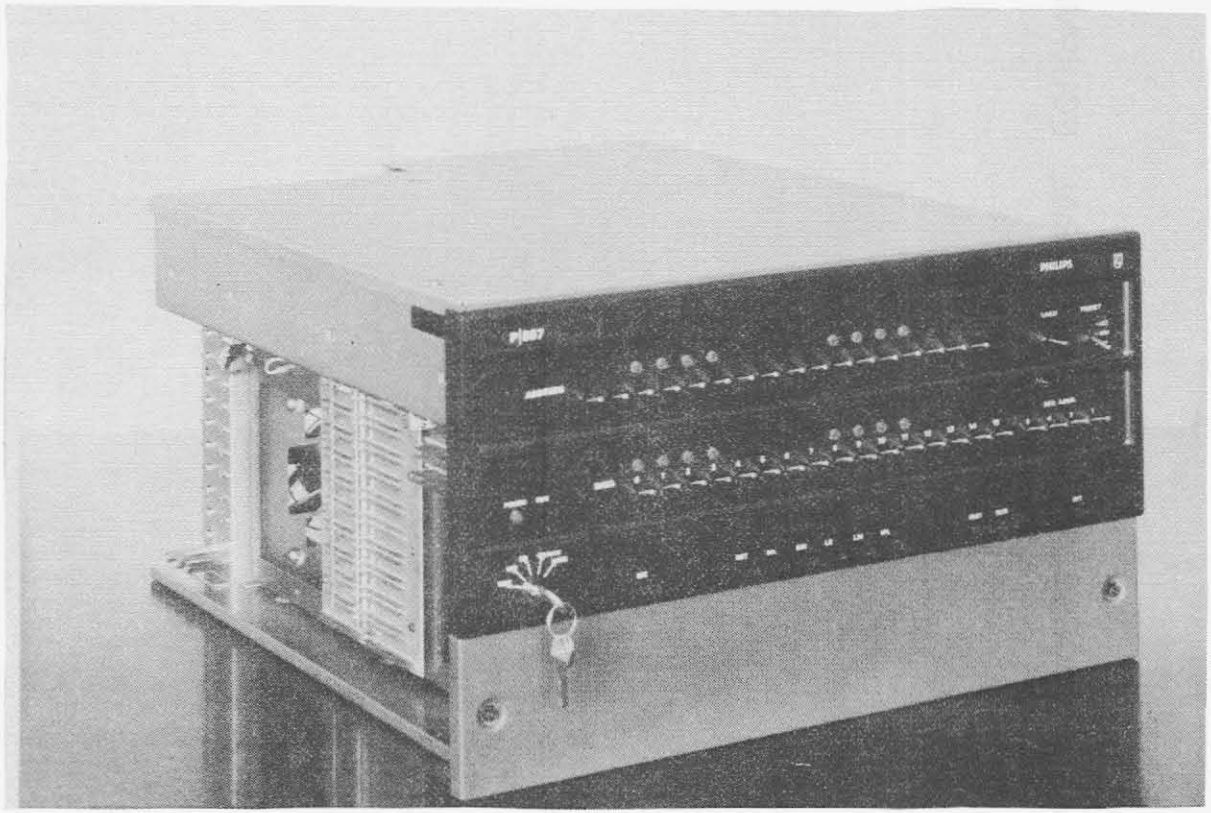
PART 2 — CENTRAL PROCESSORS AND INTEGRAL EQUIPMENT



CENTRAL PROCESSOR MOUNTING BOX

Standard Features

The common standard features of the P852M/P856M/P857M central processors are given below:

- 16 hardware registers, 14 of which are programmable.
- asynchronous general purpose bus control
- 63 interrupt levels
- internal interrupt for link to monitor
- DMA facility; allows character handling and packing.
- power supply.
- direct access (read/write) for up to 256 external registers
- addressing facility for up to 32k, 16-bit words.
- Interface for optional bootstrap loader
- Control panel
- mounting box with 4 slots (P852M, P856- 100 series) or 6 slots (P852M- 200 series), or 10 slots (P852M, P856M, P857M- 400 series), or 17 slots (P857M- 500 series).
- telescopic slides.
- documentation.

Also as standard for the P856M and P857M processors are the following:

- V24 serial interface unit.
- memory interleaving facility.
- automatic diagnostic facility.
- power failure automatic restart.
- real time clock, line frequency.
- IPL

For the P857M also provided as standard is a memory management unit, contained on a board which mounts in a dedicated location immediately underneath the CPU. This facility allows addressing beyond 32k, dynamic relocation and memory protect. A general purpose Initial Program Loader is provided as standard with the P856M and P857M.

P857M option: Floating Point Processor P857M-020.

The P852M is provided with a standard instruction set (with simulated Multiply/Divide instructions) and the P856M with the same instruction set but including Hardware Multiply/Divide instructions. The P857M is provided with an extended standard instruction set including Hardware Multiply/Divide and Memory Management instructions.

The physical details of the processors are shown in Figures 1.1 to 1.4

Main Variants

The main variants for the processors are summarized in Table 1.1.

The memory modules (all 16-bit words) available are as follows:

P852M-004	4k	(cycle time 1.2 µsec) -	Used on P852M/P856M
P843-108	8k	(cycle time 1.2 µsec)-	Used on P852M/P856M
P843-116	16k	(cycle time 1.2 µsec)-	Used on P852M/P856M
P843-216	16k	(cycle time 0.7 µsec)-	Used on P856M/P857M (provides interleaving facility)

Options

P843-020 — I/O processor High Speed Multiplex data channel Automatic control of all data transfers. Maximum throughput 1.2M words/sec. Up to 8 I/O processors can be connected to the CPU. Includes 3.0 metre break lines cable.

P843-052 — General purpose initial program loader(ROM). Mounted on P852M CPU board.

P852M-023 — A special purpose CPU board which can be supplied for all variants of the P852M. The board includes the following features:

- power failure/automatic restart.
- real time clock(line frequency).

Table 1.1. Central Processor - Main Variants

Series	Type No	GP Slots	Mem Size	RTC	PF/Auto Restart	CU for ASR 33	CU for V24 Serial Control	Remarks
P852M-100 (3U box)	P852M-101	2	4k	Opt	Opt	Opt	-	All memories 16-bit Words and 1.2 μsec cycle time.
	P852M-102	2	8k	"	"	"	-	
	P852M-103	2	16k	"	"	"	-	
P852M-200 (3U box)	P852M-201	4	4k	"	"	"	-	
	P852M-202	4	8k	"	"	"	-	
	P852M-203	4	16k	"	"	"	-	
P852M-400 (6U box)	P852M-402	8	8k	"	"	"	-	
	P852M-403	8	16k	"	"	"	-	
P856M-100 (3U box)	P856M-102	2	8k	Yes	Yes	-	Yes	Memories 16-bit Words 1.2 μsec cycle time except those marked* which have 0.7 μsec cycle time. Automatic Diagnostic facility on all Type Nos. Memory Interleaving on P856M-406.
	P856M-103	2	16k	"	"	-	"	
	P856M-106*	2	16k	"	"	-	"	
P856M-400 (6U box)	P856M-402	8	8k	"	"	-	"	
	P856M-403	8	16k	"	"	-	"	
	P856M-406*	8	16k	"	"	-	"	
P857M-400 (6U box)	P857M-405	7	16k	"	"	-	"	All memories 16-bit Words 0.7 μsec cycle time.
P857M-500 (11U box)	P857M-505	13	32k	"	"	-	"	Automatic Diagnostic facility. Memory Interleaving. Memory Management Unit. P857M-405 Extension facility up to 64k P857M-505 Extension facility up to 128k

- control unit for an ASR 33 teletype.
- general purpose bus connectors.
- internal interrupt for link to monitor plus ASR 33.
- interface to full control panel.
- interface for optional general purpose initial program loader(P843-052)

Power Supplies

The power available from the internal power supply for the CPU board, the memory, and to the slots for I/O processors and I/O cards is as shown in Table 1.2.

Table 1.2 Total Power Available from Power Supply

Supply Volts	Current(100 and 200 series)	Current(400 series)	Current(500 series)
+5	18A	43A	86A
-5	0.8A	2.0A	4.0A
+16	4.5A	9.0A	18A
+18unreg	1.0A	2.0A	4.0A
-18unreg	1.0A	2.0A	4.0A

The remaining +5V supply current available at the free connectors of the mounting boxes is shown in Table 1.3.

Note: The whole of the +18V and -18V power as listed in in Table 1.2 is available.

Table 1.3. Remaining Power Available at Free Connectors

Type No.	Current Available(From +5V)
P852M-101	5.2A
-102	5.1A
-103	4.4A

Table 1.3 cont.

Type No.	Current Available(From +5V)
P852M-201	8.2A
-202	8.1A
-203	7.4A
-402	33.1
-403	32.4
P856M-102	5.2A
-103	4.5A
-106	4.5A
-402	30.2A
-403	29.5A
-406	29.5A
P857M-405	23.5A
-505	65.7A

The power consumption in amperes for different sizes of memory is given in Table 1.4 below:

Table 1.4 Power Consumption of Memories

Core Size	Speed	Supply Voltage			No. of Modules
	µsec	+5V	-5V	+16V	
4k	1.2	2.5	0.2	3.6	1
8k	1.2	2.6	0.2	3.6	1
12k	1.2	5.3	0.4	4.0	2(4k + 8k)
16k	1.2	3.2	0.4	3.7	1
24k	1.2	6.1	0.6	4.2	2(8k + 16k)
32k	1.2	6.7	0.8	4.3	2(16k + 16k)
16k	0.7	4.5*	0.4*	5.7*	

Note: * Indicates maximum current consumption

Environmental Requirements

The environmental conditions specified below apply to all the central processors and also to the integral equipment defined in further chapters in this Part of the manual; the extended limits quoted for transit and storage only apply if the equipment is

correctly packaged.

Temperature Range

Operating	0°C to 45°C
Non-operating	-30°C to +70°C
Transit or storage	-30°C to +70°C

Humidity Range

Operating	0 to 85% r.h.
Transit or storage	0 to 100% r.h.

Maximum Vibration

The following conditions apply during operation,non-operation, storage and transit and are as defined in BEAMA standard 209/2.5/69 group II requirements.

Frequency	10 - 150Hz
Acceleration	0.5g
Amplitude	0.75mm peak to peak

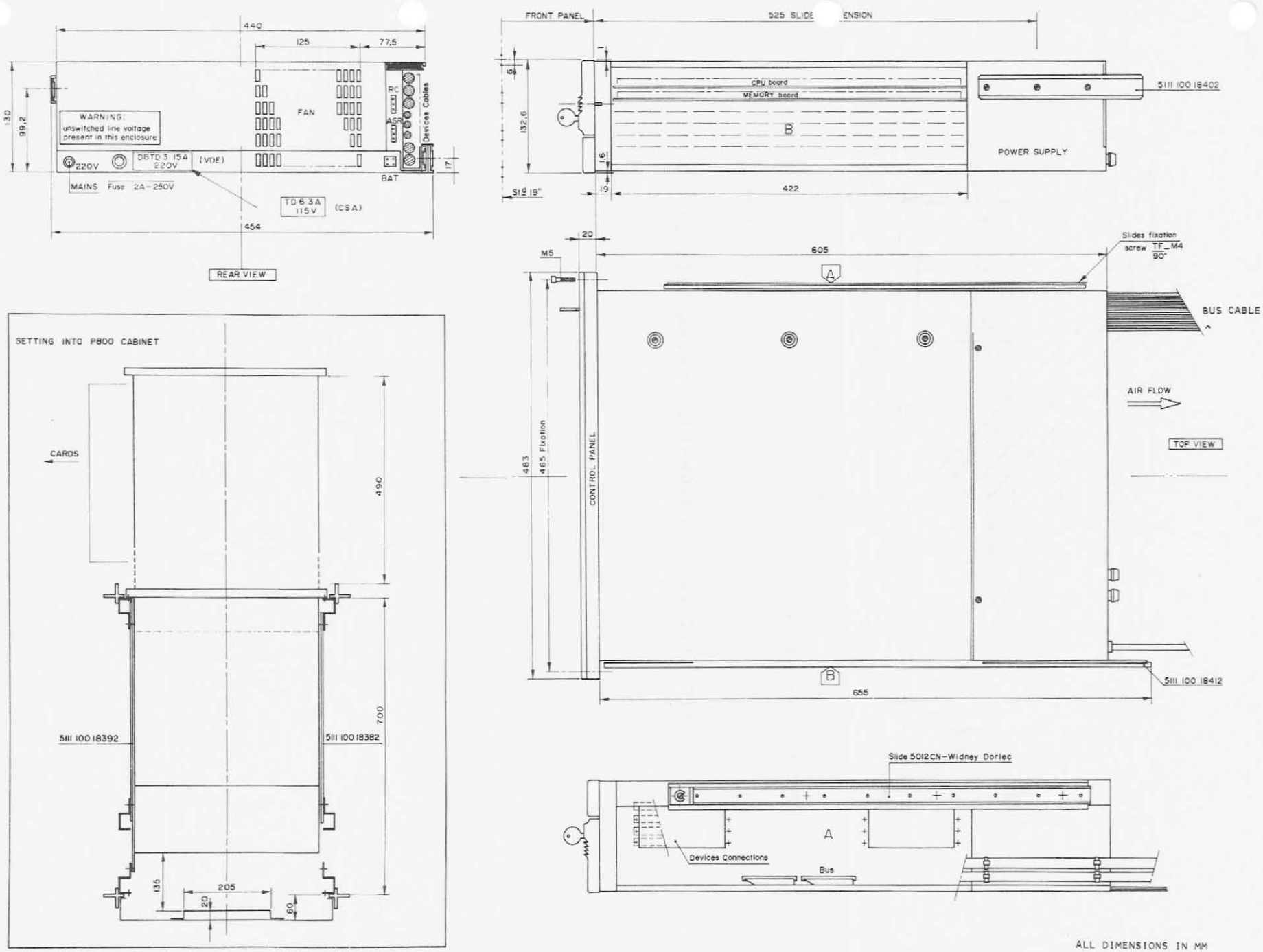
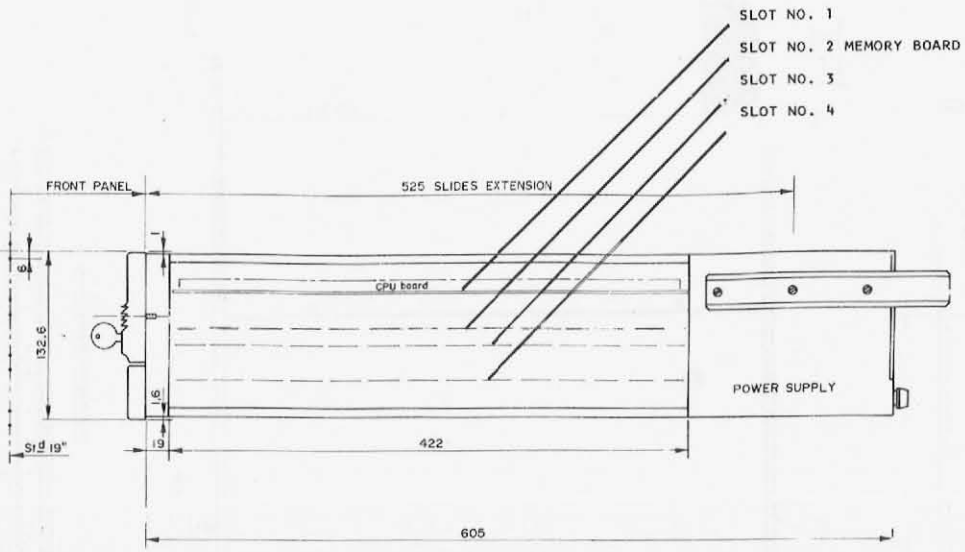


