SIEMENS

MX300
9783

List of Abbrevations used in this Manual

The present list comprises some of the technical designations in German and English language together with their corresponding abbrevations used in this manual.

German abbrev.	German designation	English designation	English abbrev.
DÜE	Datenübertragungseinheit	Data communication equipment (or communication proc.)	DCE
DVZ	Dateiverzeichnis	File list	DVZ
IPL	Urlader	Initialprogram loader	IPL
NV	Netzverteiler	Power distributor	PD
SS	Schnittstelle	Interface	IF
SV	Stromversorgung	Power supply	PS
TDS	Test- und Diagnosesystem	Test and diagnostic system	TDS
UNV	Unternetzverteiler	Sub power distributor	SPD
USV	Unterbrechungsfreie stromversorgung	Uninterruptable power supply	UPS
WTÜ	Wechseltaktübertragung	Transmission rate modulation	TRM

Revisions Catalogue

Product designation: System Manual MX300 (9783)

Order no.: U64510-J-7600

Version/ Revision no. (date)	Modified documents	Affected page/chapter	Modification effected *)
Preliminary Edition 3/89	Note: The present version corresponds to the German-language Preliminary Edition 11.88.		
Edition 1 8/89	Note: Teh present version corresponds to the 1th German-language edition of June 89		

*) E = Exchange
R = Remove
A = Add

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Part I
Introduction

Part I

Introduction

Contents

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SINIX Conventions

I.E.: SINIX-C/H D ------> PC-MX2 and PC-MX 300 German

Type of PC

A - PC-MX
B - PC-X / PC-X10
C - PC-MX2
E - PC-MX4
F - PC-MX 500
G - special contents
H - PC-MX 300
I - PC-X20
X - C, F, H, I

Type of Country

NL	Dutch
D	German
DK	Danish
E	Spanish
F	French
GB	English
I	Italian
S	Swedish
N	Norwegian

SINIX V5.2A Manuals

Order Number	Manual
U3201-J-Z95-2-7600	Volume 1
U3202-J1-Z95-2-7600	Volume 2
U2580-J-Z95-2-7600	CES V2.0, Volume 1
U2581-J-Z95-1-7600	CES V2.0, Volume 2
U3899-J-Z95-1-7600	CES V5.2, Part 1
U3900-J-Z95-1-7600	CES V5.2, Part 2
U3901-J-Z95-1-7600	SINIX V5.2 Introduction
U3902-J-Z95-1-7600	SINIX V5.2 Commands, Part 1
U3903-J-Z95-1-7600	SINIX V5.2 Commands, Part 2
U3904-J-Z95-1-7600	SINIX V5.2 System Administration
U3874-J-Z95-1-7600	Operating Instructions 97808
U3905-J-Z95-1-7600	SINIX V5.2 Operating Instructions MX300
U66050-J-7400	Parts Catalog MX300

Selectable Products

U3948-J-Z95-1	DFS V1.0
U3957-J-Z95-1-7600	REMOS/LAN1 V3.0
U3004-J-Z95-2-7600	COLLAGE V2.0 Handling, ...
U3890-J-Z95-1	COLLAGE V2.0 C-Functions, Part 1
U3891-J-Z95-1	COLLAGE V2.0 C-Functions, Part 2

Remarks:

Uxxxx-Jx-Zxx-x-7600	English
Uxxxx-Jx-Zxx-x	German
Uxxxx-Jx-Zxx-x-7400	German/English

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Part II
Product Information

Part II

Productinformation

Contents

Page

1 Product and Order Numbers

Name	Order No.	Notes
MX 300-10 Kit 1a	9783-1111	Basic Unit and: - HD 170 Mbyte - Main Memory Module 4 Mbyte - Basic I/O Processor 4 x IF 97, 2 x V.24 / V.28
MX 300-10 Kit 1b	9783-1211	Basic Unit and: - HD 310 Mbyte - Main Memory Module 4 Mbyte - Basic I/O Processor 4 x IF 97, 2 x V.24 / V.28
MX 300-10 Kit 1c	9783-1221	Basic Unit and: - HD 310 Mbyte - Main Memory Module 8 Mbyte - Basic I/O Processor 4 x IF 97, 2 x V.24 / V.28
MX 300-10	9783-10	Basic Unit: 6 Terminals
MX 300-20 Kit 2a	9783-2221	Basic Unit and: - HD 310 Mbyte - Main Memory Module 8 Mbyte - Basic I/O Processor 4 x IF 97, 2 x V.24 / V.28
MX 300-20	9783-20	Basic Unit: 12 Terminals
MX 300-20 Kit 3a	9783-3221	Basic Unit and: - HD 310 Mbyte - Main Memory Module 8 Mbyte - Basic I/O Processor 4 x IF 97, 2 x V.24 / V.28
MX 300-30	9783-30	Basic Unit: 24 Terminals

Upgrade Set	MX2 +	
Extension Kit	97802-504	4 Mbyte
	97802-508	8 Mbyte

Name	Order No.	Notes
MX 300-20	9783-20	Basic Unit: 12 Terminals
MX 300-20 Kit 3a	9783-3221	Basic Unit and: - HD 310 Mbyte - Main MemoryModule 8 Mbyte - Basic I/O Processor 4 x IF 97, 2 x V.24 / V.28
MX 300-30	9783-30	Basic Unit: 24 Terminals
Extension Kit MX 300	97834-110	for max. 2 HD with each 310 Mbyte
Loadable Comm. Processor	97832-122	256 Kbyte RAM 1x V.24 or 1x X.21
Loadable Comm. Processor	97832-124	256 Kbyte RAM or HDLC / TRM[1]
Loadable Comm. Proc. (WWS)	97832-125	256 Kbyte RAM; 2x X.21
Loadable Comm. Proc. (WWS)	97832-126	256 Kbyte RAM; 1x V.24 / 1x X.21
Ethernet Processor	97832-141	512 Kbyte RAM
BAM-TRM-Processor	97832-150	for MX 300-10 / -20
Loadable Comm. Processor	97832-160	1 Mbyte RAM 1x V.24 or 1x X.21
Loadable Comm. Processor	97832-164	1 Mbyte RAM with HDLC / TRM
I/O Processor	97832-201	6x IF 97 / V.11
I/O Processor	97832-202	6x V.24 / V.28
I/O Processor	97832-204	4 x IF 97 / V.11, 2 x V.24 / V.28
Main memory extension mod.	97832-304	4 Mbyte
Main memory module	97832-305	4 Mbyte / MX 300-10
Main memory module	97832-306	8 Mbyte / MX 300-10/-20/-30
FD Controller	97832-401	2nd FD-Controller
Teleservice	97832-710	with Siemens modem
Teleservice	97832-720	for other modem
Upgrade Set	97832-730	for MX 300-10 in MX 300-200
Extension Kit for MX 300	97832-735	for MX 300-10/-20 in MX 300-30
Connector set for 3rd HD	97832-740	3rd HD in Extension Kit
Connector set for 4th HD	97832-741	4th HD in Extension Kit
Hard Disk	97834-170	170 Mbyte (unformattet) at Basic or 2nd HD-Controller
Hard Disk	97834-171	170 Mbyte (unformatted) only as 2nd HD Drive at HD/FD/MBK-Controller (Basis-Controller)

[1] TRM: transmission rate modulation

Name	Order No.	Notes
Hard Disk	97834-130	310 Mbyte (unformatted) at Basic or 2nd HD controller
Hard Disk	97834-131	310 Mbyte (unformatiert) only as 2nd HD drive at HD/FD/MBK controller (Basic controller)
MT unit 1/2 "	97835-430	Mbyte unit 45/92 Mbyte with controller (1600 bpi)
MT unit 1/2 "	97835-440	Mbyte unit 160 Mbyte with controller (6250 bpi)
Keyboard	97801-131	International
Keyboard	97801-132	German
Cap set	97801-144	*) Swedish/Internat.
Cap set	97801-145	*) Danish/Internat.
Cap set	97801-146	*) French/Internat.
Cap set	97801-147	*) Belgian/Internat.
Cap set	97801-149	*) Spanish/Internat.
Cap set	97801-150	*) Italian/Internat.
Cap set	97801-153	*) English/Internat.
Cap set	97801-154	*) Norwegian/Internat.
Keyboard	97801-231	International
Keyboard	97801-232	German
Keyboard	97801-234	Swedish/Internat.
Keyboard	97801-235	Danish/Internat.
Keyboard	97801-236	French/Internat.
Keyboard	97801-237	Spanish/Internat.
Keyboard	97801-238	Italian/Internat.
Keyboard	97801-239	English/Internat.
Keyboard	97801-240	Norwegian/Internat.
AWL connection kit	97801-211	for 97801-305
AFP-AWL connection kit	97801-212	for 97801-305/-306
Keyswitch	97801-220	
CRT monitor	97801-304	12 " with V.24, for modem operation
CRT monitor	97801-305	12 "

*) Presupposition: Keyboard 97801-131

Name	Order No.	Notes
CRT monitor	97801-306	12 " with AWL
CRT monitor	97801-308	12 " with AFP and AWL
CRT monitor	97801-402	14 "
CRT monitor	97801-405	14 " with IF 97 and AWL IF
CRT monitor	97801-408	14 " with AFP and AWL IF
Keyboard	97808-131	International
Keyboard	97808-132	German
Keyboard	97808-144	Swedish/Internat.
Keyboard	97808-145	Danish/Internat.
Keyboard	97808-146	French/Internat.
Keyboard	97808-147	Belgian/Internat.
Keyboard	97808-149	Spanish/Internat.
Keyboard	97808-150	Italian/Internat.
Keyboard	97808-153	English/Internat.
Keyboard	97808-154	Norwegian/Internat.
AFP Upgrade Set	97808-212	for Graphic monitor
CRT monitor	97808-302	15 ", Graphics
CRT monitor	97808-303	15 " with AFP, Graphics
Mouse	97811-202	for 97808-302/-303
AFP connection Kit	97831-391	at I/O processor 97832-201
AFP connection Kit	97831-392	at I/O processor 97832-204
Connection Unit	97001-1	via IF 97/5m
Connection Unit	97001-2	via IF 97/10m
Connection Unit	97001-3	via IF 97/20m
Connection Unit	97001-4	via IF 97/30m
Connection Unit	97001-9	IF X.21/3m
Connection Unit	97001-10	for UUCP 9 pins; IF 97
Connection Unit	97001-11	for UUCP 25 pins; V.24/V.28
Connection Unit	97001-13	Drop Cable 5m
Connection Unit	97001-14	Drop Cable 10m
Connection Unit	97001-15	Drop Cable 20m
Connection Unit	97001-17	Drop Cable 35m
Connection Unit	97001-18	IF V.24/3m
Connection Unit	97001-19	IF X.21/5m (multipoint conn. to WWS)
Connection Unit	97001-24	Converter cable from IF 97 to V.24/V.28

2 Technical Specifications

2.1 Processor

	MX300-10/-20	MX300-30/45
Microrocessor	NS 32332 (15 MHz)	NS 32532
Clock frequency	15 MHz	25 MHz
Processing width (bit)	32	32
Address bus (bit)	24	24
Memory bus (bit)	32	32
Addressing (Gbyte)	4 virtual	4 virtual
Main memory management (MMU)	NS 32382	on Chip
Floating point processor (FPU)	NS 32081	NS 32081
Cache memory	---	on Chip
System bus	INTEL Multibus 1	INTEL Multibus 1
Main memory	4 - 12 or 8 - 16 Mbyte	8 - 16 Mbyte
Real time clock	buffered battery	buffered battery

2.2 Mass Storage

	Floppy Disk 5 1/4 "	Cassette 1/4 " -MT	Hard disks 5 1/4 "		Magnetic tape 1/2 "
Capacity (Mbyte, not formatted)	4.0	60	170	300→380	46 (1600 bpi) 92 (3200 bpi)
Tracks/ Surface	80/2	-	8192/8	14592/12	-
Transfer rate (Mbyte/s)	0.031	0.072	1.25	1.25	0.040/ 0.160
No. of Heads (R/W + Servo)	2	2	8+1	12+1	1 (9 head tracks)
Rotational speed (rpm)	300	-	3600	3534	-
Latency (ms)	100	-	8.3	8.5	-
Positioning time (ms)	109	-	28	25	-
Tape speed (ms)-	-	2.29	-	-	0.635/2.54
Recording	-	9 tracks (serpentine)	-	-	9 tracks (parallel)

2.3 SINIX-Operator Consoles (alphanumeric)

CRT type	97801 (12")	97801 (14")
CRT diagonal (mm)	305	365
Screen color	black/white (positive image)	
Image refresh rate (Hz)	> 66	> 70
Characters per line	80 by 25 lines	
Character matrix 7*9 points	9 * 14	9 * 16
Radiant density (cd/m^2)	85	
Interfaces to system	IF97/ V.11	
Transfer rate (Kbit/s)	38.4	
Maximum cable length SS 97 (m)	max 60 m	
Maximum cable length with AFP Kit (m)	2000 m	

2.4 SINIX-Operator Consoles (graphic)

Graphic CRT type	97808 (15")
CRT diagonal (mm)	381
Screen color	black/white (positive image)
Image refresh rate (Hz)	> 70
Resolution	720 * 540 (graphic mode) 720 * 400 (alphanumeric mode)
Character matrix 7*9 points	9 * 16
Radiant density (cd/m²)	<= 85
Interfaces to system	SS97/ V.11
Transfer rate (Kbit/s)	38.4
Operation mode	Selectable alphanumeric and graphic mode
Maximum cable length SS 97 (m)	60
Maximum cable length with AFP Kit (m)	2000

2.5 Extension of the MX300

Type	MX 300-10	MX 300-20	MX 300-30	MX 300-15
Processor	NS 32332/15 MHz	NS 32332/15 MHz	NS 32532/25 MHz	
Main Memory Ext. (Mbyte)	4-12	8-16	8-16	
I/O-Processor	1-2	1-3	1-5	
free configurable serial IF	6-12	6-18	6-30	
simultaneous operating alph-num. CRT	up to 6*)	up to 12*)	up to 24*)	
simultaneous operating grafic CRT	up to 6*)	up to 8*)	up to 16*)	
Printer	up to 6*)	up to 6*)	up to 16*)	
Plug-in Locations	8	12	12	
HD Drive (170/310 Mbyte)	1	2	2 (Extension unit 2)	
HD Controller	1	2	2	
MT Unit 1/2"	---	1	1**)	
Communication Processor BAM-Processor ***) Ethernet Processor	2 1 totally 1 up to 3	3 1 totally 2 up to 4	3 1 totally 2 up to 4	
Extension	Model-10 →	-20 →	30	

*) Mixed operation possible, totally up to same number of serial interfaces
**) Plug-in locations limited (see fig. configuration)
***) BAM/TRM Processor may not be used up to MX 300-30.

