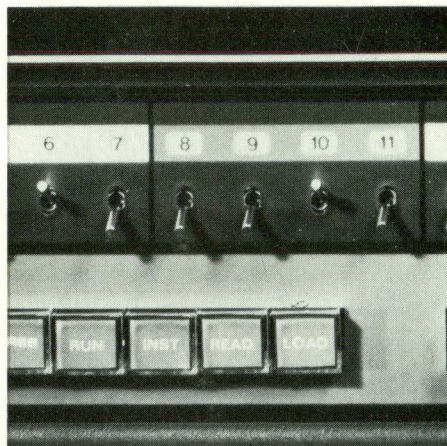
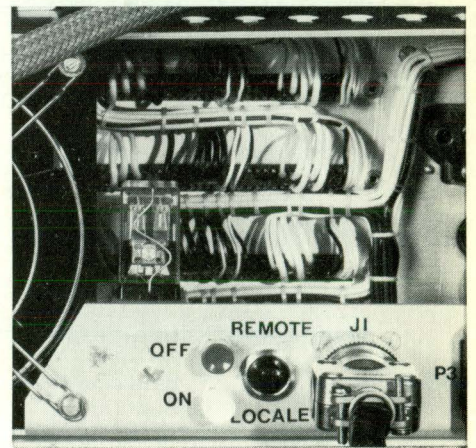
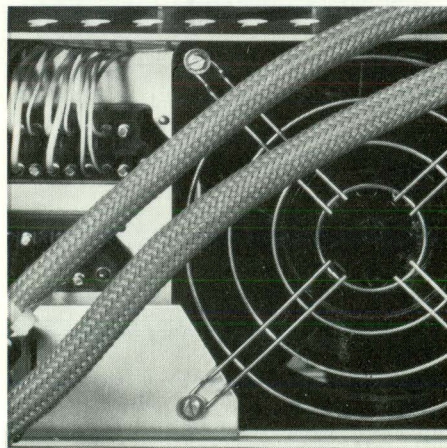
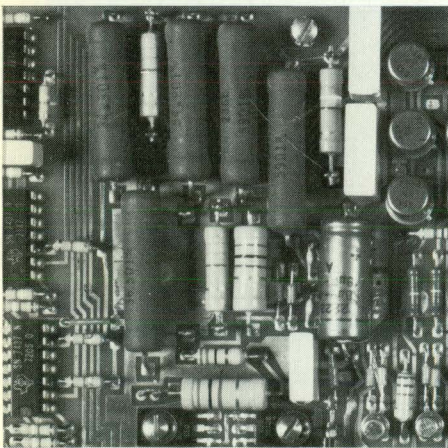


P800M Minicomputers OEM Equipment



Catalogue

1 November, 1973



Data
Systems

PHILIPS

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Purpose

This equipment catalogue lists all central processors, peripherals, controllers, options and interfaces available in the P800 family of mini computers. Sufficient information is provided to enable the prospective customer to define his individual requirements in terms of a specific P800 series configuration. For this purpose, details of prerequisites, mounting requirements and power supply are provided.

A complete configurator is included at the end of the catalogue to aid the potential user in this selection process.

Steps in selecting a configuration

Having analyzed the requirements of your application and made a selection of central processor, memory, peripherals, interfaces etc., the following must be done.

- 1 Check for all individual prerequisites (eg. the P822-001 Moving Head disc requires a Controller P822-055).
- 2 Check the mounting space for all peripheral controllers, interfaces and data communication cards. If necessary add additional equipment shelves, shown on page 13.
- 3 Next comes a check on power requirements. In some cases the user will have selected to provide his own power supply. Here the requirements of **all** elements of the system - central processor, peripheral controllers, interfaces and data communication cards will have to be considered.
As central processors are provided with power, only the power requirements of peripheral controllers mounted outside the central processor chassis, interfaces and data communication cards need to be considered.
- 4 In some cases, the customer will require the equipment to be mounted in standard 19 " cabinets. In these cases, unless otherwise specified by the customer, the equipment will be mounted according to pre-defined standards; for instance, the computer will always be mounted in the centre of the cabinet. Examples are shown in Appendix 6.
Equipment ordered without cabinets will be delivered in separate units with standard length connecting cables and hardware for fixed mounting in the cabinets mentioned, unless specified otherwise in this catalogue.
- 5 Mains connection should be 220 V - 50 Hz unless specified otherwise. Non-standard specifications may require different lead times and/or additional cost.

- 6 In Appendix 3 a list is provided, specifying non-standard cable length. If the customer requires one of these cables it has to be specified.

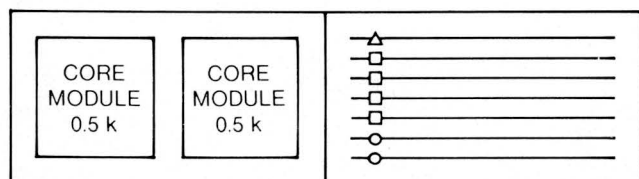
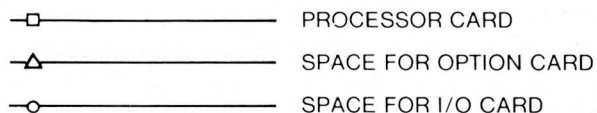
Non-standard requirements

In some instances the needs of a particular customer or application will not be met precisely by the equipment offered in this catalogue. The technical support staff at your nearest Philips sales office will be pleased to discuss with you solutions to meet these requirements.

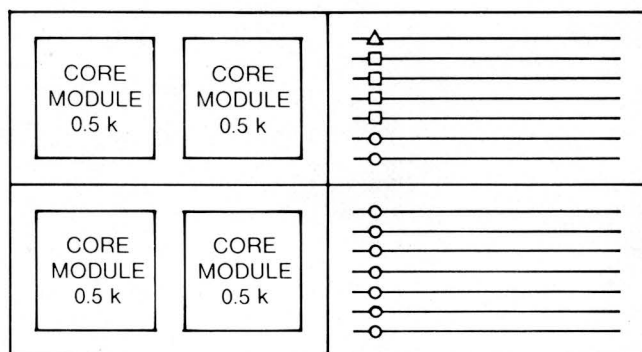
Type number	Description	Pre-requisites	Mounting code	Power requirements	Note
P850M					
Central processor, includes as standard:					
- 16 hardware registers, 14 of which are programmable general purpose registers					
- instruction set with 62 instructions					
- programmed channel					
- 2 interrupt lines on 1 level					
- option mounting card					
- full control panel					
- power supply					
P850M-201	Central processor with 0.5k 16-bit words of memory, cycle time 3.2 μ sec. (space for 1k) and 2 I/O slots	-	rack 3U	self contained	
P850M-202	Central processor with 0.5k 16-bit words of memory, cycle time 3.2 μ sec. (space for 2k) and 9 I/O slots	-	rack 6U	self contained	
P850M-203	Central processor with 1k 16-bit words of memory, cycle time 3.2 μ sec. (space for 1k) and 2 I/O slots	-	rack 3U	self contained	
P850M-204	Central processor with 1k 16-bit words of memory, cycle time 3.2 μ sec. (space for 2k) and 9 I/O slots	-	rack 6U	self contained	
P850M-205	Central processor with 2k 16-bit words of memory, cycle time 3.2 μ sec. (space for 2k) and 9 I/O slots	-	rack 6U	self contained	

PLAN OF INTERNAL LAYOUT: P850M

See also Appendix 3.



P850M-203



P850M-205

HARDWARE

<i>Type number</i>	<i>Description</i>	<i>Pre-requisites</i>	<i>Mounting code</i>	<i>Power requirements</i>	<i>Note</i>
Options					
P850M-025	Real time clock line frequency	Processor	-	-	4
P850M-026	Real time clock crystal controlled, 10 msec., optionally 1 2, 5 msec.	Processor	-	-	4
P850M-030	Power failure detection with automatic restart	Processor	-	-	-
P850M-031	Programmable interrupt lines 3-8	Processor	-	-	-
P850M-032	Programmable interrupt lines 9-16	Processor	-	-	-
P850M-033	Minipanel	Processor	B	+5V, 0.8A	15

HARDWARE

Type number	Description	Pre-requisites	Mounting code	Power requirements	Note
P855M					
Central processor including as standard:					
- 16 hardware registers, 14 of which are programmable general purpose registers					
- instruction set with 86 instructions					
- programmed channel					
- 23 interrupt lines on 8 levels					
- control panel					
- power supply					
P855M-211	Central Processor with 4k 16-bit words of memory, cycle time 0.84 μ sec. (space for 16k), DMA channel for 2 control units and 6 I/O slots	-	rack, 9U	+5V, 16.2A -5V, 3.0A +24V, 12.0A	1, 2
P855M-201	Central Processor with 4k 16-bit words of memory, cycle time 0.84 μ sec. (space for 16k) and 8 I/O slots	-	rack, 9U	+5V, 18.3A -5V, 3.0A +24V, 12.0A	1, 2
P855M-311	Central Processor with 4k 16-bit words of memory, cycle time 0.84 μ sec. (space for 32k), DMA channel for 2 control units and 6 I/O slots	-	rack, 11U	+5V, 16.2A -5V, 3.0A +24V, 12.0A	1, 2
P855M-301	Central Processor with 4k 16-bit words of memory, cycle time 0.84 μ sec. (space for 32k) and 8 I/O slots	-	rack, 11U	+5V, 18.3A -5V, 3.0A +24V, 12.0A	1, 2
P855M-212	Central Processor with 8k 16-bit words of memory, cycle time 0.84 μ sec. (space for 16k), DMA channel for 2 control units and 6 I/O slots	-	rack, 9U	+5V, 16.2A -5V, 3.0A +24V, 12.0A	1, 2
P855M-202	Central Processor with 8k 16-bit words of memory, cycle time 0.84 μ sec. (space for 16k) and 8 I/O slots	-	rack, 9U	+5V, 18.3A -5V, 3.0A +24V, 12.0A	1, 2
P855M-312	Central Processor with 8k 16-bit words of memory, cycle time 0.84 μ sec. (space for 32k), DMA channel for 2 control units and 6 I/O slots	-	rack, 11U	+5V, 16.2A -5V, 3.0A +24V, 12.0A	1, 2
P855M-302	Central Processor with 8k 16-bit words of memory, cycle time 0.84 μ sec. (space for 32k) and 8 I/O slots	-	rack, 11U	+5V, 18.3A -5V, 3.0A +24V, 12.0A	1, 2
P855M-213	Central Processor with 16k 16-bit words of memory, cycle time 0.84 μ sec. (space for 16k), DMA channel for 2 control units and 6 I/O slots	-	rack, 9U	+5V, 16.2A -5V, 3.0A +24V, 12.0A	1, 2

HARDWARE

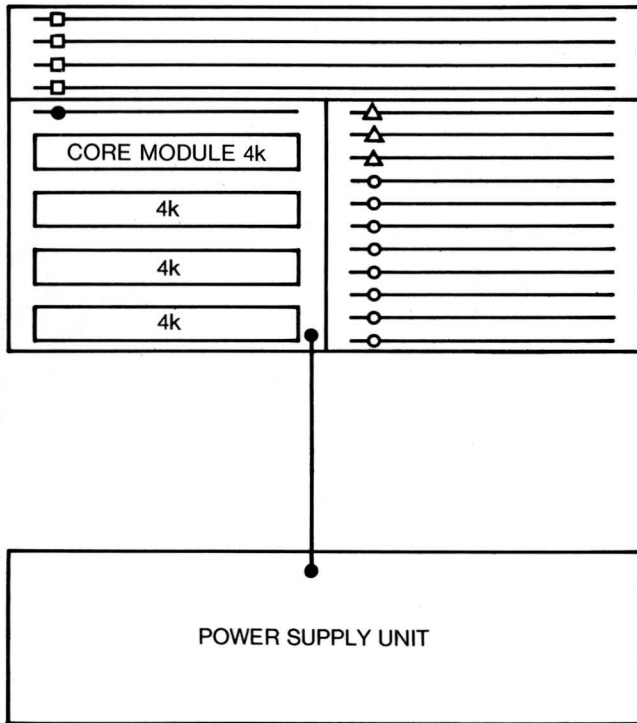
Type number	Description	Pre-requisites	Mounting code	Power requirements	Note
P855M-203	Central Processor with 16k 16-bit words of memory, cycle time 0.84 μ sec. (space for 16k) and 8 I/O slots	-	rack, 9U	+5V, 18.3A -5V, 3.0A +24V, 12.0A	1, 2
P855M-313	Central Processor with 16k 16-bit words of memory, cycle time 0.84 μ sec. (space for 32k), DMA channel for 2 control units and 6 I/O slots	-	rack, 11U	+5V, 16.2A -5V, 3.0A +24V, 12.0A	1, 2
P855M-303	Central Processor with 16k 16-bit words of memory, cycle time 0.84 μ sec. (space for 32k) and 8 I/O slots	-	rack, 11U	+5V, 18.3A -5V, 3.0A +24V, 12.0A	1, 2
P855M-314	Central Processor with 24k 16-bit words of memory, cycle time 0.84 μ sec. (space for 32k), DMA channel for 2 control units and 6 I/O slots	-	rack, 11U	+5V, 16.2A -5V, 3.0A +24V, 12.0A	1, 2
P855M-304	Central Processor with 24k 16-bit words of memory, cycle time 0.84 μ sec. (space for 32k) and 8 I/O slots	-	rack, 11U	+5V, 18.3A -5V, 3.0A +24V, 12.0A	1, 2
P855M-315	Central Processor with 32k 16-bit words of memory, cycle time 0.84 μ sec. (space for 32k), DMA channel for 2 control units and 6 I/O slots	-	rack, 11U	+5V, 16.2A -5V, 3.0A +24V, 12.0A	1, 2
P855M-305	Central Processor with 32k 16-bit words of memory, cycle time 0.84 μ sec. (space for 32k) and 8 I/O slots	-	rack, 11U	+5V, 18.3A -5V, 3.0A +24V, 12.0A	1, 2
Options					
P855M-104	Memory module with 4k 16-bit words of read/write core, 0.84 μ sec. cycle time	Processor	B	-	2
P855M-108	Memory moduls with 8k 16-bit words of read/write core, 0.84 μ sec. cycle time	Processor	B	-	2
P855M-116	Memory module with 16k 16-bit words of read/write core, 0.84 μ sec. cycle time	Processor	B	-	2
P855M-028	Option mounting card, containing high speed hardware multiply/divide and double length add/subtract	Processor	B	+5V, 0.6A	-
P855M-022	Minipanel	Processor	B	+5V, 0.8A	15

<i>Type number</i>	<i>Description</i>	<i>Pre-requisites</i>	<i>Mounting code</i>	<i>Power requirements</i>	<i>Note</i>
Option group 'A' consisting of:					
P855M-023	Option mounting card 'A'	Processor	B	+5V, 1.4A	-
P855M-025	Real time clock, line frequency	P855M-023	-	-	4
P855M-026	Real time clock, crystal controlled, 10 msec., optionally 1, 2, 5 msec.	P855M-023	-	-	4
P855M-027	Memory protection	P855M-023	-	-	-
P855M-030	Power failure detection with automatic restart	P855M-023	-	-	-
P855M-031	Interrupt levels 9-18	P855M-023	-	-	-
P855M-032	Interrupt levels 19-28	P855M-023	-	-	-
P855M-033	Interrupt levels 29-48	P855M-023	-	-	-
Option group 'B' consisting of:					
P855M-024	Option mounting card 'B'	Processor	B	+5V, 0.7A	-
P855M-040	Memory increment data break	P855M-024	-	-	-
P855M-041	Multiplex channel, with 15 subchannels, one for each device controller	P855M-024	-	-	5

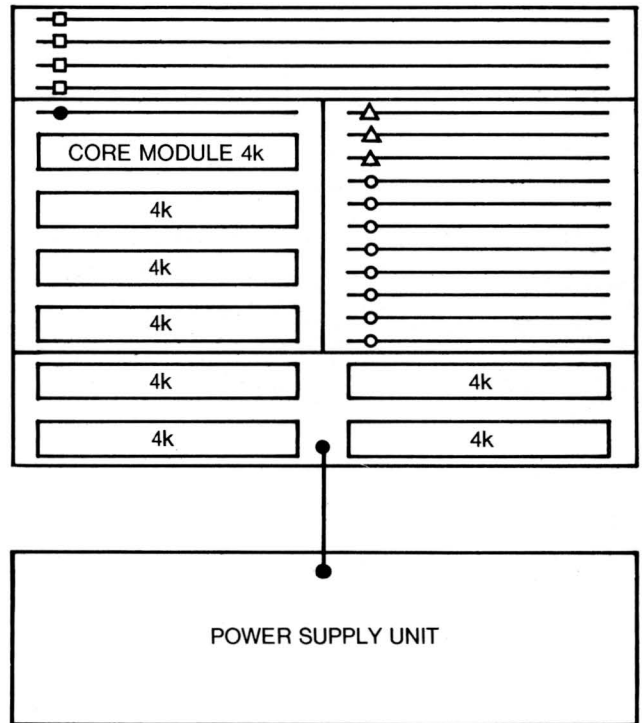
HARDWARE

PLAN OF INTERNAL LAYOUT: P855M.
See also Appendix 4.

