

ACT 6

MULTIWAY DIMMER PACK
INSTRUCTION LEAFLET

INTRODUCTION

The Rank Strand ACT6 dimmer pack is a compact six-channel unit which may be used either on its own as a complete, self-contained lighting control, or linked to a remote control desk as part of a larger system. Three standard types of unit are available: two single-phase versions respectively fitted with 15A and 5A output sockets; and a three-phase version fitted with European 'Schuko' output sockets.

Except in the case of units fitted with 5A sockets, each dimmer may control a tungsten load at load currents up to 10A. The continuous total load current for a complete pack must not, however, exceed 45A; a thermal cutout prevents the pack overheating if this maximum is exceeded.

All three types of ACT6 dimmer pack are available fitted with either a manual or a multiplex control panel. The manual control panel carries six faders for local control, while an eight-way socket (of the type used on Rank Strand TEMPUS packaged controls) permits the connection of external control signals; signals from the two control sources combine on a highest-takes-precedence basis and the local faders may be disabled, if required, by means of an inhibit switch.

The multiplex control panel allows the use of the pack with any Rank Strand control system which produces a multiplexed output (e.g. Tempus M24). Three-pin XLR connectors are provided for linking the unit to the multiplexed output of the control console and a number of ACT6 packs, M24 Multiplex Interface units and multiplexed dimmers of other types (e.g. Permus) may be connected in 'daisy chain' fashion using these connectors; rotary 'channel group selector' switches are used to assign each dimmer pack to its corresponding lighting channels. Each dimmer channel may be switched onto a single master fader for rigging, focusing, etc.

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The following ACT6 units are available; always use the corresponding order code for reference.

Versions with manual control panel

ACT6 with 15A socket outlets (single phase)	0403209
ACT6 with 5A socket outlets (single phase)	0403304
ACT6 with Schuko socket outlets (three phase)	040340T

Versions with multiplex control panel

ACT6 with 15A socket outlets (single phase)	0403505
ACT6 with 5A socket outlets (single phase)	0403600
ACT6 with Schuko socket outlets (three phase)	0403706

Packs fitted with other types of outlet are available to special order.

INSTALLATION

WARNING: HAZARDOUS VOLTAGES ARE PRESENT INSIDE ACT6 DIMMER PACKS WHEN CONNECTED TO A MAINS SUPPLY. ALWAYS DISCONNECT FROM THE SUPPLY BEFORE OPENING THE PACK FOR INSTALLATION OR MAINTENANCE. THE PACK MUST BE INSTALLED BY QUALIFIED PERSONNEL.

The ACT6 dimmer pack is designed to be installed in three different ways:

- 1) As a free-standing unit. When used in this way, packs may be stacked one on top of another to save floor space. DO NOT STACK MORE THAN TWO PACKS HIGH; a stack of three or more fully loaded packs may overheat, causing the thermal safety cutouts to operate.
- 2) As a wall-mounted unit. In this case, several units may be mounted one above the other, provided there is a space of at least 150mm between adjacent packs. It is essential that the wall chosen is FLAT or distortion of the pack may result.
- 3) As a rack-mounted unit. The packs may be mounted in a standard nineteen-inch rack; this must, however, incorporate a fan to ensure adequate cooling - see the section headed 'Rack Mounting'.

Installation details are given below for these three alternatives.

Installation Notes

- i) The pack is not designed to operate in ambient temperatures greater than 35°C. If it is used at higher temperatures, the pack may overheat, causing the thermal safety cutout to operate.

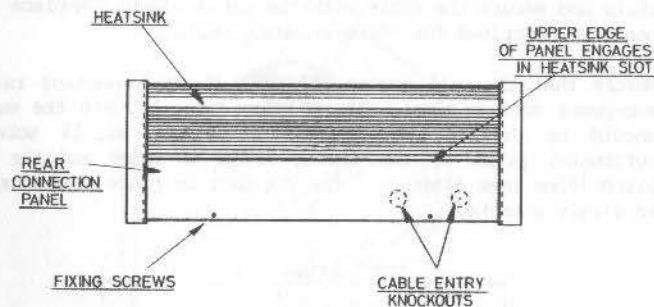
- ii) The dimmers may emit a slight buzzing noise when in operation. Packs should be installed away from areas where such noise is undesirable.
- iii) Earth Leakage Circuit Breakers. The design of ACT6 is such that Neutral-to-earth currents are minimised. The equipment should operate reliably on supplies protected by Earth Leakage (Residual Current) Circuit Breakers.