FIG. 1.1 P852M-200 SERIES-DETAILS



Box dimensions same as for P852M-200 series

All dimensions in mm

FIG. 1.2 P852M/P856M-100 SERIES DETAILS

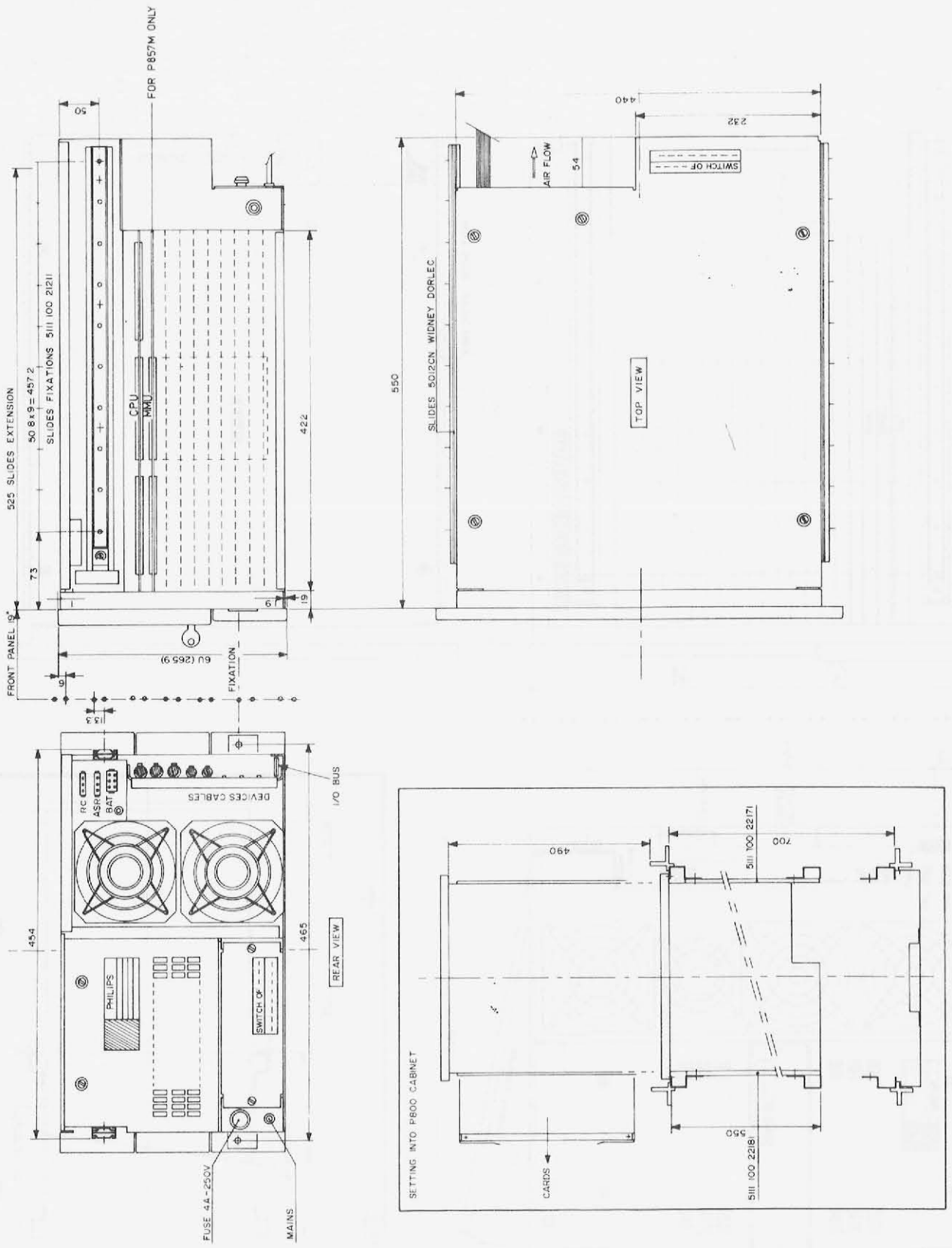


FIG. 1.3 P852M/P856M/P857M-400 SERIES DETAILS

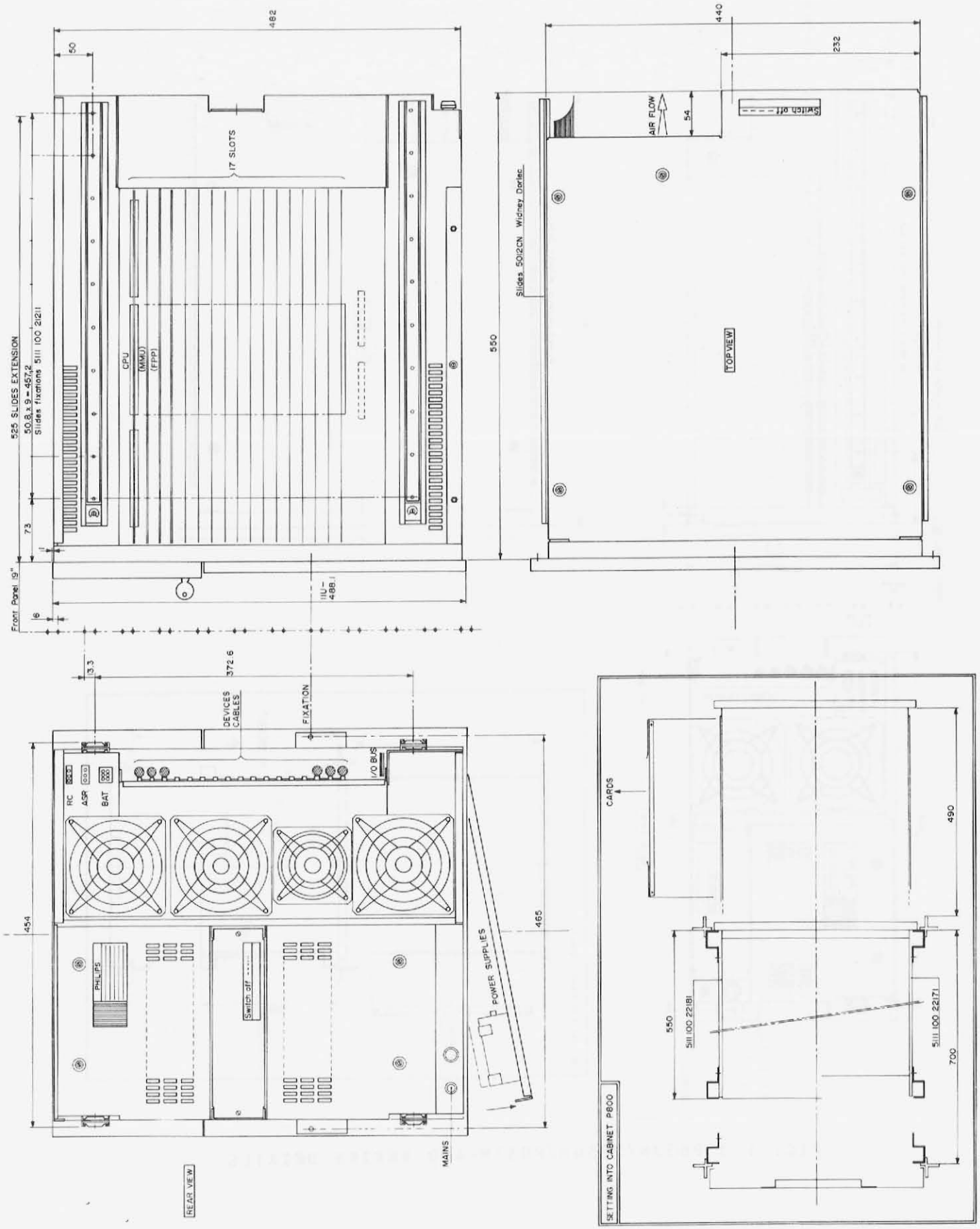
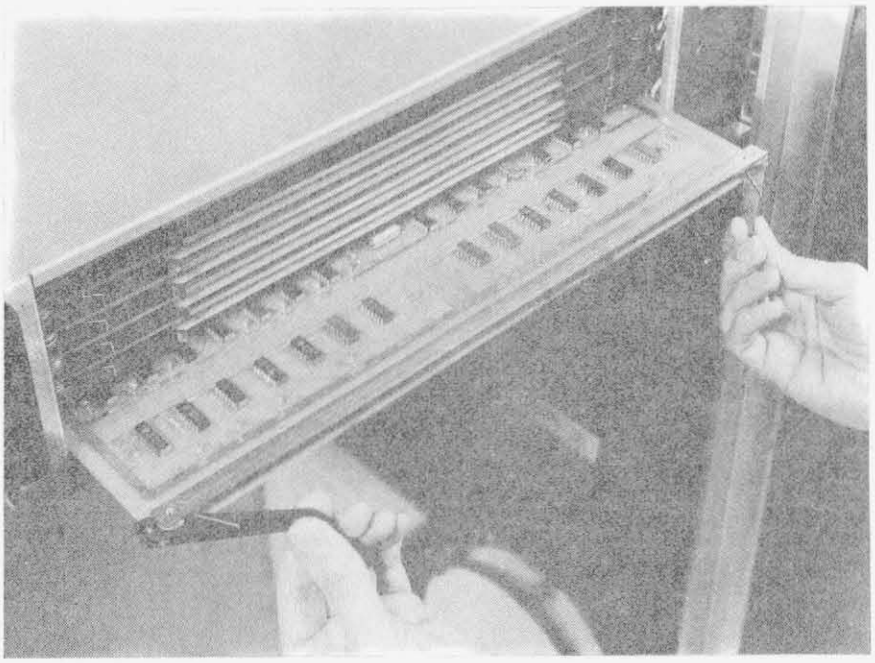
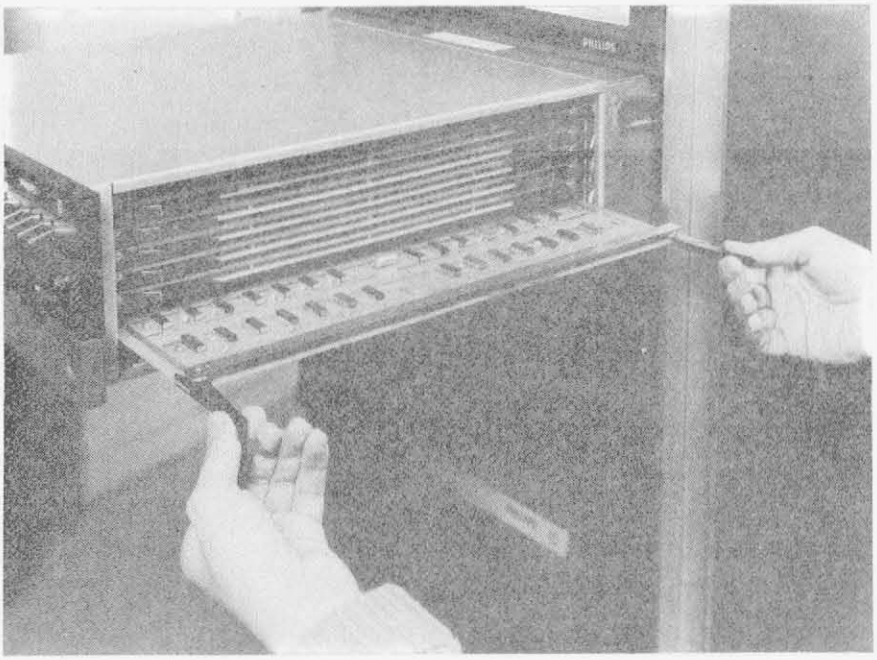


Figure 1.4. P857M-500 Series - Details



card extractor handles-construction



correct position of handles for inserting a card

USE OF CARD EXTRACTOR HANDLES

Standard and Mini Control Panels

The Full Control Panel (2U high) shown in Figure 2.1 is provided as standard with all P852M and P856M processors. The panel contains switches and indicators which allow an operator or programmer to load, display, run and supervise a program. The central processors can also be equipped, on option, with a mini-panel (P852M-030) shown in Figure 2.2.

Extended Panel (P856M-032 4U high)

An Extended Panel, as shown in Figure 2.3., is provided as standard for P857M processors and can be provided, as an option, for P856M-400 series processors. This panel contains, on the lower half, the switches and indicators as described for the Full Control Panel and on the upper half switches and indicators for the simultaneous control and display of data and address and stop on pre-set address.