- ————— PROCESSOR CARD
- △ ————— SPACE FOR OPTION CARD
- ————— SPACE FOR I/O CARD
- ————— MEMORY DRIVER CARD



P855M-203



P855M-305

Note: Where DMA is used this mounts in two of the spaces for I/O cards. See appendix 4.

HARDWARE

Type number	Description	Pre-requisites	Mounting code	Power requirements	Note
PUNCHED TAPE EQUIPMENT; P850M, P855M					
P801-001	Punched tape reader, 333 ch.p.s., including 3.0 m cable (Digitronics type 2540 EP)	P801-950	rack, 3U	-	
P802-001	Punched tape reader 600 ch.p.s., including 3.0 m cable (Digitronics type 2540 EP)	P801-950	rack, 3U	-	
P801-950	Control unit for punched tape reader, P801-001 and P802-001	Processor	1 I/O card, A	+5V, 0.55A -5V, 0.2A	-
P803-001	Tape punch 75 ch.p.s., including 3.0 m cable (Facit type 4070)	P803-950	rack, 6U		-
P804-001	Tape punch 150 ch.p.s., including 3.0 m cable (Facit type 4060 and 5107)	P803-950	rack, 7U	-	-
P803-950	Control unit for tape punch P803-001 and P804-001	Processor	1 I/O card A	+5V, 0.4A	-
P805-150	Punched tape reader/punch combination resp. P801-001/ P803-001 incl. control units and 3.0 m cable	Processor	rack, 9U 2 I/O cards A	+5V, 0.95A -5V, 0.2A	-
CARD EQUIPMENT; P850M, P855M					
P806-101	Card reader 285 c.p.m., including 7.5 m cable (Documation M200)	P806-951	E	-	-
P806-951	Control unit for card reader P806-101 (Connection of Documentation M300L and M600L card readers also possible)	Processor	1 I/O card, A	+5V, 0.55A -5V, 0.2A	-
LINE PRINTER EQUIPMENT; P850M, P855M					
P810-001	Line printer 356 l.p.m., 80 col., 64 character drum, including 7.5 m cable (Data Products type 2310)	P810-950	E	-	-
P811-001	Line printer 245 l.p.m., 132 col., 64 character drum, including 7.5 m cable (Data Products type 2420)	P810-950	E	-	-
P812-001	Line printer 670 l.p.m., 132 col., 64 character drum, including 7.5 m cable (Data Products 2440)	P810-950	E	-	-
P810-950	Control unit for line printer P810-001, P811-001 and P812-001	Processor	1 I/O card, A	+5V, 0.4A	-

HARDWARE

Type number	Description	Pre-requisites	Mounting code	Power requirements	Note
PLOTTER EQUIPMENT; P855M					
P813-001	Plotter, 11 inch plotting width, 0.1 mm step size, 300 steps per sec., including 7.5 m cable (Calcomp type 565)	P813-950	E	-	-
P813-002	Plotter, 28.55 inch plotting width, 0.1 mm step size, 300 steps per sec., including 7.5 m cable (Calcomp type 563)	P813-950	E	-	-
P813-950	Control unit for plotter, P813-001 and P813-002	Processor	1 I/O card, A	+5V, 0.70A -5V, 0.20A	-
TYPEWRITER EQUIPMENT; P850M, P855M					
P841-001	I/O typewriter, 10 ch.p.s. - light duty, with punched tape, including 7.5 m cable (Teletype ASR 33)	P841-950	E	-	-
P841-002	I/O typewriter, 10 ch.p.s. - heavy duty, with punched tape including 7.5 m cable (Teletype ASR 35)	P841-950	E	-	-
P841-003	I/O typewriter, 10 ch.p.s. - light duty, including 7.5 m cable (Teletype KSR 33)	P841-950	E	-	-
P841-004	I/O typewriter, 10 ch.p.s. - heavy duty, including 7.5 m cable (Teletype KSR 35)	P841-950	E	-	-
P841-950	Control unit for I/O typewriter P841-001, P841-002, P841-003 and P841-004	Processor	1 I/O card, A	+5V, 0.8A	-
P842-001	Character printer with keyboard, 50 ch.p.s. including 7.5 m cable (PER 3100), factory integrated	P842-950	E	-	-
P842-950	Control unit for character printer with keyboard P842-001	Processor	1 I/O card A	+5V, 1.5A	-
DISPLAY EQUIPMENT					
P818-950	Control unit for transfer of serial data with interface according to CCITT recommendations V24 and V28, speed selectable from 110, 150, 200, 300, 600, 1200, 2400 and 4800 bits per second.	Processor	1 I/O card A	+5V, 1.5A	-
DISC EQUIPMENT; P855M					
P821-006	Disc unit, fixed head, 420k 8-bits characters, including power supply and 3.5 m cable (Sagem type MS 300, 128 tracks, transferrate 1.35M bits/sec.)	P821-055	rack, 11U	-	-

Type number	Description	Pre-requisites	Mounting code	Power requirements	Note
P821-055	Control unit for 4 disc units fixed head, P821-006 (also connectable are Sagem MS 300, 16, 32, 64 and 256 track units, transferrate 1.35 M bits/sec.).	P849-015 /-031	rack, 3U C	self-contained	-
P822-001	Disc unit moving head, 2.7 M 8-bit characters. Including power supply, 3.5 m cable, and telescopic slides (Philips type X1210). Excluding cartridge	P822-055	rack, 9U	-	6
P822-055	Control unit for 2 disc units moving head P822-001	P849-015 /-031	rack, 3U C	self-contained	-
P822-100	Disc cartridge for P822-001 (Philips type XMX 1416)	-	-	-	-
MAGNETIC TAPE EQUIPMENT; P855M					
P831-002	Tape transport unit, 9 track, 25 i.p.s., 800 b.p.i., 10.5 inch reels read after write operation, recording method: NRZI, IBM compatible format (incl. hinges for rack mounting and 3.0 m cable) (Pertec type 6840/9 25 i.p.s.)	P831-010	rack, 14U	-	10
P831-004	Tape transport unit, 9 track, 45 i.p.s., 800 b.p.i., 10.5 inch reels read after write operation, recording method: NRZI IBM compatible format. (incl. hinges for rack mounting and 3.0 m cable). (Pertec type 6840/9 45 i.p.s.)	P831-020	rack, 14U	-	10
P831-055	Control unit for up to 4 magnetic tape transports P831-002 and P831-004	P849-015	rack, 3U C	self-contained	11
P831-010	Formatter for up to 4 magnetic tape transports P831-002 (Pertec type F849-20/13.9) incl. telesc. slides for rack mounting and 1.5 m cable to c.u.	P831-055	rack, 2U	self-contained	10
P831-020	Formatter for up to 4 magnetic tape transports P831-004 (Pertec type F849-36/25.02) incl. telesc. slides for rack mounting and 1.5 m cable to c.u.	P831-055	rack, 2U	self-contained	10
CASSETTE TAPE EQUIPMENT; P850M, P855M					
P833-001	Cassette tape drive unit, 7.5 i.p.s., 800 b.p.i. (Philips type ELA)	P833-050 P833-010	-	+5V, 0.5A +24V, 1.5A	6
P833-050	Control unit for 4 cassette tape drive units P833-001, incl. power supply +5V for four drive units	P849-015	rack, 3U C	self-contained	
P833-010	Equipment shelf with space for two cassette tape drive units incl. power supply +24V for two drive units and 1 m cable for connection to control unit		rack, 3U		
P833-100	Tape cassette for P833-001				

HARDWARE

Type number	Description	Pre-requisites	Mounting code	Power requirements	Note
MODULAR POWER SUPPLY:					
P849-020	Rectifier, capable of driving either 2x P849-022 or 2x P849-122 or 2x P849-322 or 1x P849-022 and 1x P849-122 or 1x P849-022 and 1x P849-322 or 1x P849-122 and 1x P849-322	P849-010 /-019	-	-	-
P849-021	Rectifier, capable of driving either 2x P849-222 or 2x P849-322 or 1x P849-222 and 1x P849-322	P849-010 /-019	-	-	-
P849-022	Stabilizer card, incl. 0.5 m cable supplies +6V, 4A; -6V, 3.5A; -12V, 0.2A (applicable in Data Communication equipment)	P849-020	-	-	12
P849-122	Stabilizer card, incl. 0.5 m cable supplies +5V, 7.6A; -12V, 0.2A (applicable in Data Communication equipment)	P849-020	-	-	12
P849-222	Stabilizer card, incl. 0.5 m cable +24V, 1.5A; +5V, 4A; -5V, 0.5A (applicable in DIOS equipment)	P849-021	-	-	12
P849-322	Stabilizer card, incl. 0.5 m cable supplies +5V, 7.6A; -5V, 0.5A (general purpose)	P849-020 /-021	-	-	12
P849-032	Marginal check and indicator lamp option for stabilizer P849-022	P849-022	-	-	-
P849-132	Marginal check and indicator lamp option for stabilizer P849-122	P849-122	-	-	-
P849-232	Marginal check and indicator lamp option for stabilizer P849-222	P849-222	-	-	-
P849-332	Marginal check and indicator lamp option for stabilizer P849-322	P849-322	-	-	-
P849-033	Overvoltage protection option for stabilizer P849-022	P849-022	-	-	-
P849-133	Overvoltage protection option for stabilizer P849-122	P849-122	-	-	-
P849-233	Overvoltage protection option for stabilizer P849-222	P849-222	-	-	-
P849-333	Overvoltage protection option for stabilizer P849-322	P849-322	-	-	-
P849-034	DC Converter supplies +6V, 0.5A; -6V, 0.25A; +12V, 0.08A; -12V, 0.1A	Processor	1 I/O card A	+5V, 2.5A	13

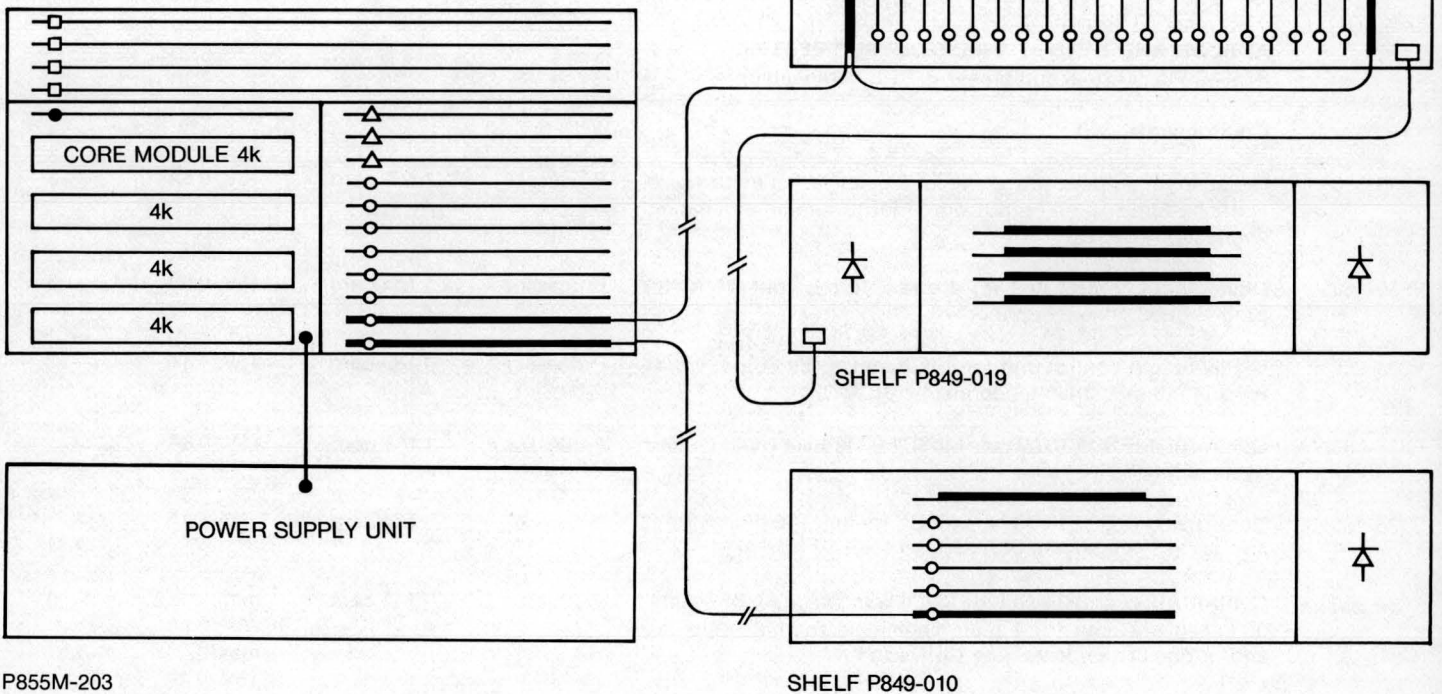
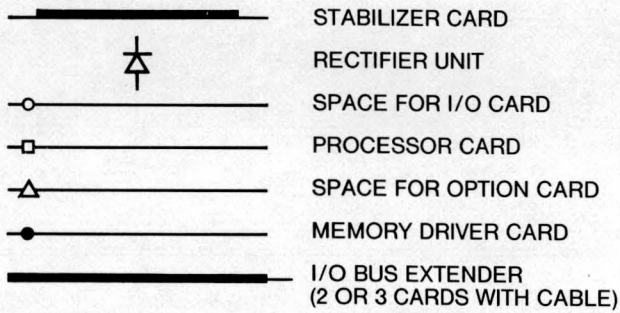
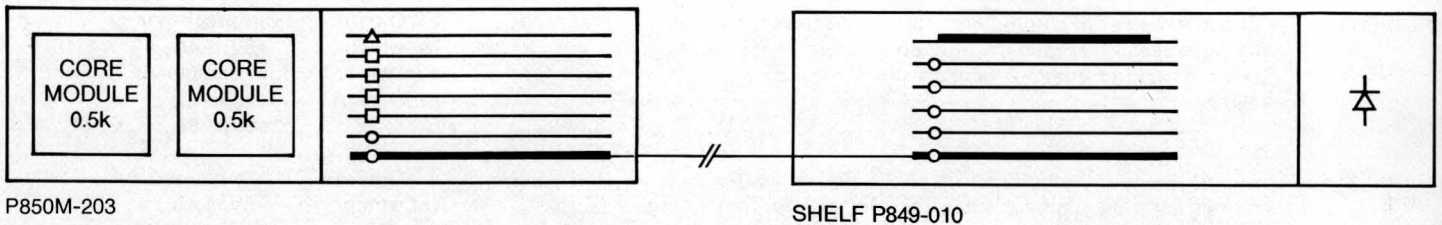
<i>Type number</i>	<i>Description</i>	<i>Pre-requisites</i>	<i>Mounting code</i>	<i>Power requirements</i>	<i>Note</i>
EQUIPMENT SHELVES:					
P849-010	Equipment shelf with space for 4 I/O cards, one rectifier, one stabilizer, including I/O bus connectors, wiring, fan and 1 pre-wired slot for I/O bus extender.	P849-015 /-031	rack, 3U	-	-
P849-011	Equipment shelf with space for 22 I/O cards with I/O bus connectors, without wiring.	-	rack, 5U	-	-
P849-013	Equipment shelf with space for 20 I/O cards, including I/O bus connectors, wiring and 2 prewired slots for I/O bus extender.	P849-019 /-115 /-115+215	rack, 5U	-	-
P849-018	Equipment shelf with space for 10 I/O cards, including I/O bus connectors, wiring and 1 prewired slot for I/O bus extender.	P849-019 /-015 /-115+215	rack, 5U	-	-
P849-019	Equipment shelf with space for 2 rectifiers and up to 4 stabilizers, including connectors, wiring and fan.	-	rack, 3U	-	-
CABINETS AND ACCESSORIES:					
P849-016	Basic 19 inch Cabinet 36 units; incl. side panels and rear door usable height 36 U, usable depth 27.5 inch	-	-	-	-
P849-116	Extension 19 inch Cabinet 36 Units, incl. rear door, usable height 36U, usable depth 27.5 inch	P849-016 /-017	-	-	-
P849-017	Basic 19 inch Cabinet 36 Units, incl. 2 fans; 10 Amp power distribution panel; side panels, CPU mounting slides and rear door, usable height 36U, usable depth 27.5 inch	-	-	-	-
P849-117	Extension 19 inch Cabinet 36 Units, incl. 2 fans and rear door, usable height 36 U, usable depth 27.5 inch	P849-016 /-017	-	-	-
P849-040	Ventilation unit 2 fans	-	-	-	-
P849-041	Ventilation unit 4 fans	-	-	-	-
P849-042	Power distribution panel 10 Amp	-	-	-	-
P849-043	Power distribution panel 25 Amp	-	-	-	-
P849-044	Telescopic slides general purpose (for CPU's, multcard control units; equipment shelves).	-	-	-	-
P849-045	Telescopic slides for fixed head disc unit	-	-	-	-
P849-046	Front panel, height 1 Unit	-	-	-	-