Free-standing Units

WARNING: WHEN CONNECTING TO AN EXISTING MAINS CABLE, ENSURE THAT THIS IS DISCONNECTED FROM THE SUPPLY DURING INSTALLATION.

- 1) Remove the rear connection panel. This is secured on its bottom edge by two screws; when these are removed the panel drops out.

REAR VIEW OF PACK

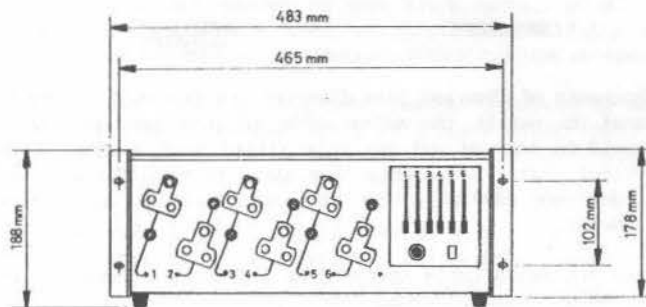


- 2) Knockouts of 25mm and 32mm diameter are provided in the connection panel to permit the mains cable to pass through. One of these should be removed and the hole fitted with a cable gland of the correct size. A suitable 32mm gland is available from Rank Strand (order code 0840301); this will accept cables up to 27mm outside diameter.
- 3) Pass the mains cable through the connection panel and connect to the mains input terminals (see 'Connections').
- 4) Replace the rear connection panel; the upper edge engages in a slot in the heatsink extrusion. Secure the panel with the two fixing screws. The cable gland should be tightened to secure the mains cable.

- 5) Plug the loads into the sockets on the front panel.
- 6) If required connect an external control input to the socket on the control panel on the front of the pack.
- 7) Connect the pack to the mains and test for correct operation.

Wall Mounting

- 1) Remove the rear connection panel as described in the previous section.
- 2) The two end plates are each provided with a 32mm cable entry hole. Decide which side the cables will enter and remove the appropriate end plate (five screws). Then remove the blanking plug and fit a cable gland of the correct size.
- 3) Pass the mains cable through the side panel and connect to the mains input terminals (see 'Connections'). Then replace the end plate and secure the cable with the cable gland. Replace the rear panel as described for 'Free-standing Units'.
- 4) Ensure that the wall chosen is FLAT; if not, mounting rails or a sub-panel must be used. If mounting directly onto the wall, this should be drilled and plugged to accept No. 14 screws; the horizontal pitch of the fixing holes is 465mm and the vertical pitch 102mm (see diagram). Fix the unit in place, ensuring that it is firmly attached.



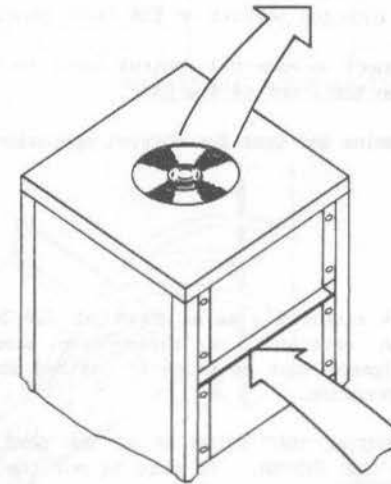
DIMENSIONS

Depth (overall) - 275mm
Fixing holes will accept No. 14 screws

- 5) Plug the loads into the sockets on the front panel.
- 6) If required connect an external control input to the socket on the control panel on the front of the pack.
- 7) Connect the pack to the mains and test for correct operation.

