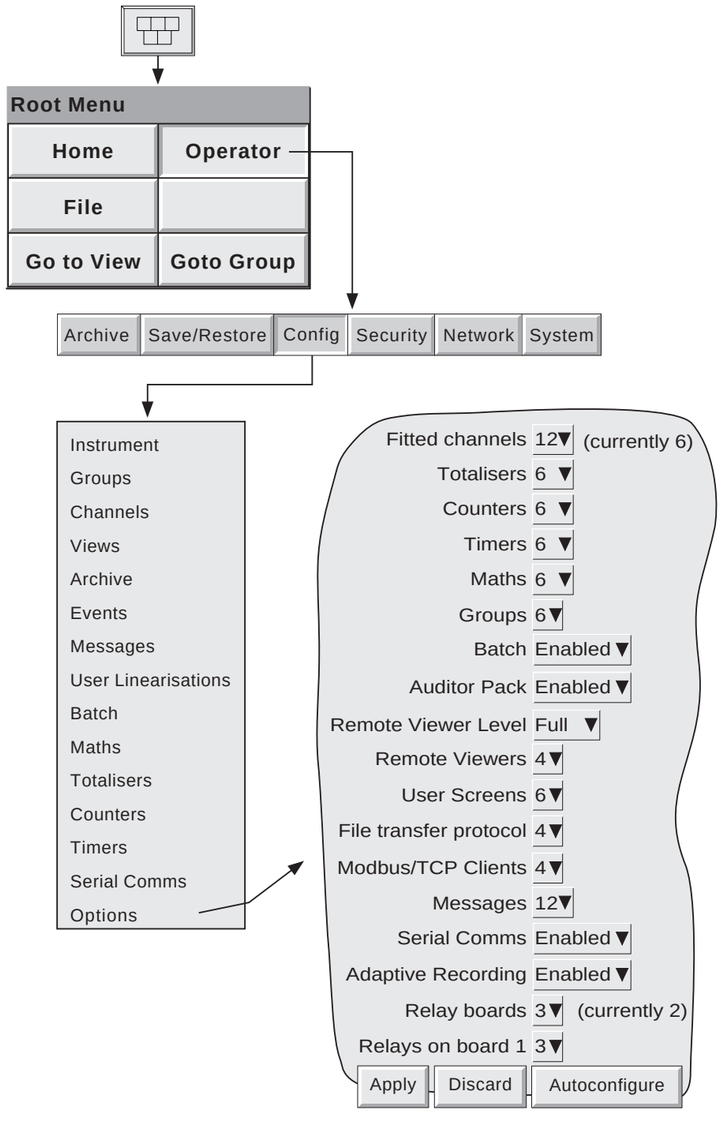
AUTOCONFIGURE ACCESS



Note: Actual display depends on which options are fitted.

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HA027241U180/6 (CN14951)

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EUROTHERM

Circuit board retrofit instructions
180 mm Video-graphics recorders

INTRODUCTION

These instructions are intended to help service engineers and others who are required to add or replace 180 mm recorder circuit boards. The instructions apply to the power supply unit, as well as to input boards and option boards.

WARNING!
Isolate the recorder from all hazardous voltage sources, both supply and signal. Allow the recorder to cool for at least 10 minutes after powering off .

CAUTION
These procedures involve the handling of components which are sensitive to static electrical discharge. All relevant personnel must be aware of static handling procedures.

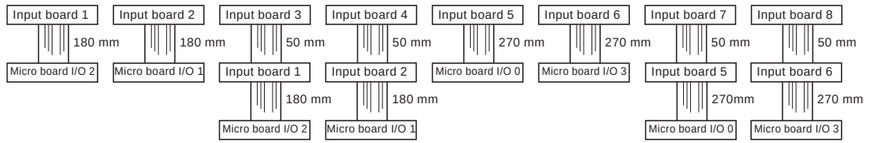
Note: The illustrations in this document show the addition of an eighth input board, and the ninth option board to a recorder already fitted with seven input boards and eight option boards. The procedure for fitting other boards is similar, the difference being in the organisation of the flexi-cable chain, and in the setting of switches/links etc. to define which board number, communications standard etc. Board switch settings/link positions are given below.

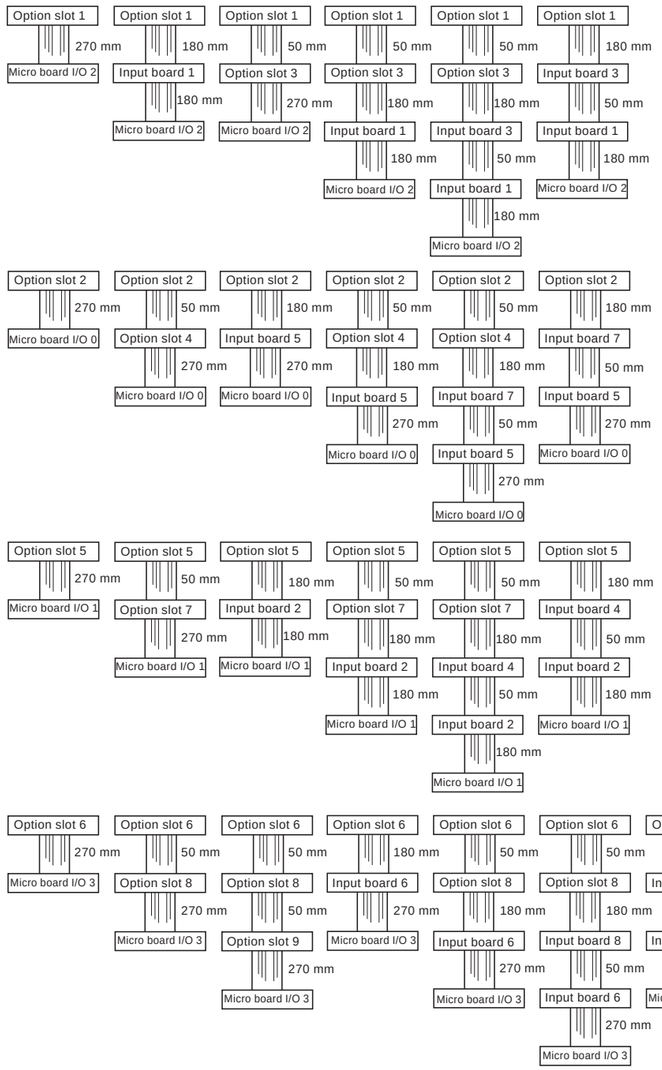
Note: Most illustrations in this document show the original version of the recorder. The differences between the current and the original version lie in the removal procedure for the circuit board retainer, and in the routing of the flexicables. These differences are highlighted at appropriate points in the document.