HARDWARE

Type number	Description	Pre-requisites	Mounting code	Power requirements	Note
P849-047	Front panel, height 3 Units	-	-	-	-
P849-048	Front panel, height 5 Units	-	-	-	-
P849-049	Front panel, height 7 Units	-	-	-	-
CARDS AND CONNECTORS; P850M, P855M					
P849-002	General purpose wiring card with I/O bus connectors and 2 I/O connectors. Blank cards with hole patterns for 14, 16, 24 and 36 pin I.C.'s and discrete components. Capacity: 24 (14, 16 pin) dual in line packages and 5 (24, 36 pin) L.S.I. packages	-	-	-	-
P849-005	Male card connector. A spare connector for mounting on a customer's I/O card at device side.	-	-	-	-
P849-006	Female card connector. A spare connector for mounting on a customer's I/O card at device side.	-	-	-	-
P849-012	General purpose card with I/O bus control logic. I/O bus connectors and 1 I/O connector	Processor	1 I/O card, A	+5V, 0.18A	-
P849-035	Male card connector. A spare connector for mounting on a customer's I/O card at CPU side.	-	-	-	-
P849-036	Female card connector for input isolator card P839-004	-	-	-	-
EXTENDERS AND ADAPTERS					
P849-015	I/O bus extender, including 5 m. cable, the necessary transmitting-receiving amplifiers and connectors for extending programmed and multiplex channel beyond the standard cabinet for P855M	Processor	2 I/O cards (of which 1 in the processor)	in processor: +5V, 1.4A in equipment shelf: +5V, 1.9A	14
P849-115	I/O bus extender, including 5 m. cable, the necessary transmitting-receiving amplifiers, terminator and connectors, for extending the programmed and multiplex channel to the equipment shelf for 20 I/O cards.	Processor	3 I/O cards (of which 1 in the processor)	in processor: +5V, 1.4A in equipment shelf: +5V, 2.6A	14
P849-215	Cables and panel for interrupt and break signals, extension for two 20 or 10 card equipment shelves. Interrupt and break signal cables 5 m. Equipment shelf cables resp. 1 m and 5 m.	P849-115	-	-	14

PLAN OF INTERNAL LAYOUT

The following diagrams show the interconnection possibilities and layout of the various equipment shelves and modular power supply available.



HARDWARE

Type number	Description	Pre-requisites	Mounting code	Power requirements	Note
P849-315	I/O bus extender, including 5 m. cable, the necessary transmitting-receiving amplifiers and connectors for extending the programmed channel beyond the standard cabinet for P850M.	Processor	2 I/O card (of which 1 in the processor)	in processor: +5V, 1.4A in equipment shelf: +5V, 1.9A	14, 8
P849-031	I/O bus extender, including 5 m. cable, the necessary transmitting-receiving amplifiers and connectors for extending DMA channel beyond the standard cabinet.	Processor	2 I/O cards (of which 1 in the processor)	in processor: +5V, 1.4A in equipment shelf: +5V, 1.9A	
Maintenance Equipment					
P849-003	Extension card for testing P855M central processor cards	-	-	-	-
P849-004	Extension card for testing P850M central processor cards and P850M, P855M control unit cards and option cards.	-	-	-	-
P849-050	Portable Control panel for P850M	Processor	-	+5V, 0.8A	15
P849-055	Portable Control panel for P855M	Processor	-	+5V, 0.8A	15
ANALOG AND DIGITAL INPUT-OUTPUT SYSTEM; P850M, P855M (this equipment is TTL. compatible)					
Control cards					
P839-050	Digital input output control unit for 2 gated 16-bit input words and 2 buffered 16-bit output words for programmed channel connection (DIOC).	Processor	1 I/O card, A	+5V, 0.8A	3
P839-150	Digital input control unit for 4 gated 16-bit input words for programmed channel connection (DIC).	Processor	1 I/O card, A	+5V, 0.5A	3
P839-250	Digital output control unit for 4 buffered 16-bit output words for programmed channel connection (DOC).	Processor	1 I/O card, A	+5V, 1.1A	3
P838-050	Control unit (PC 1202/00 type M4S), for Modular Input Output System; MIOS.	Processor	1 I/O card, A	+5V, 0.8A	-
P838-150	Control unit (PC 1203/00 type M4D), for up to 16 digital input and/or output modules of MIOS.	Processor	1 I/O card, A	+5V, 1.2A	-
P838-250	Control unit (PC 1204/00 type M4C) with space for one Analog to Digital Converter, a buffered sample and hold amplifier and/or one Digital to Analog Converter	Processor	1 I/O card, A	min.: +5V, 0.7A max: +5V, 2.4A	8

Type number	Description	Pre-requisites	Mounting code	Power requirements	Note
Input options for digital input-output system: DIOC, DIC, DOC <i>These option cards include cable and connectors to the DIC, DOC or DIOC card.</i>					
P839-001	Input buffer card for 2 words, 16 bits each	P839-050 /-150	1 I/O card,	+24V, 0.06A +5V, 0.75A	-
P839-002	Input adapter card for 2 words, 16 bits each. Low threshold 1.5V. Input voltage level adaptation. Max. voltage rating $\pm 48V$	P839-050 /-150	1 I/O card, A	+24V, 0.06A +5V, 0.75A	-
P839-003	Input adapter card for 2 words, 16 bits each. High threshold 5.9V. Input voltage level adaptation. Max. voltage rating $\pm 48V$.	P839-050 /-150	1 I/O card, A	+24V, 0.06A +5V, 0.75A	-
P839-004	Input isolator card for 2 words, 16 bits each. Can be used with Input buffer and Input change of state detector options.	P839-050 /-150	1 I/O card, A	+5V, 1.1A	-
P839-005	Input buffer and change of state detector card for 2 words, 16 bits each.	P839-050 /-150	1 I/O card, A	+24V, 0.06A +5V, 0.75A	-
P839-006	Input buffer and adapter card for 2 words, 16 bits each. Low threshold 1.5V.	P839-050 /-150	1 I/O card, A	+24V, 0.06A +5V, 0.75A	-
P839-007	Input buffer and adapter card for 2 words, 16 bits each. High threshold 5.9V.	P839-050 /-150	1 I/O card, A	+24V, 0.06A +5V, 0.75A	-
P839-008	Input buffer, change of state detector and adapter card for 2 words, 16 bits each. Low threshold 1.5V.	P839-050 /-150	1 I/O card, A	+24V, 0.06A +5V, 0.75A	-
P839-009	Input buffer, change of state detector and adapter card for 2 words, 16 bits each. High threshold 5.9V.	P839-050 /-150	1 I/O card, A	+24V, 0.06A +5V, 0.75A	-
Output options for digital input-output system: DIOC, DIC, DOC					
P839-010	Output level adaptation card for 2 words, 16 bits each. No isolation. Low threshold 1.5V.	P839-050 /-250	1 I/O card, A	+24V, 0.06A +5V, 0.4A output voltage to be provided by the user	-
P839-011	Output isolator and level adjustment card for 2 words, 16 bits each.	P839-050 /-250	1 I/O card, A	+5V, 1.1A output voltage to be provided by the user	-

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Type number	Description	Pre-requisites	Mounting code	Power requirements	Note
P839-012	Output level adaptation card for 2 words, 16 bits each. No isolation. High threshold 5.9V.	P839-050 /-250	1 I/O card, A	+24V, 0.06A +5V, 0.4A output voltage to be provided by the user	-
DATA COMMUNICATION EQUIPMENT; P850M, P855M					
P845-050	Multiple line control unit for 8 full duplex lines, 50 to 300 b.p.s. with interface according to CCITT recommendation V24 (MELCU)	P848-001 P849-030 /-026 /-027 /-028	1 I/O card, A	+6V, 0.3A +5V, 0.5A -6V, 0.2A -12V, 0.025A	7, 13
P845-150	Multiple line control unit for 8 full duplex lines 50 to 300 b.p.s. with T.T.L. compatible interface	P848-001	1 I/O card, A	+5V, 0.55A -12V, 0.02A	7, 13
P845-102	Modem interface for 8 modems with interface according to CCITT recommendation V21 (MIU)	P845-050 P849-126 /-127 /-128	1 I/O card, A	+6V, 0.45A +5V, 0.4A -6V, 0.35A	7, 9, 13
P846-950	Asynchronous line control unit for a single line, half duplex, 600-2400 b.p.s., with interface according to CCITT recommendation V23 (ASYLCU)	P848-001 P849-029 /-023 /-024 /-025	1 I/O card, A	+6V, 0.25A +5V, 0.8A -6V, 0.12A -12V, 0.001A	7, 13
P848-001	Clock pulse card for P845-050 and/or P846-950 for standard speeds (50, 75, 100, 110, 150, 200, 300, 600, 1200, 2400 b.p.s.) (CPC)	-	1 I/O card, A	+5V, 0.7A	-
P848-002	Option for extending the range of speeds with 134.5 b.p.s. (CPCO)	P848-001	-	-	-
P847-950	Synchronous line control unit for a single line, half duplex, 600-50.000 b.p.s. with interface according to CCITT recommendation V24 (SYLCU)	P849-029 /-023 /-024 /-025	1 I/O card, A	+6V, 0.25A +5V, 1.1A -6V, 0.12A -12V, 0.001A	7, 13
P847-101	Option for detection of special characters and CRC computation for BSC procedure ASCII or EBCDIC (DERCO).	P847-950	1 I/O card, A	+5V, 0.9A	-
P849-023	Cable between modem panel P849-029 and single line control unit (P846-950, P847-950), incl. connectors. Length 1 m.	-	-	-	-

<i>Type number</i>	<i>Description</i>	<i>Pre-requisites</i>	<i>Mounting code</i>	<i>Power requirements</i>	<i>Note</i>
P849-024	Cable between modem panel P849-029 and single line control unit (P846-950, P847-950), incl. connectors. Length 2 m.	-	-	-	-
P849-025	Cable between modem panel P849-029 and single line control unit (P846-950, P847-950), incl. connectors. Length 5 m.	-	-	-	-
P849-026	Cable between modem panel P849-030 and multiple line control unit (P845-050) incl. connectors. Length 1 m.	-	-	-	9
P849-027	Cable between modem panel P849-030 and multiple line control unit (P845-050), incl. connectors. Length 2 m.	-	-	-	9
P849-028	Cable between modem panel P849-030 and multiple line control unit (P845-050), incl. connectors. Length 5 m.	-	-	-	9
P849-029	Modem panel for 8 synchronous/asynchronous line control units for external connection. Connector type: Cannon	-	-	-	-
P849-030	Modem panel for one multiple line control unit P845-050 with or without modem interface unit for external connection. Connector type: Cannon	-	-	-	-
P849-126	Cable between modem panel P849-030 and both multiple line control unit (P845-050) and modem interface unit (P845-102), including connectors. Length 1 m.	-	-	-	9
P849-127	Cable between modem panel P849-030 and both multiple line control unit (P845-050), and modem interface unit, (P845-102), including connectors. Length 2 m.	-	-	-	9
P849-128	Cable between modem panel P849-030 and both multiple line control unit (P845-050) and modem interface unit (P845-102), including connectors. Length 5 m.	-	-	-	9
P849-226	Cable between two synchronous line control units P847-950 and modem panel P849-029 for full duplex connection (occupies one position on the modem panel), including connectors. Length 1 m.	-	-	-	-
P849-227	Cable between two synchronous line control units P847-950 and modem panel P849-029 for full duplex connection (occupies one position on the modem panel), including connectors. Length 2 m.	-	-	-	-
P849-228	Cable between two synchronous line control units P847-950 and modem panel P849-029 for full duplex connection (occupies one position on the modem panel), including connectors. Length 5 m.	-	-	-	-

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<i>Type number</i>	<i>Description</i>	<i>Pre-requisites</i>	<i>Mounting code</i>	<i>Power requirements</i>	<i>Note</i>
P849-326	Cable between modem panel (P849-029 or P849-030) and modem according to CCITT recommendation V24. Includes one connector for connection to the modem panel. Length 5 m.	-	-	-	-
P849-327	Cable between modem panel (P849-029 or P849-030) and modem according to CCITT recommendation V24. Includes one connector for connection to the modem panel. Length 10 m.	-	-	-	-
P849-328	Cable between modem panel (P849-029 or P849-030) and modem according to CCITT recommendation V24. Includes one connector for connection to the modem panel. Length 15 m.	-	-	-	-