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Part III
Adjusting Specifications

Part III

Adjusting Specifications

Contents

1 Power On/ Off and Address Assignment of Hardware

1.1 Power ON

To switch on the system with the push-button "ON" is only possible if the key switch is in position "ON". It causes the start up of the system.

Note:

- In case of more than one power supply (MX300-20 or in extension cabin), all power supplies will be shut down 3 sec after push-button "ON" has been pressed, if one of the power supplies is defect.
- The individual power supplies are switched on time-staggered to avoid a higher pulse.

1.2 Power OFF

Switch off the power supply is effected by pressing the push-button "OFF" ('hard' OFF). Also this function works only if the key switch is in position "ON".

Note: Shut down the system safely and switch off the power supply is effected by the following SINIX commands:

- /etc/halt	→	system terminated; PSU switched off
- /etc/shutdown	→	optional refer to SINIX manual (e.g. /etc/shutdown -h +5 causes a shutdown in 5 minutes)
- /etc/poweroff	→	text file that contains shutdown -h now (may be enlarged by system administrator)
- /etc/reboot	→	system terminated and restarted
- /etc/fastboot	→	like /etc/reboot, but without file-check during next start up procedure
- /etc/fasthalt	→	like /etc/halt, but without file-check during next start up procedure

- login password: shutdown → calls /etc/poweroff (password : siemens)

1.3 Address Assignment Hardware SINIX-C/-H MX2/MX300

I/O Address	Memory Address MX2/C30	Memory Address MX300	Description	Interrupt MX2	Interrupt MX300	Interrupt SINIX 2000
0800 0807			1st DTC 86-1	2		2
1800 18ff			ICON Processor	0		0
1a00 1a01			1st LAN processor	1	1	7
1a02 1a03			2nd LAN processor	x	x	7
4000 40ff			1st WORM processor (LD1200)		x	
4100 41ff			ZIP array processor		x	
7200 73ff			1st ESDI processor (Storager)		2	2
7400 75ff			2nd ESDI processor (Storager)		2	2
75f8 75ff			2nd SMD processor (2290)			2
7600 77ff			3rd ESDI processor (Storager)		2	2
77f8 77ff			1st SMD processor (2290)			2
a000 a0ff			1st U* processor	0		
a000 a0ff			ICON Processor	0		0
a100 a1ff			2nd U* processor	0		
a200 a2ff			3rd U* processor	0		
ee60 ee67			1st XYLOGICS 472		3	6
		2c00000 2d7fffff	reserved for LYNX		0	

I/O Address	Memory Address MX2/C30	MX300	Description	Interrupt MX2	MX300	SINIX 2000
08a4	a0c000	2a0c000	1st BTX processor	x	x	
08a4	a0ffff	2a0ffff				
08a5	a4c000	2a4c000	2nd BTX processor	x	x	
08a5	a4ffff	2a4ffff				
08a6	a8c000	2a8c000	3rd BTX processor	x	x	
08a6	a8ffff	2a8ffff				
08a7	acc000	2acc00	4th BTX processor	x	x	
08a7	acffff	2acfff				
09a4	b0c000	2b0c000	5th BTX processor	x	x	
09a4	b0ffff	2b0ffff				
09a5	b4c000	2b4c000	6th BTX processor	x	x	
09a5	b4ffff	2b4ffff				
09a6	b8c000	2b8c000	7th BTX processor	x	x	
09a6	b8ffff	2b8ffff				
09a7	bcc000	2bcc000	8th BTX processor	x	x	
09a7	bcffff	2bcffff				
1c00	a00000	2a00000	5th I/O processor (new)	-	-	-
1cff	a03fff	2a03fff				
1d00	a04000	2a04000	6th I/O processor (new)	-	-	-
1dff	a07fff	2a07fff				
1e00	a08000	2a08000	7th I/O processor (new)	-	-	-
1eff	a0bfff	2a0bfff				
1f00	a40000	2a40000	8th I/O processor (new)	-	-	-
1fff	a43fff	2a43fff				
1400	d80000	2d80000	1st I/O processor (new)	-	-	-
14ff	d83fff	2d83fff				
1500	d84000	2d84000	2nd I/O processor (new)	-	-	-
15ff	d87fff	2d87fff				
1600	d88000	2d88000	3rd I/O processor (new)	-	-	-
16ff	d8bfff	2d8bfff				
1700	d8c000	2d8c000	4th I/O processor (new)	-	-	-
17ff	d8efff	2d8efff				
2300	e00000	2e00000	BS2000 processor			1
23ff	e7ffff	2e7fffff				

I/O Address	Memory Address MX2/C30	MX300	Description	Interrupt MX300 MX2	SINIX	2000
1b00 1bff	e80000	2e80000 2e8ffff	BAM processor	4	4	
	e90000 e9ffff		LYNX processor	0		0
2100 21ff	ea0000 eaffff	2ea0000 2eaffff	3rd DFÜ processor	x	x	5
2200 22ff	eb0000 ebffff	2eb0000 2ebffff	4th DFÜ processor	x	x	5
2400 24ff	ec0000 ecffff	2ec0000 2ecffff	5th DFÜ processor			5
1900 19ff	ed0000 edffff	2ed0000 2edffff	1st DFÜ processor	5	5	5
2000 20ff	ee0000 eeffff	2ee0000 2eeffff	2nd DFÜ processor	6	6	5
0c00 0cff	ef0000 ef0fff	2ef0000 2ef0fff	8th I/O processor	-	-	-
0d00 0dff	ef1000 ef1fff	2ef1000 2ef1fff	7th I/O processor	-	-	-
0e00 0eff	ef2000 ef2fff	2ef2000 2ef2fff	6th I/O processor	-	-	-
0f00 0fff	ef3000 ef3fff	2ef3000 2ef3fff	5th I/O processor	-	-	-
1300 13ff	ef4000 ef4fff	2ef4000 2ef4fff	4th I/O processor	-	-	-
1200 12ff	ef5000 ef5fff	2ef5000 2ef5fff	3th I/O processor	-	-	-
1100 11ff	ef6000 ef6fff	2ef6000 2ef6fff	2th I/O processor	-	-	-
1000 10ff	ef7000 ef7fff	2ef7000 2ef7fff	1st I/O processor	-	-	-

Explanation on Interrupts

1. - :

   The board operates without interrupts. The interrupts on the board must be switched off.

2. " (no entry) :

   The board is not delivered by the system.

3. number (0-7) :

3.1 MX2 with SINIX-C V2.x and C30

   The numbers of interrupts are established by the software. They must be adjusted by hardware as noted.

3.2 MX300 and MX2 with SINIX-C V5.2

   The numbers of interrupts are independent of the software.

4. "x":

   Processors marked with an "x" must be assigned a free interrupt number (0-7).

Notes:

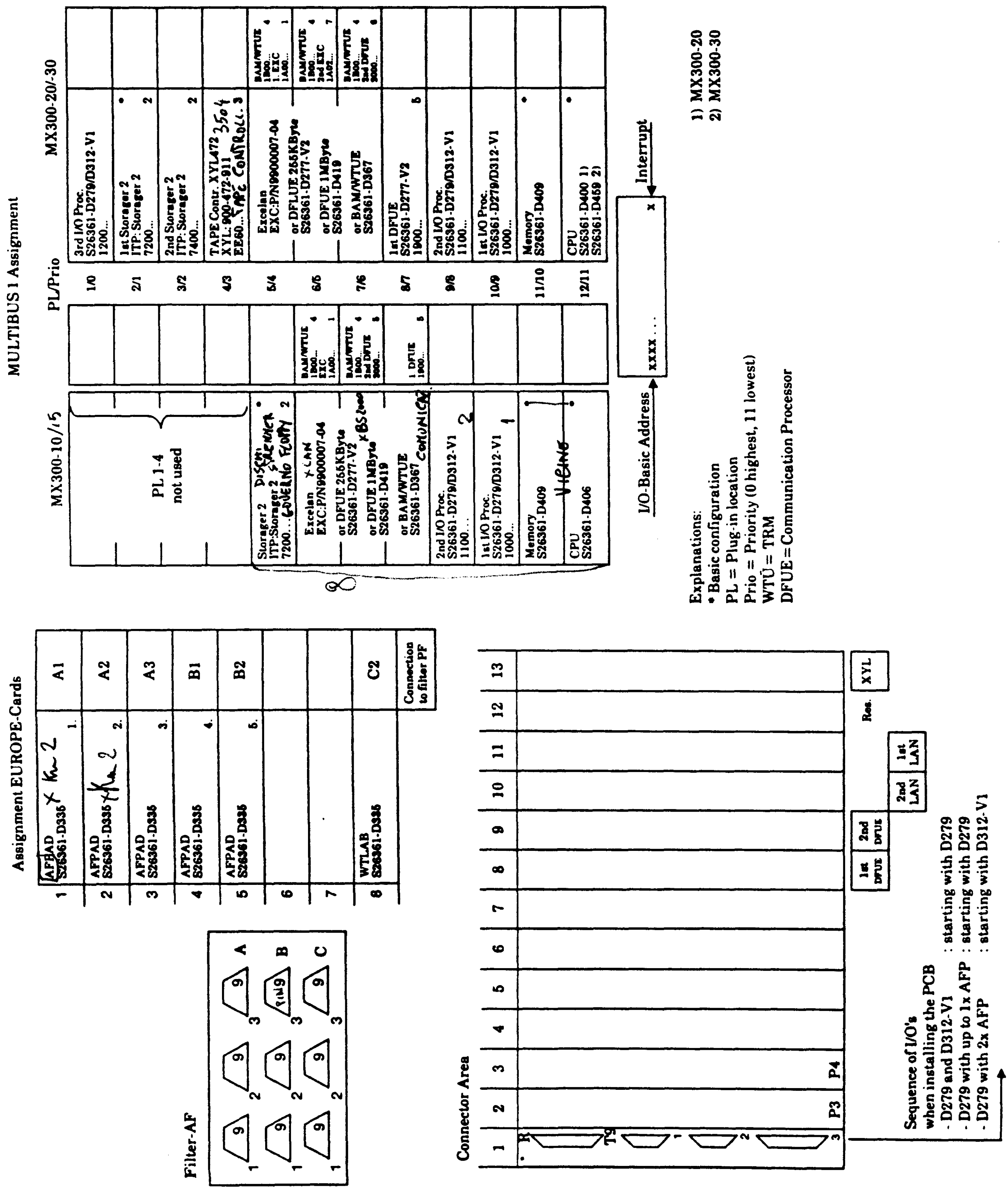
1) All storager boards must work with the same interrupt number.

2) All B4x processors must operate with the same interrupt number.