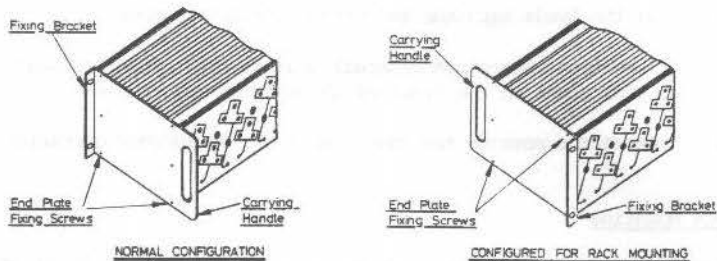
Rack Mounting

When ACT6 dimmer packs are rack mounted, cooling should be by means of an exhaust fan in the top or rear of the rack and the rack should be fairly well sealed except for the spaces between the dimmer packs. The packs will then be cooled by the airflow over the heatsink extrusion. To ensure adequate cooling, an airflow of about 16 litres/second is necessary for each pack.



RACK VENTILATION

- 1) Remove one (either) of the two end plates by releasing the five fixing screws around its edge. Reverse the panel so that the mounting bracket is at the front (see diagram); replace the fixing screws. Repeat for the second end plate. DO NOT REMOVE BOTH END PLATES AT ONCE.
- 2) Remove the rear panel and connect the mains input as for the free-standing configuration. Replace the rear panel.



- 3) Unscrew the four rubber feet from the base of the pack.
- 4) Fix the dimmer pack into the rack. Complete the mains wiring as required.
- 5) Plug the loads into the sockets on the front panel.
- 6) If required connect an external control input to the socket on the control panel on the front of the pack.
- 7) Switch on the mains and test for correct operation.

Connections

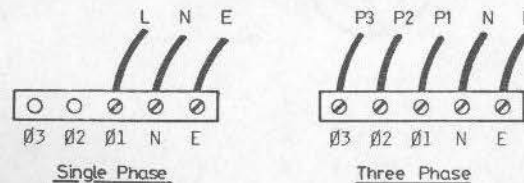
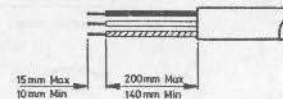
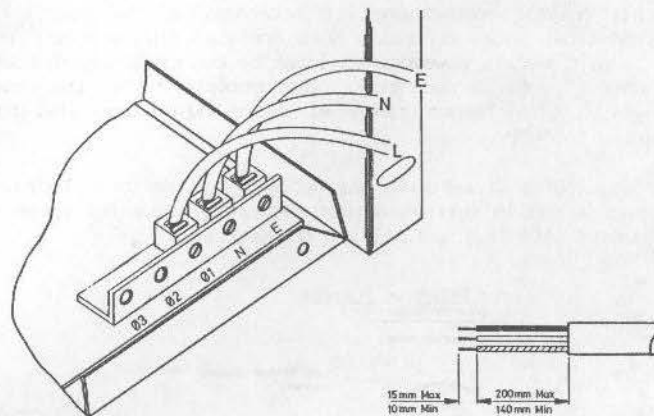
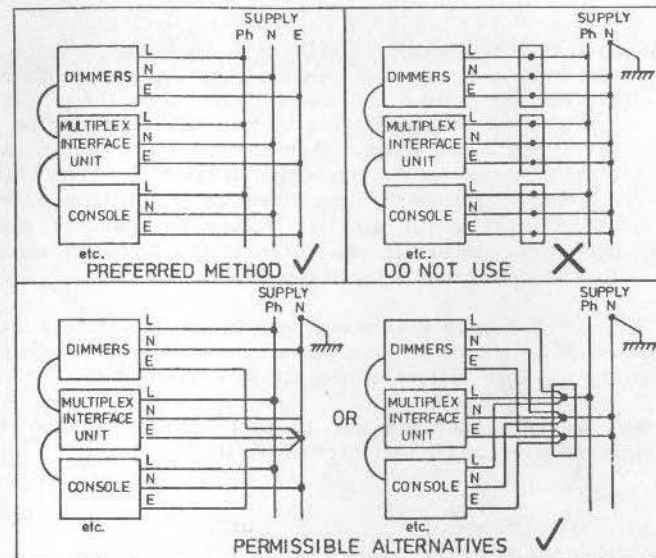
Mains Input

The ACT6 dimmer pack requires a mains input at 220/240V 50Hz, single-phase (15A and 5A versions) or three-phase star (Shucko socket versions). The equipment must be properly earthed for safety and also to ensure correct operation.