Type number	Identification/Description	Core requirements k words (16 bits)	Note	
P850M STAND-ALONE SOFTWARE				
Basic package:	PV163-001	Executive system, consisting of: - I/O drivers for I/O typewriter P841-001, papertape reader P801-001 or P802-001, papertape punch P803-001 or P804-001 - interrupt handler - arithmetic routines	0.6 0.03 0.2	
	PV160-005	Assembler P850M	1.7	
	PV170-002	PV161-003	Loader	0.3
	PV165-005	Update package	1.9	
	PV165-002	Binary core dump on papertape punch P803-001 or P804-001 or on punch of I/O typewriter P841-001 or P841-002	0.15	
	PV165-003	ASCII core dump on I/O typewriter P841-001, P841-002, P841-003, P841- 004 or on lineprinter P810-001, P811-001 or P812-001	0.2	
	Extensions:			
PV164-001	PV164-001	Driver for cardreader P806-001	0.3	
PV164-002	PV164-002	Driver for lineprinter P810-001, P811-001 or P812-001	0.2	
PV164-003	PV164-003	Driver for cassette tape P833-001	0.7	
Notes:	<ul style="list-style-type: none"> - P850M software programs are stand-alone and delivered in 4x4 format, object code - P850M software is fully oriented to I/O typewriter (ASR33) and fast papertape equipment. Each processor includes therefore the necessary device handlers. - The Executive System can easily be extended to other peripheral devices by adding the required device handlers. - Minimum configuration for basic package: P850M Memory of 2k words (16 bits) ASR33 (I/O typewriter + papertape) 			

SOFTWARE

Type number	Identification/Description	Core requirements k words (16 bits)	Note
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P855M STAND-ALONE SOFTWARE

Basic package:	PV160-001	Assembler	3.6	
	PV161-003	Loader	0.3	
	PV161-004	Linkage Editor	3.4	
	PV165-005	Update package	1.9	
	PV170-100	PV165-002	Binary core dump on papertape punch P803-001 or P804-001 or on punch of I/O typewriter P841-001 or P841-002	0.15
PV165-003		ASCII core dump on I/O typewriter P841-001, P841-002, P841-003, P841-004 or on lineprinter P810-001, P811-001 or P812-001	0.2	
PV164-004		I/O package on non-interrupt base for: - I/O typewriter P841-001, P841-002, P841-003 or P841-004 on programmed channel - papertape reader P801-001 or P802-001 on programmed channel - papertape punch P803-001 or P804-001 on programmed channel	0.5	
Extensions:				
PV162-001	PV162-001 Basic FORTRAN compiler including library	4.0		*

- Notes:**
- All programs are stand-alone programs and papertape oriented (I/O typewriter, fast papertape equipment). The necessary drivers are included.
 - Standard delivery in 8+8 format, object code.
Minimum configuration for basic package:
P855M
Memory of 4k words 16 bits
Operator's console typewriter
Fast papertape equipment
 - On request, delivery can be in 4x4 format, object code, except for FORTRAN *.
Minimum configuration:
P855M
Memory of 4k words (16 bits)
ASR33 (I/O typewriter + papertape)
- * Basic FORTRAN is never delivered in 4x4 format and needs specifically an I/O typewriter with papertape (ASR33), fast papertape equipment and the hardware multiply/divide option.

SOFTWARE

<i>Type number</i>	<i>Identification/Description</i>	<i>Core requirements k words (16 bits)</i>	<i>Note</i>
PV107-010	PV107-010 Basic Data Communication Extension for Basic Operating System including drivers for: <ul style="list-style-type: none"> - MELCU (P845-050) on programmed channel - SYLCU (P847-950) on multiplex channel, with DERCO (P847-101) or SYLCU on programmed channel with special character detection for BSC procedure by software 	0.8 0.7 0.3	
PV107-003	PV107-003 Line procedure package for SYLCU (P847-950) based on BSC	2.0	

- Notes:**
- The Operating System is designed for software development using papertape. The necessary device handlers for I/O typewriter and fast papertape equipment are included. Extension to other peripheral devices is possible simply by adding the required device handlers at system generation time.
 - Minimum configuration for basic package:
 P855M
 Memory of 8k words (16 bits)
 Fast papertape equipment
 Operator's console typewriter
 - * The minimum version of the Basic Operating Monitor for working with processors is 3.0k words. This version includes the drivers for I/O typewriter and fast papertape equipment, and the operator commands. Using FORTRAN, the simulation routines for multiply and divide must be included if the hardware multiply/divide option is not available. This extends the core requirements by 417 words.
 - The Basic Operating System is always delivered in 8+8 format, object code, on papertape.
 - The Basic Data Communication Extension is fully compatible with the Basic Operating Monitor and can be included in the system at system generation time. When any calculation is done on core requirements for Data Communication, it has to be additional to the Data Communication Extension and drivers, 15 words for each MELCU-connected line and 12 words for each SYLCU-connected line.

Type number	Identification/Description	Core requirements k words (16 bits)	Note		
DISC OPERATING SYSTEM					
Basic package:	PV163-004	Disc Operating Monitor - including debugging features - including re-entrant I/O drivers for: - I/O typewriters P841-001, P841-002, P841-003 or P841-004 on programmed channel - papertape reader P801-001 or P802-001 on programmed channel - moving head disc P822-001 on multiplex channel and DMA channel - fixed head disc P821-006 on multiplex channel and DMA channel - cassette tape P833-001 on multiplex channel - card reader P806-001 on multiplex channel - lineprinter P810-001, P811-001 or P812-001 on multiplex channel - magnetic tape P831-002 or P841-004 on multiplex channel - plotter P813-001 or 813-002 on multiplex channel - Control Command Interpreter	3-6 0.5 0.3 0.4 0.3 0.2 0.4 0.2 4.6	*	
	PV170-040	PV167-003	System generator for Disc Operating Monitor	4	
		PV165-007	Disc Premark, including the Initial Program Loader	2.6	
		PV160-006	Disc Assembler, double buffering	4.5	
		PV165-011	Disc Text Editor		
		PV161-007	Disc Linkage Editor	3.1	
		PV165-002	Binary core dump on papertape punch P803-001 or P804-001 or on punch of I/O typewriter P841-001 or P841-002	0.15	
		PV165-003	ASCII core dump on I/O typewriter P841-001, P841-002, P841-003, P841-004 or on line printer P810-001, P811-001 or P812-001	0.2	
	Extensions:				
	PV162-006	PV162-006	Disc Basic FORTRAN compiler, including library	4.6	*
	PV165-015	PV165-015	Disc Extended Debugging package	4.0	
	PV170-041	PV162-004	Disc Full FORTRAN compiler, including library	8.0	*
		PV162-011	Disc Full FORTRAN transcoder	3.0	
PV165-016	PV165-016	Cassette Premark	0.5		
PV107-012	PV107-012	Disc Data Communication Extension for Disc Operating system, including drivers for:	0.8		
		- MELCU (P845-050) on programmed channel	0.7		
		- SYLCU (P847-950) on multiplex channel, with DERCO (P847-101) or SYLCU on programmed channel, with special character detection and CRC computation for BSC procedure by software	0.3		

SOFTWARE

<i>Type number</i>	<i>Identification/Description</i>	<i>Core requirements k words (16 bits)</i>	<i>Note</i>
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PV107-003	PV107-003 Line procedure package for SYLCU (P847-950) based on BSC	2.0	
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Notes:

- The Disc Operating System is designed for software development using discs and papertape for input and output. The necessary device handlers for I/O typewriter and fast papertape equipment are included.
The device handlers for the discs and other peripherals can be included in the system at system generation time.
- Minimum configuration for basic package:
 - Fast papertape equipment
 - Operator's console typewriter
 - At least one disc.
- * The minimum version of the Disc Operating Monitor required for working with processors is 6k words. This includes drivers for I/O typewriter and fast papertape equipment, memory protect and operator commands. Using FORTRAN requires the hardware multiply/divide option or the simulation routines for multiply and divide. The simulation routines extend the core requirements by 417 words.
- The Disc Operating System is delivered in 8+8 format, object code, on papertape.
- The Disc Data Communication Extension is fully compatible with the Disc Operating Monitor and can be included in the system at system generation time. It has to be taken into account that the core requirements vary with the amount of lines connected to the configuration, approximately as follows: additional to the Data Communication Extension and drivers 15 words for each MELCU-connected line and 12 words for each SYLCU-connected line.

Type number	Identification/Description	Core requirements k words (16 bits)	Note
SMALL REAL TIME SYSTEM			
Basic package:	PV163-010 Small Real Time Monitor including I/O drivers for:	0.6	
PV170-060	<ul style="list-style-type: none"> - I/O typewriter P841-001, P841-002, P841-003 or P841-004 on programmed channel - papertape reader P801-001 or P802-001 on programmed channel - papertape punch P803-001 or P804-001 on programmed channel 		
	PV161-003 Loader	0.3	
Notes:	<ul style="list-style-type: none"> - The Small Real Time Monitor is designed for use in dedicated real time applications and is upward compatible with the Basic Real Time Monitor. User programs running under the Small Real Time Monitor can be used without modifications under the Basic Real Time Monitor. - No system generation program is necessary. The Small Real Time Monitor is always delivered in source and the needed modules can be assembled and link-edited normally. The resulting object tape has to be loaded by the Loader. - Minimum configuration for basic package: P855M Memory of 4k words (16 bits) I/O typewriter (ASR33) 		

SOFTWARE

Type number	Identification/Description	Core requirements k words (16 bits)	Note
BASIC REAL TIME SYSTEM			
Basic package:	PV163-003 Basic Real Time Monitor	3-5	*
	- including re-entrant drivers for:		
	- I/O typewriter P841-001, P841-002, P841-003 or P841-004 on programmed channel		
	- papertape reader P801-001 or P802-001 on programmed channel		
PV170-070	- papertape punch P803-001 or P804-001 on programmed channel		
	- cassette tape P833-001 on multiplex channel	0.4	
	- card reader P806-001 on multiplex channel	0.3	
	- lineprinter P810-001, P811-001 or P812-001 on multiplex channel	0.2	
	- magnetic tape P831-002 or P841-004 on multiplex channel	0.4	
	- plotter P813-001 or P813-002 on multiplex channel		
	- Initial Program Loader	0.8	
	PV167-002 System generator for Basic Real Time Monitor	4	
Extensions:			
PV166-003	PV166-003 Real Time Full FORTRAN Library		*
PV107-011	PV107-011 Data Communication Real Time Extension for Basic Real Time System including drivers for:	0.8	
	- MELCU (P845-050) on programmed channel	0.7	
	- SYLCU (P847-950) on multiplex channel with DERCO (P847-101) or SYLCU on programmed channel, with special character detection and CRC computation for BSC procedure by software	0.3	
PV107-003	PV107-003 Line procedure package for SYLCU (P847-950) based on BSC	2.0	
Notes:	<ul style="list-style-type: none"> - The Basic Real Time Monitor is designed as a runtime executive system, capable of handling real-time events and a variable number of programs in a multitasking environment. - The Basic Real Time Monitor includes all functions of the Small Real Time Monitor and is expanded with more monitor requests- and I/O facilities. Each program, which runs under the Small Real Time Monitor, can run under the Basic Real Time Monitor. - The Basic Real Time Monpor is also compatible with the Basic Operating System in such a way, that a program developed under Basic Operating System, can run under Basic Real Time Monitor without modifications. - Full FORTRAN programs have the possibility of using the facilities of the Real Time Full FORTRAN library, which enables easy writing of real time programs. - The system software is delivered in 8+8 format, object code, on papertape. On request, source can be delivered. - Minimum configuration for basic package: P855M Memory of 8k words (16 bits) Console typewriter Fast papertape equipment 		

<i>Type number</i>	<i>Identification/Description</i>	<i>Core requirements k words (16 bits)</i>	<i>Note</i>
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- * The minimum version of the Basic Real Time Monitor, including drivers for I/O typewriter and fast papertape equipment, is 3k.
Using FORTRAN programs the hardware multiply/divide must be available or the simulation routines have to be used.
The core requirements for these simulation routines vary with the number of levels on which the simulation is expected to work at the same time.
Total extra core: $417 + 17.n$ words.
- The Data Communication Real Time Extension can be added to the Basic Real Time System at system generation time. The core requirements vary with the amount of lines connected to the configuration as follows: additional to the Data Communication Extension and drivers 15 words for each MELCU-connected line and 12 words for each SYLCU-connected line.

SOFTWARE

Type number	Identification/Description	Core requirements k words (16 bits)	Note
DISC REAL TIME SYSTEM			
Basic package:	PV163-005 Disc Real Time Monitor	5	*
	- including re-entrant I/O drivers for:		
	- I/O typewriter P841-001, P841-002, P841-003 or P841-004 on programmed channel		
	- papertape reader P801-001 or P802-001 on programmed channel	0.5	
	- papertape punch P803-001 or P804-001 on programmed channel	0.3	
	- moving head disc P822-001 on multiplex channel and DMA channel	0.4	
	- fixed head disc P821-006 on multiplex channel and DMA channel	0.3	
	- cassette tape P833-001 on multiplex channel	0.4	
	- card reader P806-001 on multiplex channel	0.3	
	- lineprinter P810-001, P811-001 or P812-001 on multiplex channel	0.2	
	- magnetic tape P831-002 or P841-004 on multiplex channel	0.4	
	- plotter P813-001 or P813-002 on multiplex channel	0.2	
	- Control Command Interpreter	4.6	
PV170-080	PV167-004 System generator for Disc Real Time Monitor	4	
	PV165-007 Disc Premark including the Initial Program Loader	2.6	
Extensions:			
PV166-004	PV166-004 Real Time Full FORTRAN library, disc oriented		*
PV107-013	PV107-013 Disc Data Communication Real Time Extension for the Disc Real Time System including drivers for:	0.8	
	- MELCU (P845-050) on programmed channel	0.7	
	- SYLCU (P847-950) on multiplex channel, with DERCO (P847-101); with special character detection and CBC computation for BSC procedure by software	0.3	
PV107-003	PV107-003 Line procedure for SYLCU (P847-950) based on BSC	2.0	

<i>Type number</i>	<i>Identification/Description</i>	<i>Core requirements k words (16 bits)</i>	<i>Note</i>
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Notes:

- The Disc Real Time Monitor is designed as a runtime executive system, capable of handling real-time events and a variable number of programs in a multitasking environment.
- Minimum configuration for basic package:
P855M
Memory of 8k words (16 bits)
At least one disc
Console typewriter
It is recommended to have access to a Disc Operating System with exchangeable discs, otherwise the minimum configuration has to be expanded with fast papertape equipment.
- * The minimum version of the Disc Real Time Monitor for the configuration as above is approximately 5k. Using FORTRAN programs one has to consider that the hardware multiply/divide option must be used or the simulation routines for multiply and divide should be included.
Total extra core: $417 + 17n$ words, where 'n' is the amount of levels on which the simulation is expected to work at the same time.
- The system software is delivered in 8+8 format, object code, on papertape. On request, source can be delivered.
The Disc Real Time Monitor is compatible with the Disc Operating System in such a way that a program, designed under Disc Operating System can run without modifications under the Disc Real Time Monitor.
Full FORTRAN programs can use the facility of the real-time Full FORTRAN library.
- The Disc Data Communication Real Time Extension can be linked to the Disc Real Time Monitor at system generation time.
Additional core requirements: approximately 15 words for each MELCU-connected line and 12 words for each SYLCU-connected line.