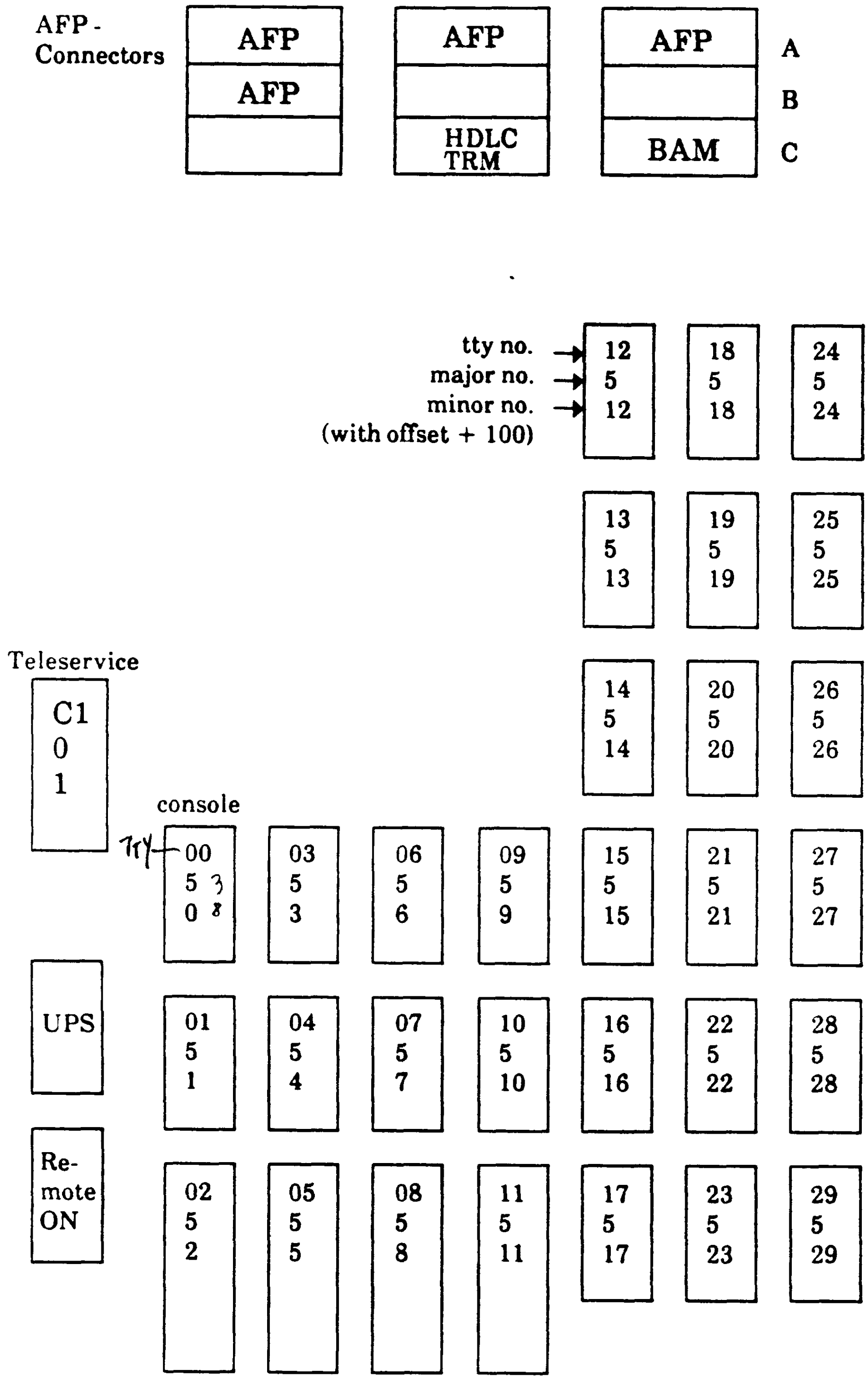
3) The 1st and 2nd DUEAI processor of MX2 and MX300 may not operate with the same interrupt.

2 Platter Layout and Connector Area

2.1 Platter Layout



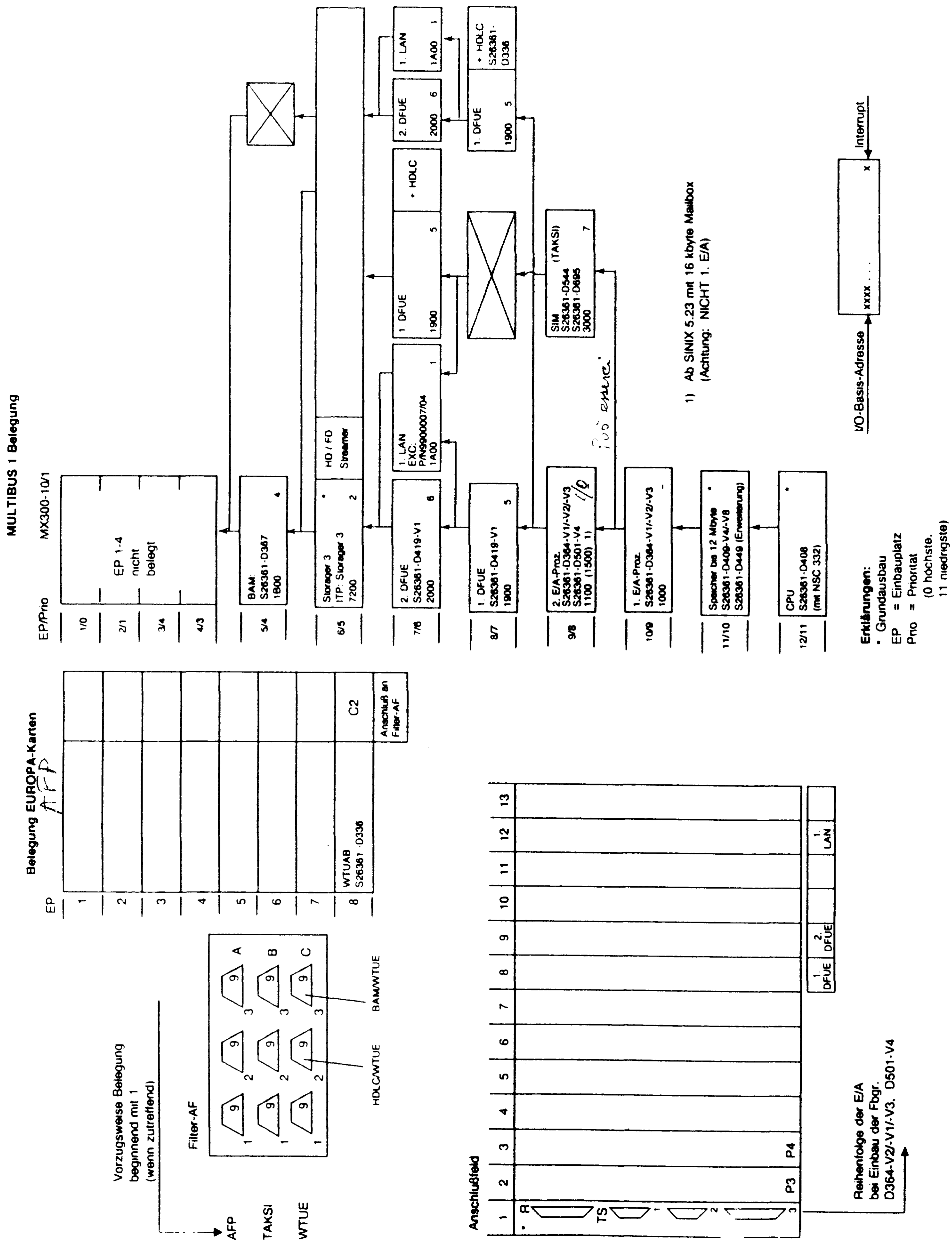
2.2 Connector Area of the MX300



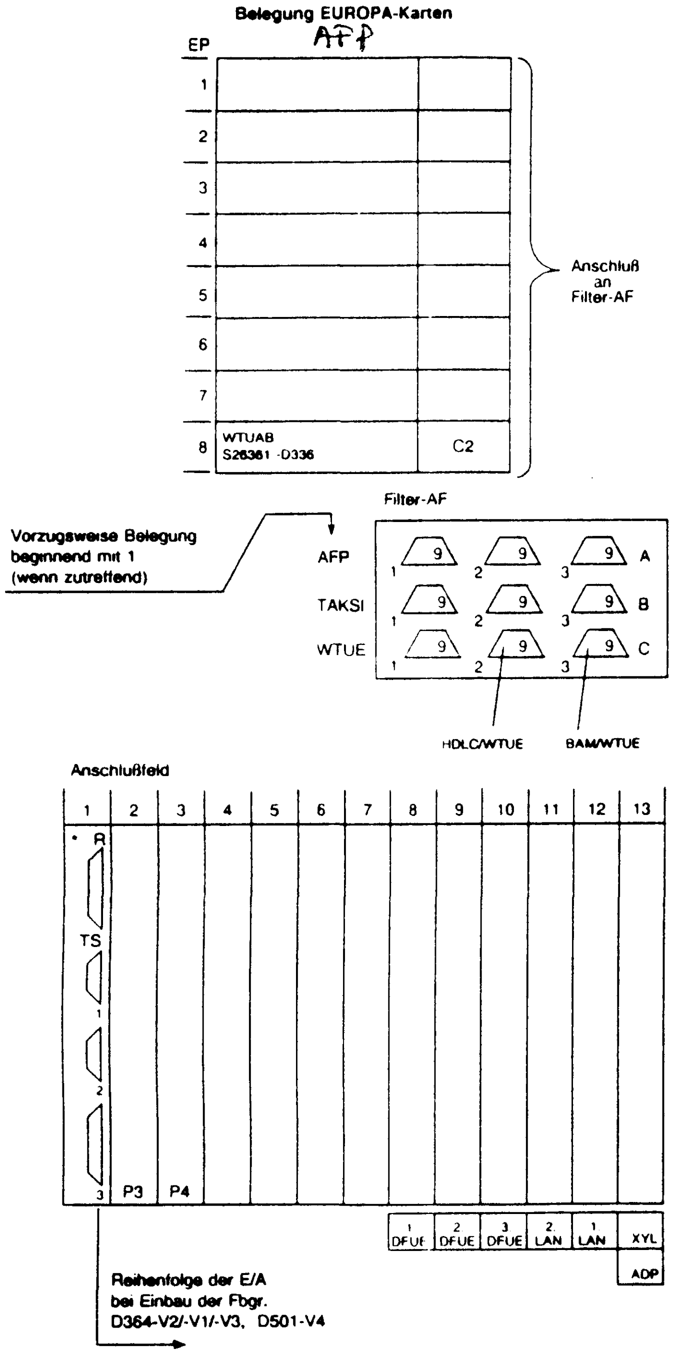
UPS = Uninterruptable power supply

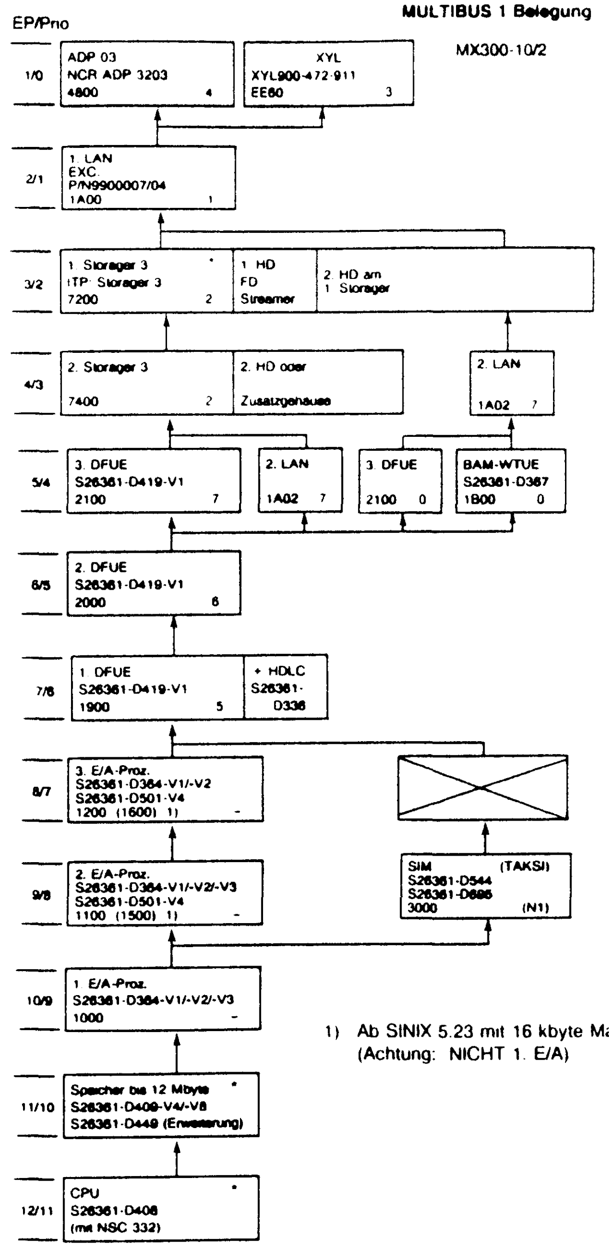
I / O - Board

2.5 Platterbelegung MX300-10 (ab SINIX V5.22)



2.6 Platterbelegung MX300-20 (ab SINIX V5.22)





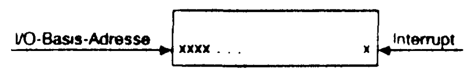
1) Ab SINIX 5.23 mit 16 kbyte Mailbox
(Achtung: NICHT 1. E/A)

Erklärungen:
* Grundausbau
EP = Einbauplatz
Pno = Priorität
(0 höchste,
11 niedrigste)