BOARD LOCATION RULES

1 If Relay output boards are fitted, they must be located in the lowest numbered slots.
2 If Event input boards are fitted, they must be fitted in the lowest numbered slots which are available after all relay boards have been fitted.
3 If a Serial Communications option board is fitted, this must be fitted in the first available of slots 6, 8 or 9.
4 If a Serial Communications option board is fitted, the maximum permitted total of relay and event input boards is eight.
5 If a Serial Communications option board is fitted, the maximum permitted number of input boards is 5.

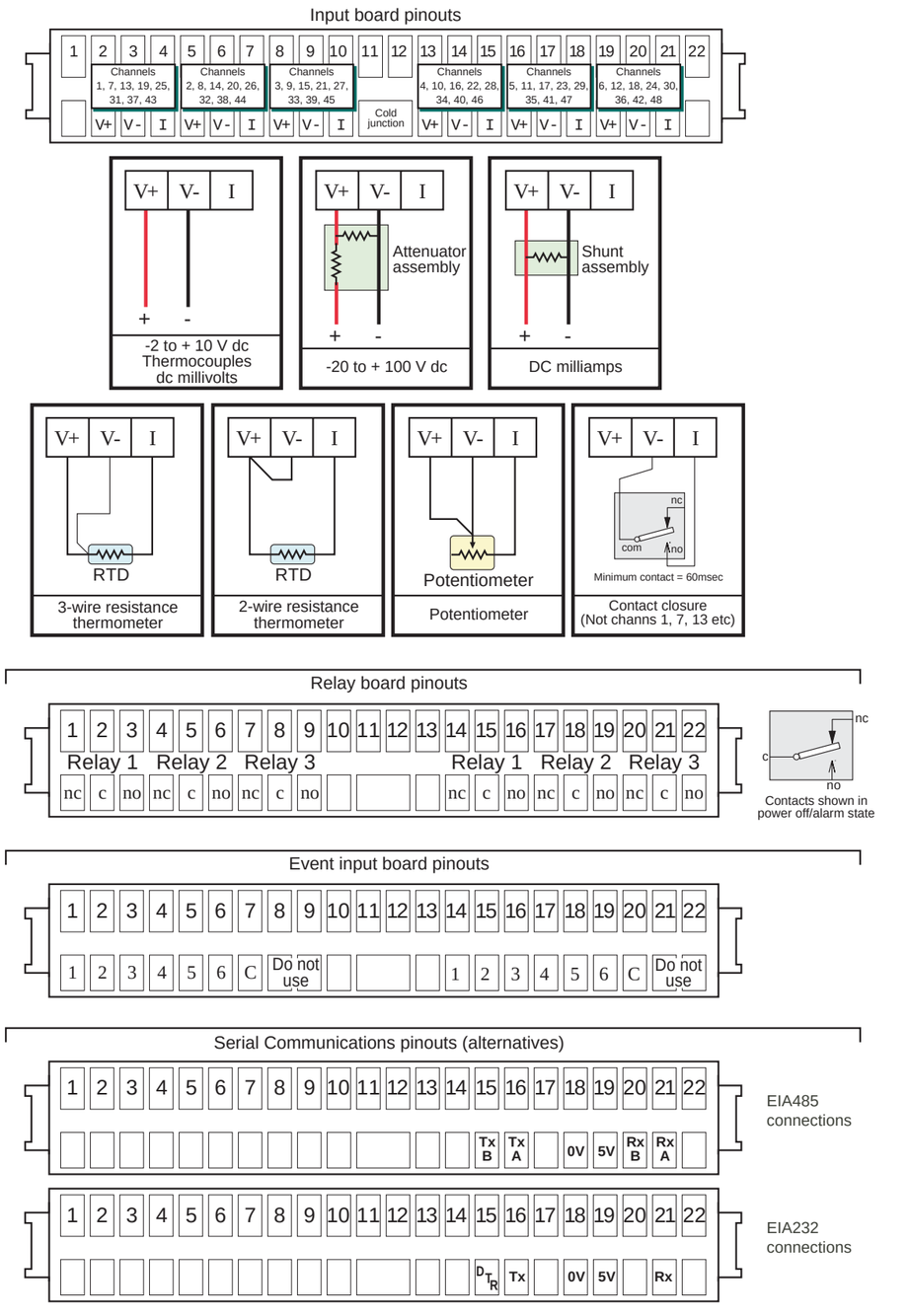
FLEXI CABLE ORGANISATION





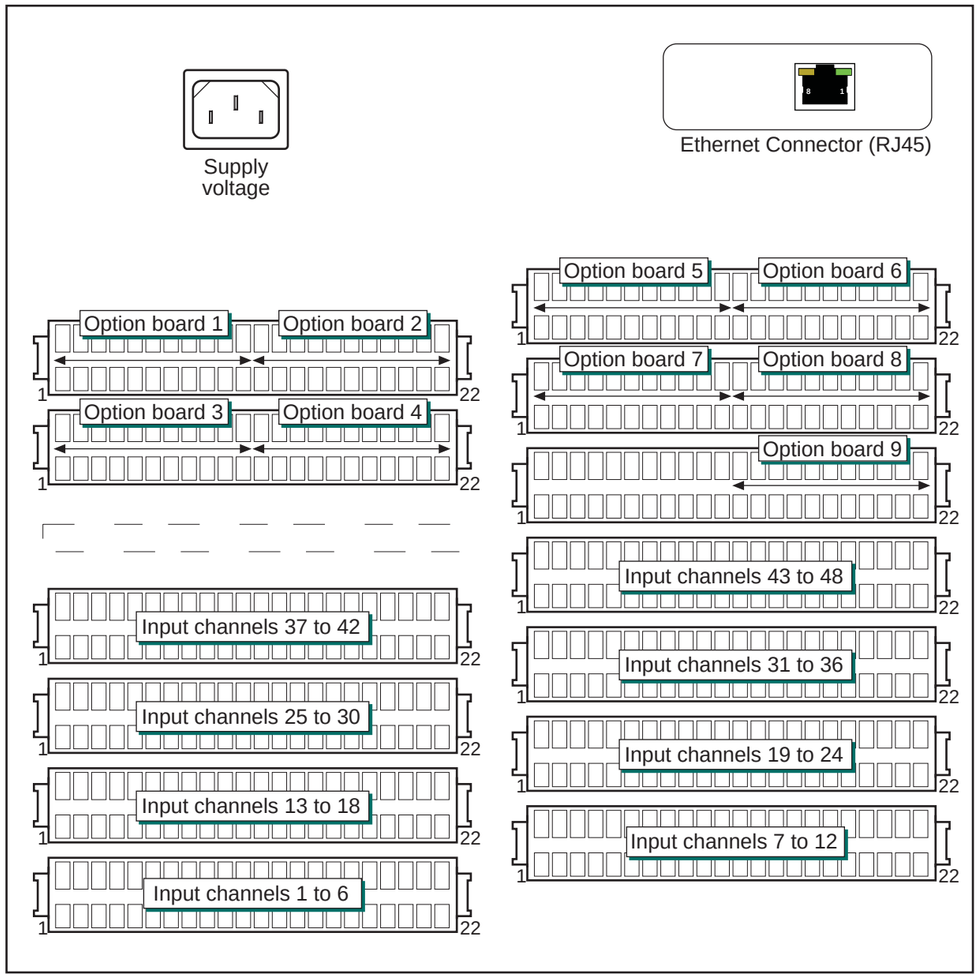
WIRING DETAILS

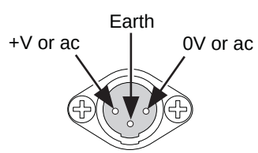
Pinouts



WIRING DETAILS

Connector locations

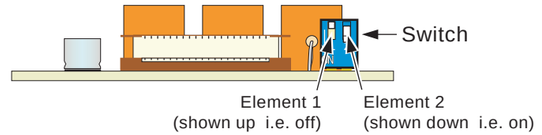




Supply power connection for dc supplies

RELAY / EVENT INPUT BOARD SWITCH SETTINGS

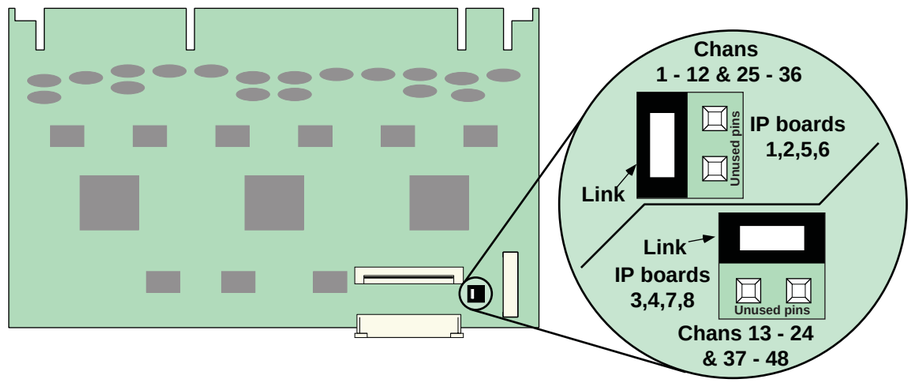