WARNING: IT IS ESSENTIAL THAT EARTH BE AT THE SAME POTENTIAL AT ALL POINTS IN THE SYSTEM. If this is not the case, circulating currents may be generated in the signal earth connections, leading to fluctuating light levels and, in extreme cases, severe damage to the equipment.

In cases where the earth is provided via the supply neutral, all units (control console and dimmers) should ideally be powered from the same source via adequately rated three core (L. N. E.) cable. If this is not possible, a single earth point must be chosen and all the units earthed **ONLY AT THIS POINT** (see diagram). The conductors used must be able to carry any potential fault current.

If damage is caused as a result of failure to observe the above recommendations, any warranty will be invalidated. If in doubt, your local Rank Strand agent will be pleased to advise.



MAINS INPUT CONNECTIONS

Note that in versions fitted with the manual control panel, the Technical Earth is connected to Protective Earth via a link on the Fader Panel assembly; in cases where there is a similar link in the control system, this link may be removed to prevent earth loops. When the Multiplex Control Panel is fitted, there is no connection between Technical Earth and Protective Earth within the dimmer pack; provision is made for the fitting of a link if future developments make this necessary. In either case refer to the Technical Handbook or to the Rank Strand Service department.

The mains input terminals will accept cables up to 16mm² in diameter. The cables must be chosen in accordance with local regulations; in the U.K. refer to the 15th edition of the I.E.E. regulations.

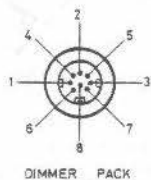
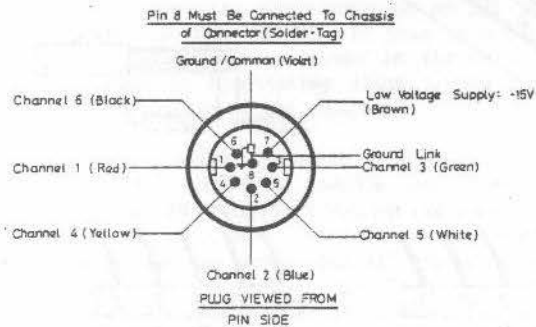
Note: When wiring, take care not to pull off any of the internal connectors or damage the internal wiring.

Control Input

a) Manual Control Panel

In the case of packs fitted with the Manual Control Panel, no external control connections are necessary if the pack is to be operated under local control. When operated from a remote control desk (e.g. Tempus), however, an input to the eight-way connector on the control panel is necessary. The connector is of the same type as used on the Tempus range of desks, which may therefore be connected directly.

Extension cables fitted with the necessary connectors are available in 5 metre and 19 metre lengths; the order codes for these cables are 0435006 (5 metre) and 0435101 (19 metre).



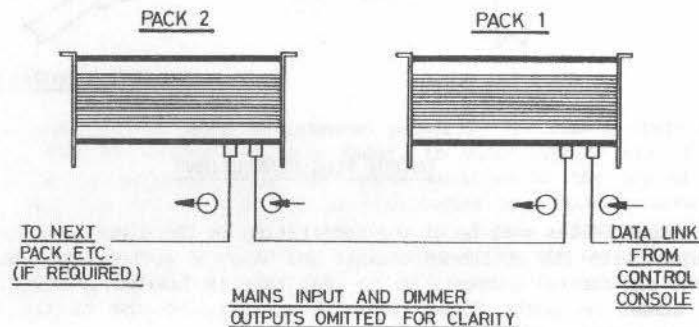
BLEECON CONNECTORS

Mating plugs and line sockets (order code 0433805) and panel mounting sockets (order code 0433900) are available for use if it is necessary to wire special control cables. These must be wired as shown in the diagram opposite:

Each dimmer requires a control input of 0V (zero) to -10V (full), fed via a 10k resistor and a diode. Rank Strand control desks already include these components.

b) Multiplex Control Panel

Packs fitted with the Multiplex Control Panel connect to the control system in a 'daisy chain' fashion; the data link from the control system connects to one pack via the connector labelled '⊕' and this pack is linked to the next via the second connector (labelled '⊖'). A cable for this purpose, 1 metre long, is provided with each pack and each Multiplex panel.