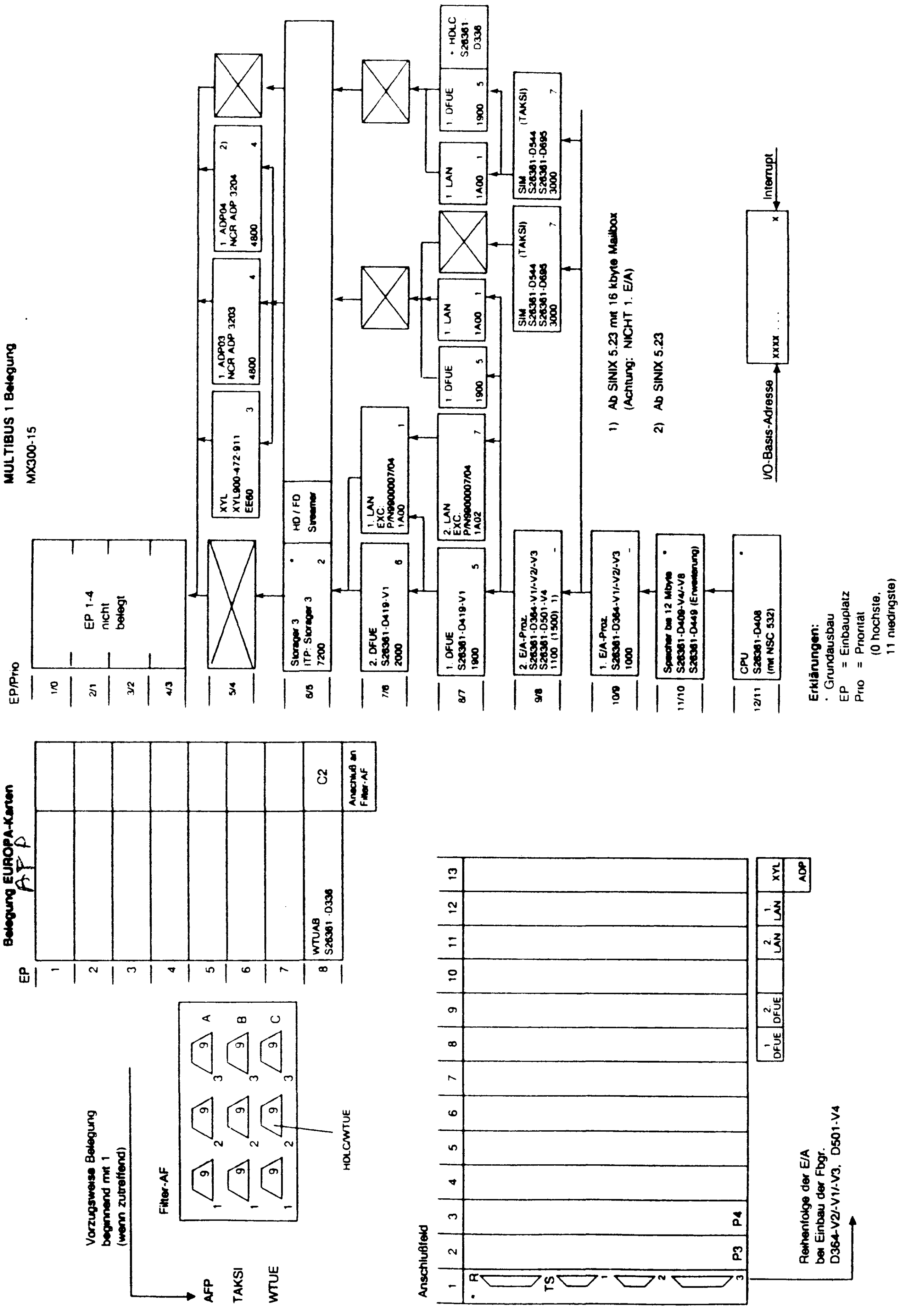
N1 (Note 1)
I/O Adressen und Interrupts

Fbgr.	I/O Adresse	SINIX 5.23	Interrupt (*)
1. E/A	1000		-
2. E/A	1100	1500	-
3. E/A	1200	1600	-
4. E/A	1300	1700	-
5. E/A	0F00	1C00	-
1. DFUE	1900		5
2. DFUE	2000		6
3. DFUE	2100		7 0
1. LAN	1A00		1
2. LAN	1A02		7
1. SIM	3000		7 3 4 0
2. SIM	3100		7 3 4 0
1. Storager	7200		2
2. Storager	7400		2
1. ADP03	4800		4
1. XYL	EE60		3
BAM-WTUE	1B00		4 0

(*)
Auf Grund neuer Komponenten ist eine feste Zuweisung der Interrupts nicht mehr länger möglich (die Zuweisung wird konfigurations-abhängig). Die bevorzugte Zuweisung wird in obiger Tabelle angegeben und alternative Zuweisung angezeigt.
Alternative Zuweisung zu SIM und/oder DFUE wie verfügbar.