Before fitting relay or event input boards, the two elements of the switch located near the front edge of the board must be set to define its board number. The figure below, and the accompanying tables give details. (Figure shows the relay board - the event input board is similar).



Relay board No	Switch element	
	1	2
1 or 5	Up	Up
2 or 6	Up	Up
3 or 7	Down	Up
4 or 8	Down	Up
9	Up	Down

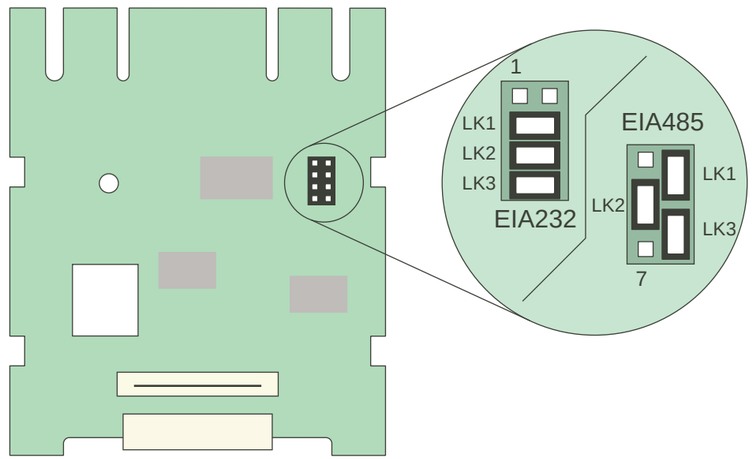
Event input board number	Switch element	
	1	2
1	Up	Up
2	Down	Up
3	Up	Down
4	Down	Down

INPUT BOARD LINK SETTINGS



SERIAL COMMUNICATIONS BOARD SETTINGS

Before fitting a serial communications board, it is necessary to set it to the appropriate transmission standard - i.e. EIA232 or EIA485. This selection is made by positioning three links as shown.

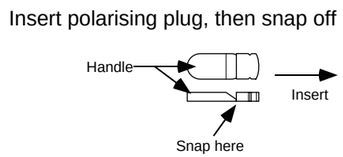


POLARISING PLUGS

In order to avoid accidental insertion of an incorrect board type, it is recommended that a polarising plug be inserted into the board side of the connector in the locations indicated in the table. Failure to do so may damage the recorder. As shown in the figure, the plug is inserted into the connector and the 'handle' is then snapped off.