TEST SOFTWARE

Type number	Description	Prerequisite	Note
HARDWARE TEST PROGRAMS			
PV170-200	P850M Basic test package consisting of:		
PV150-001	P850M test on instruction set		
PV150-005	P850M test on first memory module		
PV150-006	P850M extended memory test		
PV152-001	P850M test monitor for testing peripherals connected to P850M		
PV170-210	P855M Basic test package consisting of:		
PV151-001	P855M test on P850M type instructions		
PV151-002	P855M test on additional instructions		
PV151-003	P855M test on hardware multiply/divide instructions		
PV151-004	P855M test on instruction set with or without hardware multiply/divide instructions	min. 8k	
PV151-005	P855M memory test		
PV151-011	P855M test on options real time clock, memory protection, power failure, automatic restart, memory increment data break		
PV151-012	P855M test on interrupt lines		
PV151-017	P855M test on programmed, multiplex and DMA channel		
PV152-002	P855M test monitor for testing peripherals connected to P855M	PV855-110	
Extensions:			
PV152-011	P850M test program for punched tape reader P801-001 and P802-001, includes test tape	PV152-001 -002	
PV152-012	P855M test program for punched tape reader P801-001 and P802-001, includes test tape	PV152-001 -002	
PV152-013	P850M test program for tape punch P803-001 and P804-001	PV152-001 -002	
PV152-014	P855M test program for tape punch P803-001 and P804-001	PV152-001 -002	
PV152-016	P850M/P855M test program for card reader P806-101	PV152-001 -002 PV806-110	
PV152-021	P850M/P855M test program for line printer P810-001, P811-001 and P812-001	PV152-001 -002	
PV152-026	P855M test program for plotter P813-001 and P813-002	PV152-001 -002	
PV152-031	P850M/P855M test program for typewriter P841-001, P841-002, P841-003 and P841-004	PV152-001 -002	
PV152-032	P850M/P855M test program for character printer with keyboard P842-001	PV152-001 -002	
PV152-041	P855M test program for disc unit fixed head P821-006	PV152-001 -002	
PV152-046	P855M test program for disc unit moving head P822-001	PV152-001 -002	

TEST SOFTWARE

<i>Type number</i>	<i>Description</i>	<i>Prerequisite</i>	<i>Note</i>
PV152-051	P855M test program for magnetic tape drive P831-002 and P831-004	PV152-001 -002	
PV152-056	P850M/P855M test program for cassette tape drive P833-001	PV152-001 -002	
PV806-110	Card deck for testing card reader P806-001 and P806-101 for P850M/ P855M		
PV855-110	Test tool for testing programmed, multiplex and DMA channel for P850M/P855M		

- 1 Shown is total power supplied to memory, I/O slots and options.
- 2 Power consumption for different magnetic core sizes (P855M) in amperes.

Core size	+5V	-5V	+24V
4K	2.4	0.15	4.4
8K	3.3	0.25	5.2
12K	4.2	0.35	6.0
16K	5.1	0.45	6.8
20K	6.0	0.55	7.6
24K	6.9	0.65	8.4
28K	7.8	0.75	9.2
32K	8.7	0.85	10.0

- 3 To connect a device to the DIOS system a female connector P849-006 per 2 words is needed. This connector mounts either on DIC, DOC or DIOC card or on the option card. The connection between option card and DIC, DOC or DIOC card is included in the option card. When the Input Isolator Card P839-004 is applied, the female connector P849-036 (instead of P849-037) is required.
- 4 Only one can be selected.
- 5 The total number of controllers connected to the Direct Memory Access channel (DMA) **and** the Multiplex channel (MPX) is 15. That means if two device controllers are operating on the DMA channel only 13 MPX sub-channel addresses are free for device controllers instead of 15. Multi device controllers like **cassette tape, magnetic tape, DIOC, DIC, and DOC** always occupy a MPX-address even if they are connected to programmed channel.
- 6 These peripherals may also be purchased directly from the supplying Philips division at a lower price, as follows:
P833-001 via Main Industry Group E.L.A.
- 7 Data communication cards require additional power when mounted in the processor cabinet (see power requirements). This is provided by the Modular Power supply unit or the DC Converter. The Modular Power Supply unit is connected to the processor backpanel via a separate plug for P855M. For P850M it is not possible to connect the Modular Power Supply to the CPU cabinet.

NOTES

- 8 Component size on the card makes it necessary to reserve the space of 2 I/O slots in the CPU.
- 9 If P845-050 (MELCU) and P845-102 (MIU) are used, only P849-126/-127/-128 is necessary for connection.
- 10 Mag. tape units are daisy chained. Cable between Formatter and first tape unit is 3.0 m. Cable between mag. tape units 3.0 m. A terminator is required when 1 up to 4 Mag. tape units are connected to a formatter. This terminator is included in the Formatter.
- 11 To the control unit one Formatter may be connected. If different tape speeds to one central processor are required, one control unit plus formatter is needed for each speed.
- 12 If two stabilizers are connected to one rectifier following rules should be applied.

Max output in Amp.

	+6V	-6V	-12V	+5V	-5V	+24V
Connected to 1 × P849-020						
2×P849-022						
or 2×P849-122	8A	7A	0.4A			
or 2×P849-322			0.4A	13A		
or 2×P849-022+1×P849-122				13A	0.5A	
or 2×P849-022+1×P849-322	4A	3.5A	0.4A	6.5A		
or 2×P849-122+1×P849-322	4A	3.5A	0.2A	6.5A	0.5A	
			0.2A	13A	0.5A	
Connected to 1 × P849-021						
2×P849-222						
or 2×P849-322				8A	0.5A	2A
or 1×P849-222+1×P849-322				13A	0.5A	
				10.5A	0.5A	1A

- 13 The DC Converter P849-034 is applicable in systems where 1 or 2 Data Communication cards are required. It can be mounted in one I/O slot and supplies power for any one of the following combinations:
 2 SYLCU's
 2 ASYLCU's
 1 MELCU
 1 SYLCU + 1 ASYLCU

- 14 **P849-015** is to be used for connection of magnetic device control units and equipment shelves for 4 and 10 cards when the total of required interrupt and break signals is 10 or less.
P849-115 is to be used for the 20 card equipment shelf when the total of required interrupt and break signals is 10 or less.
P849-215 is to be used in conjunction with P849-115 for the 10 and 20 card equipment shelf when the total of required interrupt and break signals exceeds 10.
- 15 The minipanel is interchangeable with the standard control panel. For programming/debugging the portable control panel P849-050/055 is required.

Mounting Codes

- A. Mounts in the processor or a separate cabinet; uses 1 I/O slot. If an I/O card is mounted outside the processor cabinet, an equipment shelf with modular power and I/O bus extender, is necessary (see power requirements).
- B. Mounts in the processor cabinet, dedicated location.
- C. Self contained controller; equipment shelf with power supply and controller cards, rack mounting, 3U high. I/O bus extender to be selected if not specified.
- D. Mounts in processor cabinet; 2 I/O slots are prewired for either the DMA channel or the programmed channel.
- E. Free standing (line printer, teletype) or table top version (plotter, card reader).

Remark

1 Unit (U) equals $1\frac{3}{4}$ inch (= 44.45 mm).

APPENDIX 1

to level 5 common line: 16 lines: 15 unassigned
14 Card Reader
13 Punched Tape Reader 1
12 Punched Tape Reader 2
11 Cassatte Tape Unit
10 Punched Tape Punch 1
9 Punched Tape Punch 2
8 ASR 1
7 ASR 2
6 Magnetic Tape Unit
5 Fixed Head Disc
4 Moving Head Disc 1
3 Moving Head Disc 2
2 Line Printer
1 Plotter
0 unassigned

Descending Priority 15 to 0

Optional P855M-031 levels 8 to 17 unassigned

Optional P855M-032 levels 18 to 27 unassigned

Optional P855M-033 levels 28 to 47 unassigned

PERIPHERAL CONNECTION TABLE

This table shows the interrupt activities, the type of I/O channel, the number of device addresses used, the device addresses and standard bits of the maskable interrupt lines. (These connections are software supported.)

Type Number	Short Controller Description	DMA Channel	MPX Channel	Programmed Channel	Interrupt Lines	Number of Device Addresses	Standard device Address (hexa)	Standard bits of the maskable interrupt lines
P801-950	-punched tape reader	no	no	yes	1	1	20	13
P803-950	-tape punch	no	no	yes	1	1	30	10
P806-950	-card reader	no	yes	yes	1	1	05	14
P810-950	-line printer	no	yes	yes	1	1	0D	2
P813-950	-plotter	no	yes	yes	1	1	0E	1
P841-950	-typewriter	no	no	yes	1	1	10	8
P821-055	-fixed head disc	yes	yes	no	1	4	1,11,21,31	5
P822-055	-moving head disc	yes	yes	no	1	2	2,12	4
P831-055	-magnetic tape	no	yes	no	1	4	4,14,24,34	6
P833-050	-cassette tape	no	yes	yes	1	4	6,16,26,36	11
P839-050	-DIOC	no	no	yes	1	4	A,1A,2A,3A	-
P839-150	-DIC	no	no	yes	1	4	-	-
P839-250	-DOC	no	no	yes	1	4	-	-
P838-050	-M4S	no	no	yes	1	3	1C,1D,1E	-
P838-150	-M4D	no	no	yes	1	1	3E	-
P838-250	-M4C	no	yes	yes	2	2	08,09	-
P845-050	Melcu	no	no	yes	1	1*	-	-
P846-950	Asylcu	no	no	yes	1	1	-	-
P847-950	Sylcu	no	yes	yes	1	1	-	-

* max. 16 devices (-= non standard.)

I/O CABLE LENGTHS

Non Standard Cable Lengths.

(If the customer requires a non standard cable it should be specified e.g. Paper tape reader with 7.5 m cable instead of 3.5 m).


<i>Device</i>	<i>Alternative Cable Length</i>
P.T.R.	2 m; 7.5 m
P.T.P.	2 m; 7.5 m
CR	-
ASR	-
MHDisc	-
FHDisc	-
Cassette	-
Stabilizer	2 m
I/O bus ext. (P849-015/115)	1 m; 2 m; 3 m; 7.5 m; 15 m
I/O bus ext. (P849-031)	-
Mag. Tape unit/Mag. Tape unit	-
Formatter/Mag. Tape unit	-

Note: Cables are provided with peripherals. They are not supplied when only control units are ordered.

RULES FOR I/O-POSITIONS IN CPU

The implementation of Control units and I/O cables in the P855M must be realized in accordance with the following rules:

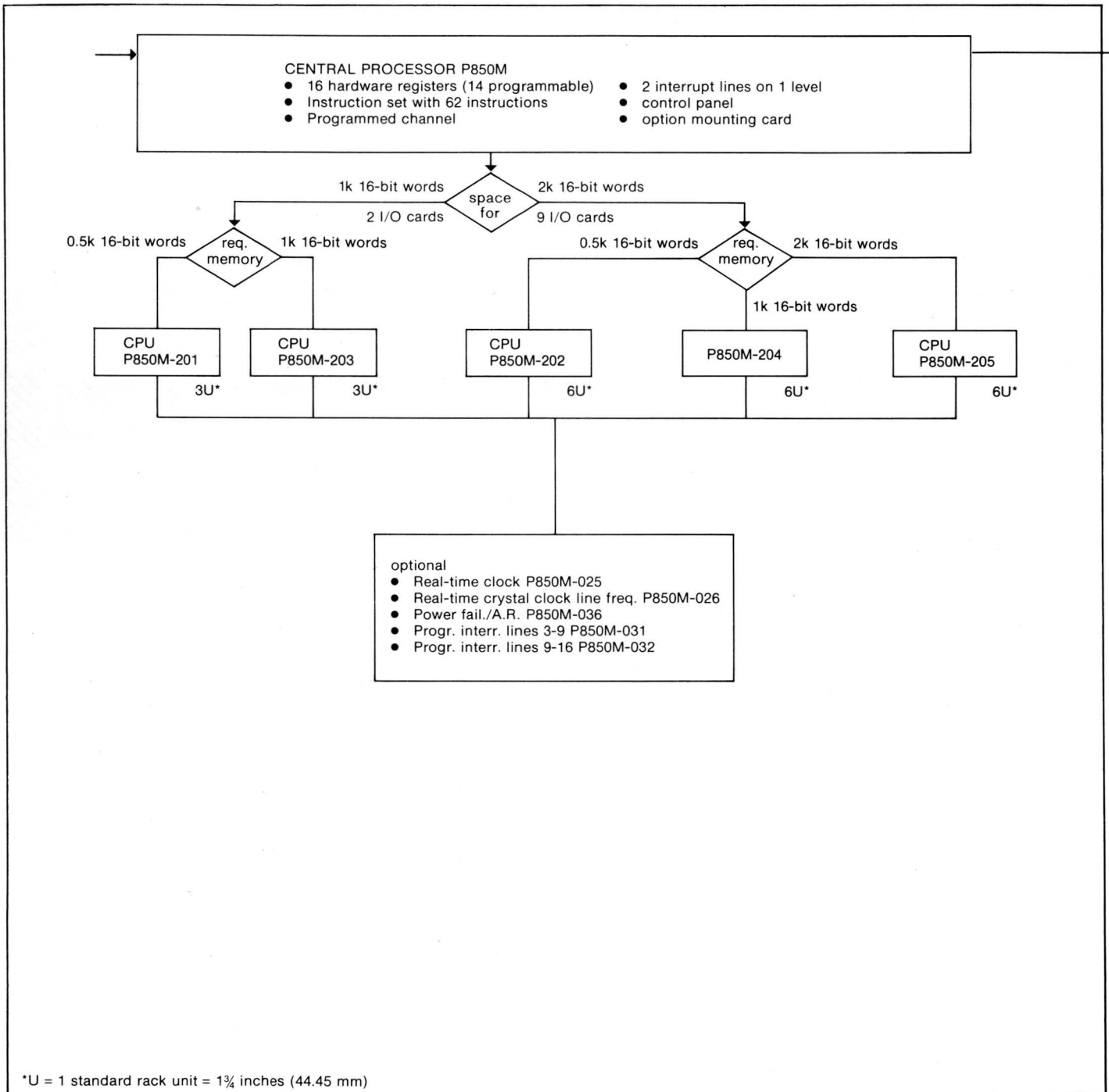
Type of card No. of slot	Periph. Control Unit	Data Com. card	Clock Pulse card	I/O ext. for Progr. and MPX Channel		I/O ext. DMAC	DMAC cards
				with DMA	without DMA		
1							
2		(1)			(2)		
3		(1)			(2)		
4		(1)			(2)		
5							
6							
7							
8							

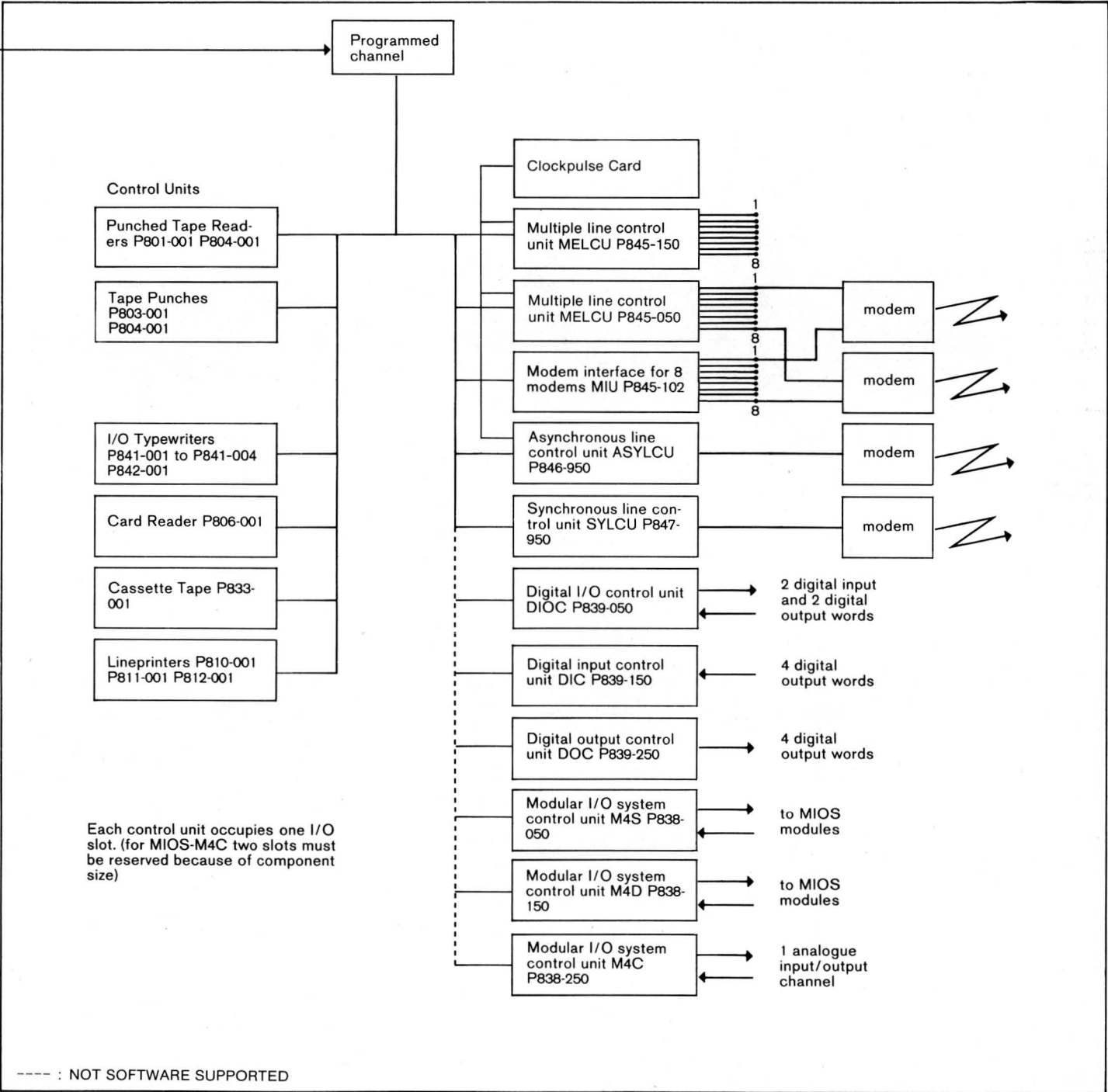
 not allowed.