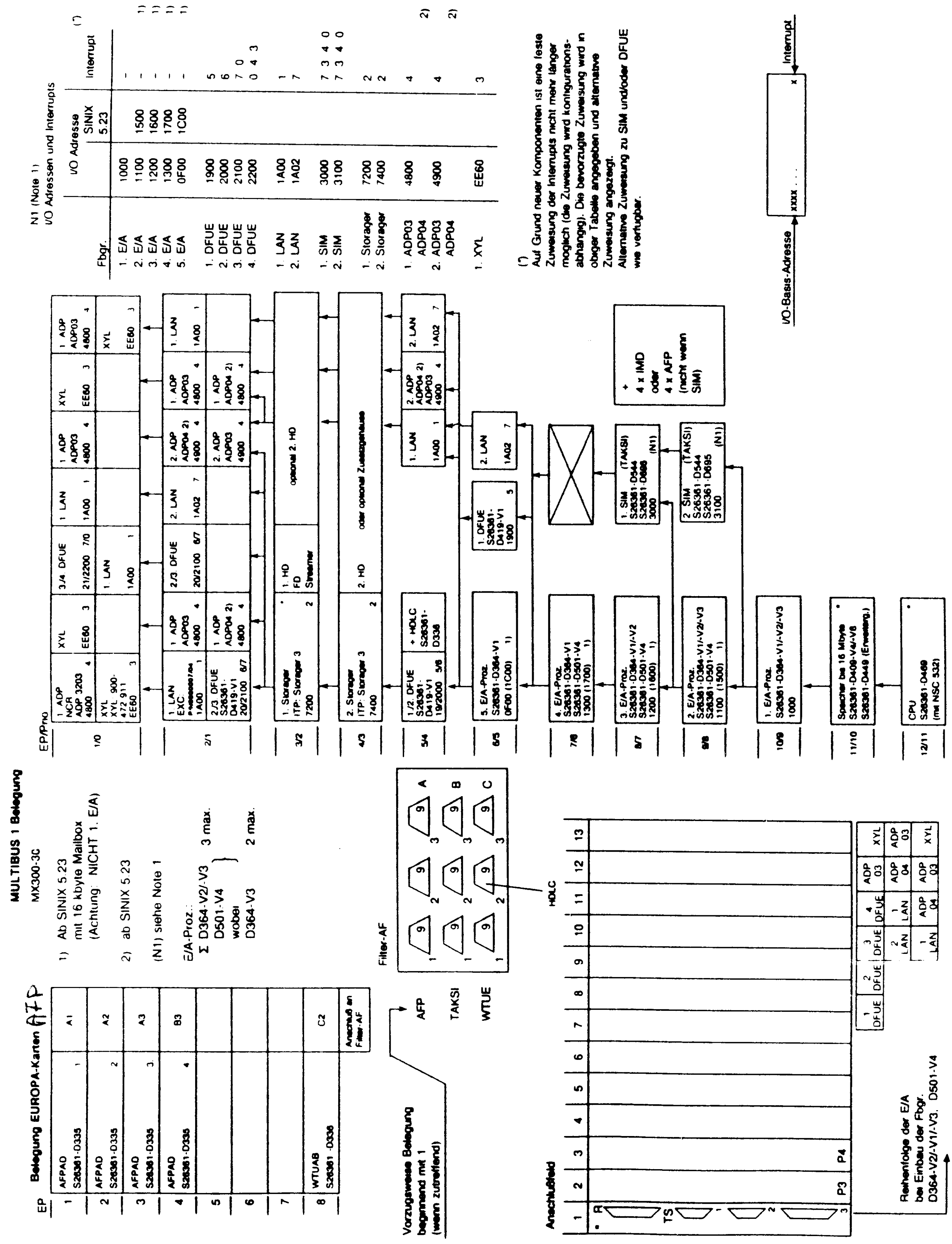


2.7 Platterbelegung MX300-15 (ab SINIX V5.22)

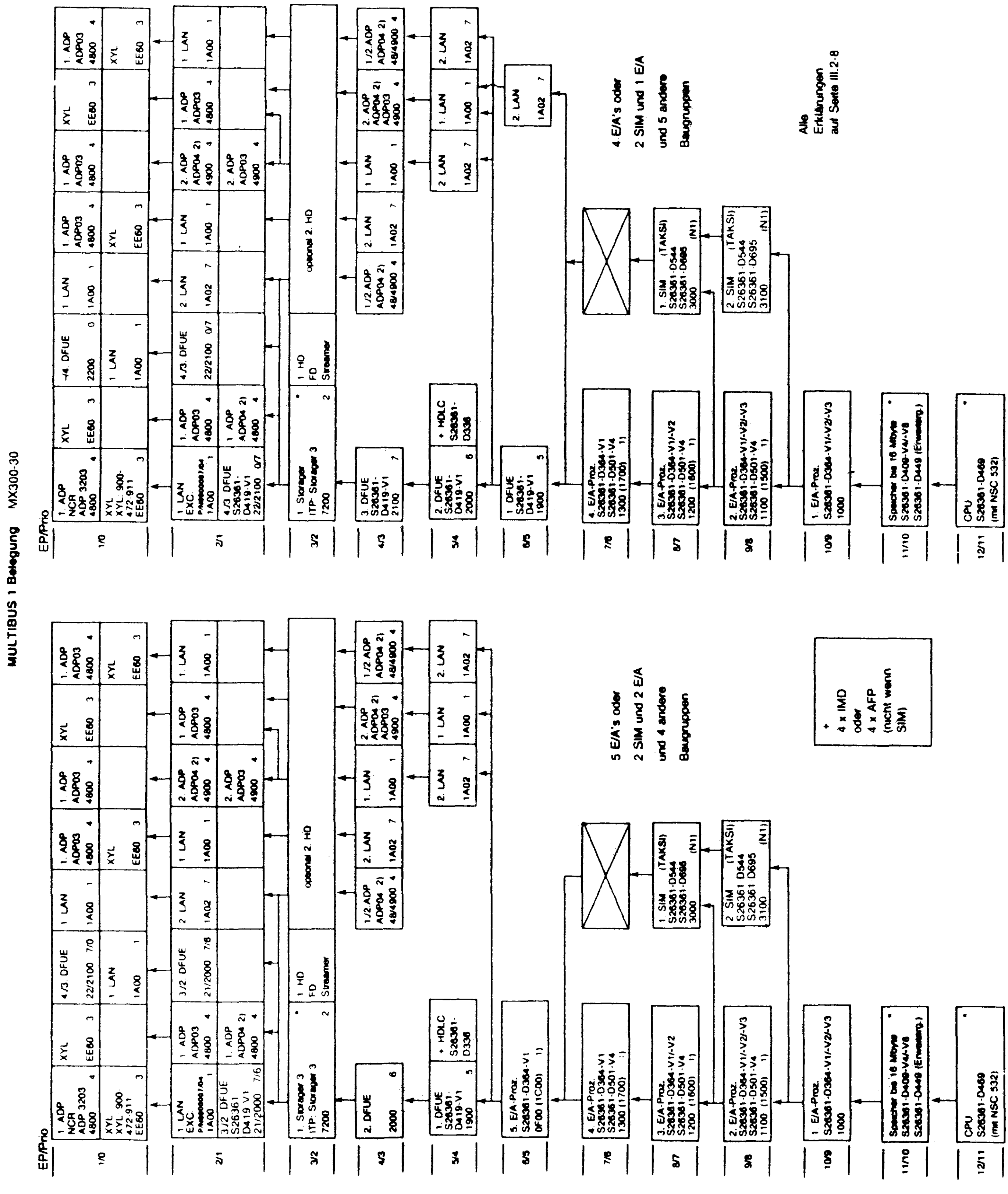


2.8 Platterbelegung MX300-30 (ab SINIX V5.22)

Konfigurationen: 2 Storager



Konfigurationen: 1 Storager



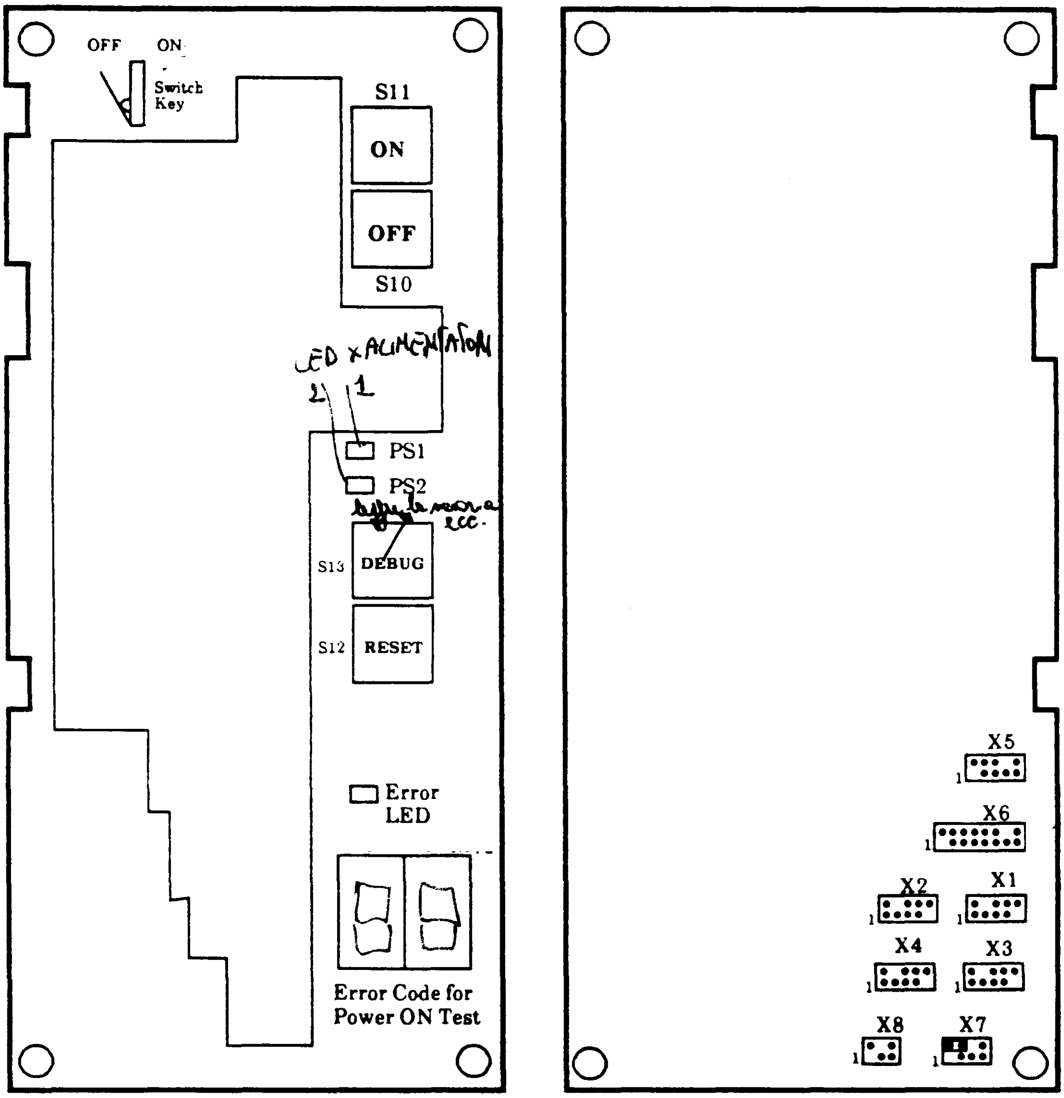
3 Adjusting Specifications

Operator Area MX300

S 26361 - D 446 V1 - 1

Front Panel

Rear Panel



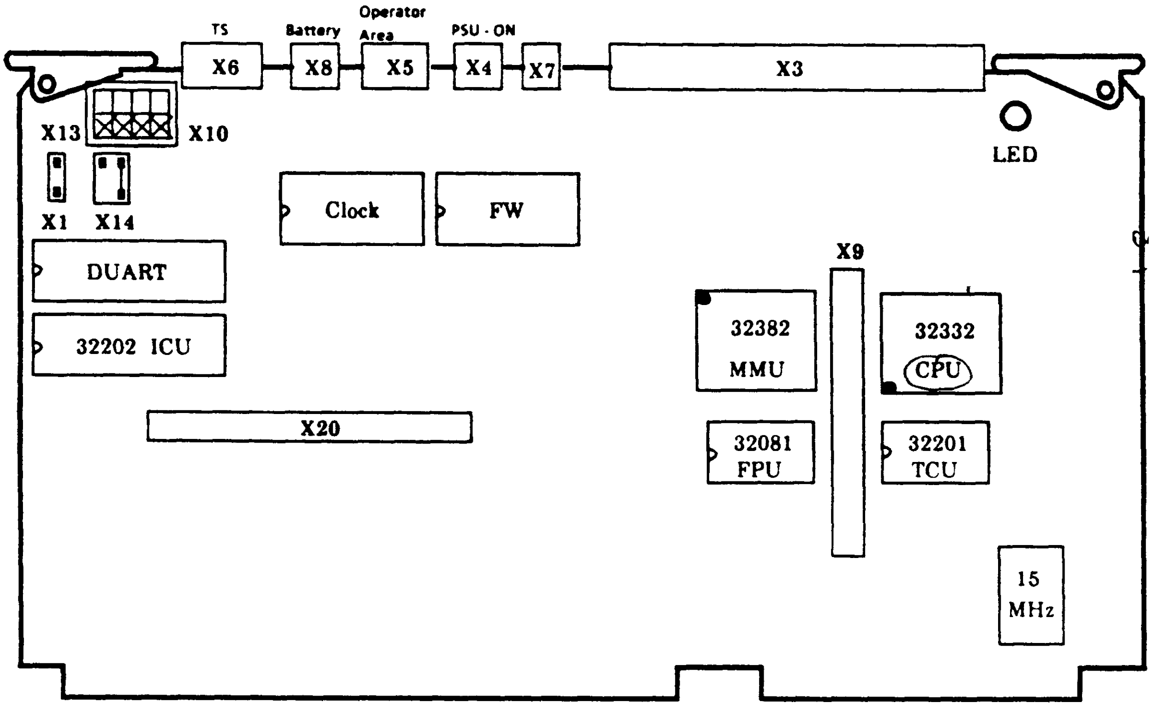
X1 - X4	-	power supply 1 - 4
X5	-	to CPU (X4), PS ON by MX300
X6	-	to CPU (X5), for LED's (operator area)
X7	-	to connector area (for UPS) **JUMPER via pin 5-6**
X8	-	to connector area (for remote ON)
SV1	-	LED ON, power supply 1 active
SV2	-	LED ON, power supply 2 active

Switch Key:

Position ON
- cover plate is locked
- keys without function

Position OFF
- cover plate is unlocked
- keys in function

CPU/AS S 26361 - D 408



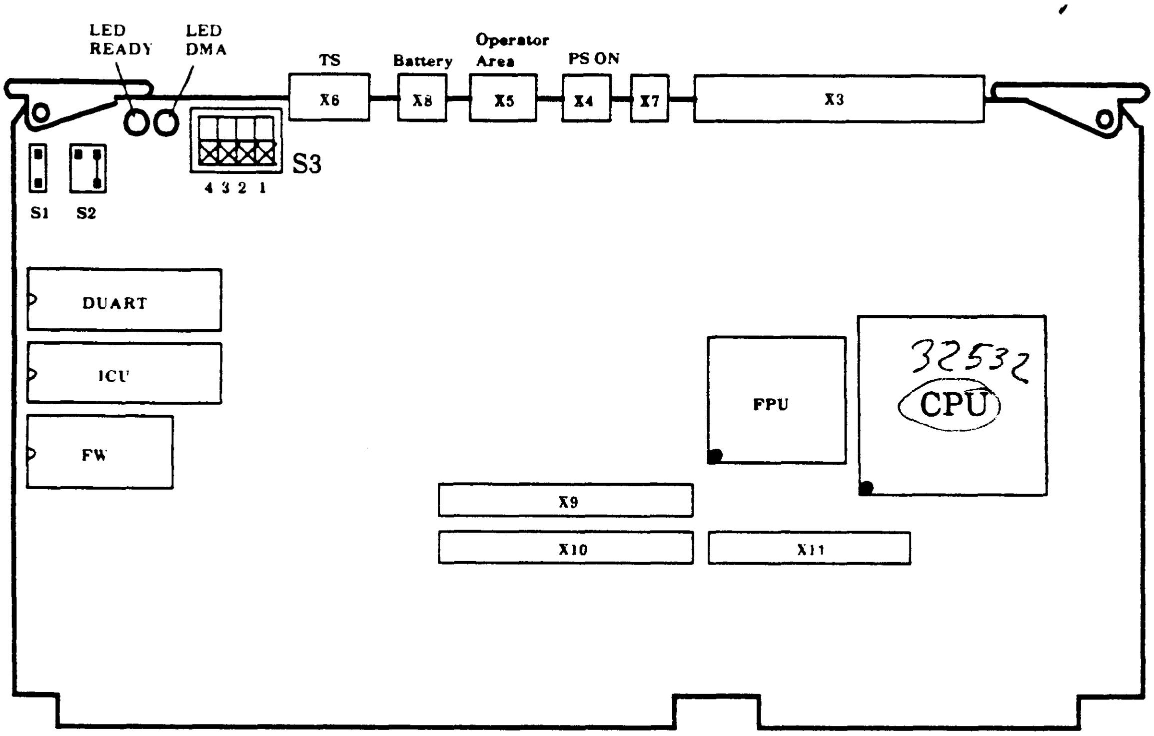
X3	-	memory bus	LED -	ON	CPU busy (in use)
X4	-	PSU ON MX300 --> operator area X5		OFF	CPU idle
X5	-	--> operator area X6			
X6	-	Teleservice, V24 --> connector area			
X7	-	remote POWER ON von SERAx bei MX2 +			
X8	-	battery			
X9 - X20	-	diagnostic connectors			
X10 - X13	-	all switches open during operation			
X14	-	x — IF 97			
		x-----x — teleservice V24 operation.			
X15	-	open operation master			
		closed multibus slave			

Self-test CPU

	X10	X11	X12	X13	
sw0					standard operating mode
sw1	X				all test steps, jumpes to monitor when error
sw2		X			test as sw3 and loop on error
sw3	X	X			test as sw4 and mmu, icu, fpu - test
sw4			X		ram-, bus time-out-, mapper - test
sw5	X		X		ramtest and bus time-out test
sw6		X	X		only ramtest
sw7	X	X	X		no test, jumpes to monitor

X = Closed

CPU BC S26361 - D469



X3 - memory Board
X4 - PSU - ON MX300 ▮ operator area X5
X5 - ▮ operator area X6
X6 - teleservice , V24 ▮ connector area
X7 - remote POWER ON of SERAx at MX2+
X8 - battery
X9 - X11 - diagnostic connectors
S3 - In Operation all switches are open
S2 - [x] IF 97
[x-----x] teleservice V24 operation
S1 - open operation master
closed multibus slave

LED READY:
blinking - CPU busy (in use)
off - CPU idle

LED DMS:
lits during a DMA cycle
from a Multibus-I-Controller

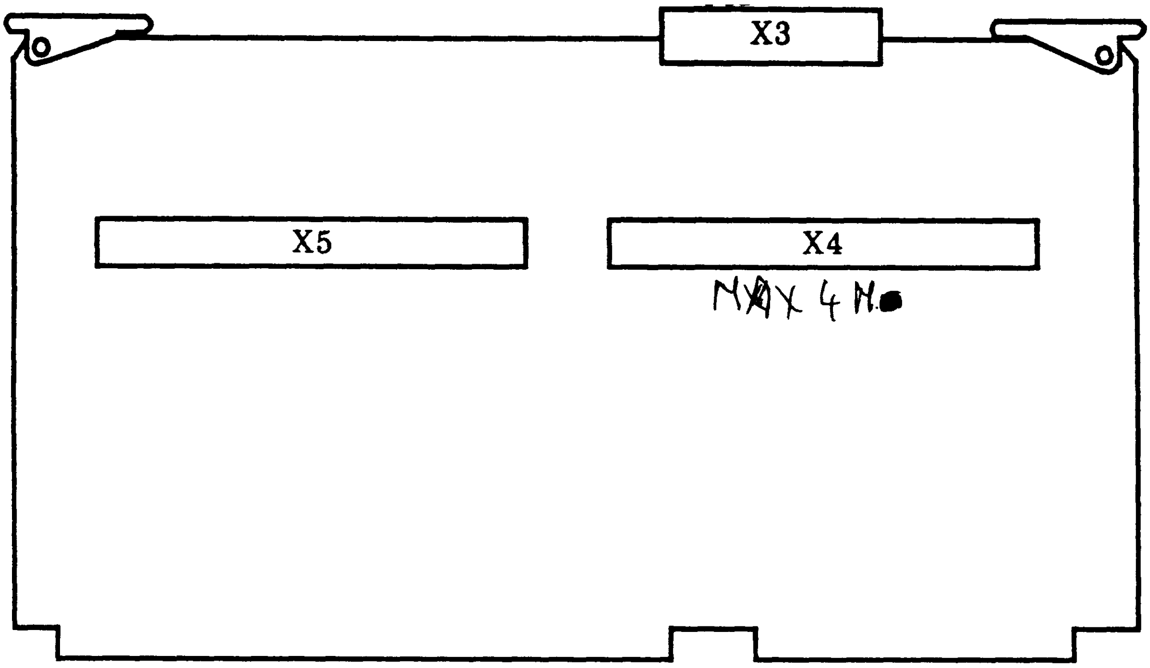
S3: Self-test CPU

	1	2	3	4	
sw0					standard operating mode
sw1	X				all test steps, jumpes to monitor when error
sw2		X			test as sw3 and loop on error
sw3	X	X			test as sw4 and mmu, icu, fpu-test
sw4			X		ram-, bus time-out-, mapper - test
sw5	X		X		ramtest and bus time-out test
sw6		X	X		only ramtest
sw7	X	X	X		no test, jumpes to monitor

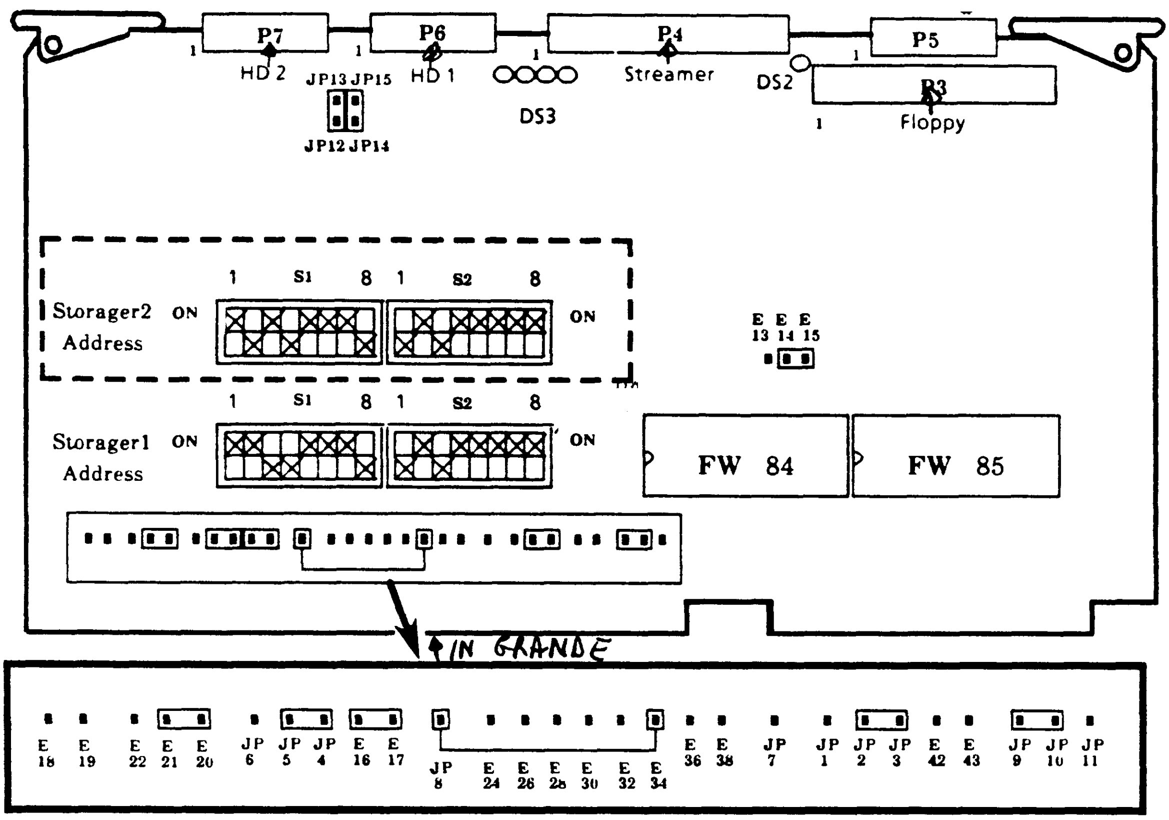
X - Closed

Memory Board MEMAL

MEMAL: S26361-D409-V4/V8



The 1st memory extension (S26361-D449) is plugged at X4 !