Portable Control Panel

A Portable Control Panel (P849-052) is available which contains all the facilities of a standard Full Control Panel and is fitted with a connector which enables it to be fitted in place of a standard full control panel or mini-panel; the panel is used mainly for servicing purposes.

A control panel is shown disconnected from the basic mounting box in Figure 2.4.

Note: Test position not used on P852M

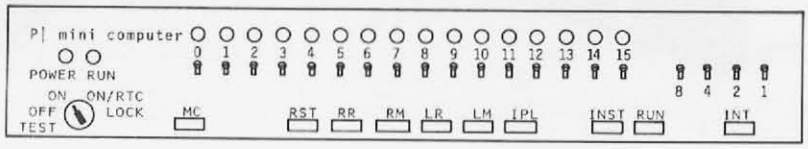


FIG. 2.1 FULL CONTROL PANEL

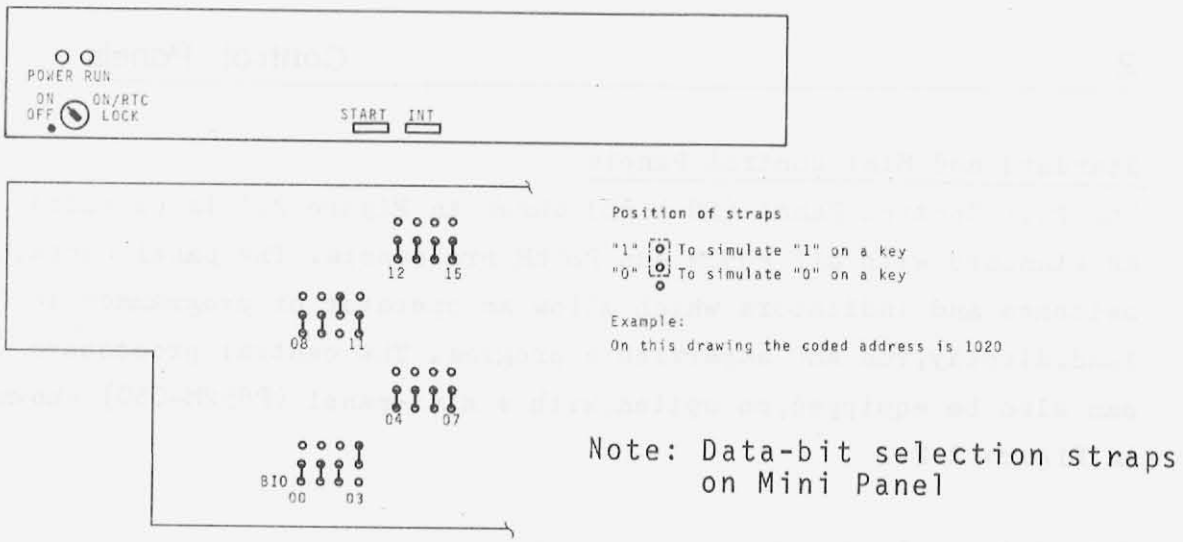


FIG. 2.2. MINI PANEL

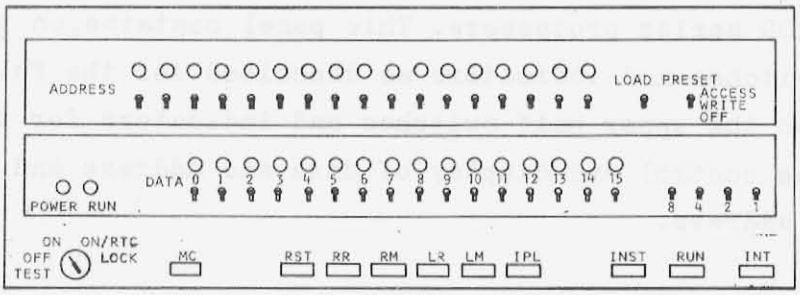


FIG. 2.3 EXTENDED PANEL

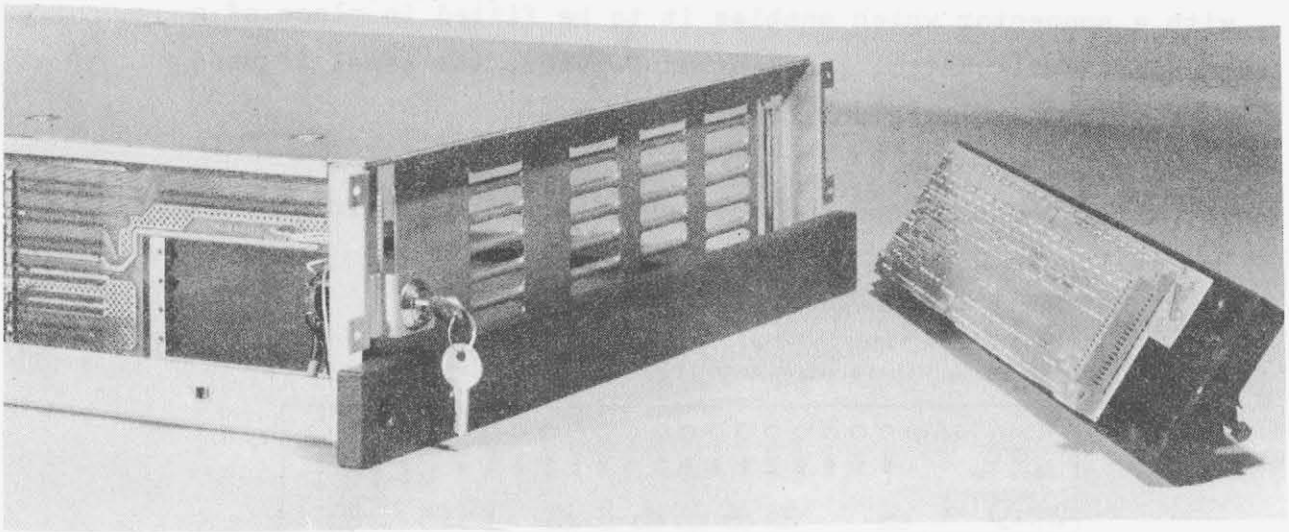


FIG. 2.4 CONTROL PANEL-DISCONNECTED

3 I/O Cards

The I/O Cards are located in the general purpose slots of the basic mounting box but where there are too many of them to be accommodated the G P bus is extended, using a transmission line of two flat cables of 50 ways each, thus enabling additional cards to be contained in separate equipment shelves (described in Chapter 4.). Each shelf contains its own power supply for the cards it contains. Multicard peripheral controllers are also separately housed in this manner to form self contained units complete with power supplies.

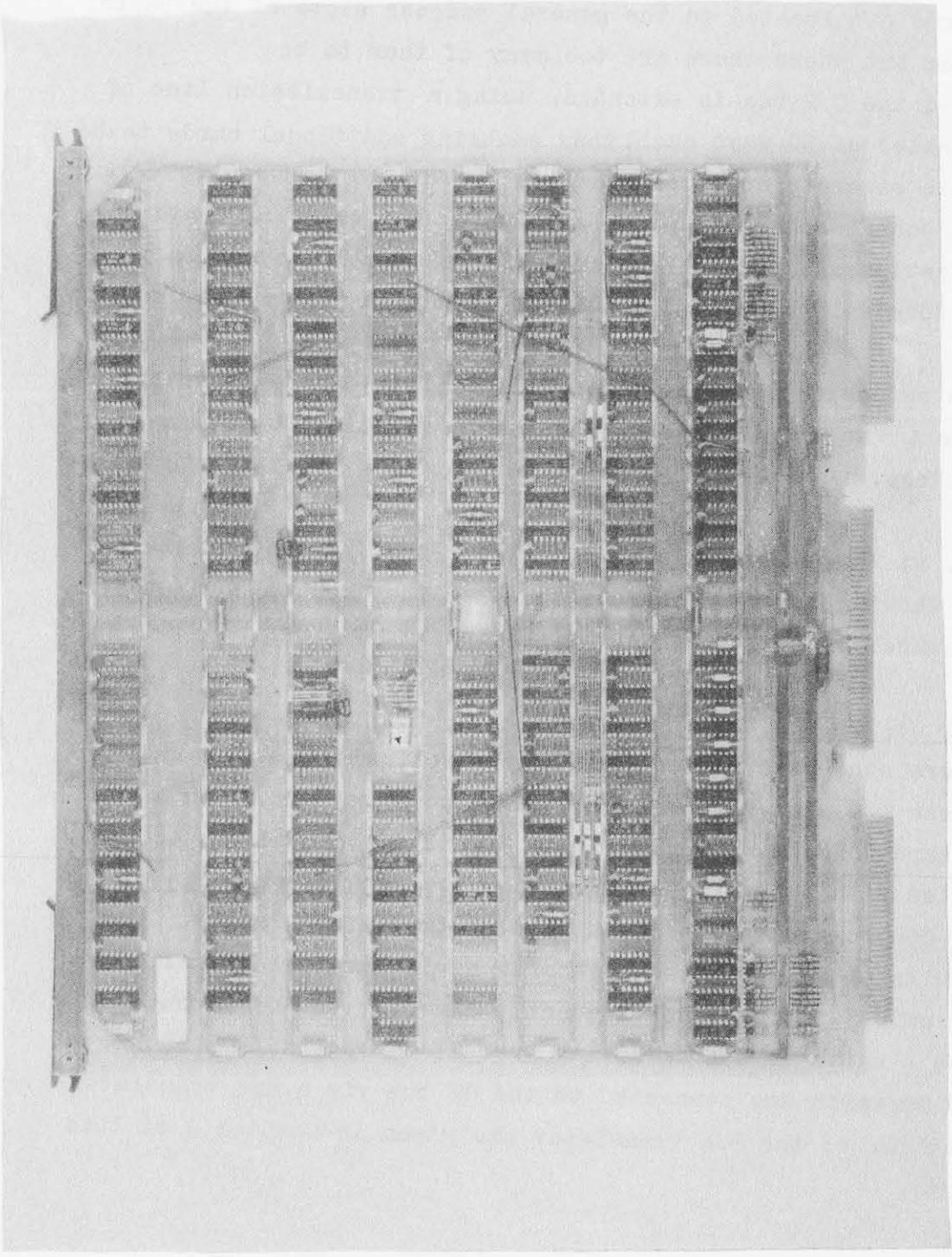
The GP bus extension and equipment shelf facilities are described in Chapter 4 as are the cables and panels relating to data communications.

Table 3.1. at the end of this chapter lists the I/O controllers discussed showing the I/O channels to which they may be connected, also the number of device addresses and interrupt lines.

Peripheral Control Units

Except where otherwise stated each of the following control units occupies one I/O slot either in the basic mounting box or in a separate card chassis. The associated signal cables and connectors are supplied with the peripheral units - see Part 3 Peripherals.

Note: The control units are identified as type 1 or 2 units. Type 1 units are constructed on boards having overall dimensions 421 mm x 371.5 mm which connect directly to the GP bus and type 2 units on boards having overall dimensions 208 mm x 310 mm which are connected to the GP bus via a bus translator (details of the bus translator are given in Chapter 4 of this part).



P824-040 Disc Control Units

P801-040 (type 1)

Control unit for punched tape reader P801-001 or P802-001.
It requires the following d.c. supply:

+5V 1.3A

P810-040 (type 1)

Control unit for lineprinter P809-002, P811-001 or P812-001.
It requires the following d.c. supply:

+5V 0.7A

P845-040 (type 1)

Control unit for the transfer of serial data with CCITT V24 and V28 interface. Speed selectable from 110,150,200,300,600,1200,2400,4800 and 9600 bits/second.
It requires the following d.c. supplies:

+5V 1.9A
+18V 0.045A
-18V 0.04A

P824-040 (type 1)

Control unit for two P824-002 moving head disc units.
It requires the following d.c. supply:

+5V 4.0A

P825-040 (type 1)

Control unit for 2 P825-007 moving head disc units.
It requires the following d.c. supply:

+ 5V 6.0A

P831-040 (type 2)

Control unit for either four P831-002, four P831-004 or four P831-006 tape transports daisy-chain connected to either a P831-010, P831-020 or P831-030 tape formatter - See Part 3. The control unit comprises 2 cards which together with a P849-020 (RD1) or P849-021 (RD2) rectifier and a P849-322 (RG4) stabilizer card to provide the necessary d.c. supplies and a P843-007 or P843-008 bus translator card for connection to the GP bus are housed in a multicard equipment shelf to form a self contained unit.

P833-152 (type 1)

Equipment shelf with space for up to three cassette tape drives. Shelf includes control unit, CRC computation, power supply for 3 tape drives + 3.0m cable (see Part 3, Chapter 1).

P840-001 (type 1)

Control unit for punched tape reader P801-001 or P802-001 and tape punch P803-001.
It requires the following d.c. supply:

+5V	1.9A

P840-002 (type 1)

Control unit for punched tape reader P801-001 or P802-001 and tape punch P803-001 and V24 devices.
It requires the following d.c. supplies:

+5V	2.8A
-18V	0.04A
+18V	0.045A

P840-003 (type 1)

Control unit for card reader P806-102 and line-printer P809-002, P811-001, or P812-001.
It requires the following d.c. supply:

+5V	1.7A

Data Communications

The following data communication units, when used, occupy 1 slot in an Equipment Shelf Type E2.

P847-060 SLCU 2S

Multiple line control unit for 2 Half Duplex (HDX) or 1 Full Duplex (FDX) synchronous line connections up to 200,000 bits per second with interface according to CCITT V24/V28 recommendations. Special character recognition; CRC- VRC generation and check.
It requires the following d.c. supplies:

+5V	4.0A
+18V	0.08A
-18V	0.16A

P847-070
SLCU 4

Multiple line control unit for 4 HDX or 2 FDX synchronous line connections up to 9600 bits per second with interface according to CCITT V24/V28 recommendations.
It requires the following d.c. supplies:

+5V	4.0A
+18V	0.16A
-18V	0.25A

P846-070
ALCU 4

Multiple line control unit for 4 HDX or 2 FDX asynchronous line connections 300 to 9600 bits per second with interface according to CCITT V24/V28/V23 recommendations.
It requires the following d.c. supplies:

+5V	4.0A
+18V	0.12A
-18V	0.18A

P846-060
ALCU 2

Multiple control unit for 2HDX or 1 FDX asynchronous line connections 300 to 9600 bits per second with interface according to CCITT V24/V28/V23 recommendations.
It requires the following d.c. supplies.