1. One Data Communication card may be implemented in one of these slots when no I/O extender is implemented in one of these slots.
2. One, two or three I/O extenders may be implemented when no Data Communication card is implemented in one of these slots.

APPENDIX 5

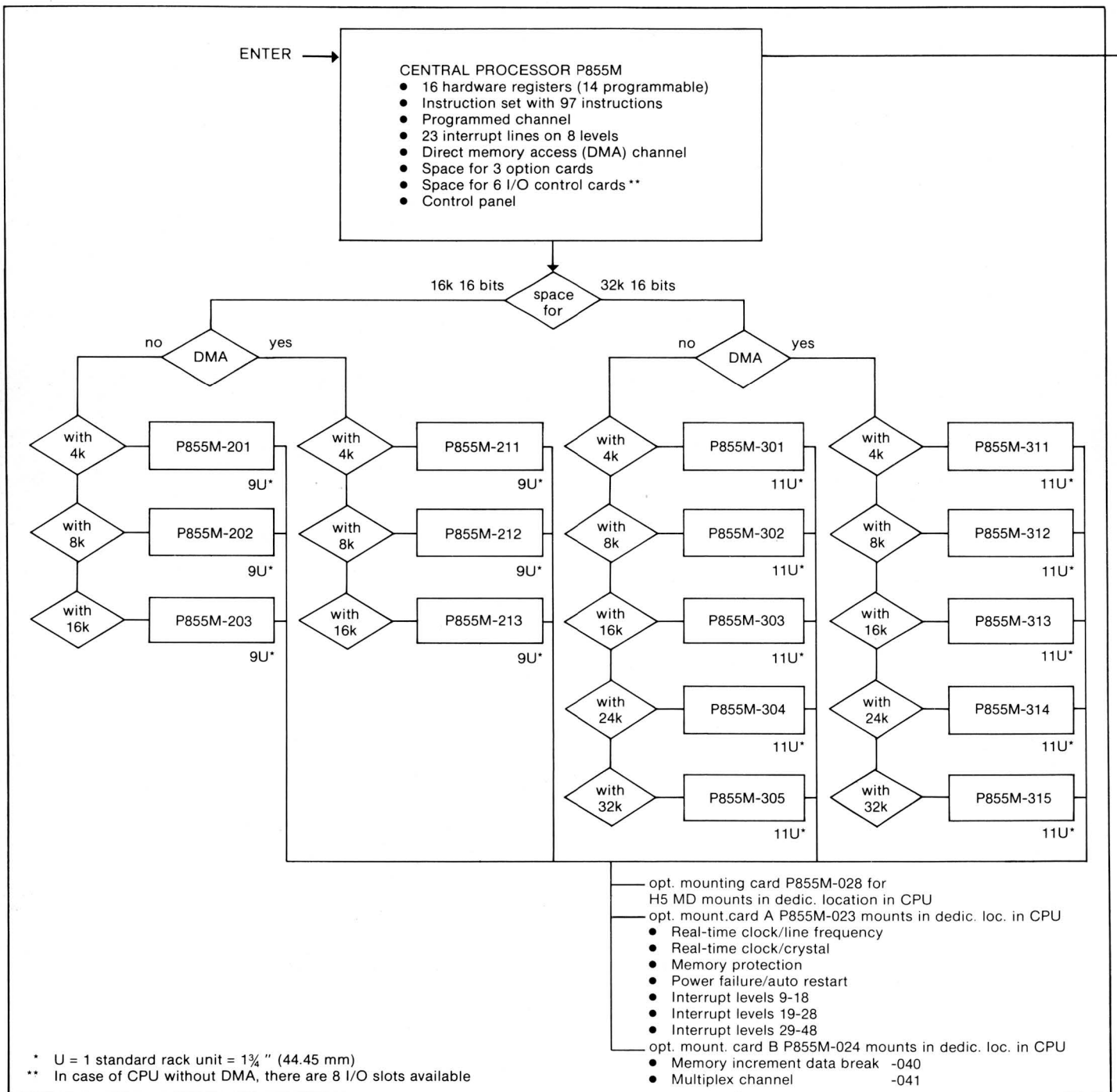
P850M Configurator

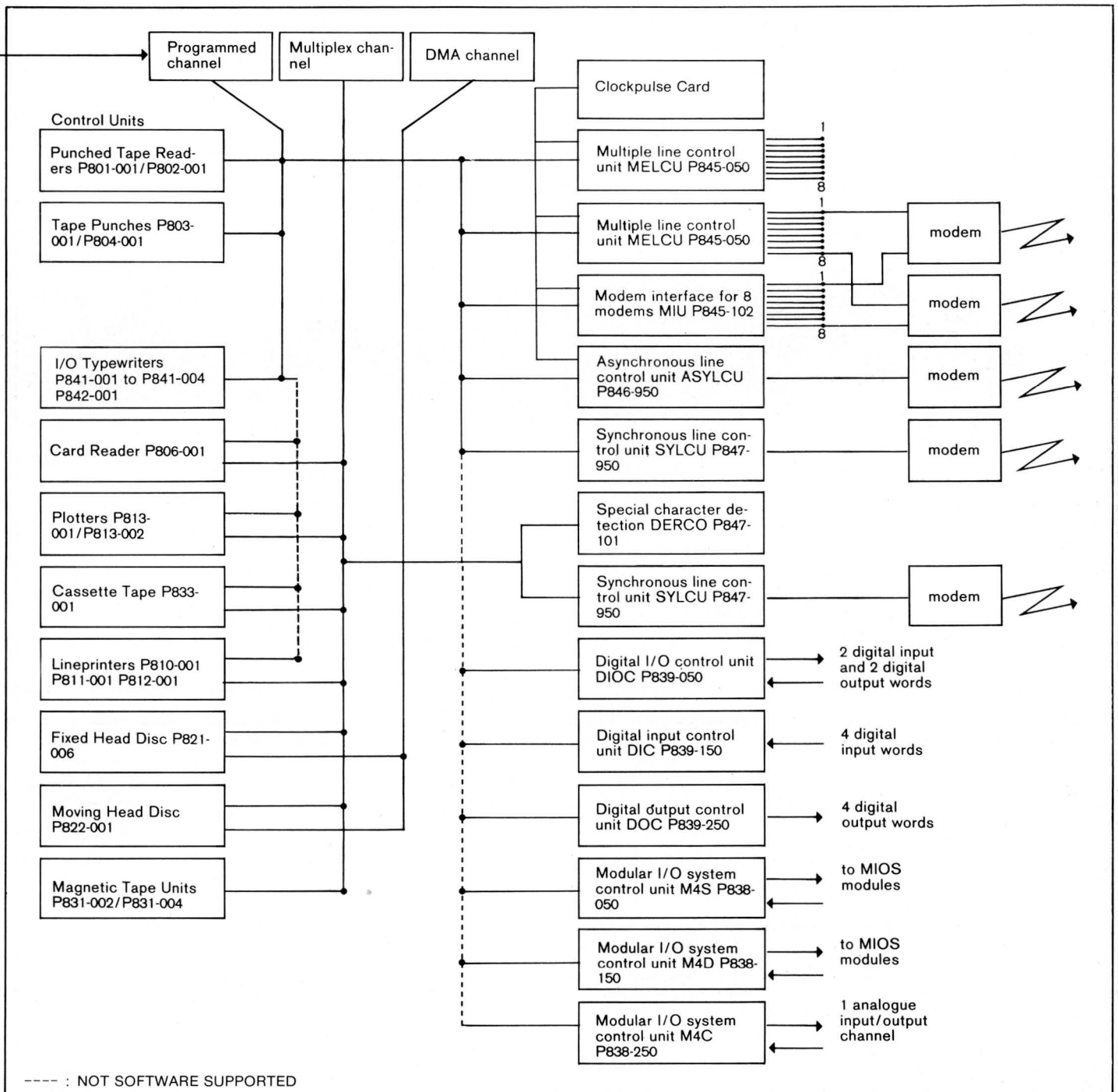




APPENDIX 5

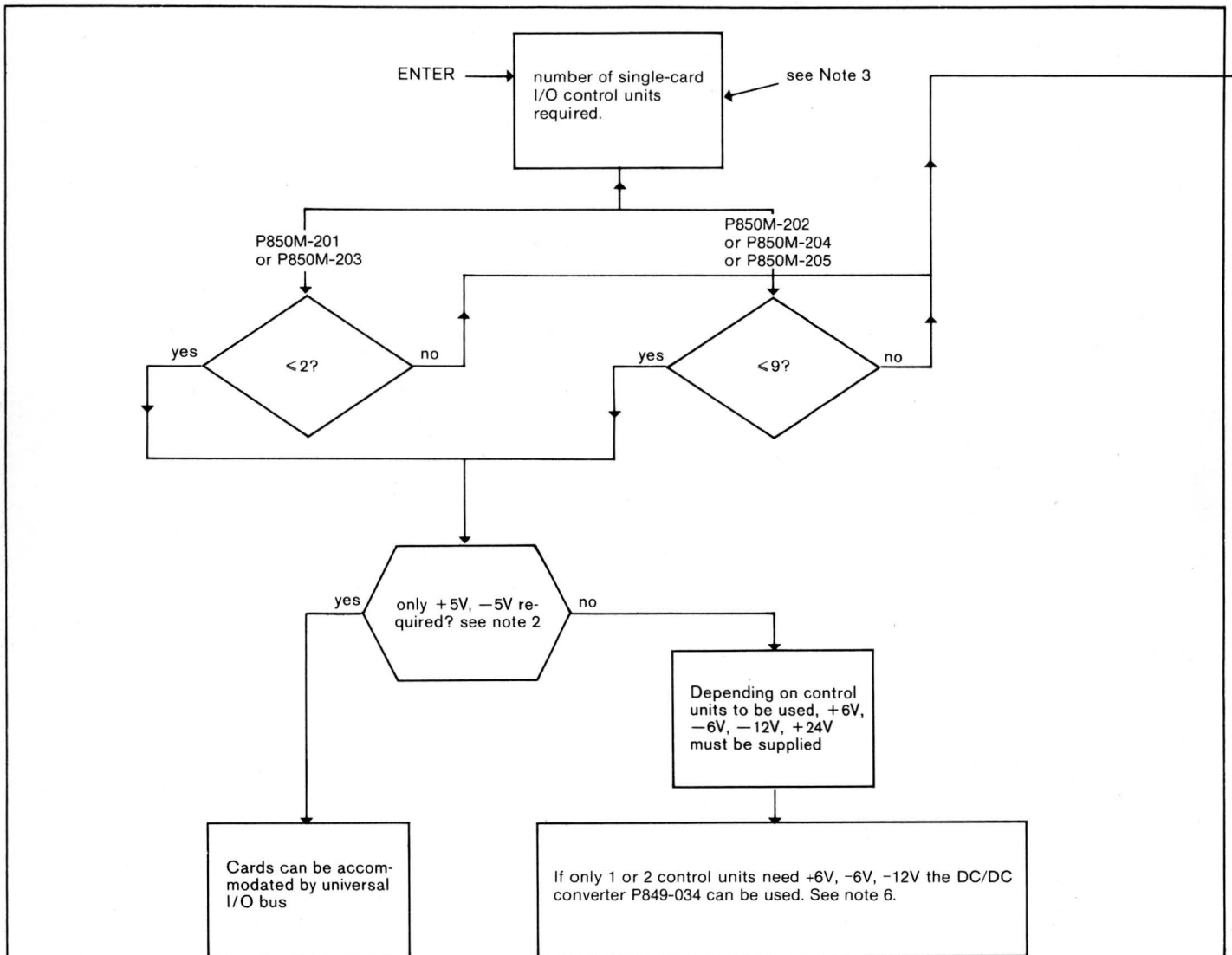
P855M Configurator





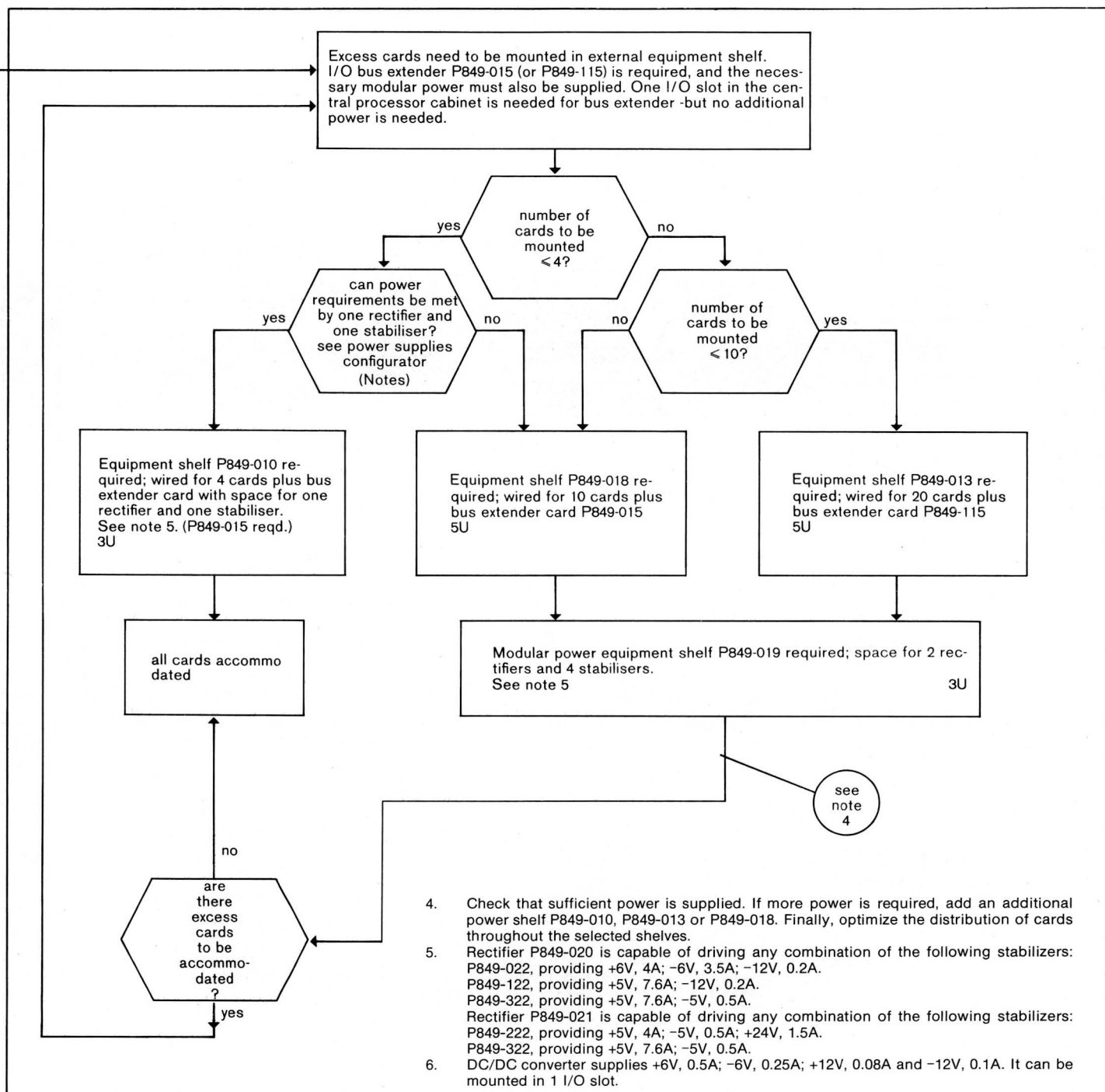
APPENDIX 5

P850M Power and Equipment Shelf Configuration



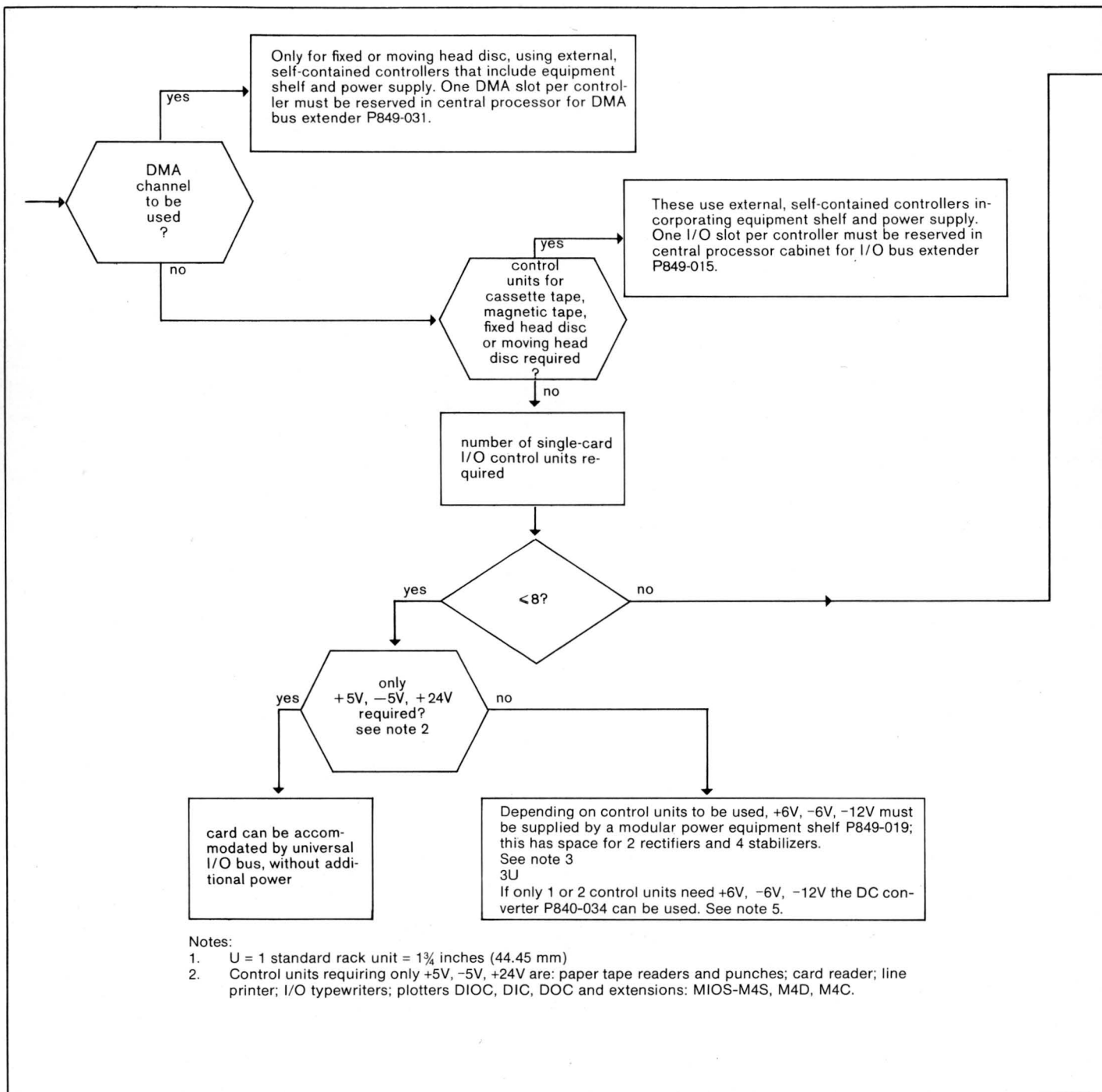
Notes:

1. U = 1 standard rack unit = 1 3/4 inches (44.45 mm)
2. Control units requiring only +5V, -5V are: paper tape readers and punches; card reader; line printer; I/O typewriters; plotters DIOC, DIC, DOC, MIOS-M4S, M4D, M4C.