I / O Address (S1)
Storager 1 73F8
Storager 2 75F8

Switch Assignment:

S1 1 Queue mode operation
2 2^9
3 2^{10}
4 2^{11}
5 2^{12} Address
6 2^3
7 2^{14}
8 2^{15}

S2 1 - not used
2 - Queue mode operation
3 - 8 I/O register mode
4
5
6 4-8 Queue mode operation
7
8

E13 out E14 in E15
E16 in E17 16 bit I/0 addressing
E18 out E19 parallel priority scheme (BPRO/)
E20 in E21 out E22 parallel priority scheme (BPRN/)
E24 INT7
E26 INT6
E28 INT5
E30 INT4
E32 INT3
E34 INT2 wire wrap connection to JP8
E36 INT1
E38 INT0
E42 out E43 8 I/0 register mode

JP1 out JP2 in JP3
JP4 in JP5 out JP6 Queue mode operation
JP9 in JP10 out JP11

JP7 level A interrupt (not used)
JP8 level B interrupt (connectd to E34)

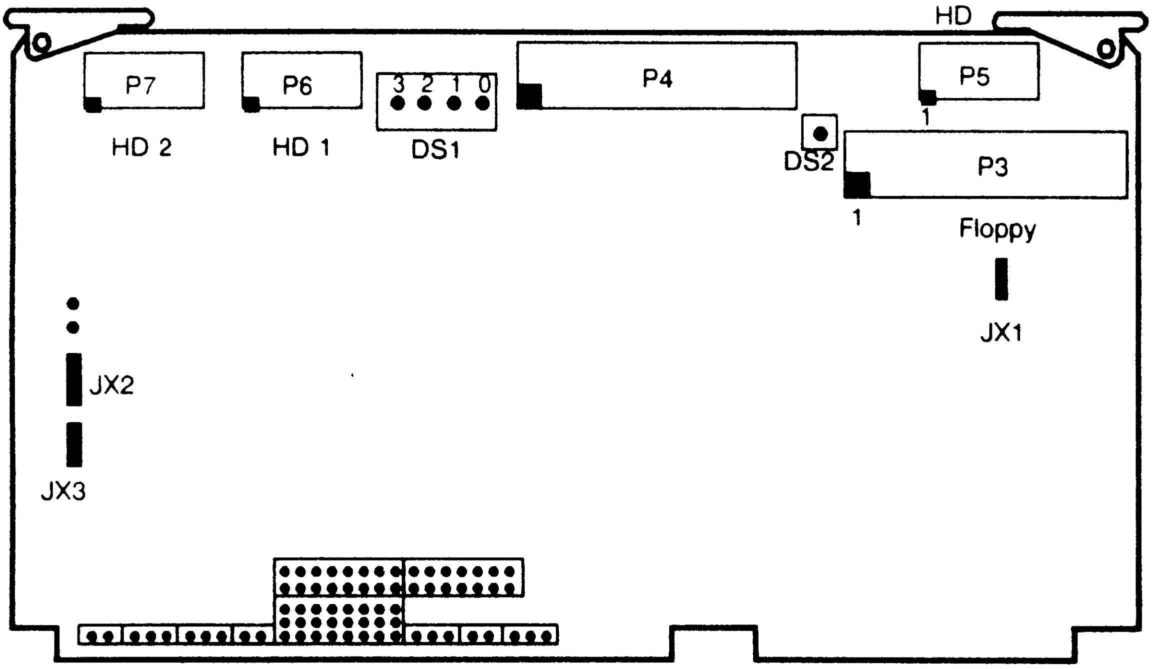
JP12 in JP13
JP14 in JP15 both drives with ESDI interface

LED - Assignment
DS 2: ON if 68000-processor active
DS 3: a) Standard Mode Bit 0: ON if no cammand is being executed (idle)
Bit 1: ON if command is executed (busy)
Bit 2: ON if POWER-ON test is busy
Bit 3: ON if run diagnostic command is executed
b) Error Case DS 3 indicates error code of IOPB

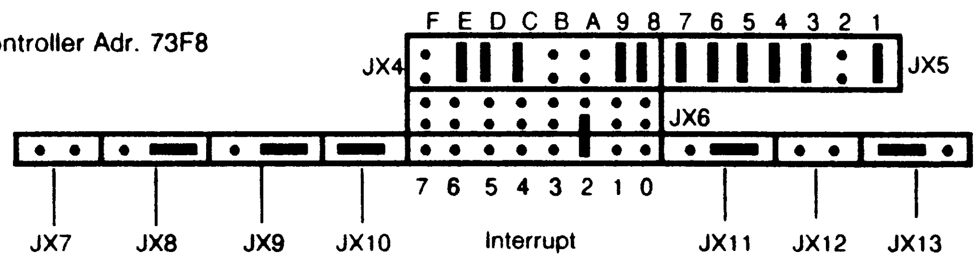
Interphase/Storager III

ESDI-Disk-Drive-Controller

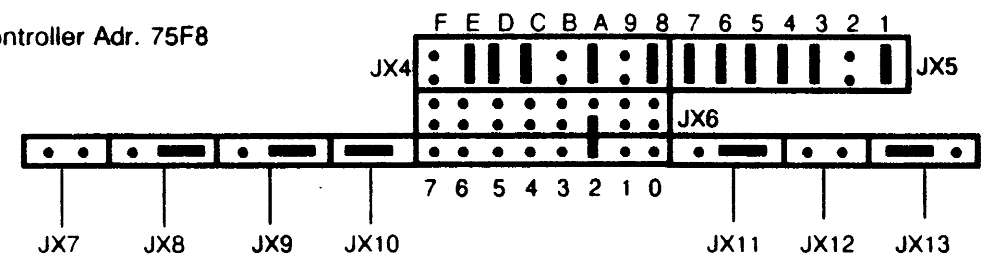
ITB: STORAGER 3



1. Controller Adr. 73F8



2. Controller Adr. 75F8



Indicators:

DS1: In normal Operations: The bits of DS1 are as shown below:

- Bit0 - Idle: This bit is ON when no command is in progress.
- Bit1 - Busy: This bit is ON when the Storager III is busy executing a command
- Bit2 and 3: These two bits are ON when the Storager III is executing the Run Diagnostics command and when the automatic power-on diagnostic sequence is being run.

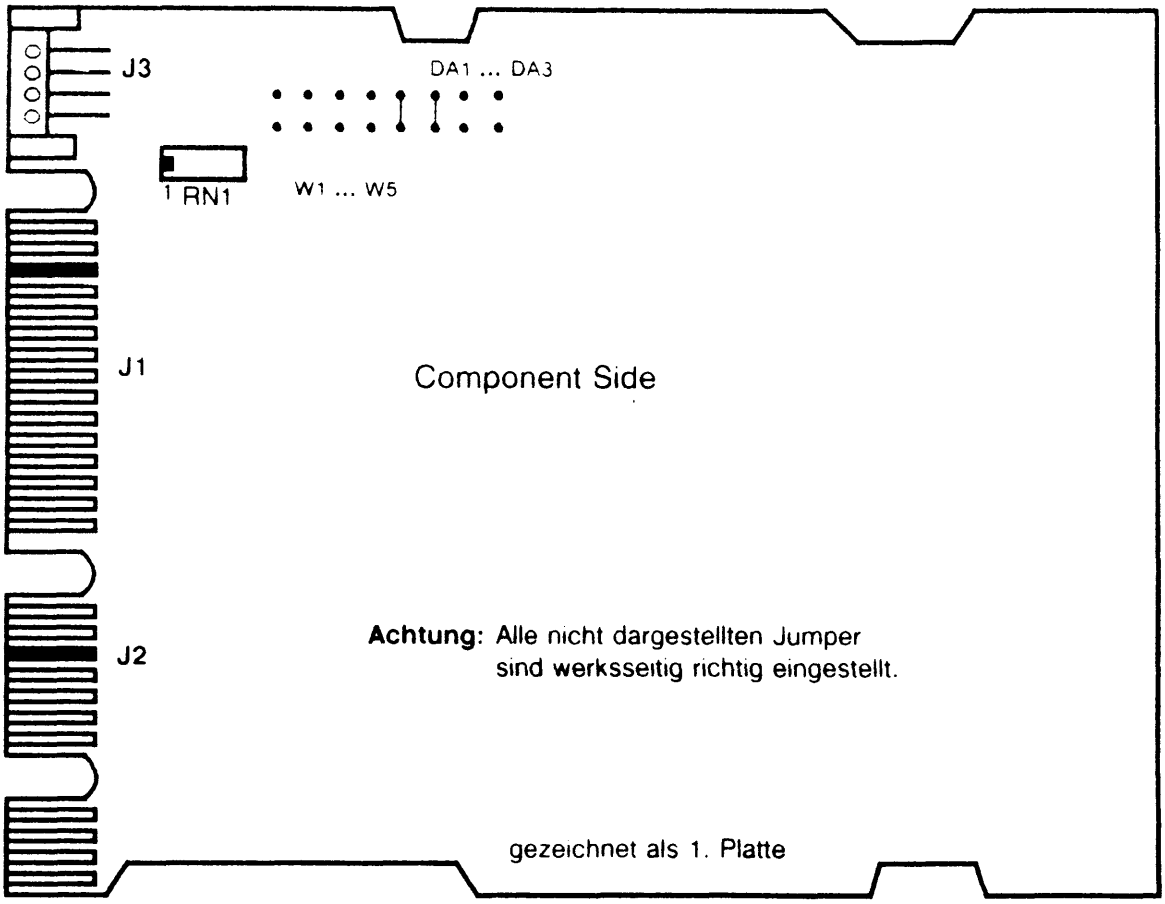
DS1: Error Display mode (3-0: error code sequence F - low digit - high digit - F...)

DS2: This LED indicates general activity for the on-board 68000 processor.

Micropolis 1558 und Micropolis 0558

Device Electronic Board

S26361-K217



Connectors

J1 - Control Signal Connector
J2 - Data Transfer Connector
J3 - DC Power Connector

Configuration jumpers

W1 - out	hard sector mode
W2 - out	35 sectors per
W3 - out	track.
W4 - out	512 bytes sec.
W5 - in	spindle motor starts with interface start spindle command.

Interface Terminator RN1

The interface terminator must be installed on the last physical drive on the control bus.

DA1, DA2, DA3

Device Address	DA3	DA2	DA1	unit
1	out	out	in	0
2	out	in	out	1

Note: All other jumpers on the Device Electronic Board are not be changed.

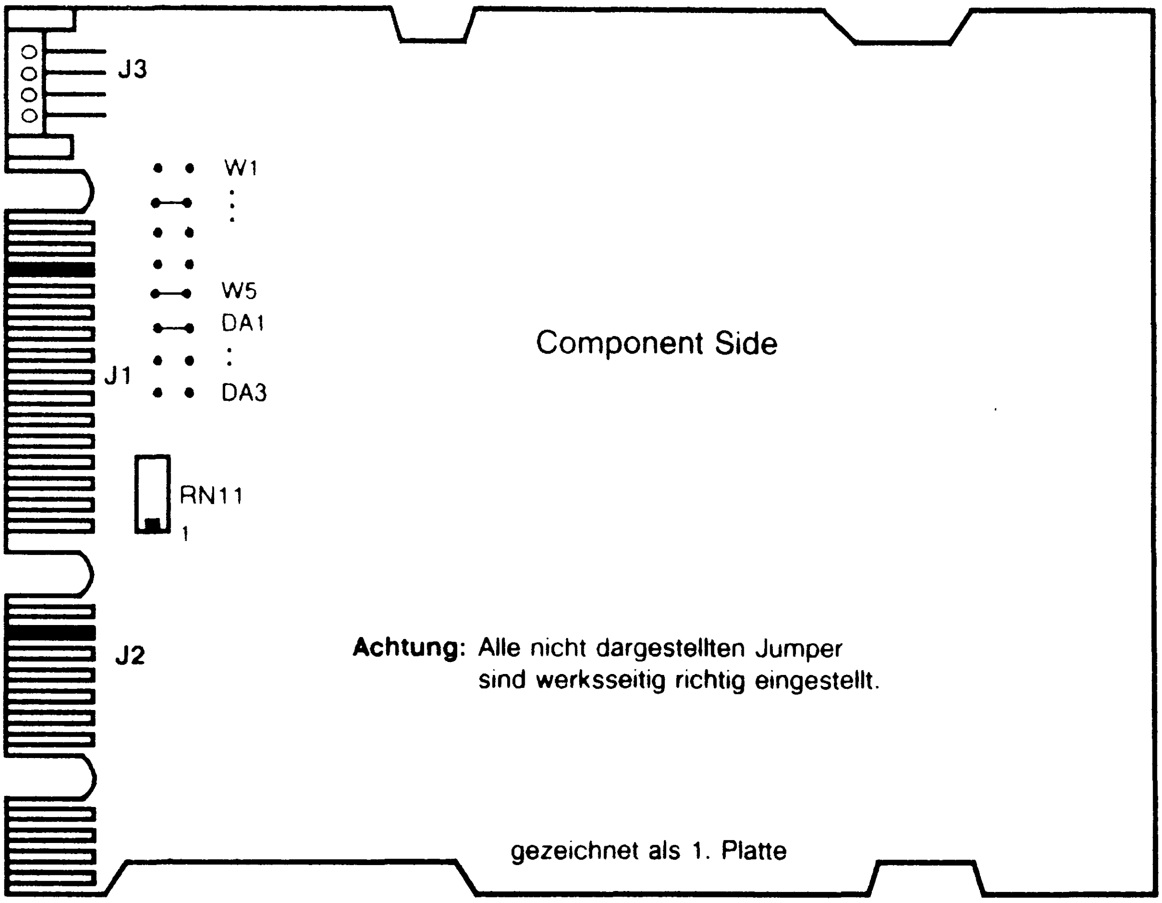
als 1. Platte am 1./2. Storager DA1 gebrückt und RN1 gesteckt

als 2. Platte am 1./2. Storager DA2 gebrückt

Micropolis 1568

Device Electronic Board

S26261-K154



Connectors

J1 - Control Signal Connector
J2 - Data Transfer Connector
J3 - DC Power Connector

Configuration jumpers

W1 - out	hard sector format
W2 - in	512
W3 - out	bytes/sector
W4 - out	54 sectors per track.
W5 - in	drive requires a motor start command to spin up.