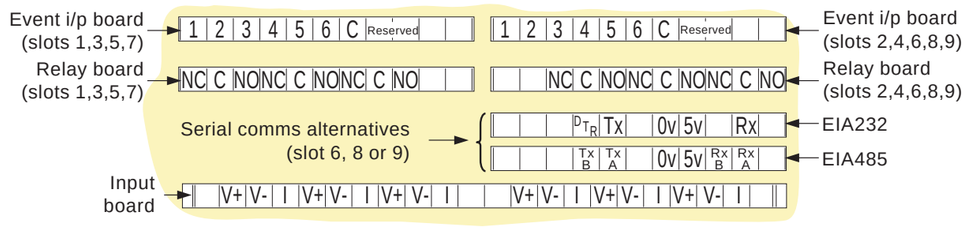
Note: Input boards do not require polarising plugs.

Option board type	Insert plug between contacts:	
	Slots 1,3, 5, 7	Slots 2, 4, 6, 8, 9
Event input	5 & 6	18 & 19
Relay	6 & 7	19 & 20
Serial comms	N/A	20 & 21
Contacts are counted from the left end of the connector, as viewed from the rear of the instrument.		



CONNECTOR LABELS

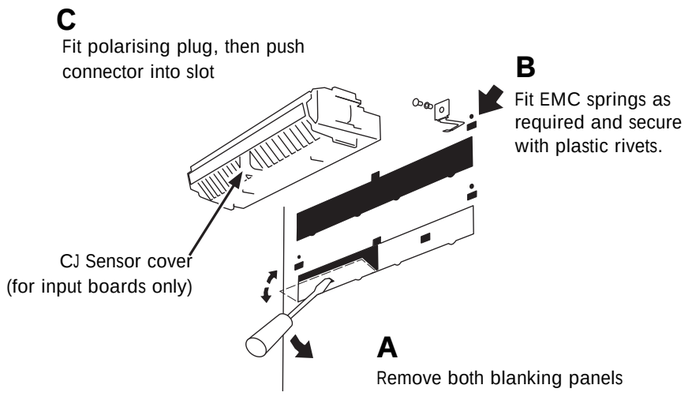
A set of self-adhesive labels is supplied, for the user to apply to the connector. The various types are depicted below.



CONNECTOR FITTING

If required, EMC springs are fitted as shown.

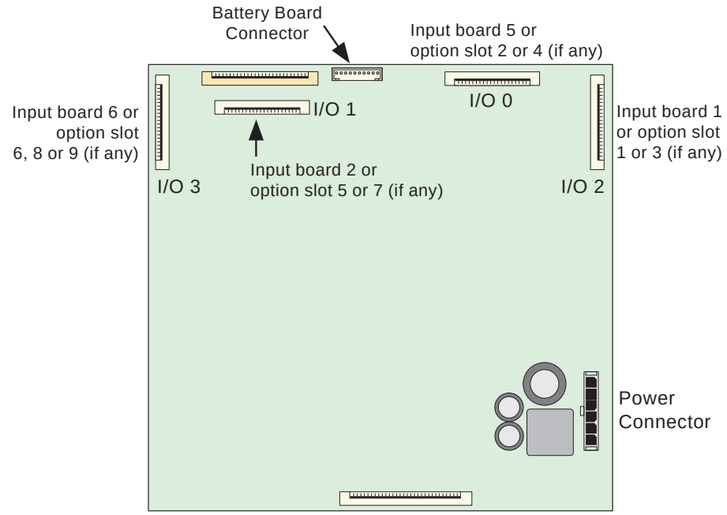
Relay boards do not require EMC springs.
Other option boards require one EMC spring, fitted at the appropriate end of the connector slot.
Input boards require two EMC springs to be fitted, one at each end of the connector.



18

Carefully re-assemble the recorder, ensuring that the flexi-cables are correctly routed through the appropriate slots in the board retainer, and that the retainer is correctly located, before attempting to secure it.

Ensure that all connections to the micro board are secure and that the flexi-cables are securely retained. The figure below shows the relevant connector locations on the micro board.



19

Wire the new connectors according to the information contained in the following pages

20

Apply power to the recorder. Once initialization is complete it is likely that a request to autoconfigure dialogue page will appear. This is only a reminder - pressing OK does not carry out the Autoconfigure.

Log in.

If necessary (i.e. if a new Serial Communications or other software option has been fitted), enter the option key code as described under 'Option Enabling' in the reference section of the Installation and Operation Manual.

From the Root key menu select Operator, then 'Config', then 'Options'. Press the Autoconfigure key to complete installation (Back Page).

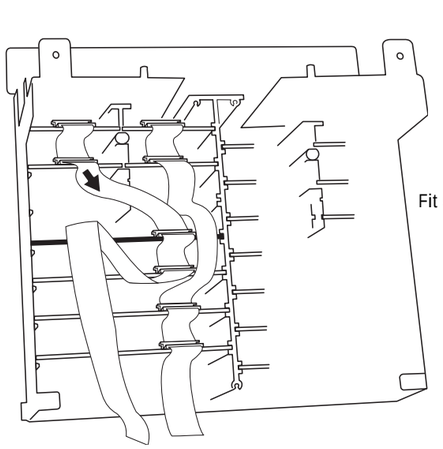
FITTING AN OPTION BOARD (CONT.)

17 (Cont.)

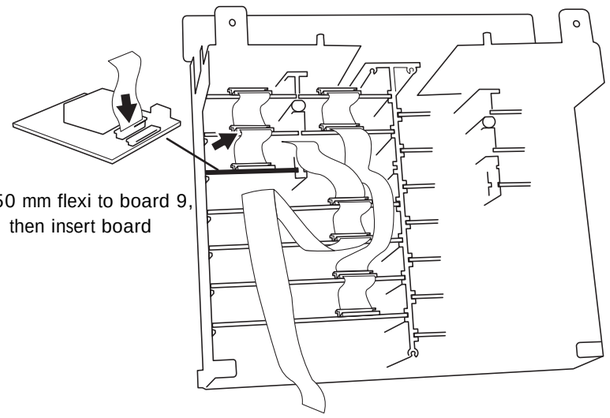
If fitting a board into option slot 7, remove the flexi-cable from the horizontal connector of option board 5. Insert a 50 mm long flexi-cable into the vertical connector of the new board. Slide the option board into its slot, and connect it to option board 5 using the 50 mm flexi-cable just fitted. Take the flexi-cable previously removed from option board 5, and fit it to the horizontal connector of option board 7.