+5V	3.0A
+18V	0.06A
-18V	0.09A

P845-060
AMA 8A

Asynchronous medium speed line multiplexer for 8 FDX or 8 HDX connections 50 to 9600 bits per second with interface according to CCITT V24/V28 recommendations.
It requires the following d.c. supplies:

+5V	5.0A
+18V	0.24A
-18V	0.36A

P845-070
AMA 8C

Asynchronous medium speed line multiplexer for 8 asynchronous device connections 50 to 9600 bits per second with current loop interface (20 mA) or TTL interface.
It requires the following d.c. supplies:

+5V	4.5A
-18V	0.1A

P844-060
AMA 16

Asynchronous low speed line multiplexer for 16 HDX or 16 FDX connections 50 to 200 bits per second with TTL compatible interface.
It requires the following d.c. supplies:

+5V	1.4A
-18V	0.05A

P844-110
V28 CM

Control module for 64 lines (32 in-32 out)with interface according to CCITT V24/V28 recommendations.
It requires the following d.c. supplies:

+5V	3.0A
+18V	0.16A
-18V	0.16A

Modular I/O System (MIOS)

MIOS is a separate rack mounting system (see Appendix for handbook) for connecting the system to the GP bus.

Control unit (PC 1207/00 type M5D) for a basic modular input and/or output system of up to 16 modules.

Digital I/O System (DIOS)

DIOS is supplied using the following Dual Input Output Digital (DIOD) boards:

P837-001
DIOD
(type 1)

Digital input output control unit providing:

- 1 gated 16-bit input word (including level adaptation)
- 1 buffered 16-bit output word (including level adaption)
- 1 call line per word
- 1 response line per word
- TTL level connection

It requires the following d.c. supply:

+5V 2.25A (when used without output resistors)
3.2A (when used with output resistors)

P837-002
DIOD
(type 1)

Digital input output control unit providing:

- 2 gated 16-bit input words (including level adaption)
- 2 buffered 16-bit output words (including level adaption)
- 1 call line per word
- 1 response line per word
- TTL level connection

It requires the following d.c. supply:

+5V 3.5A (when used without output resistors)
5.3A (when used with output resistors)

Table 3.1

I/O Channel Alternatives for Controllers

Type Number	Description	Prog. Channel	I/O Processor	Interrupts	No of Device Addresses
P801-040	P.T.R.	Yes	-	1	1
P840-001	P.T.R./P.T.P.	Yes	-	2	2
P840-002	P.T.R./P.T.P./V24	Yes	-	3	3
P840-003	C.R./L.P.	Yes (LP)	Yes	2	2
P810-040	L.P.	Yes	Yes	1	1
P845-045	V24/V28	Yes	-	1	1 (1)
P825-040	M.H.D.(40M 8-bit chr)	-	Yes	1	1
P824-040	M.H.D.	-	Yes	1	4
P831-040	M.T. 800/1600	-	Yes (tran)	1	4
P833-152	Cass. T.	Yes	Yes	1	3
P837-001	DIOD 2W	-	-	1	1
P837-002	DIOD 4W	-	-	2	2

- not supported by standard software

yes - supported by standard software

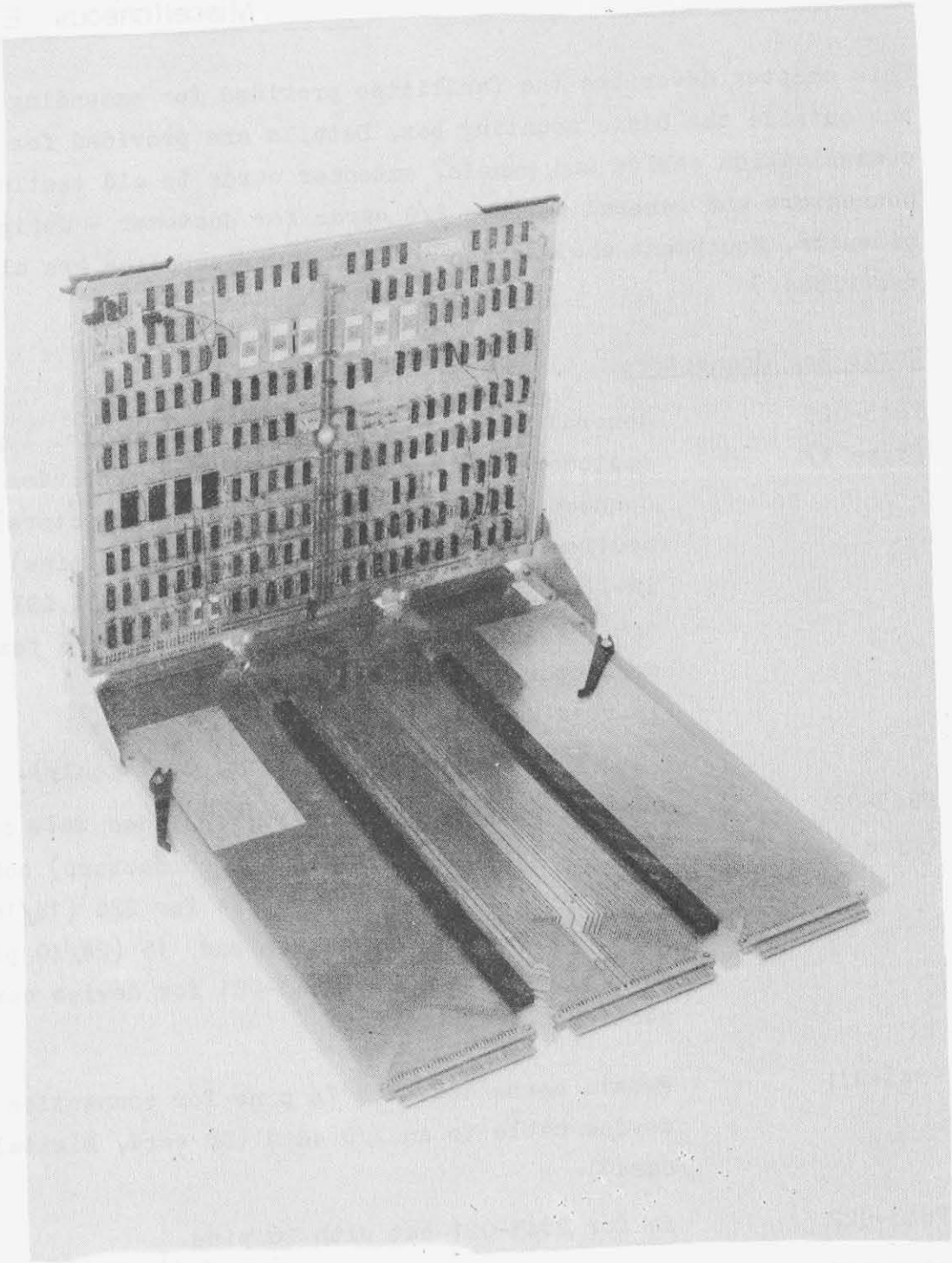
(1) These CU'S are not supported by standard software as the use of them depends on the application

tran - connected via a translator card P843-007/008

This chapter describes the facilities provided for extending the GP bus outside the basic mounting box. Details are provided for data-communication cables and panels, extender cards to aid testing, card connectors and general purpose I/O cards for customer - designed circuits. Equipment shelves and modular power supplies are also described.

Cards and Connectors.

P843-025 (type 1)	General purpose card with GP bus control logic for customer-designed control circuit. Includes male connectors for bus and device (2 connectors) connection, and has space for 125 (14/16 pins) dual in-line-packages and 2 (24/40 pins) MSI,LSI packages. For connection of a device cable a female connector must be used (use P843-021). It requires the following d.c. supply: +5V 1.0A (bus control logic only).
P843-026 (type 1)	General purpose wiring card; includes male connectors for bus and device (2 connectors) connection. Blank card with space for 226 (14/16 pins) dual in-line-packages and 15 (24/40 pins) MSI,LSI packages. Use P843-021 for device connection.
P843-021	Female connector with 74 pins for connection of a device cable to an I/O card (GP card, Digital I/O card).
P843-022	As for P843-021 but with 26 pins.
P843-027	Set of 10 emitter and 10 receiver packages. Required for a customer who is designing an interface to the GP bus.
P843-028	Set of 10 bridge adaption networks (Ternet packages each of which terminate 14 signal lines). Required



Use of Extenstion Card P843-035

by customer designing terminations to the GP bus.

P849-006 Female Connector (50 pins) for device connection to Type 2 card.

P849-006 Female Connector (74 pins) for input isolator card P839-004.

Extenders and Adaptors

P843-007 (type 2) Bus translator card including 3 metre cable. Used to translate signals on I/O bus into signals for GP bus. The card is always supplied as part of equipment shelf P843-002.
It requires the following d.c. supply:
+5V 1.0A.

P843-008 (type 2) Bus translator/terminator card including 3 metre cable. Identical to P843-007 but also provides termination resistors for terminating the GP bus. The card is always supplied as part of equipment shelf P843-003.
It requires the following d.c. supply:
+5V 1.9A.

P843-009 Bus terminator to be used in equipment connected at end of the GP bus, where the bus requires terminating. e.g. Equipment Shelf P843-001 used at the end of bus.
It requires the following d.c. supply:
+5V 0.9A.

P843-115 GP bus extension cables (flat cable 2 x 50 way each) with connectors-overall length3.0 metre.

P843-031 Break lines requests cable (8 break request signal lines plus 8 signal earth lines),
- overall length 3 metre.

P843-037 Cable for connection of a V24 interfacing device to the serial control units P840-002 or P845-040. Includes Cannon connector and control unit connector-overall length 10 metre.

Maintenance Equipment

P843-035	Extension card for testing P852M central processor card.
P843-135	Extension card for testing P852M type 1 control unit cards and I/O processor cards.
P849-052	Portable control panel for P852M which is used mainly for maintenance and servicing. This is a free standing panel fitted with the same controls as a full control panel and with a flying lead and connector to enable it to be fitted in place of the full control panel.

Power Supplies

The power supplies for the system are mainly contained within the units supplied.

When using equipment shelf P843-001, which holds I/O cards type 1, the power supply is included with the shelf. When using equipment shelves P843-002/003 however, which hold I/O cards type 2 an extra power supply unit P843-011 or a D.C. Converter P849-034 can be ordered with the shelf dependent upon the type of cards fitted. See details under separate headings for these units.

Where a self contained control unit is formed from cards (type 2) contained within a multicard equipment shelf rectifiers RD1 or RD2 with stabilizer RG4 can be housed in the shelf to provide power for the neighbouring I/O Cards (See Figures 4.1. and 4.2).

Details of all power supply modules are as follows:

P843-011 — Power supply unit which can be mounted in a dedicated location in equipment shelf P843-002 or P843-003. The unit consists of rectifier RD2 and stabilizer card RG3 which provide the following d.c. supplies for digital I/O equipment:

+24V	1.5A
+5V	4A
-5V	0.5A

P849-034 — D.C. converter which can be mounted in a dedicated location in equipment shelf P843-002 or P843-003. It provides from an input of +5V at 2.5A the following d.c. supplies for data-communications equipment:

+6V	0.5A
-6V	0.25A
+12V	0.08A
-12V	0.1A

For the multicard equipment shelf rectifier RD1 or RD2 with stabilizer card RG4 provide outputs of +5V, 7.6A and -5V, 0.5A.

The power supply always included with shelves P843-002 or P843-003 consists of rectifier RD3 and stabilizer card RG5 which provide an output of +5V, 7.6A. The stabilizer provides also overvoltage protection.

Equipment Shelves

The equipment shelves are designed to fit into standard 19 inch racks - see Part 4 Cabinetry for mounting details.

The adaption of the power supplies within the shelves for various mains voltage levels is described in Chapter 5 Mains Conversion and the switching arrangements for local and remote control of the shelves in Chapter 6 Local and Remote Control of d.c. Supplies.

Multicard Control Unit Equipment Shelf

Self contained equipment shelf (see Figure 4.1.) complete with wiring, connectors, fans, and local or remote on/off control for:

- Bus translator card P843-007 or 008
- 4 I/O cards (type 2)
- 1 rectifier (RD1 or RD2)
- 1 stabilizer (RG4)

Front Panel height = 3 standard rack units.

Note: This shelf is used in the system to form control unit P831-040 for 4 M.T. transports P831-102, 104 or 106.

P843-001 (E2)

Equipment shelf (see Figures 4.3 and 4.4.) with space for 6 I/O cards (type 1). Includes power supply +5V, 18A; -18V,1A; +18V,1A; telescopic slides, bus cable 3.0 metres and bus connector. When connected to the end of the GP bus a terminator P843-009 must be added.

Front panel height = 3 standard rack units.

P843-002 (E1)

Equipment shelf (see Figures 4.5 and 4.6) with space for 8 I/O cards (type 2), clock pulse card (P848-001) or D.C. converter (P849-034) and one extra supply unit (P843-011). The shelf includes a bus translator (P843-007) with 3.0 metre cable and a +5V,6.6A power supply (RD3 + RG5).

Front panel height = 5 standard rack units.