Interface Terminator RN11

The interface terminator must be installed on the last physical drive on the control bus.

DA1, DA2, DA3

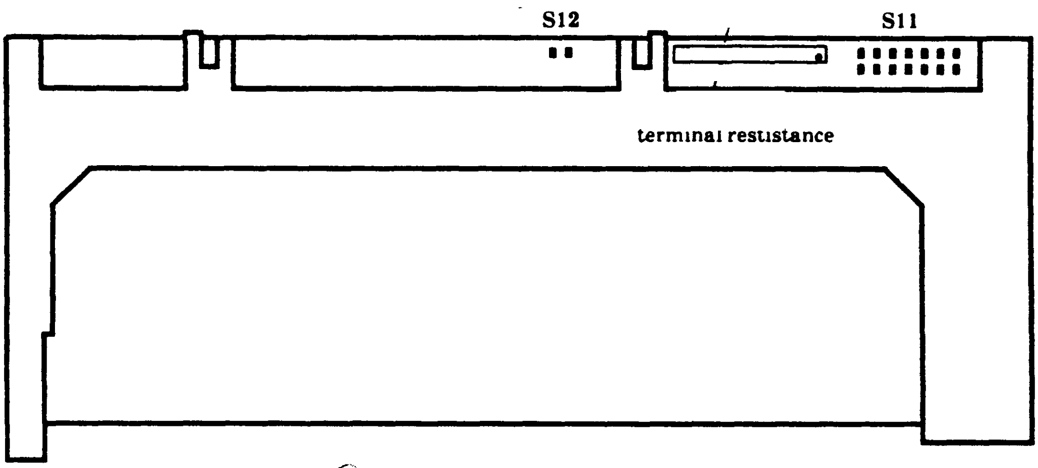
Device Address	DA3	DA2	DA1	unit
1	out	out	in	0
2	out	in	out	1

Note: All other jumpers on the Device Electronic Board are not be changed.

als 1. Platte am 1./2. Storager DA1 gebrückt und RN1 gesteckt

als 2. Platte am 1./2. Storager DA2 gebrückt

Megafile 300 Mbyte: S 26261 - K 111



S11
Drive # 7 6 5 4 3 2 1

S12 - plugged in automatic setup of hard disk when power supply ON
not pluggedsetup via system software (Operation on MX300)

as 1st hard disk at (1st /2nd) Storager:

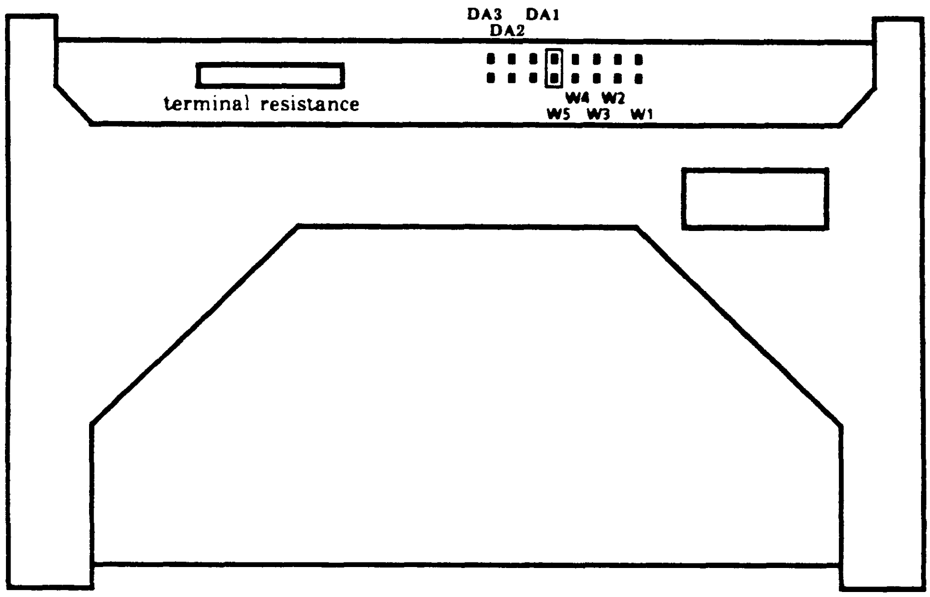
Drive 1 bridged
and
terminal resistance plugged

as 2nd hard disk at (1st /2nd) Storager:

Drive 2 bridged

1558 - 380 mB

Hard Disk Drive Micropolis 1355 -> 170 mB



DA1
DA2 } Drive selection
DA3

W1 - Hard/Soft section
W2
W3 } Default sector configuration
W4
W5 - Spindler control

as 1st hard disk at (1st /2nd) Storager:

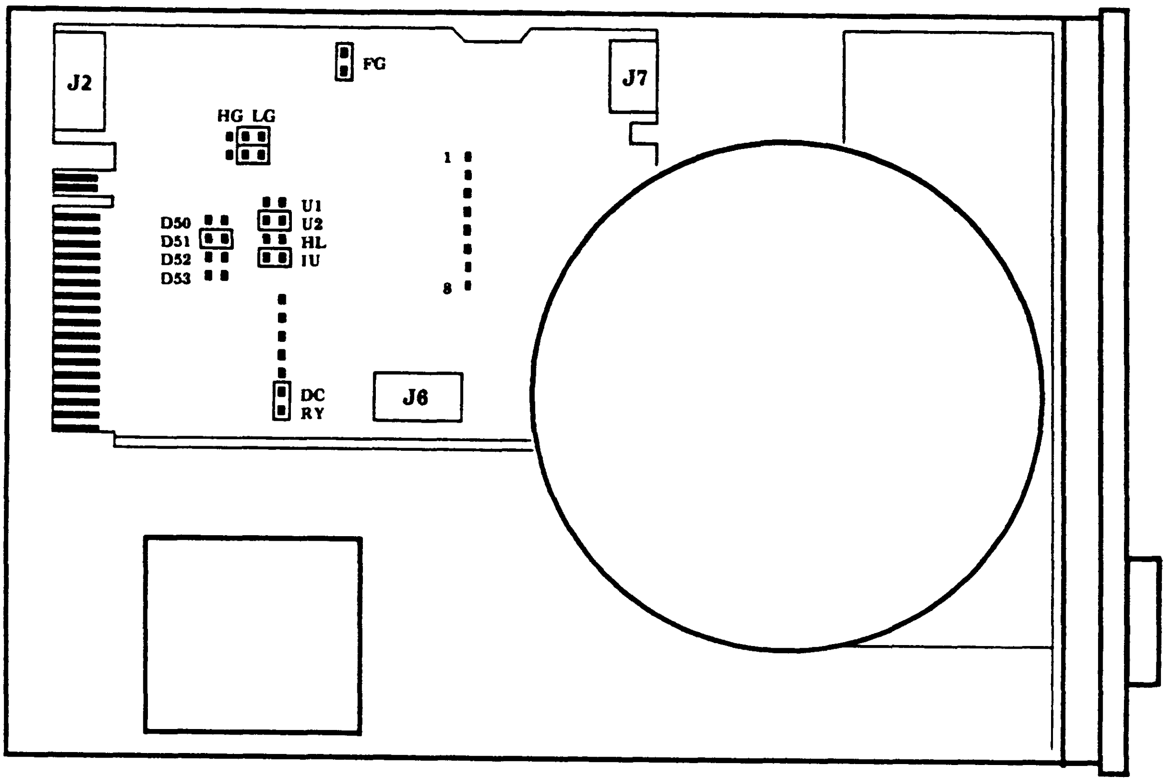
Drive 1 bridged
and
terminal resistance plugged

as 2nd hard disk at (1st /2nd) Storager:

Drive 2 bridged

Floppy Disk Drive

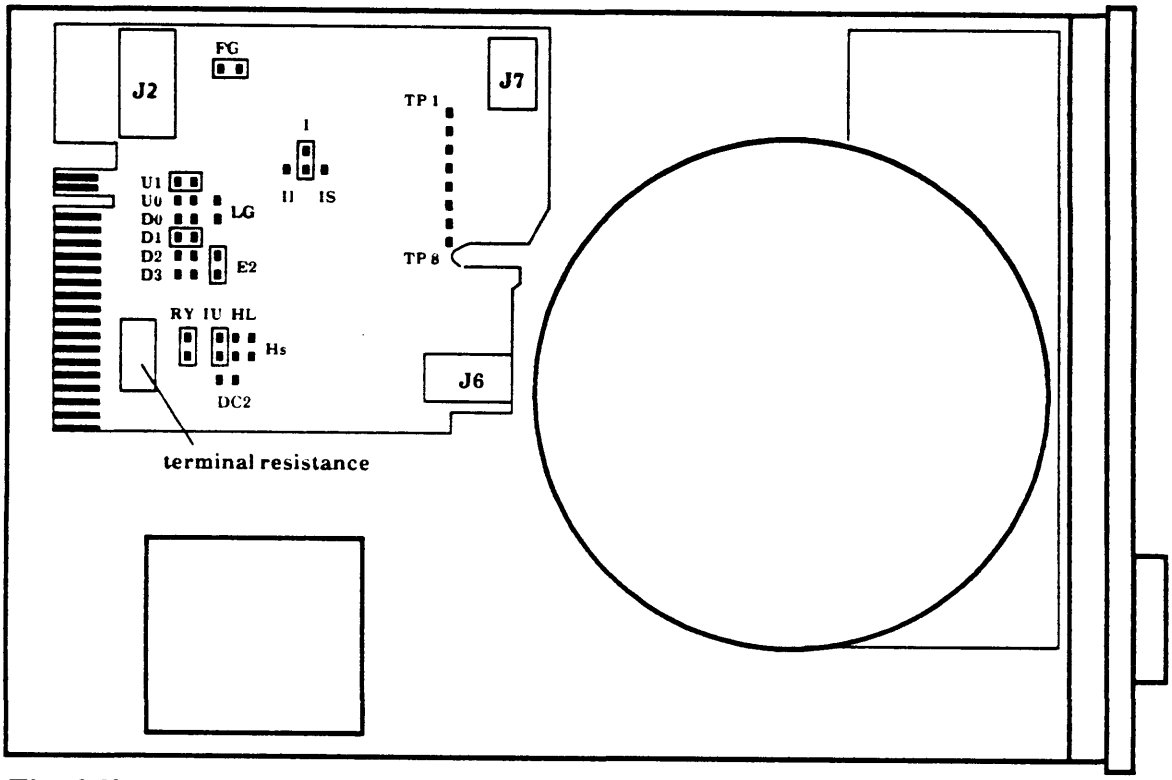
TEAC FD 55 GFV



The following jumpers must be plugged : FG, LG(2x), U2, IU, D51, DC-RY

Floppy Disk Drive

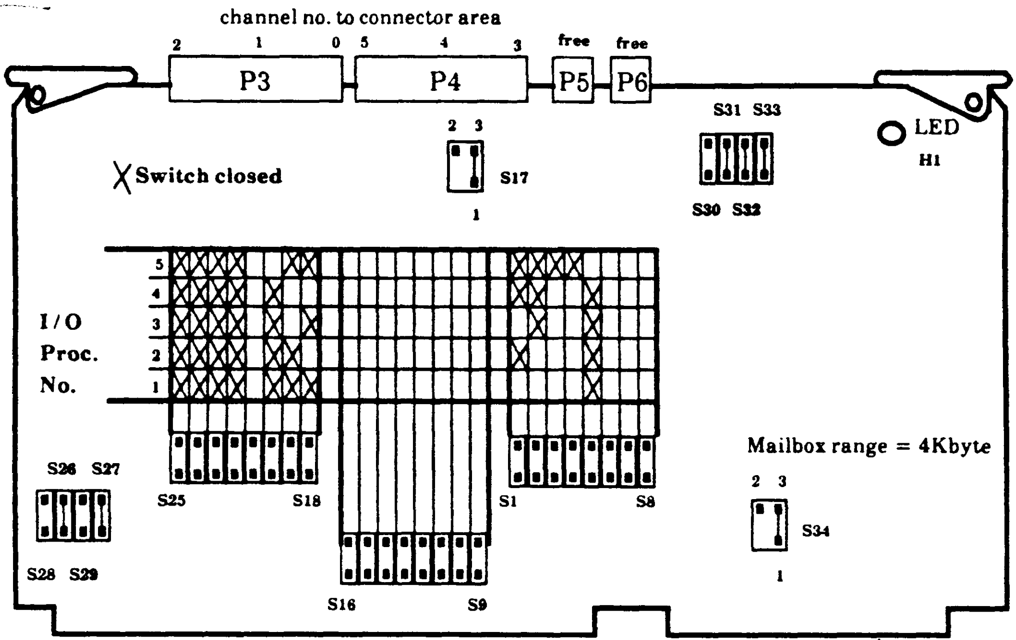
TEAC FD - 55 GF~~R~~- 620 - U



The following jumpers must be plugged : FG, I, U1, D1, E2, IU, RY

4 5597 2 V24

SERAD S 26361 - D 279 I/O Controller (4 x IF97) (2 x V24)