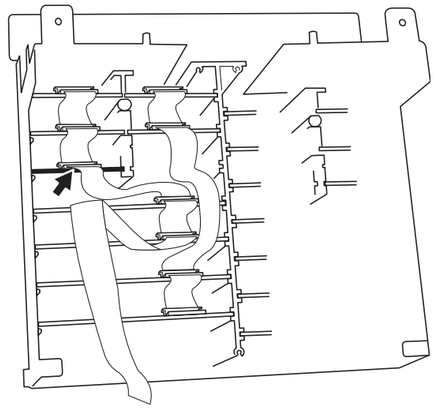
To fit option board 8, remove the flexi-cable from the horizontal connector of option board 6 and insert it into the horizontal connector of option board 8. Insert a 50 mm long flexi-cable into the vertical connector of option board 8 Slide the option board into its slot, and use the 50 mm flexi-cable to connect to the horizontal connector on option board 6.

To fit option board 9 (as shown), remove the flexi-cable from the horizontal connector of option board 8. Insert a 50 mm long flexi-cable into the vertical connector of option board 9. Slide the option board into its slot, and use the 50 mm flexi-cable to connect to the horizontal connector on option board 8. Take the flexi-cable previously removed from option board 8, and insert it into the horizontal connector of option board 9



Remove flexi from board 8

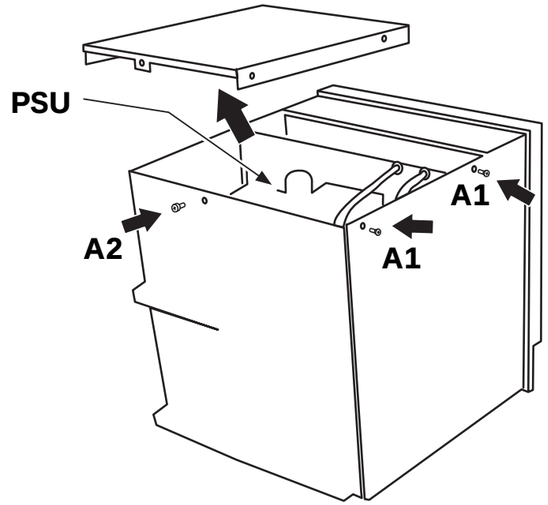




Fit flexi to board 9

PSU REPLACEMENT

If the PSU is not to be replaced, please ignore this section, and start at instruction 9 instead.



1

Ensure that the recorder is isolated from supply power. Remove the power cord connector from the rear panel connector.

2

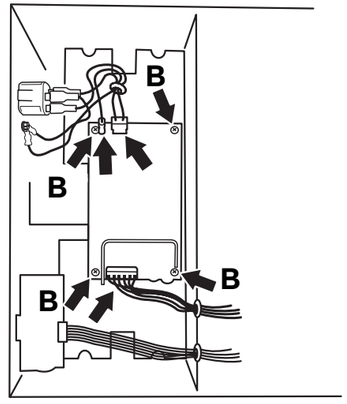
Remove the recorder top plate, by removing the four countersunk securing screws 'A1' (two each side) and the pan-head pozidriv screw 'A2' at the rear.

Note: For current designs of recorder, the four screws securing the top plate to the side plates (A1) are T8 Torx headed screws. The original design used Pozidriv-headed screws.

3

Avoiding any hot components, carefully disconnect all the Power Supply Board connectors.

The PSU may now be removed by undoing the four securing screws 'B'.



If the replacement PSU is of the same type as the existing one (i.e. the supply voltage is not being changed), the new PSU board can now be fitted, and secured using screws B, previously removed.

Warning

Ensure that the insulation sheet is not trapped between the Board and any of its standoff pillars.

Reconnect all the connectors previously removed.

If the replacement PSU is of a different type (e.g. low voltage instead of standard), continue at instruction 5.

4

If input or option boards are to be replaced, or retro-fitted, please continue at instruction 10.
If not, replace the recorder top and secure it using the 5 screws ('A1' and 'A2') previously removed.

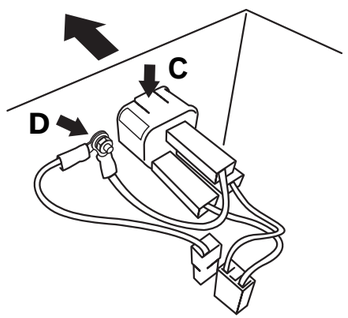
SUPPLY VOLTAGE CHANGE

Two versions of the power supply unit (PSU) are available, *viz*, Standard and Low Voltage. The standard unit accepts supplies of 85 to 265 Volts, 47 to 63 Hz ac, and 110 to 370Volts dc. The low voltage unit accepts ac supplies of 20 to 42Volts, 45 to 400 Hz, and dc supplies of 20 to 54 Volts.

When changing PSU versions, the existing supply voltage connector must be replaced with one suited to the supply voltage. This procedure is detailed below, for changing from the standard version to the low voltage version. The description should also be adequate for the situation where it is required, instead, to change from the low voltage version to the standard version.

5

Ensure that the recorder is isolated from supply power.
Remove the power cord connector from the rear panel connector.



6

Release the earth leads from the chassis, by undoing nut 'D', retaining the fixings for later use.

With the mains harness disconnected from the PSU, the IEC (mains) plug can now be removed from the rear panel, by pressing on the securing 'clips' or latches, on the top ('C') and on the underside of the connector.

The connector and its harness can now be withdrawn from the back panel.

7

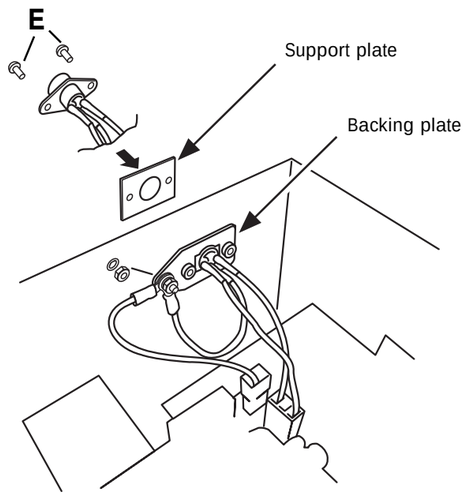
Pass the rectangular connector and associated power leads through the support plate, then through the aperture in the rear panel.