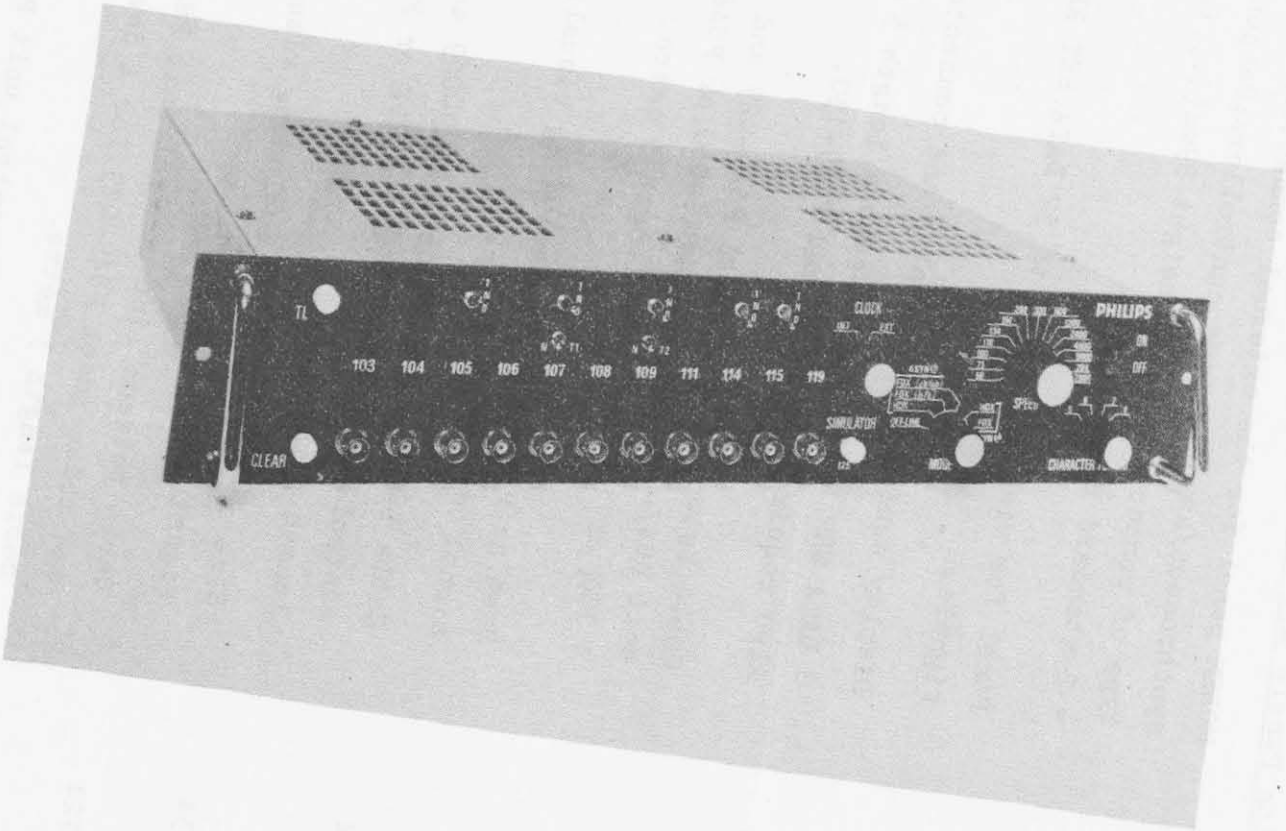
P843-003 (E1)

Equipment shelf as described for P843-002 but fitted with a bus translator/terminator (P843-008) with 3.0 metre cable and a +5V,5.7A power supply. This shelf is for use at the end of the GP bus.

Front panel height = 5 standard rack units.

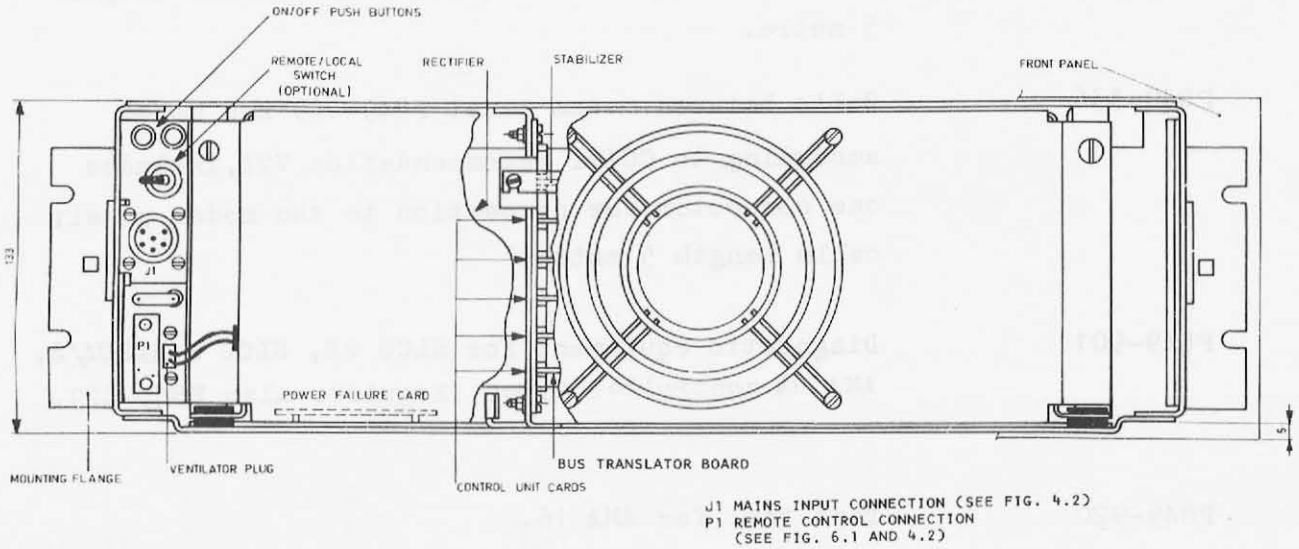
Data Communication Panels and cables

P849-029	MODEM panel for the external connection of 16 synchronous/asynchronous controllers; Cannon type of connectors. Panel height 89mm (3.5 inches) = 2 standard rack units.
P849-130	Panel for visualising up to 32 'DATA SET READY' signals.
P849-230	Display equipment with cable and connectors for 8 'DATA SET READY' signals; cable length 3 metre. Also required P849-029 and P849-130.
P849-524	Cable between modem panel P849-029 and line control unit P847-060, P847-070, P846-060, or P846-070 for 1 FDX or 1 HDX; Cable length 3 metre.
P849-534	Same as P849-524 but including visualisation signal for option P849-230
P849-624	Cable between modem panel P849-029 and line control unit P845-060 for 4 HDX or FDX; cable length 3 metre.
P849-634	Same as P849-624 but including visualisation signal for option P849-230
P849-724	Cable between line control unit P845-070 and modem panel P849-029 for 4 device connections; cable length 3 metre.
P849-734	Cable between line control unit P845-070 and 4 external equipments (open ended); cable length 5 metre.
P849-824	Cable between line control unit P844-110 and external equipment (open ended) 16 input and 16 output lines; cable length 5 metre.
P849-346	Cable between modem panel P849-029 and modem according to CCITT recommendation V24, includes one connector for connection to the modem panel; cable length 5 metre.

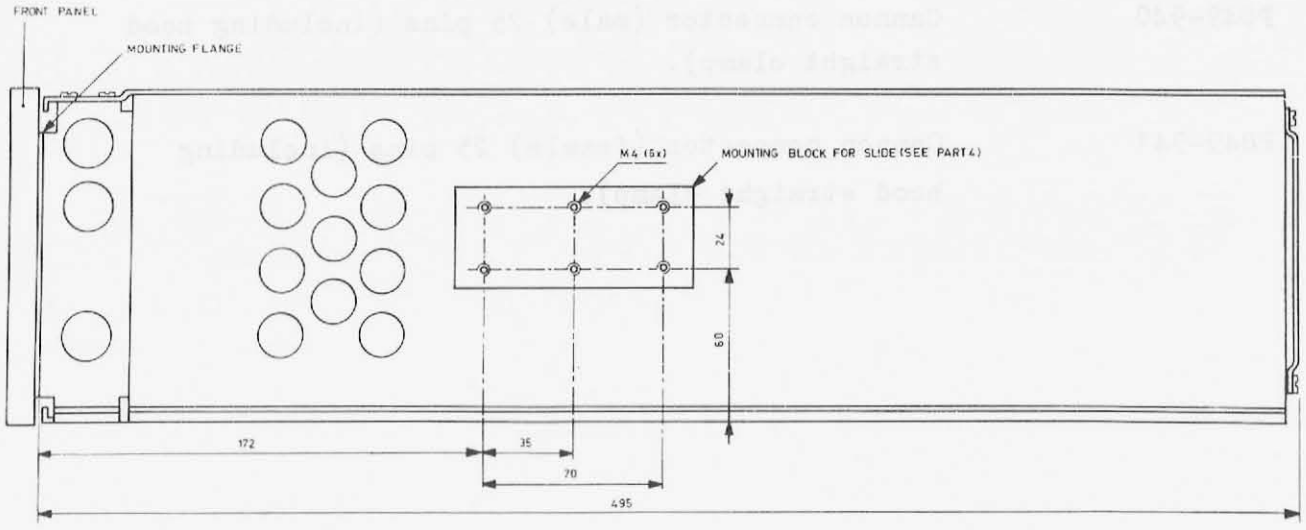


Diagnostic Box

P849-924	Cable between line control unit P844-060 and 8 external equipments (open ended);cable length 5 metre.
P849-336	Cable between modem panel P849-029 and modem according to CCITT recommendation V24,includes one connector for connection to the modem panel; cable length 5 metre.
P849-901	Diagnostic equipment for SLCU 2S, SLCU 4,ALCU4/2, AMA 8A controller types. Requires also P849-029.
P849-920	Test tool for AMA 16.
P849-925	Test tool for V28 CM.
P849-930	Test tool for AMA 8C.
P849-940	Cannon connector (male) 25 pins (including hood straight clamp).
P849-941	Cannon connector (female) 25 pins (including hood straight clamp).



REAR VIEW



SIDE VIEW

ALL DIMENSIONS mm

FIG. 4.1 MULTICARD CONTROL UNIT EQUIPMENT SHELF

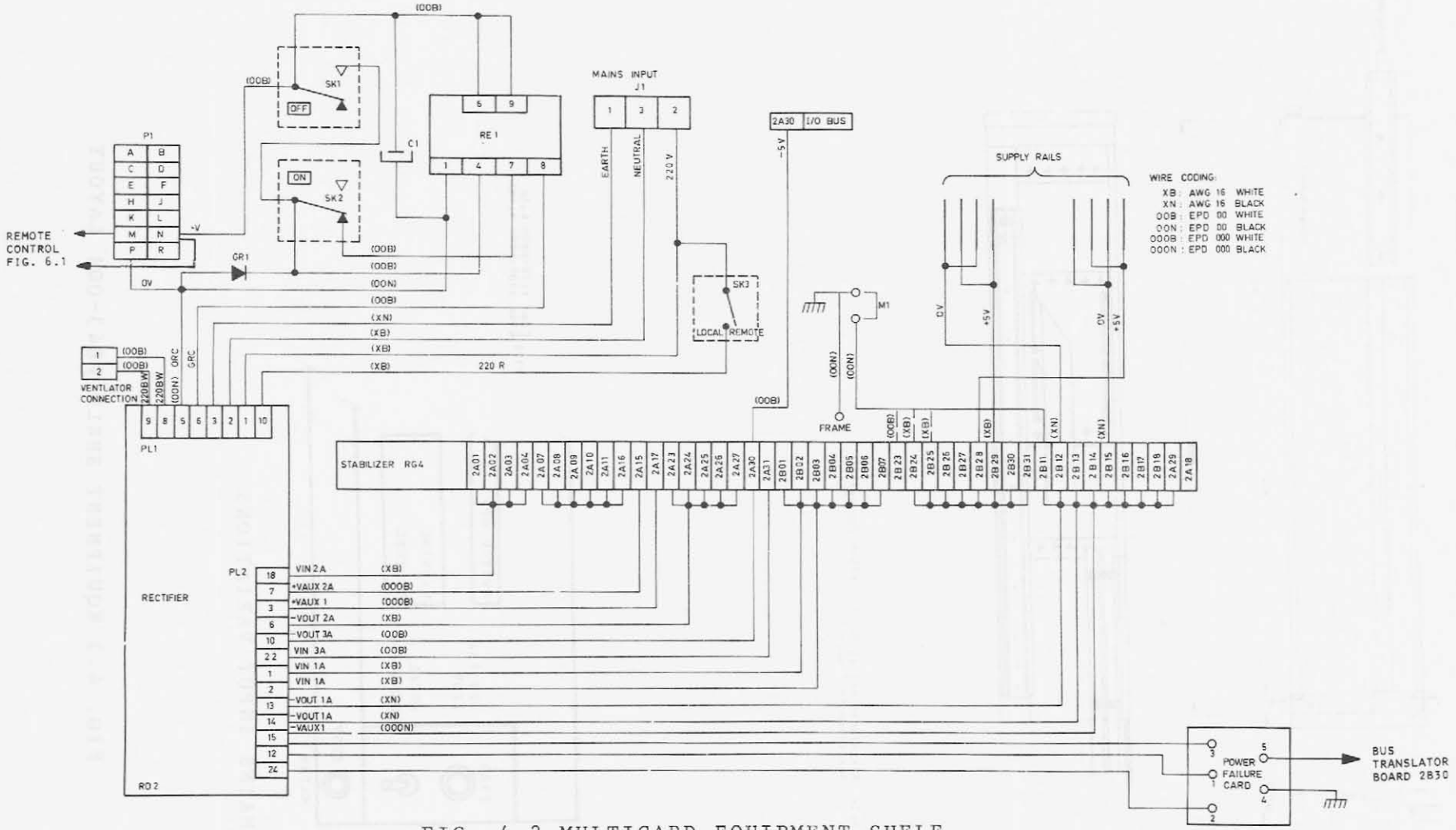
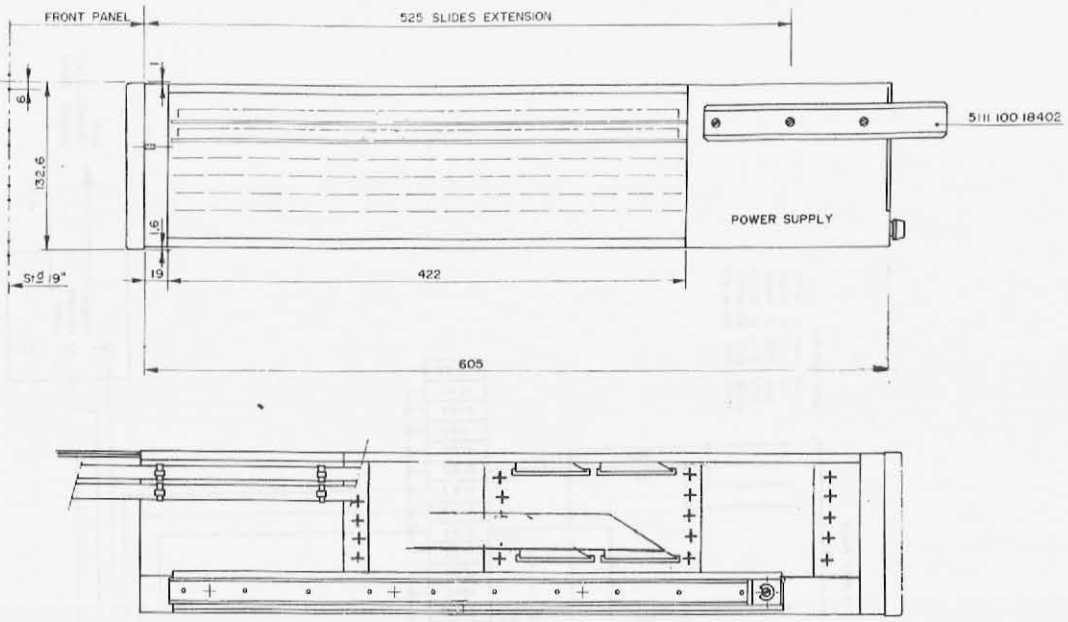
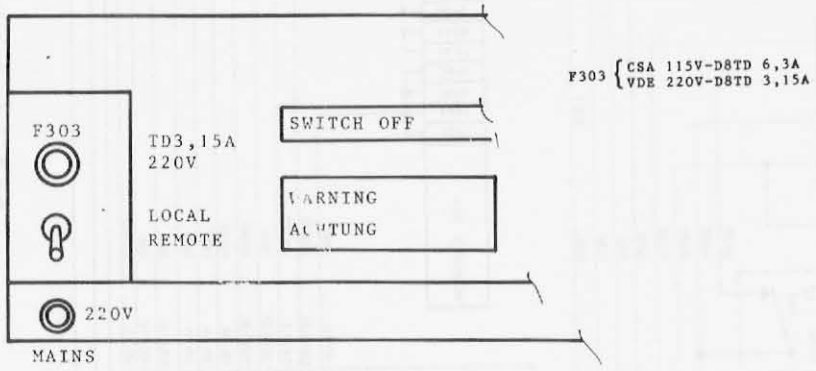