3. This excludes control units which are self-contained; including equipment shelf and power supply. One I/O slot per controller must be reserved in central processor cabinet for I/O bus extender P849-015. (Applies to cassette).



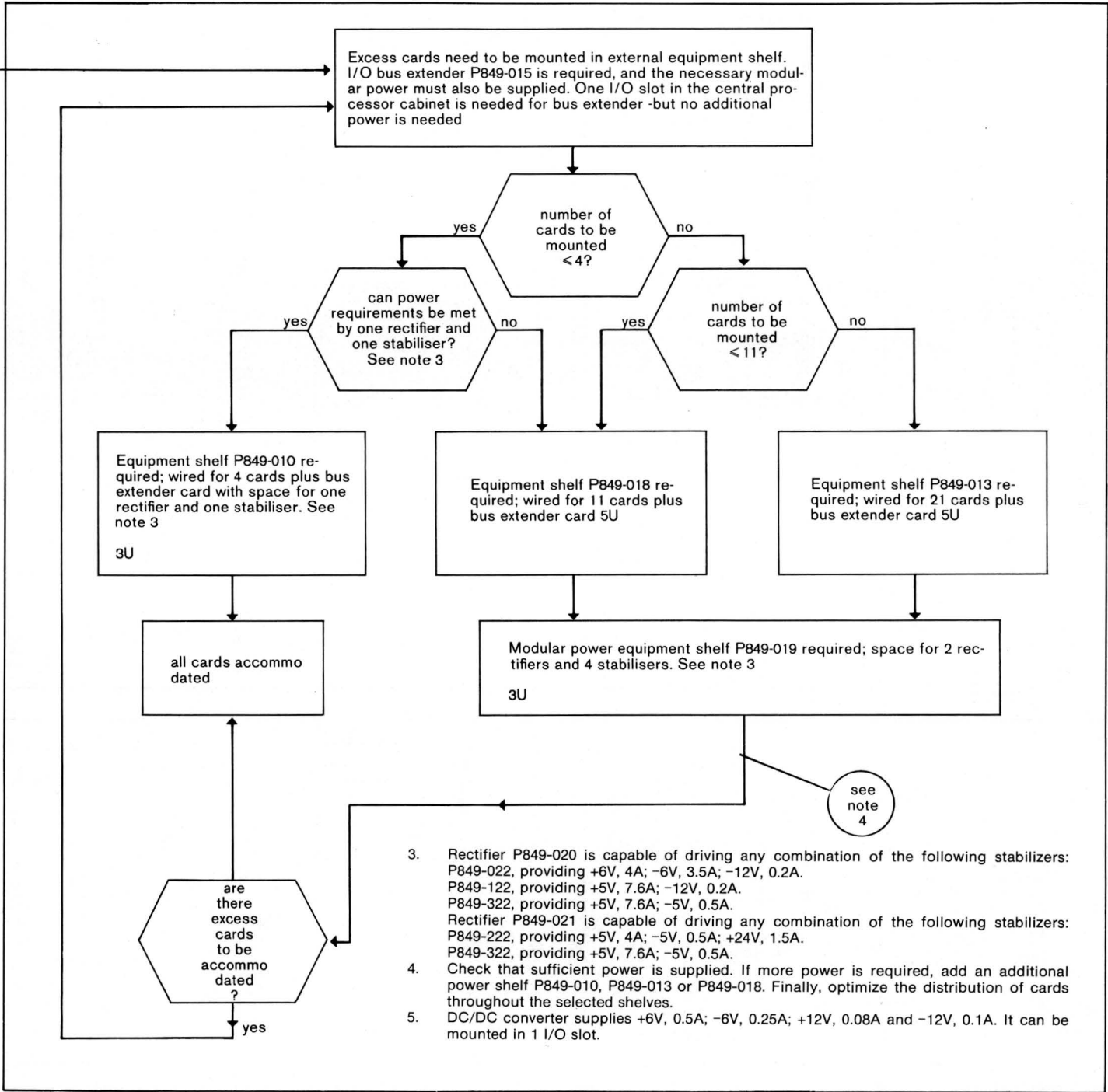
APPENDIX 5

P855M Power and Equipment Shelf Configuration



Notes:

1. U = 1 standard rack unit = 1¾ inches (44.45 mm)
2. Control units requiring only +5V, -5V, +24V are: paper tape readers and punches; card reader; line printer; I/O typewriters; plotters DIOC, DIC, DOC and extensions: MIOS-M4S, M4D, M4C.

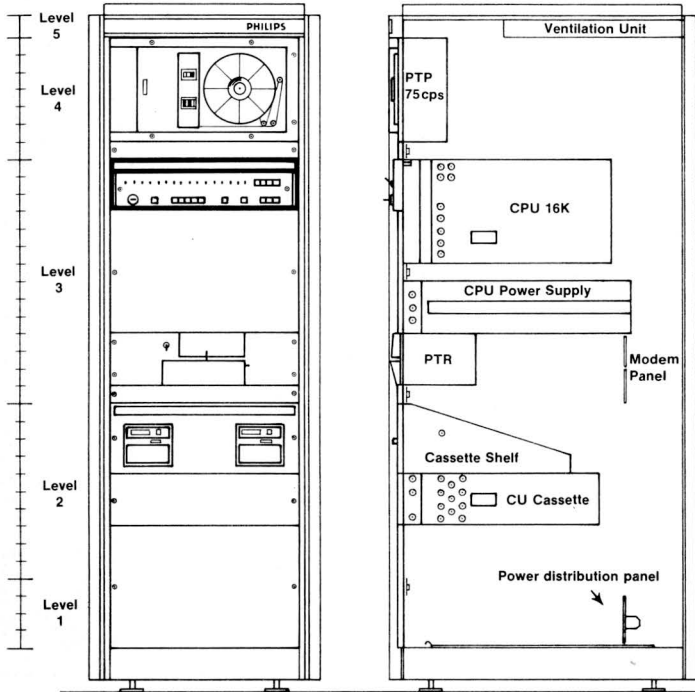


APPENDIX 6

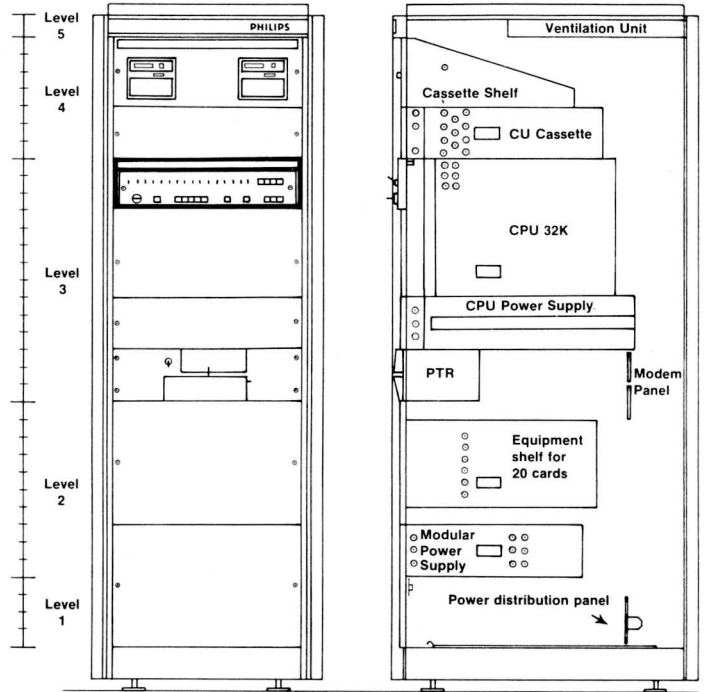
STANDARD CABINET LAYOUTS

In the following pictures some examples of the standard configuration possibilities are given. Non-standard configurations should be specified.

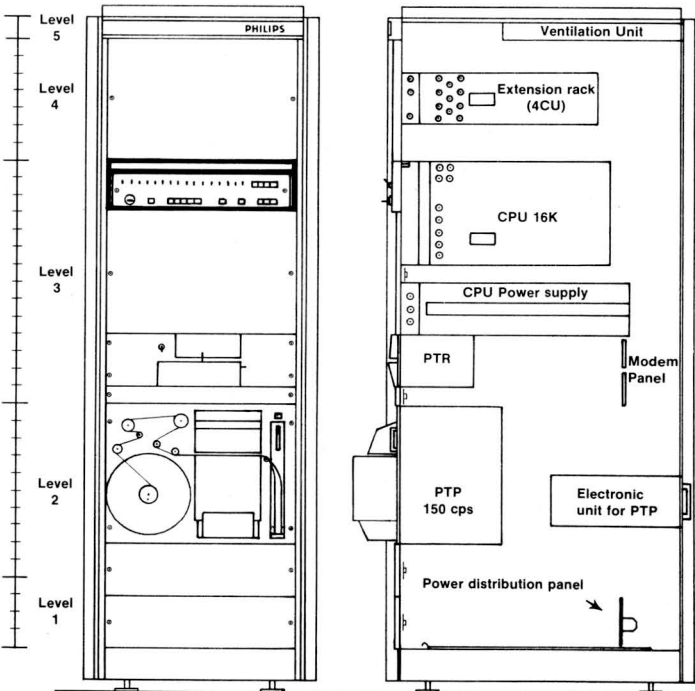
1. Central processor cabinet including PTR, PTP and 2 Cassette tape drive.