Pass the rectangular connector and associated power leads through the backing plate. Secure the assembly with screws E.

Remake the earth connection, ensuring the shakeproof washer is correctly fitted. Connect the power and earth leads to the PSU.
Reconnect all the connectors previously removed.

Fit a new Supply Voltage label.

See 'Wiringdetails' on page 14 for dc wiring details.



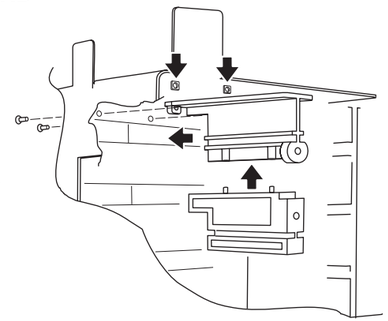
8

If input or option boards are to be replaced, or retro-fitted, please continue at instruction 10. If not, replace the recorder top and secure it using the 5 screws ('A1' and 'A2') previously removed.

FITTING AN OPTION BOARD

16

Continuing from instruction 13, set any relevant switches or links, on the new board(s), as described on page 3. See also the Board location rules on page 1. If necessary, fit one or more circuit board support extensions. (The figure shows not only how to fit an extension, but also how to fit a top support extrusion, which is necessary only when fitting a board in option slot 1/2 or 5/6 for the first time.)



17

Notes:
1 Flexi-cable is not 'double sided'. At the ends, one face is 'live'; the other is insulated. The insulated side of the flexi should always face the latching bar of the connector.
2. It may be necessary to disconnect some flexi cables, that are not directly associated with the new board being fitted, in order to gain access to the board slot more easily.
3. See page 9 for a slot location drawing.

The following assumes that a new board is being fitted to a previously unused slot. If this is not the case (e.g. a faulty board is being replaced), then the same length flexi-cables should be used for the replacement board as were used on the board being replaced. It is also assumed that only a single board is being fitted. If more than one board is being fitted, the procedure is similar, but it must be ensured that the flexi-cable chains are arranged as shown electrically on page 2, and physically on page 8 or 9, according to version.

If fitting a board into option slot 1, fit the board, and use a 180 mmm long flexi-cable to connect it to input board 3 (if fitted), or to input board 1 (if fitted). If neither input board is fitted, use a 270 mm long flexi-cable to connect the option board to I/O2 on the microboard.

If fitting a board into option slot 2, and neither input board 5 nor 7 is fitted, insert a 270 mm long flexi-cable into the horizontal connector and slide the board into its slot. Connect the other end of this flexi to I/O 0 on the micro board. If either input board is fitted, connect the horizontal connector of option board 2 to the vertical connector of input board 7 (if fitted) or board 5, using a 180 mm long flexi-cable.

If fitting a board into option slot 3, remove the flexi-cable fitted to the horizontal connector of Option board 1. Insert a 50 mm long flexi-cable into the vertical connector of the new board. Slide the option board into its slot, and connect it to option board 1 using the 50 mm flexi-cable just fitted. Use a 180 mm long flexi-cable to connect the option board's horizontal connector to the vertical connector of input board 3, if fitted, or input board 1 (if fitted). If no input board is fitted, use a 270 mm flexi-cable to connect the option board to I/O 2 on the microboard

To fit option board 4, remove the flexi-cable from option board 2, and insert it into the horizontal connector of the new option board. Insert a 50 mm long flexi-cable into the vertical connector. Slide the option board into its slot, and use the 50 mm flexi-cable to connect to the horizontal connector on option board 2.

To fit option board 5, fit the board, and connect it to input board 4 (if fitted), or to input board 2 (if fitted), using a 180 mm long flexi-cable. If neither input board is fitted, fit a 270 mm length of flexi-cable into the horizontal connector. On re-assembly, this flexi-cable is connected to I/O 1 on the micro board.

If fitting a board into option slot 6, fit the board, and connect it to input board 8 (if fitted), or to input board 6 (if fitted), using a 180 mm long flexi-cable. If neither input board is fitted, fit a 270 mm length of flexi-cable into the horizontal connector. On re-assembly, this flexi-cable is connected to I/O 3 on the micro board.

(Continued)

FITTING A FURTHER INPUT BOARD (CONT.)

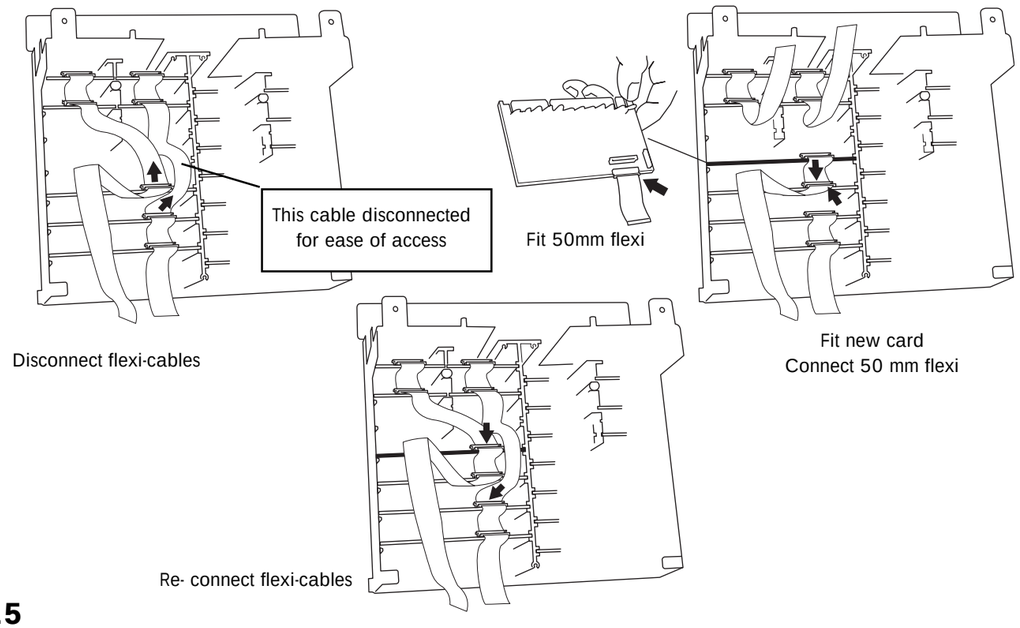
14b (cont.)