FIG. 4.2 MULTICARD EQUIPMENT SHELF
A.C. and D.C. DISTRIBUTION



Note: Box dimensions as for the P852M-200 series box shown in Figure 1.1



MAINS INPUT VARIATIONS

FIG. 4.3 EQUIPMENT SHELF P843-001 LAYOUT

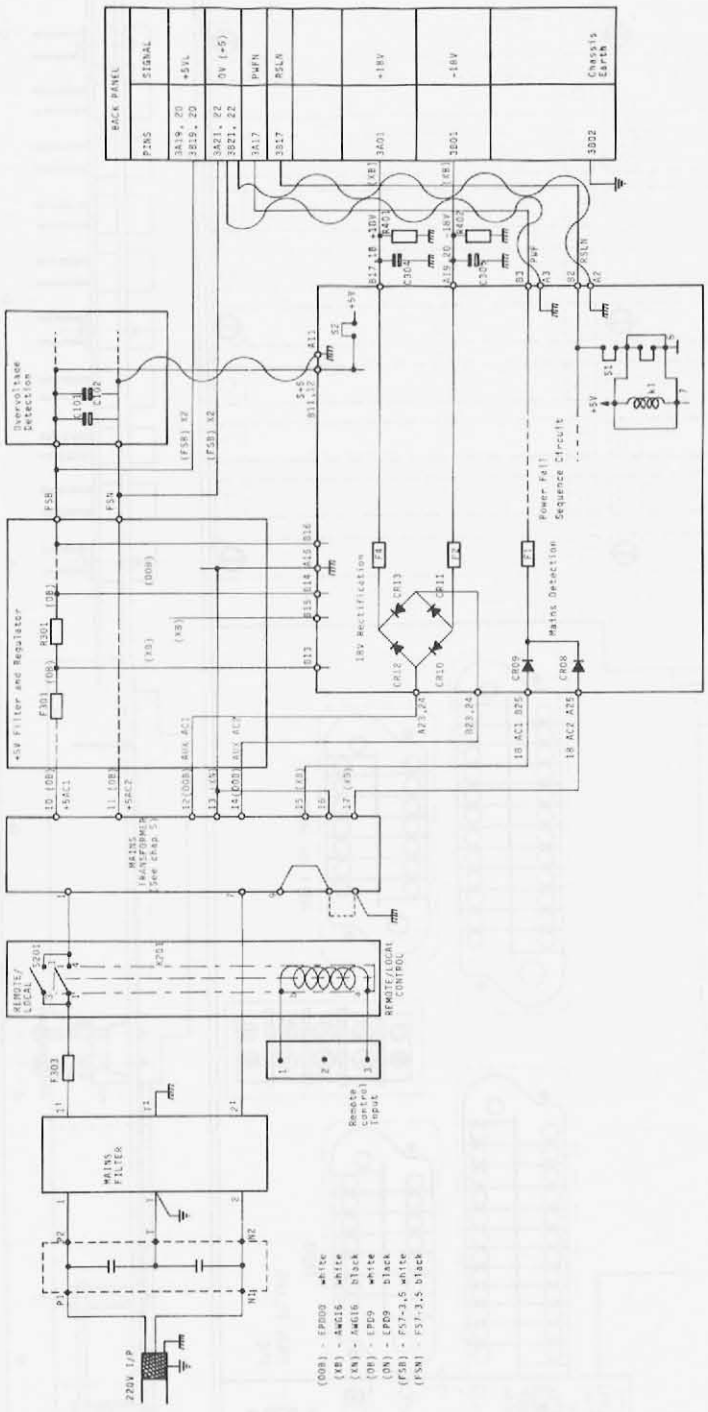


FIG. 4.4 EQUIPMENT SHELF P843-001 CIRCUIT-SCHEMATIC

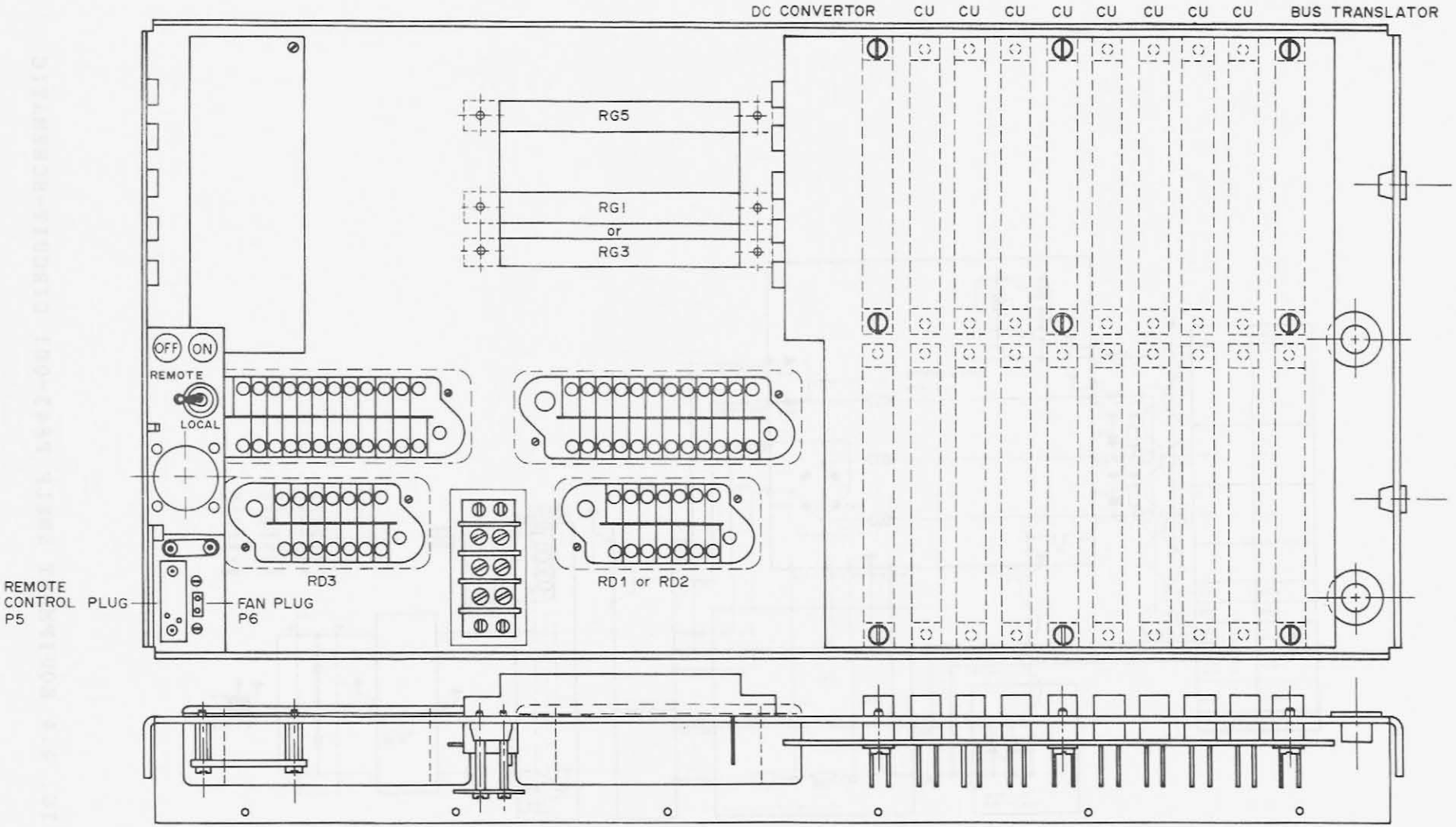


Figure 4.5. Equipment Shelf P843-002/003 Layout

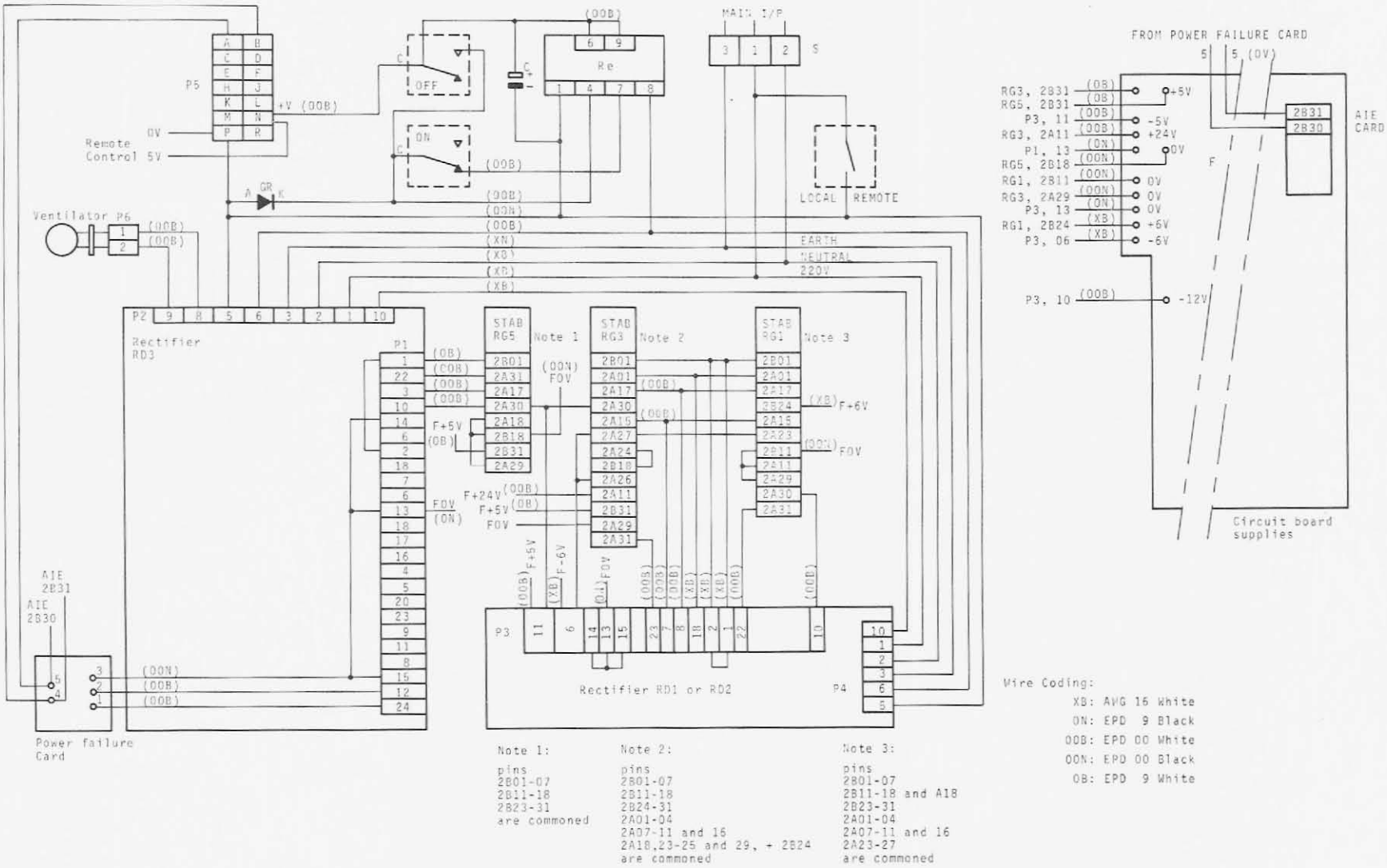


FIG. 4.6 EQUIPMENT SHELF P843-002/003 AC and DC DISTRIBUTION

Adapting the power supply of the basic mounting box and the equipment shelves to suit different levels of mains voltage is achieved by altering the tappings on the mains transformers of each unit.

