).

Permus Demultiplex kit



Load Terminals
Pressure-pad terminals, accepting up to 6mm² conductors on 10A dimmer racks, up to 10mm² conductors on 20/25A racks.

Dimmer Ratings
10A max at 220/240v, 40W min.
20A max at 240v, 40W min.
24A max at 220v, 40W min. (Neozed-fused)

Line Frequency
45/65 Hz

Output Voltage
Continuously variable between zero and 5v below line voltage.

Efficiency
Greater than 98%.

R.F.I. Suppression
To BS.800 Part 3, VDE 0875/7.71, grade N for supply terminals, and grade G for load terminals.

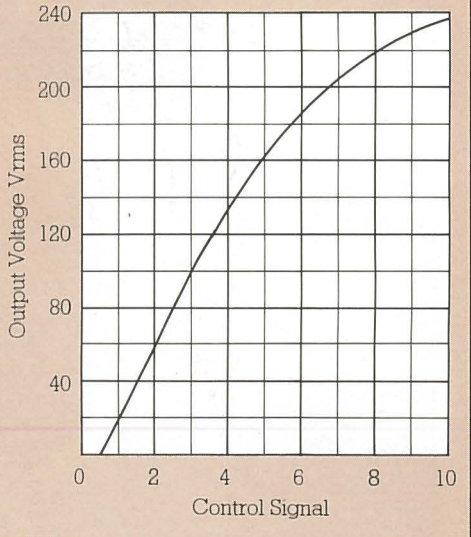
Risetime filter adjacent to module. Greater than 250 microsecond for 10A and 900 microsecond for 20A at rated full load and at 90° conduction angle.

Analogue Control Input
Full = –10V via 10k ohm resistor and silicon diode
Off = 0V. Maximum control current is 2mA

Multiplex Control Input
Multiplexed analogue signal with composite clock to Rank Strand published standard D54. Link to control desk via 2 core screened cable 16/0.2mm.

Response Time
Virtually instantaneous – thermal lag of tungsten filament lamp loads more significant.

Dimmer Law
Transfer developed to embody best features of 'S' law and Square law.



Alignment
Top set only to determine maximum output voltage. Automatic bottom set ensures safety from mis-alignment.

Thyristor Firing
Hard-fired 5kV r.m.s. insulation, transformer isolation.

The Company reserves the right to make any variation in design or construction to the equipment described.

Rank Strand

Accessories

Multiplex Permus
Any of the Permus range of dimmer racks can be adapted to operate directly from the multiplex output of the Tempus M24, M24FX and Gemini control systems, with the addition of the Permus Demultiplex Unit. This is supplied as a kit which comprises a chassis mounted printed circuit board incorporating its own power supply and decoding electronics, a mains cable and a multicore cable which connects the analogue dimmer outputs of the unit to the control input terminals of the rack.

The twin screened cable link to the control system is also connected to the demultiplexing unit, which decodes the levels of up to 24 Permus dimmers, and from which a parallel connection is taken to subsequent racks. Decade switches, mounted on the circuit card, select the number of the channel of the control system to which the first dimmer in the rack will respond. Full instructions are provided with each kit.

Permus Demultiplex Kit:	06 020 00

Tempus Control Desks
Permus dimmers can be interfaced with any current, or recent, Rank Strand control desks, but Tempus desks require a Power Supply Unit to be fitted to the nut-inserts provided within a Permus dimmer rack. This is supplied as a sub-assembly, complete with cartridge fuse, for fitting on-site, or it can be fitted by Rank Strand before delivery.

Tempus desks also have a 2m long flexible control cable with an 8-pin DIN plug for the output of each multiple of six control channels. Twin or Quad control socket boxes enable 'hard' wired control cables from Permus racks to mate with the flexible control cables of a Tempus desk.

Power Supply Unit, add-on for Tempus desk	08 841 10
Twin 8-pin control socket box	04 372 01
Quad 8-pin control socket box	04 373 07

Ripple Rejection
If control signals for other equipment (such as street lighting) are superimposed upon the mains supply this ripple control can cause instability of Thyristor dimmers. If necessary the plug-on addition, on-site, of a Ripple Rejection Card to each Permus dimmer module filters out ripple control frequencies above 300 Hz, and voltages up to 20v r.m.s.

Ripple Rejection Card, plug-on	08 814 07

10kW Dimmers
Permus Racks fitted with 10kW modules can be supplied to special order. The 10kW Permus dimmer module replaces two standard modules, thus 6 x 10kW dimmers can be fitted to the standard rack and 12 x 10kW dimmers to the enlarged rack.

Fluorescent Dimmers
An extensive range of Permus dimmer racks is available to control fluorescent lighting loads. Details of these products and others in the Environ range are available from Strand Commercial Lighting.

Dimmer Rack Labels
Numbered label strips are available to replace the standard sequence provided with each Permus rack.

1 – 240 Channel number pack in strips:	
for Reyrolle fused racks	06 055 10
for Neozed fused racks	06 055 29

Rank Strand Limited
P.O. Box 51, Great West Road,
Brentford, Middlesex
TW8 9HR, United Kingdom
Telephone 01 568 9222, Telex 27976

Printed in England RS74M70984