To fit input board 5. Fit a 270 mm long flexi-cable to the input board's horizontal connector and slide it into its slot.
If option boards 4 and/or 2 are fitted, remove the flexi-cable which previously connected the option board(s) with I/O 0 on the micro board. Use a 180 mm flexi-cable to connect the horizontal connector on option board 2 or 4 (whichever is physically the lower), to the vertical connector of the new input board.
Connect the other end of the input board flexi to I/O 0 on the micro board.

To fit input board 6. Fit a 270 mm long flexi-cable to the its horizontal connector and slide it into its slot.
If option boards 6 and/or 8 and/or 9 are fitted, remove the flexi-cable which previously connected the option board(s) with I/O 3 on the micro board. Use a 180 mm flexicable to connect the horizontal connector on option board 6, 8 or 9 (whichever is physically the lowest), to the vertical connector of the new input board.
Connect the other end of the input board flexi to I/O 3 on the micro board.

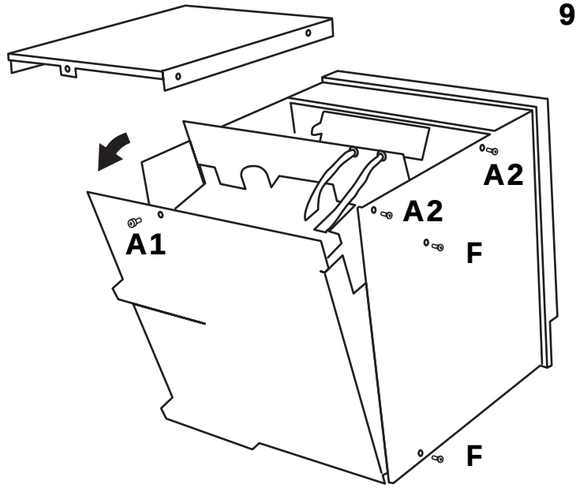
To fit input board 7. Disconnect the flexi cable (if any) currently fitted to the vertical connector of input board 5. Fit a 50 mm long flexi-cable to this connector. Take the new input board, and slide it into its slot. Connect its horizontal connector to the vertical connector of input board 5, using the 50 mm flexi-cable just fitted. Take the flexi-cable (if any) previously fitted to the vertical connector of input board 5, and fit it to the vertical connector of input board 7.

To fit input board 8 (pictured below). Disconnect the flexi cable (if any) currently fitted to the vertical connector of input board 6. Fit a 50 mm long flexi-cable to this connector. Take the new input board, and slide it into its slot. Connect its horizontal connector to the vertical connector of input board 6, using the 50 mm flexi-cable just fitted. Take the flexi-cable (if any) previously fitted to the vertical connector of input board 6, and fit it to the vertical connector of input board 8. (If option slots 6, 8 or 9 are occupied, a flexi 180 mm long should be used.)



15

If option boards are also to be fitted, continue at instruction 16. If not, continue at instruction 18.



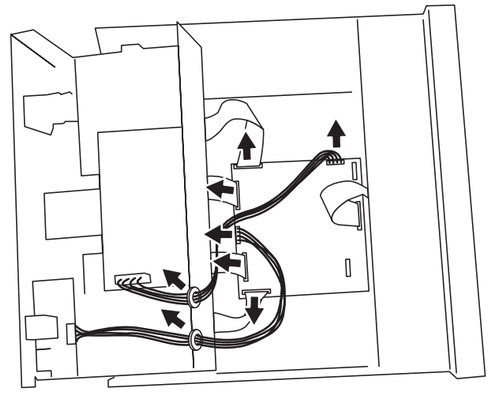
9

Remove the recorder top plate, by removing the four countersunk securing screws 'A1' (two each side) and the pan-head pozidriv screw 'A2' at the rear.

Note: For current designs of recorder, the four screws securing the top plate to the side plates (A1) are T8 Torx headed screws. The original design used Pozidriv-headed screws.

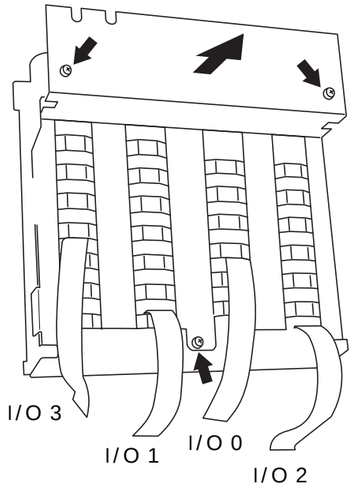
10

Remove the two card cage securing screws ('F'; two each side), then rotate the card cage sufficiently to gain access to the micro board connectors.



11

After disconnecting all relevant connectors, lift the card cage out of the chassis



12a (Original design)

Remove the board retainer, by undoing its three retaining screws, and carefully rotating and lifting it away from the chassis, ensuring that no damage is done to the flexi-cables whilst doing so.

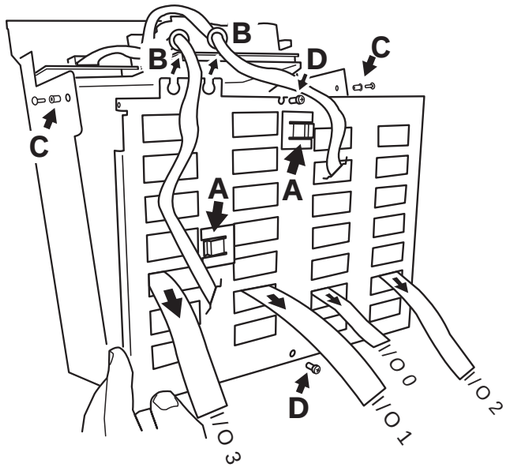
The I/O numbers in the figure refer to the microboard connectors to which the flexi-cables are allocated.