For basic mounting boxes (M100,M200,M400 and M500 Series) equipment shelves P843-001 (E2), and P833-152 cassette equipment shelves the tapping arrangements are as shown in Figure 5.1 and the physical location of the transformers as shown in Figures 5.2. and 5.3.

For equipment shelves P843-002 or P843-003 and for the multicard control unit shelf the transformer tappings are shown in Figure 5.4. and the physical location of the transformer in Fig. 5.5.

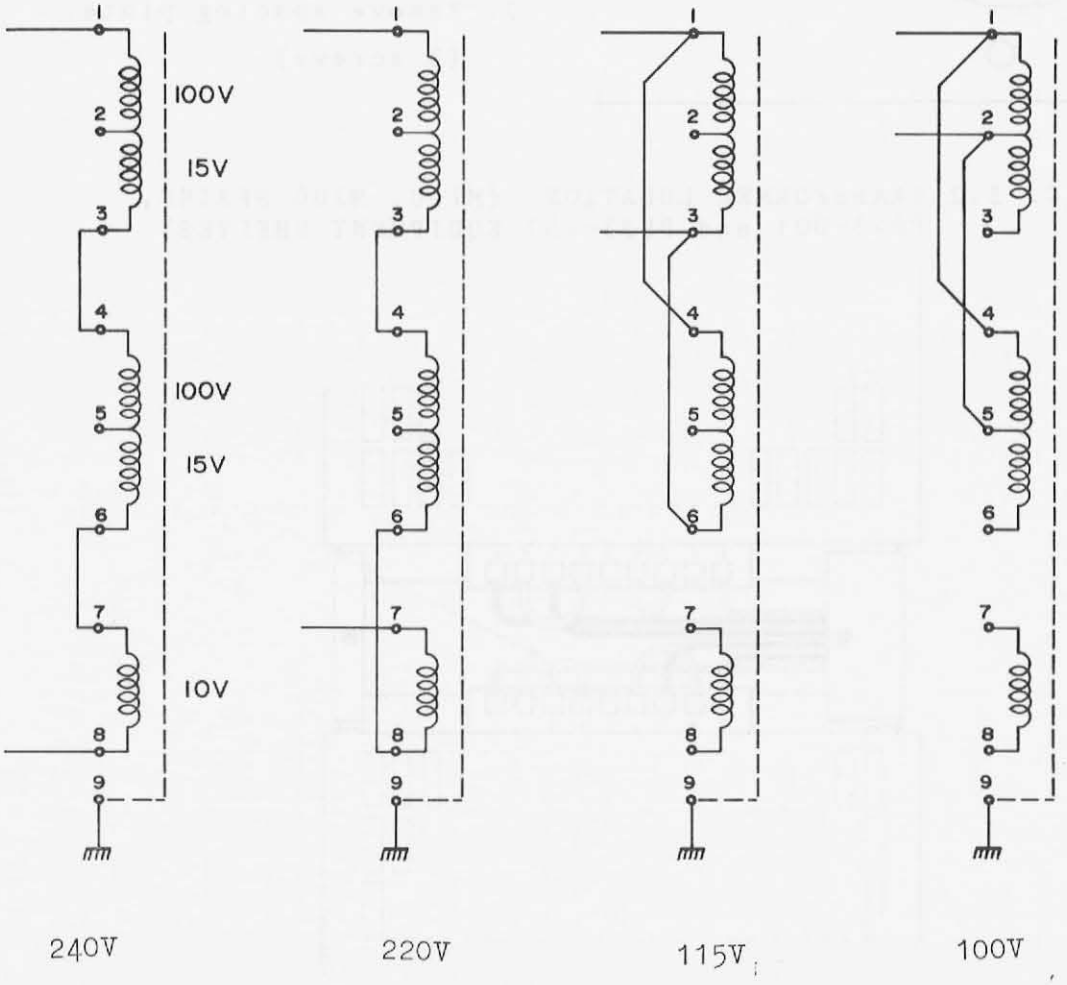


FIG. 5.1 TRANSFORMER TAPPINGS (M100|200|400|500, P843-001 and P833-152)

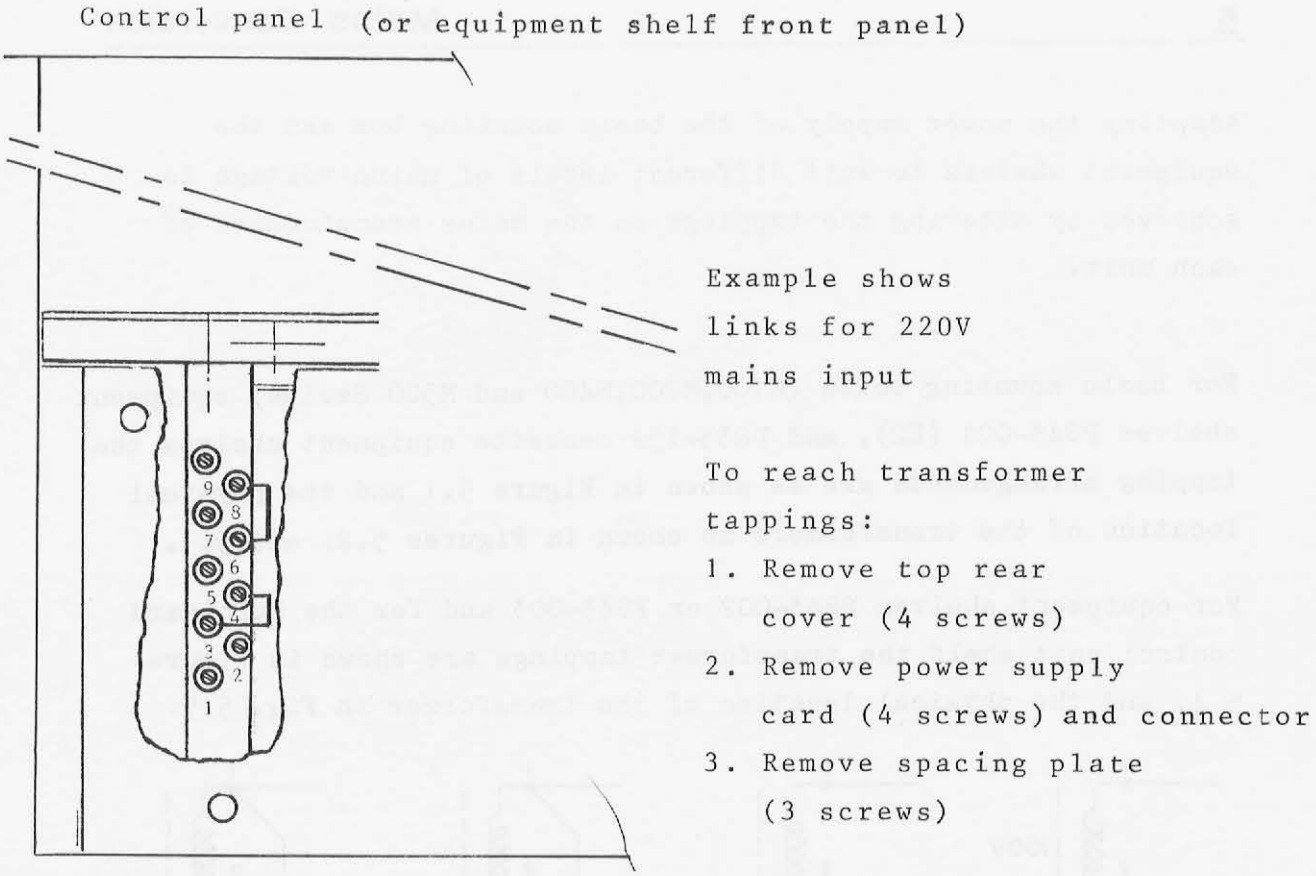


FIG. 5.2 TRANSFORMER LOCATION (M100, M200 SERIES, P843-001 and P833-152 EQUIPMENT SHELVES)

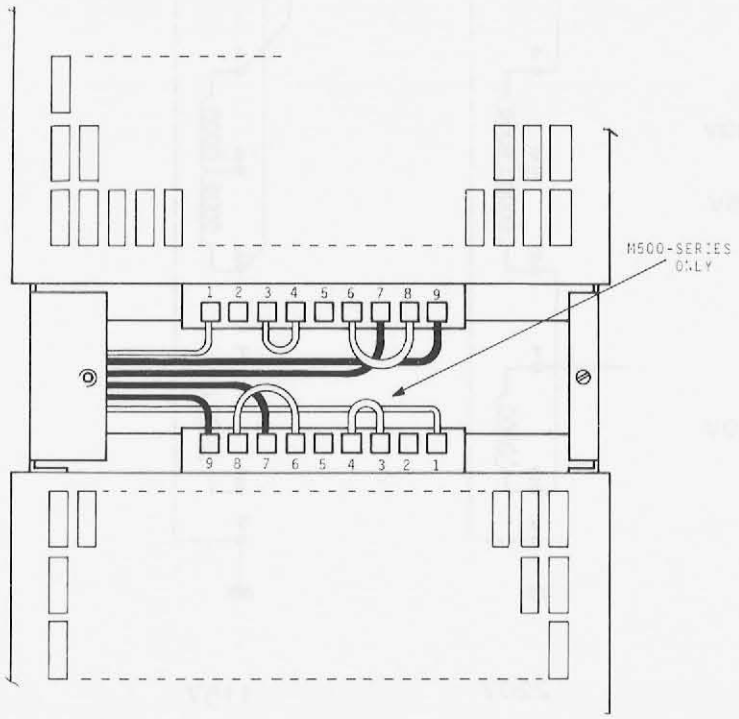
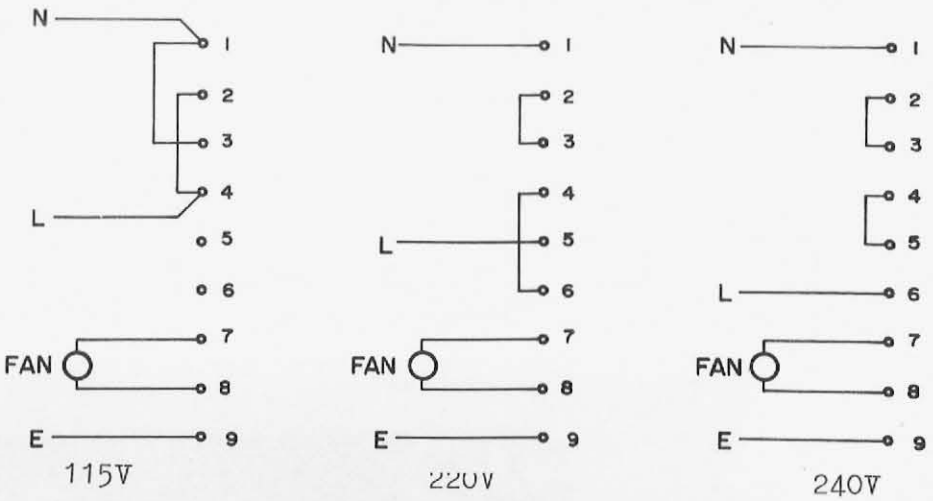


FIG. 5.3 TRANSFORMER LOCATION (M400, M500)



NOTE: 105, 110, 120, 125 AND 130V CONNECTIONS ALSO POSSIBLE

FIG. 5.4 TRANSFORMER TAPPINGS (P843-002/3 and MULTICARD CONTROL UNIT EQUIPMENT SHELF)