Note that this 'chain' of packs may also include Multiplex Interface units and other Rank Strand multiplexed dimmers if required.

If special data-link cables are required, the cable used must be two core 0.5mm² cable with overall screen. This should be fitted with 3-pin type XLR connectors wired as follows:

Pin 1	Screen	0V
Pin 2	Red	Multiplexed Faders Signal (to control system)
Pin 3	Blue	Multiplexed Dimmer Signal (from control system)

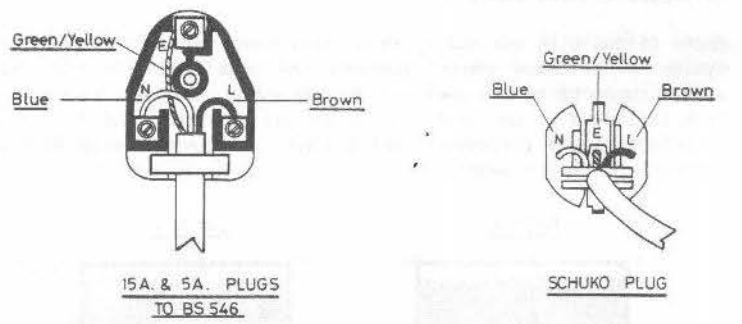
Ready made cables are available from Rank Strand in 5 metre and 25 metre lengths; the order codes for these are 0725559 (5 metre) and 0725570 (25 metre).

Note: There is no multiplexed faders output to the control system from ACT6. The pin 2 connection should not be omitted, however, as the 'chain' may include M24 Multiplex Interface units which are receiving inputs from a Manual Fader Wing.

Dimmer Outputs

One output socket is provided on the front panel for each dimmer channel. Depending on the type of pack, these will be 3-pin British 15A or 5A (to BS546), or 2-pin and scraping earth European Schuko sockets.

WARNING: Plugs of the correct type **MUST** be used for the dimmer output connections. Direct wiring is dangerous and must not be attempted.



OUTPUT PLUG CONNECTIONS

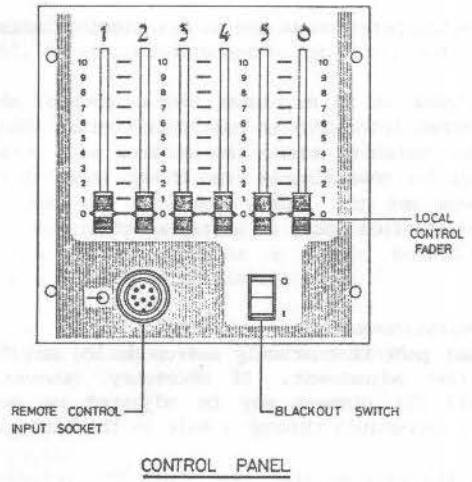
The output cables must be of the same rating as the dimmers; i.e. 10A on versions with 15A or Schuko sockets and 5A on 5A socket versions. Each dimmer can control currents up to 10A; this is limited, however, to 5A per dimmer on packs fitted with 5A sockets, because of the reduced current capacity of the output sockets.

OPERATION

Manual Control Panel

The controls provided on the ACT6 Manual Control Panel comprise six faders (one for each dimmer channel) and an inhibit switch. Each fader gives proportional control of the level of the correspondingly labelled dimmer output. The inhibit switch, if set to '0', disables the local faders.