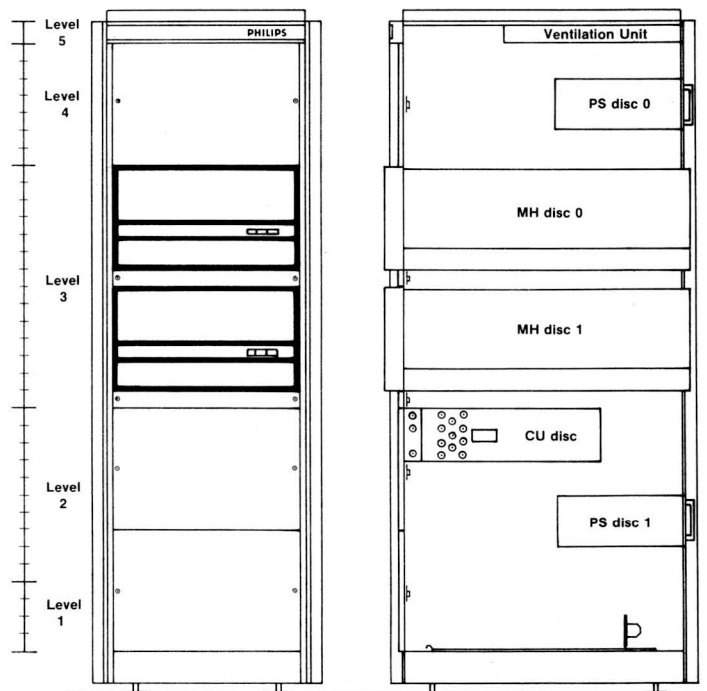
2. Central processor cabinet including PTR, 2 Cassette tape drive, equipment shelf 20 cards and modular power supply.



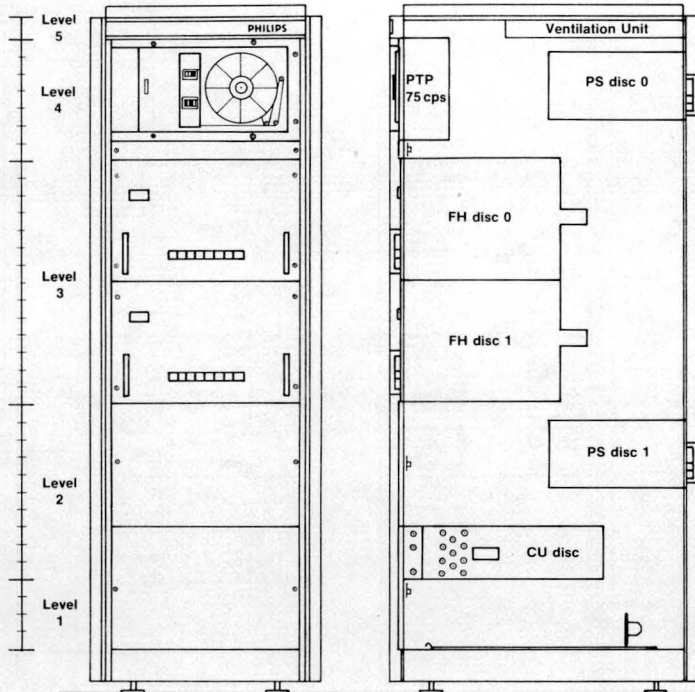
3. Central processor cabinet including PTR, PTR, 150 cps, and equipment shelf for 4 I/O cards.



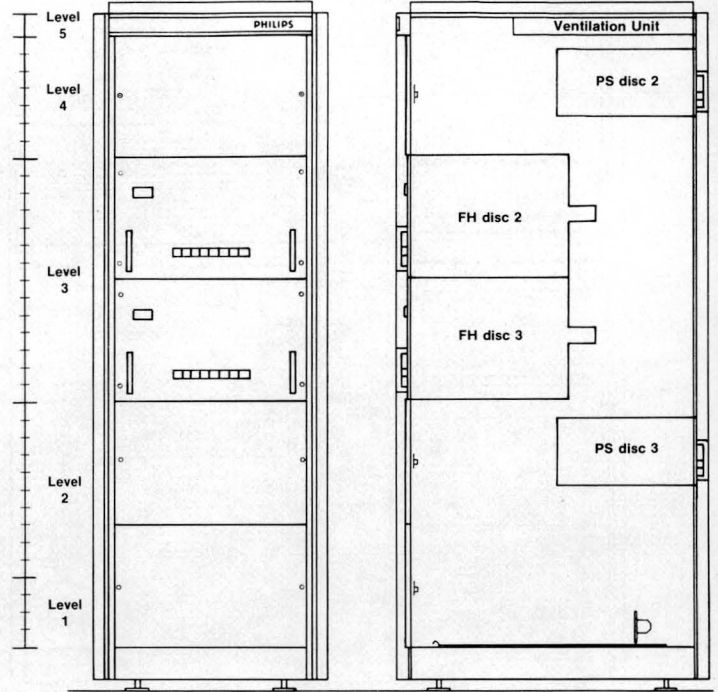
4. Extension cabinet for 2 moving head discs with their control unit.



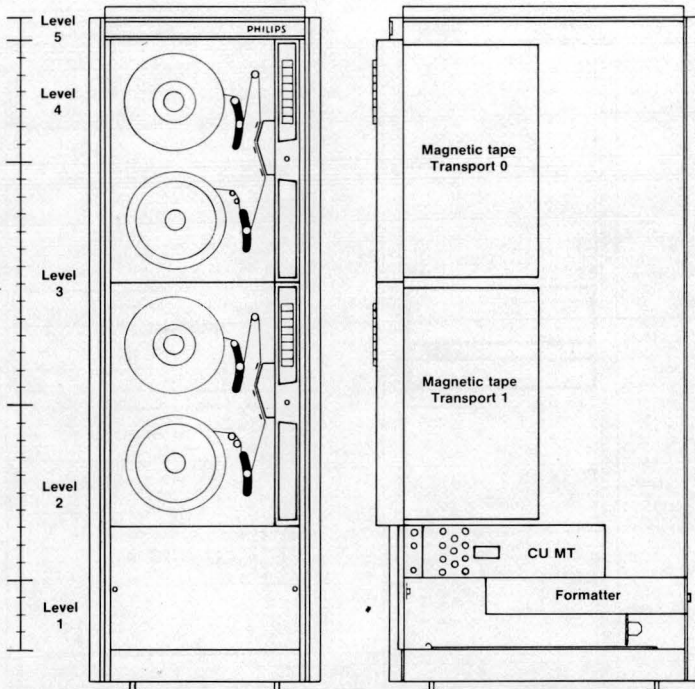
5. Extension cabinet for 2 fixed head discs with their control unit and a tape punch



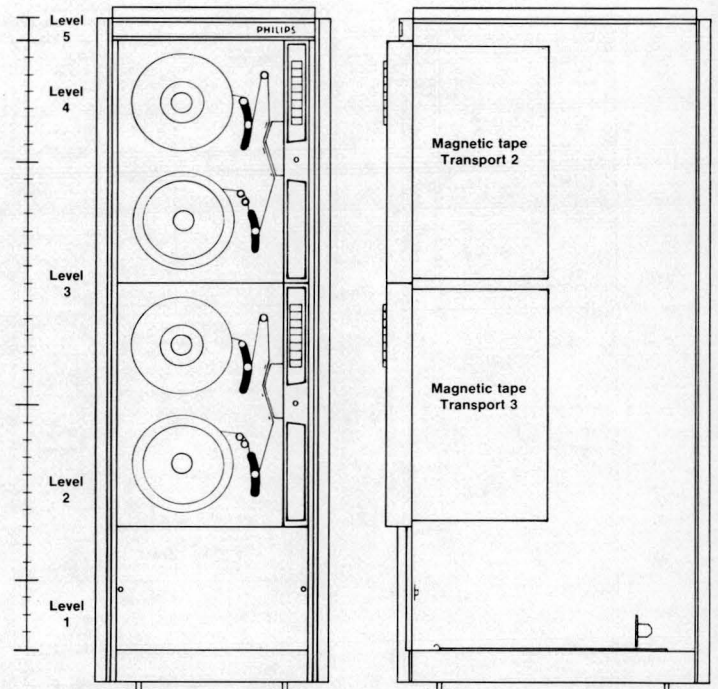
6. Extension cabinet for the third and fourth fixed head discs.



7. Extension cabinet for 2 magnetic tape transports with their control unit and formatter.

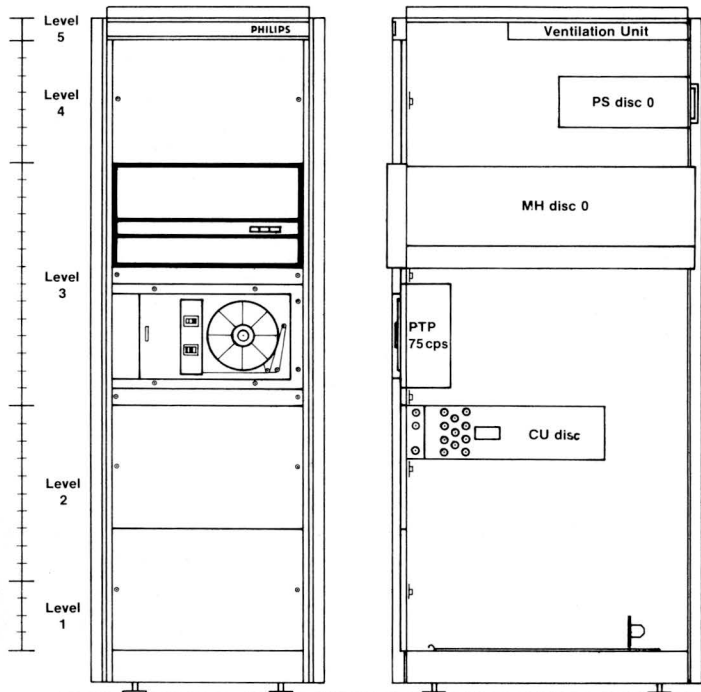


8. Extension cabinet for third or fourth magnetic tape transports.

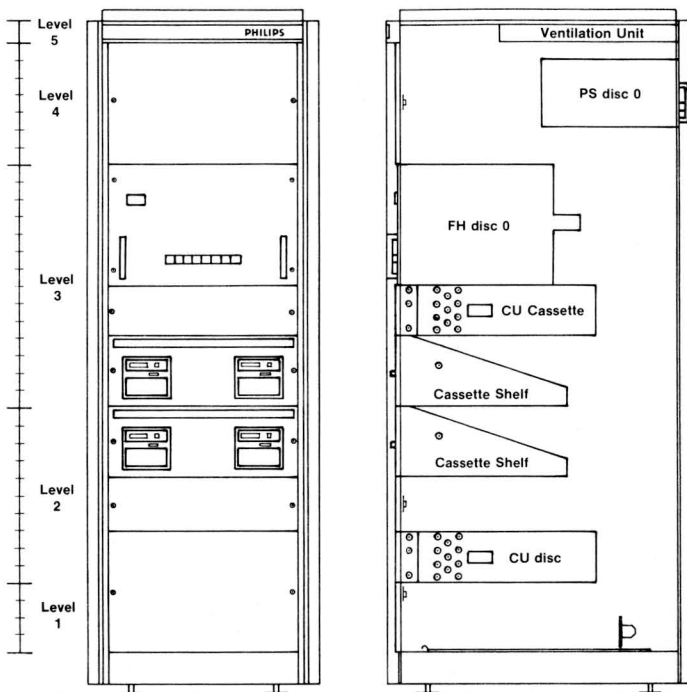


APPENDIX 6

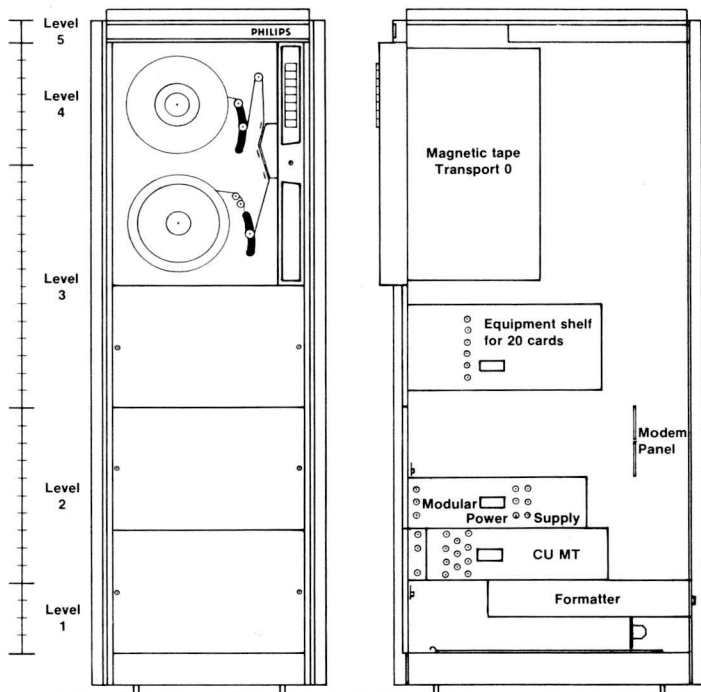
9. Extension cabinet with a moving head disc and control unit and a PTP.



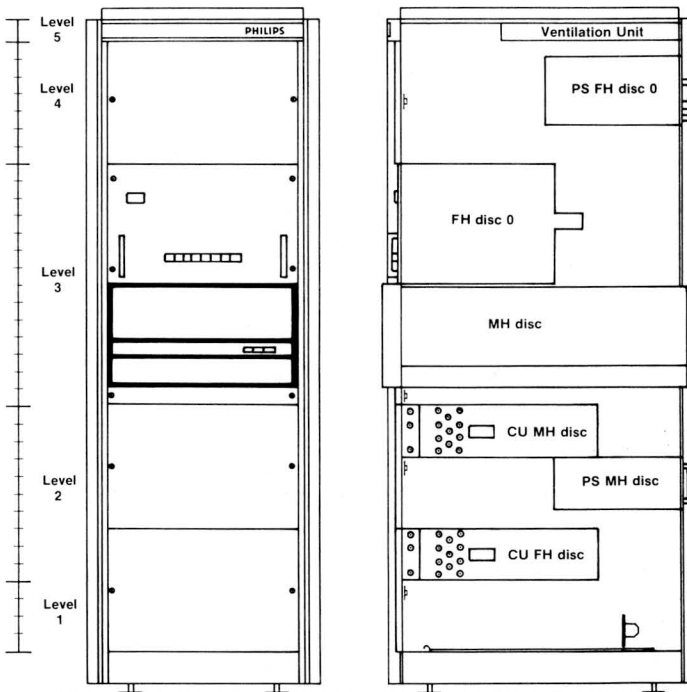
10. Extension cabinet with a fixed head disc and control unit and 4 Cassette tape drives with their control unit.



11. Extension cabinet with one magnetic tape transport, control unit and formatter, equipment shelf 20 cards and modular power supply.



12. Extension cabinet with one moving head disc and control unit and one fixed head disc and control unit.



Appendix to P800M Catalogue

dd. 1 November 1973

Cross reference to typenumbers in P800M catalogue dd. February 1973.

To ease ordering with new typenumbers, the following table shows the breakdown of the new typenumbers into earlier typenumbers (not all numbers have changed!). In ordering extensions to existing configurations please quote order confirmation number and use earlier typenumbers.

new numbers	earlier numbers						
	P850M-100	P850M-101	P850M-007	P850M-008	P850M-009	P850M-020	P850M-023
P850M-201	1		1			1	1
P850M-202		1	1			1	1
P850M-203	1			1		1	1
P850M-204		1		1		1	1
P850M-205		1			1	1	1

P855Mearlier
numbers

new numbers

	<i>P860M-001</i>	<i>P860M-003</i>	<i>P860M-005</i>	<i>P860M-008</i>	<i>P860M-020</i>	<i>P860M-042</i>
P855M-211	1		1	1	1	1
P855M-201	1		1	1	1	
P855M-311		1	1	1	1	1
P855M-301		1	1	1	1	
P855M-212	1			1	1	1
P855M-202	1			1	1	
P855M-312		1		1	1	1
P855M-302		1		1	1	
P855M-213	1			2	1	1
P855M-203	1			2	1	
P855M-313		1		2	1	1
P855M-303		1		2	1	
P855M-314		1		3	1	1
P855M-304		1		3	1	
P855M-315		1		4	1	1
P855M-305		1		4	1	

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