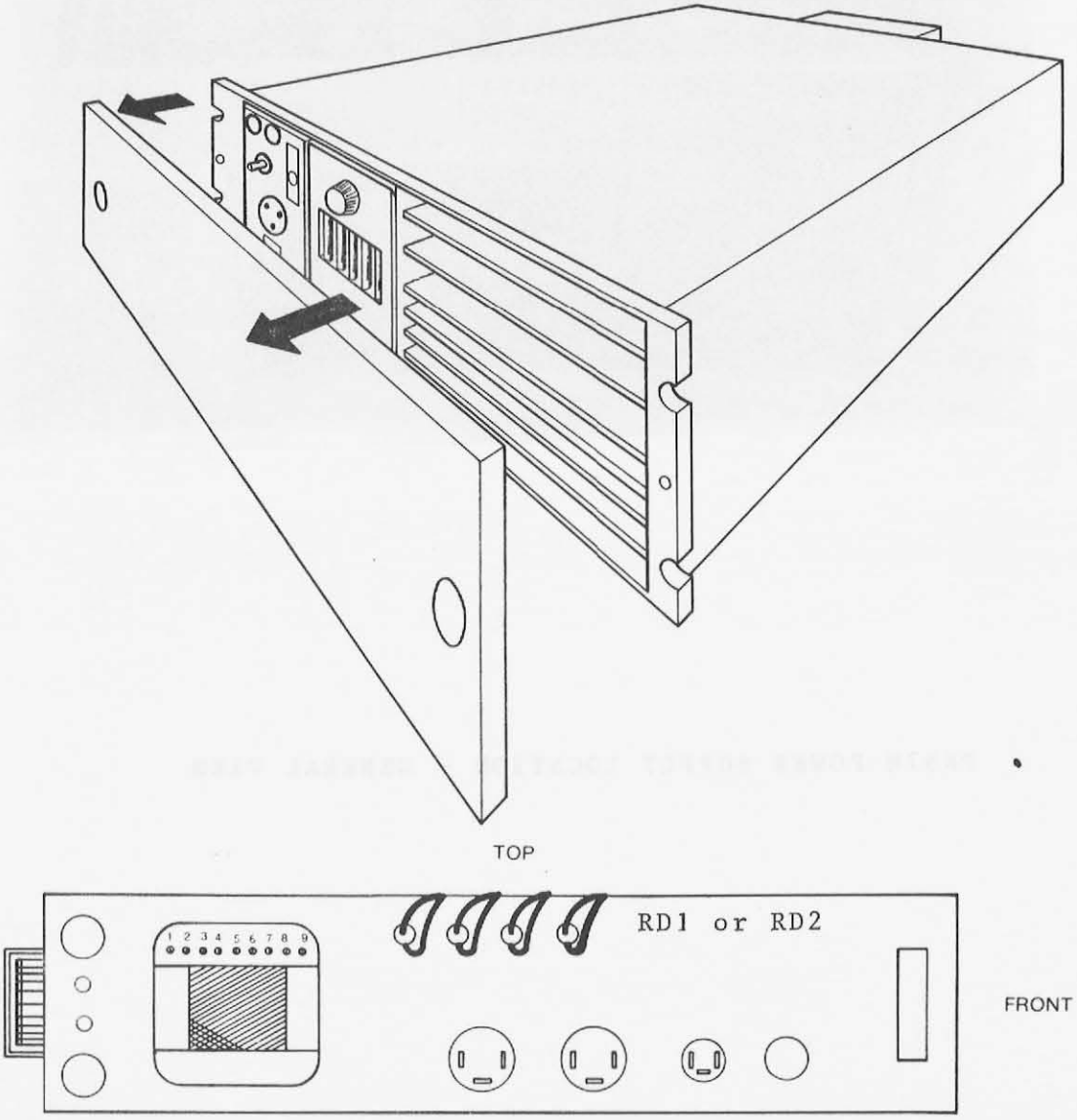
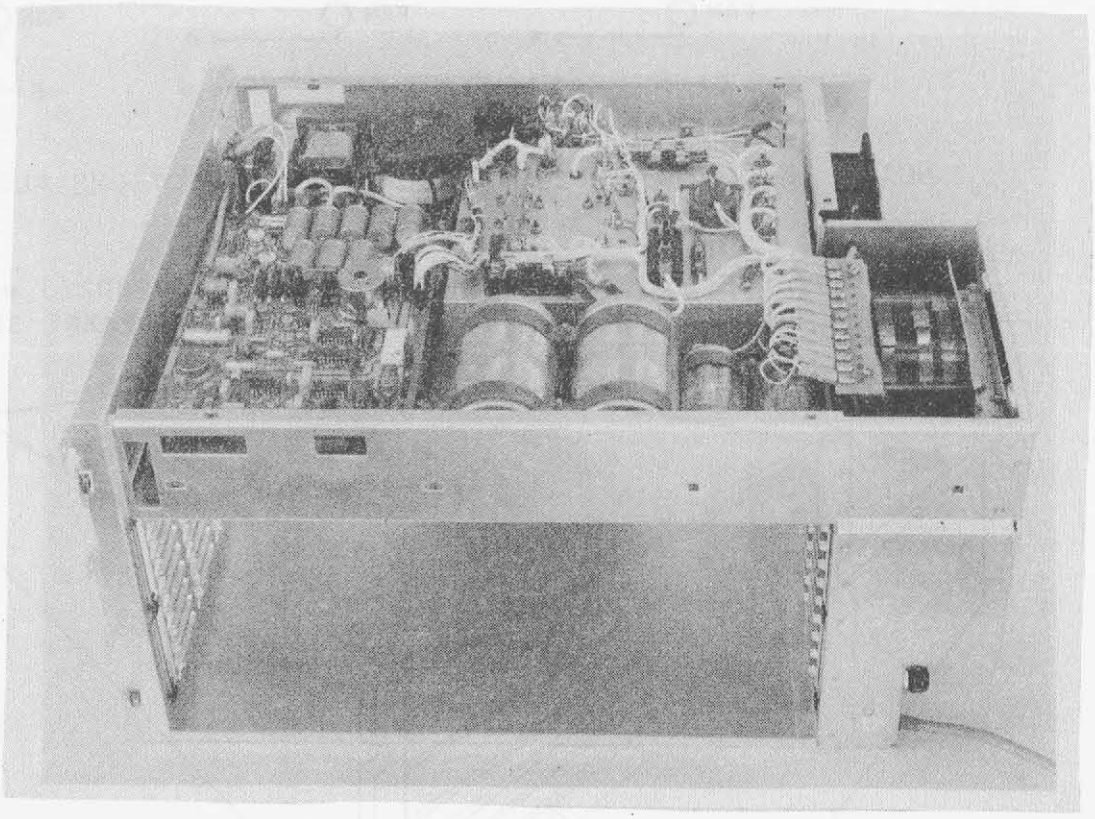


FIG. 5.5 TRANSFORMER LOCATION (MULTICARD CONTROL UNIT EQUIPMENT SHELF and P843-002/3)



P857M POWER SUPPLY LOCATION - GENERAL VIEW

6 Local and remote control of d.c. supplies

The P843-001 equipment shelf (with space for 6 I/O cards - type 1), the P843-002/003 equipment shelves (with space for 8 I/O cards - type 2), and the P833-152 equipment shelves (for 3 cassettes) are all equipped with the facility for local or remote control. The equipment shelf, for self contained multicard control units - type 2, can also be equipped with this facility. The interconnections for remote control are shown in Figure 6.1. and the control circuits for local/remote operation are shown in Figures 6.2. and 6.3.

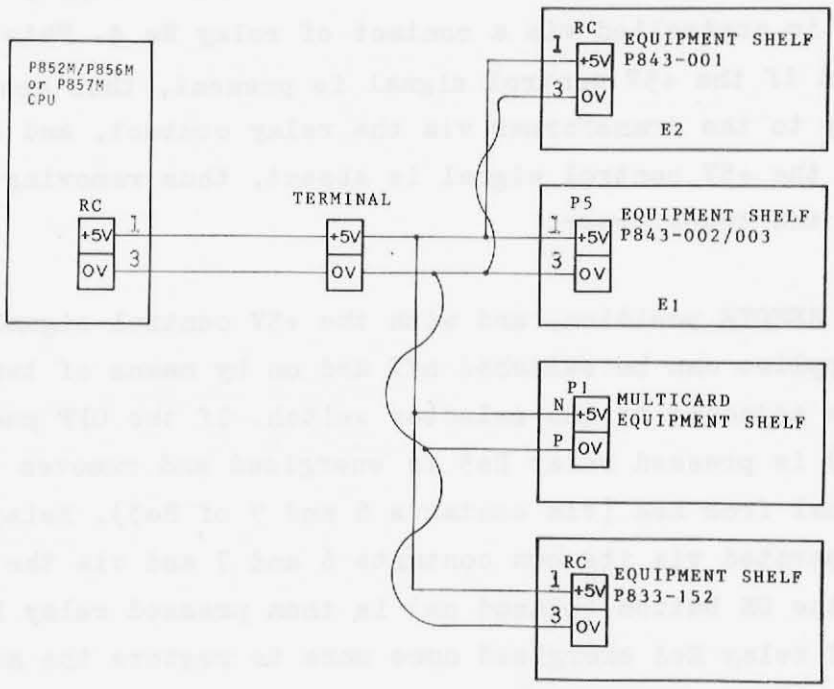


FIG. 6.1 REMOTE CONTROL INTERCONNECTIONS

Figure 6.2. shows the control circuit used in equipment shelves P843-001, P843-002 and in P833-152. In operation the supply to the equipment shelf mains transformer is connected either via a LOCAL/REMOTE switch, when the switch is in the LOCAL position, or via a solenoid operated switch which is controlled and operated with a +5V control signal derived from the P852M/P856M or P857M basic

mounting box power supply.

The control circuit incorporated in a multicard control unit equipment shelf also includes ON/OFF switches as shown in Figure 6.3. When the selector switch is set to LOCAL (with the mains switch set to ON) the supply is connected to the mains transformer and internal d.c. supplies are obtained from the unit whether or not the +5V control signal is present. The ON and OFF switch have no effect on the circuit under these conditions.

When the selector switch is set to REMOTE the mains supply to the transformer is controlled via a contact of relay Re 4. This relay is energised if the +5V control signal is present, thus applying the mains supply to the transformer via the relay contact, and is de-enegised if the +5V control signal is absent, thus removing the mains supply from the transformer.

Also in the REMOTE position, and with the +5V control signal present the d.c. supplies can be switched off and on by means of two biased push buttons adjacent to the selector switch. If the OFF push button (biased off) is pressed relay Re3 is energised and removes the +5V control signal from Re4 (via contacts 8 and 9 of Re3). Relay Re3 is then held operated via its own contacts 6 and 7 and via the ON switch. If the ON button (biased on) is then pressed relay Re3 is released and relay Re4 energised once more to restore the mains supply to the transformer. If the OFF push button has been operated the control circuit is reset (Relay Re3 de-energised) if the +5V control signal is then switched off. The mains supply to the equipment shelf transformer is then restored when the +5V control signal comes on again.

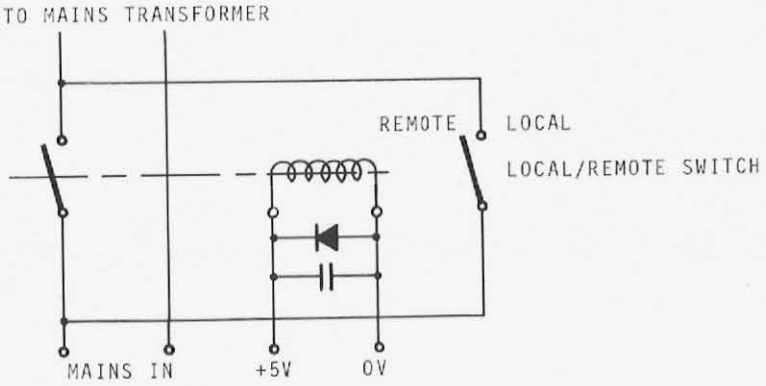


FIG. 6.2 REMOTE CONTROL CIRCUIT (P843-001 and P833-152 EQUIPMENT SHELVES)

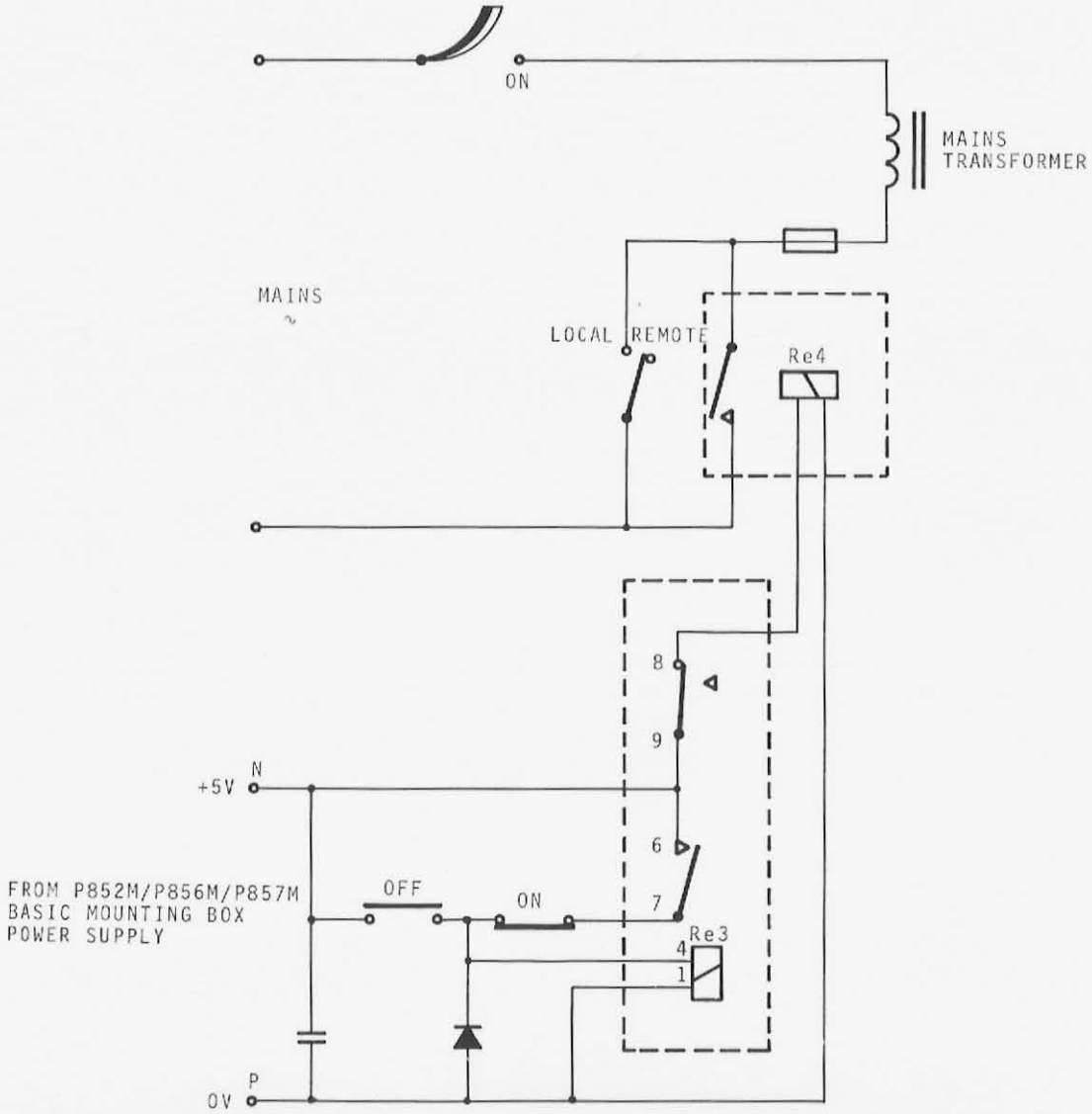


FIG. 6.3 REMOTE CONTROL CIRCUIT (MULTICARD CONTROL UNIT and P843-002/3 EQUIPMENT SHELVES)