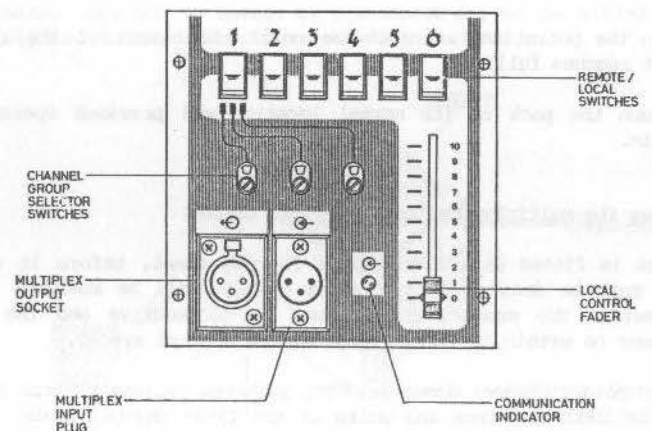
Remote control inputs, via the multi-way connector below the faders, interact with the local fader settings on a highest-takes-precedence basis; i.e. the dimmer output will correspond to the higher of the two control signals. The remote inputs are unaffected by the inhibit switch and the latter may therefore be used to disable the local controls when only remote control is required.



CONTROL PANEL

Multiplex Control Panel

The Multiplex Control panel is intended primarily for remote operation; it does, however, carry a single fader, to which any or all of the dimmers may be switched using the rocker switches at the top of the panel. Push the top of the corresponding rocker to switch a channel to remote control, and the bottom to switch it to local. Dimmers assigned to local control in this way are completely under the control of the fader, the corresponding multiplexed level from the control console being ignored.



MULTIPLEX CONTROL PANEL

The local mode of operation is useful for rigging lanterns and, with the fader at zero, for disabling unused dimmers.

WARNING: If there is no multiplex signal present when a channel is switched from local to multiplex control and the corresponding fader is above zero, the channel will retain its previous level for some minutes even though there is no control signal. Always set the faders concerned to zero before switching channels from local to multiplex control.

SETTING-UP

The ACT6 dimmer pack is correctly set-up during manufacture and should not need further adjustment. If necessary, however, the full level setting of all six dimmers may be adjusted by means of a single potentiometer, accessible through a hole in the base plate.

- 1) Position the pack so that the adjustment potentiometer is easily accessible. Ensure that at least one load is connected and apply power to the pack.
- 2) If the pack is connected to a remote control desk, set the local controls on the pack to Off and one of the lighting channels associated with the pack on the control desk to full; otherwise, set one of the local channels to Full. Ensure that the lighting channel chosen controls a lantern which is easily visible from the pack location.
- 3) Using a small, insulated preset-adjustment tool, turn the potentiometer anticlockwise until the output of the chosen lantern begins to fall.
- 4) Turn the potentiometer clockwise until the output of the lantern just reaches full.
- 5) Return the pack to its normal location and previous operational state.

Setting-up the Multiplex Control Panel (if fitted)

If a pack is fitted with a Multiplex Control Panel, before it can be used it must be decided which channel numbers will be assigned to the six dimmers. The numbers chosen must be consecutive and the first number must be within the valid range of the control system.

The three rotary Channel Group Selector switches represent, from left to right, the hundreds, tens and units of the first channel number in the group, i.e. that assigned to dimmer 1. For instance, to assign the six dimmers to channels 1 to 6, set the three switches to (from left to right) 0, 0, 1; dimmer 1 will then be assigned to channel 1, 2 to 2, 3

to 3, etc. Similarly if the channels required are numbers 22 to 27, the switch settings will be 0, 2, 2.

- Notes:
- 1) If the first number is within 6 of the maximum valid channel number (e.g. channel 21 on a 24-channel system) there will be some spare dimmers (dimmers 5 and 6 in this case).
 - 2) Two or more ACT6 packs may be assigned to the same lighting channels. This provides a simple method of patching multiple dimmers to single channels.

When the equipment is in operation, a 'Communication' indicator (labelled 'C') lights to show that a valid multiplex signal is being received.

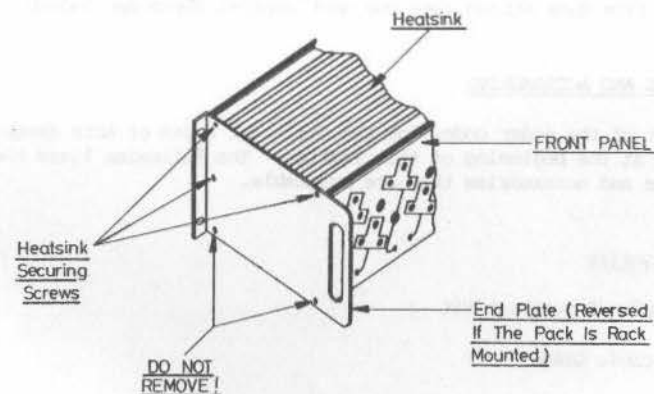
MULTIPLEX CONVERSION KIT

ACT6 Packs fitted with the Manual Control Panel may be converted to multiplex operation by fitting a replacement Multiplex Control Panel (order code 0402311). Installation is as follows:

- 1) Remove the six screws (three each side) securing the heatsink extrusion to the side panels - see diagram.