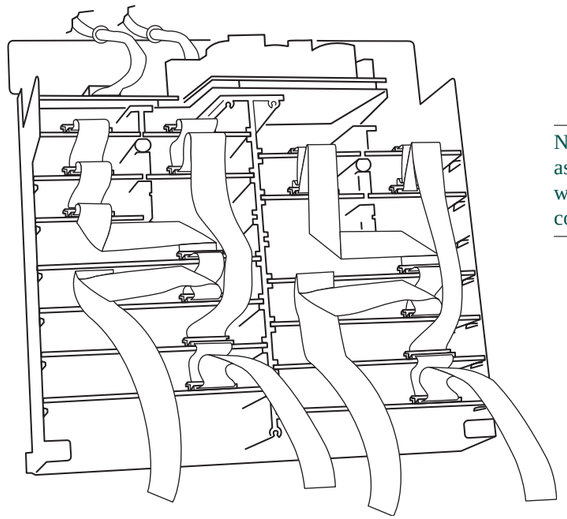
12b (Current design)

Release the power and battery board looms from their restraining clips (A in the figure), and pull the grommets (B) away from the board retainer plate.
Remove the board retainer, by removing the two plastic rivets (C) and two securing screws (D), and then carefully rotating and lifting it away from the chassis, ensuring that no damage is done to the flexi-cables whilst doing so.

The I/O numbers in the figure refer to the microboard connectors to which the flexi-cables are allocated.

The figure below shows flexi-cable routing for the current design. This differs only in detail from the original version.





Note: The flexi-cables must be routed and folded as shown in the two figures on this page. Otherwise, it is likely that the unit will not be CE compliant when re-assembled.

13

If necessary, fit extra connectors* and associated EMC springs* at the rear of the recorder. Select a label appropriate to the type of new board being added, and apply it to the connector (see page 4).

Continue at instruction 14a, if one or more input boards are to be fitted, or at instruction 16, if only option boards are being fitted.

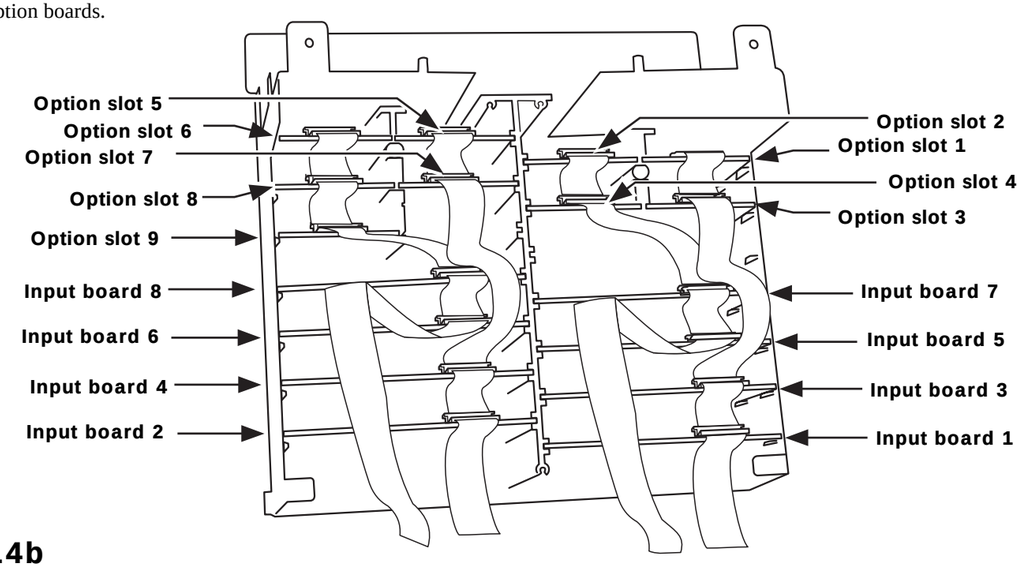
*Notes:
1. If required, insert polarising plugs in the appropriate place for the type of board being fitted (see the table on page 4).
2. Input boards require an EMC spring at both ends of the connector. Relay option boards do not require any EMC springs. Other option boards require one EMC spring each, fitted at the relevant end of the connector.

FITTING A FURTHER INPUT BOARD

Note: Only recorders with hardware status 15 or higher maintain CE Compliance when input board 7 or 8 is fitted.

14a

Before fitting a new input board, a link must be set to define the board number. Although there can be up to eight input boards fitted, there are only two per I/O port on the microboard. It is thus necessary only to define the board as board 1 or board 2, as shown on page 3 of this document. The figure below shows the slot numbers for all possible input and option boards.



14b

Notes:
1 Flexi-cable is not 'double sided'. At the ends, one face is 'live'; the other is insulated. The insulated side of the flexi should always face the latching bar of the connector.
2. It may be necessary to disconnect some flexi cables, that are not directly associated with the new board being fitted, in order to gain access to the board slot more easily.

To fit input board 2. If option boards 5 and/or 7 are fitted, remove the flexi-cable which previously connected the option boards with I/O 1 on the micro board. Fit 180 mm long flexi-cables to both the vertical and horizontal connector of the new input board. Slide the board into its slot, and connect it to the horizontal connector on option board 5 or 7, whichever is physically the lower.
If neither option board is fitted, fit a 180 mm long flexi-cable to the input board horizontal connector and slide the board into its slot.

To fit input board 3. Disconnect the flexi cable (if any) currently fitted to the vertical connector of input board 1. Fit a 50 mm long flexi-cable to this connector. Take the new input board, and slide it into its slot. Connect its horizontal connector to the vertical connector of input board 1, using the 50 mm flexi-cable just fitted. Fit the flexi-cable (if any) previously fitted to the vertical connector of input board 1, and fit it to the vertical connector of input board 3.

To fit input board 4. Disconnect the flexi cable (if any) currently fitted to the vertical connector of input board 2. Fit a 50 mm long flexi-cable to this connector. Take the new input board, and slide it into its slot. Connect its horizontal connector to the vertical connector of input board 2, using the 50 mm flexi-cable just fitted. Fit the flexi-cable (if any) previously fitted to the vertical connector of input board 2, and fit it to the vertical connector of input board 4.

(Continued)