WARNING: HAZARDOUS VOLTAGES ARE PRESENT INSIDE ACT6 DIMMER PACKS WHEN CONNECTED TO A MAINS SUPPLY. DISCONNECT FROM THE SUPPLY BEFORE OPENING THE PACK TO INSTALL THE MULTIPLEX CONTROL PANEL.

Lift off the heatsink and place it on its back behind the pack, taking care not to damage or disconnect any of the wiring. Remove only the screws indicated in the diagram.



- 2) Remove the four screws around the edge of the Manual control panel. Pull the panel carefully off the multipin connector and lift out, avoiding any obstructions and taking care not to damage the panel controls, etc.
- 3) Fit the Multiplex panel in place of the Manual panel, ensuring that the connector pins on the Motherboard align correctly with the socket on the panel. Secure the panel with the screws removed in 2 above.
- 4) Replace the heatsink, engaging the front and rear panels in the slots provided. Take care not to damage or disconnect any of the wiring. Replace the screws removed in 1 above.
- 5) Connect the multiplex input and output (see 'CONNECTIONS') and set-up the panel as described in 'Setting-up', to control the required group of six dimmer channels.

FUSES

On 15A and Schuko versions, each dimmer channel is protected by a 32mm x 6.3mm 10A H.R.C. fuse, while on 5A versions, 20mm x 5mm 5A H.R.C. fuses are used. ALWAYS SWITCH OFF THE SUPPLY TO THE PACK BEFORE REPLACING THE POWER FUSES.

The dimmer control circuits are protected by 20mm x 5mm, 100mA anti-surge fuses on the Motherboard. Access to these fuses is obtained by removing the heatsink extrusion as described in the previous section.

WARNING: HAZARDOUS VOLTAGES ARE PRESENT INSIDE ACT6 DIMMER PACKS WHEN CONNECTED TO A MAINS SUPPLY. DISCONNECT FROM THE SUPPLY BEFORE OPENING THE PACK TO REPLACE FUSES.

Spares of the correct types must be used; these are available in packs of 10 from Rank Strand (see the next section for order codes).

SPARES AND ACCESSORIES

A list of the order codes for the different types of ACT6 dimmer pack is given at the beginning of this leaflet. The following lists the various spares and accessories that are available.

Accessories

Multiplex Conversion Kit	0402311
32mm Cable Gland	0840301

Extension Cable for Tempus Desk, 5 metre	0435006
Extension Cable for Tempus Desk, 19 metre	0435101
Bleecon Plug and Line Socket (8-way)	0433005
Bleecon Socket, panel mounting (8-way)	0433900
Control Cable, 8-core	3560008

Multiplex Extension Cable, 5 metre	0725559
Multiplex Extension Cable, 25 metre	0725570

Spares

10A H.R.C. fuse, 32mm x 6.3mm (10)	0840305
5A H.R.C. fuse, 20mm x 5mm (10)	0840305
100mA anti-surge fuse, 20mm x 5mm (10)	0800571

ACT6 Motherboard	0840302
Manual Control Assembly	0840303
Triac	0840304
Toroidal Choke	0973011

Fuseholder, 32mm x 6.3mm (2)	0840315
Fuseholder, 20mm x 5mm (2)	0840316

15A Socket	0884370
5A Socket	0884389
Schuko Socket	0889202

REGIONAL OFFICES

All servicing should be undertaken only by a Rank Strand approved agent. For information regarding any of our products, contact the nearest Rank Strand Office or agent, quoting the seven-digit order code for the unit as a reference. A list of appointed Service Agents is available, on request, from the addresses overleaf.