Basic Address	I / O Address	Interrupt nlo x MX2
1. 2EF7000	1000	
2. 2EF6000	1100	
3. 2EF5000	1200	
4. 2EF4000	1300	
5. 2EF3000	0F00	

Switch Assignment:

S1-S8: Multibus I/O Address

S:	8	7	6	5	4	3	2	1	Switch
	F	E	D	C	B	A	9	8	Address Bits

S18-S33: Multibus Base Address

S:	33	32	31	30	25	24	23	22	21	20	19	18	Switch
	17	16	15	14	13	12	11	10	F	E	D	C	Address Bits

S9-S16: Multibus Interrupt Level (at MX300 all open)

S:	16	15	14	13	12	11	10	9	Switch
	7	6	5	4	3	2	1	0	INTERRUPT

S34: Mailbox selection (4kbyte position 1-3);

S26-S29: Mailbox size (Buffer 4KB: S26, S27 CLOSED)

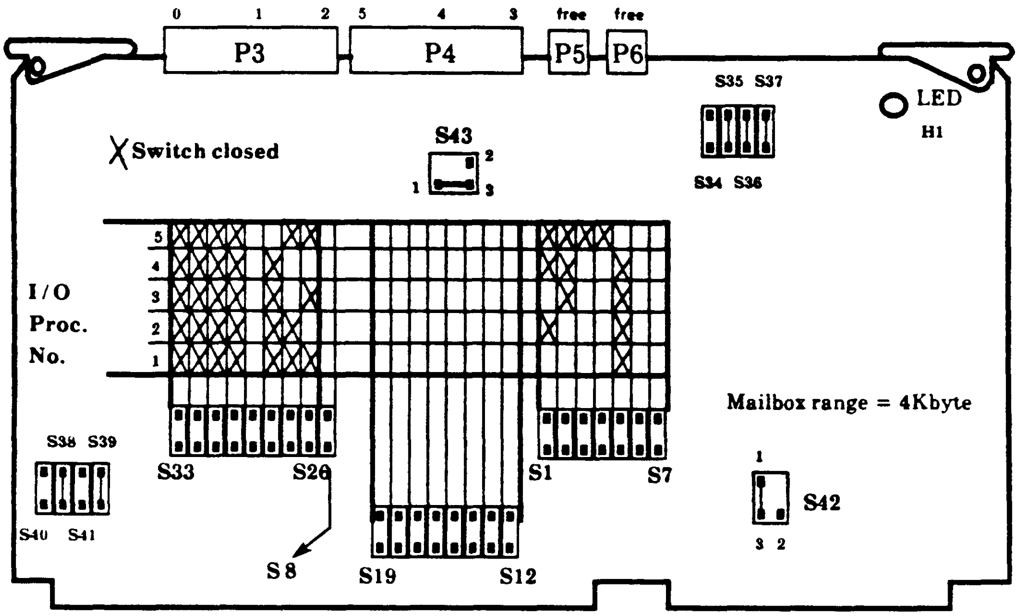
S17: position 1-3 CLOSED (MX300)
position 1-2 Console Remote ON only MX2, MX2+

H1 : LED turns off after positve self-test

Note: At V24 connector ashure, that M2 (Pin5) is plugged with a plus level , because only in this case a data output is possible! This is possible with a loop from S2 (Pin4) to M2 (Pin5).

6 5597-

SERAG S26361 - D 312 -V1 I/O Controller (6 x IF97)



Basic Address	I / O Address	Interrupt
1. 2EF7000	1000	
2. 2EF6000	1100	
3. 2EF5000	1200	
4. 2EF4000	1300	
5. 2EF3000	0F00	

Switch Assignment:

S1-S7: Multibus I/O Address

S:	8	7	6	5	4	3	2	1	Switch
	F	E	D	C	B	A	9	8	Address Bits

S26-S37: Multibus Base Address

S:	37	36	35	34	33	32	31	30	29	28	27	26	Switch
	17	16	15	14	13	12	11	10	F	E	D	C	Address Bits

S12-S19: Multibus Interrupt Level (at MX300 all open)

S:	19	18	17	16	15	14	13	12	Switch
	7	6	5	4	3	2	1	0	INTERRUPT

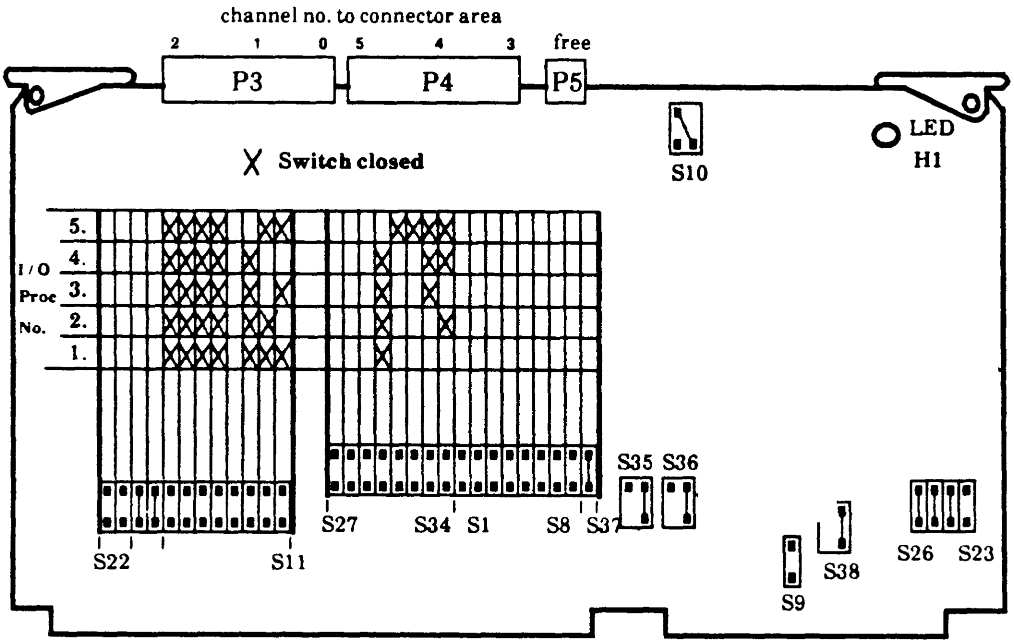
S42: Mailbox selection (4KB position 1-3);

S38-S41: Mailbox size (4KB: S38, S39 CLOSED)

S17: position 1-3 CLOSED (MX300)
position 1-2 Console remote ON only at MX2, MX2+

H1 : LED turns off after positve self-test

SEAAB S26361 - D 364 - V* I/O-Controller
(V1: 6 x SS97 V2: 4 x SS97, 2 x V24 V3: 6 x V24)



Basic Adress	I/O Address	Interrupt
1. 2EF7000	1000	
2. 2EF6000	1100	
3. 2EF5000	1200	
4. 2EF4000	1300	
5. 2EF3000	0F00	

Switch Assignment:

S27-S34: Multibus I/O Address

S:	34	33	32	31	30	29	28	27	Switch
	F	E	D	C	B	A	9	8	Address Bits

S11-S18 and S 23-S26: Multibus Baseaddress

S:	26	25	24	23	18	17	16	15	14	13	12	11	Switch
	17	16	15	14	13	12	11	10	F	E	D	C	Address Bits

S1-S8: Multibus Interrupt Level (at MX300 all open)

S:	8	7	6	5	4	3	2	1	Switch
	7	6	5	4	3	2	1	0	INTERRUPT

S35 and S36: Mailbox selection (4Kbyte);

S19-S22: Mailbox size (4kbyte: S19, S20 closed)

S10 (not at V3): Console Remote ON not active (only at MX2, MX2 +)

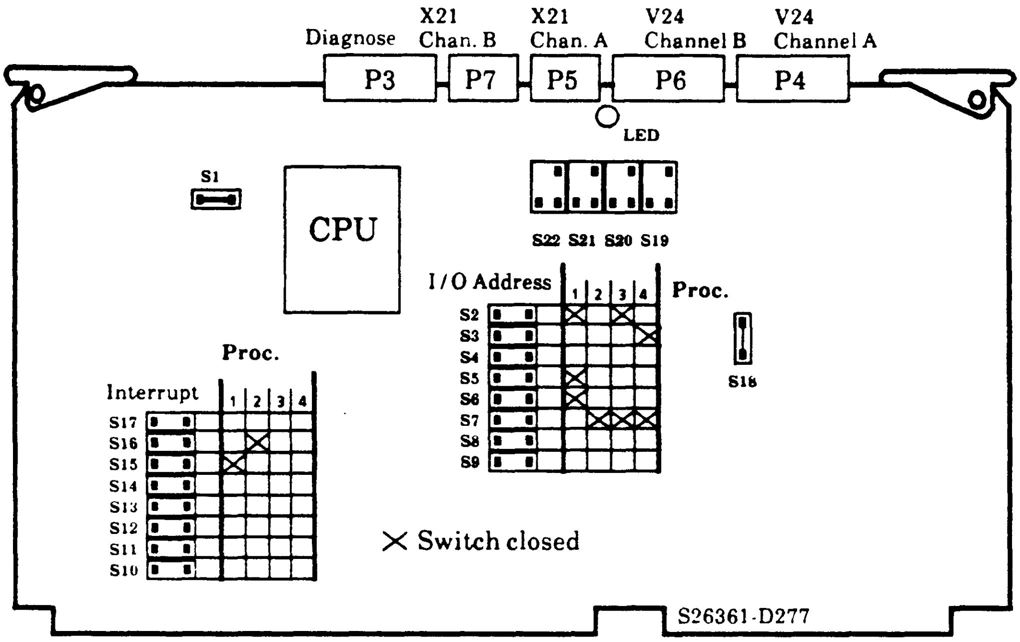
S38: Address interpreter with P2 plug (at MX500 without)

S9 (not at V1): M2 interpreter with V24 channels on

S37: INH1 is generated

H1: LED turns off after positive self-test

Communication - Processor: DUE|AI S 26361 - D 277



Basic Adress	I / O Address	Interrupt
1. 2ED0000	1900	5
2. 2EE0000	2000	6
3. 2EA0000	2100	*
4. 2EB0000	2200	*

* refer to general INTERRUPT assignment

LED	ON	Self-test	negative
	Flashing	-"-	positive terminated
		SW not loaded	
	OFF	SW is loaded	

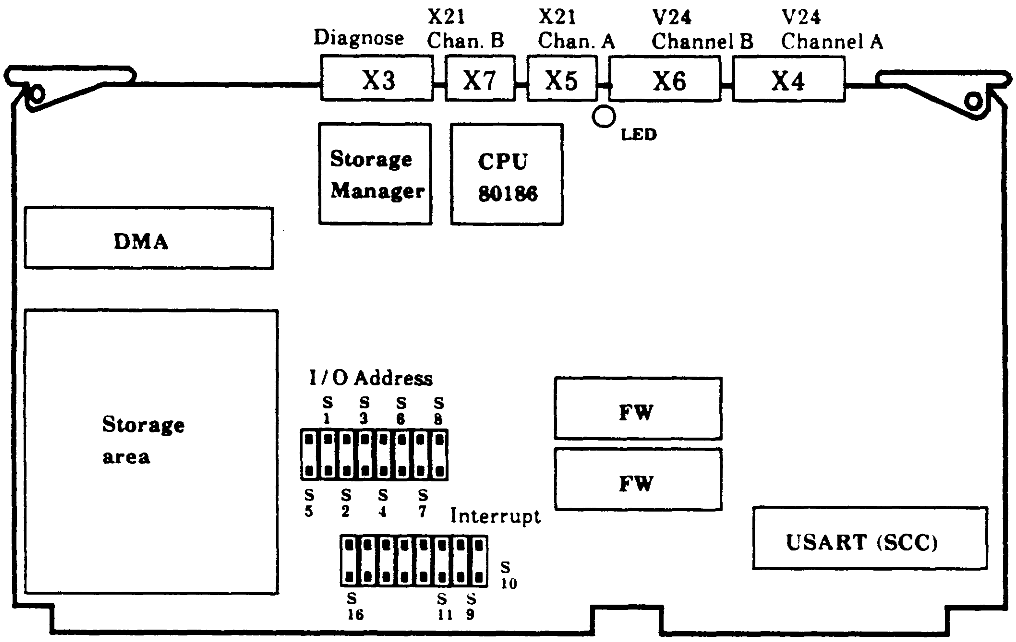
Switch Assignment:

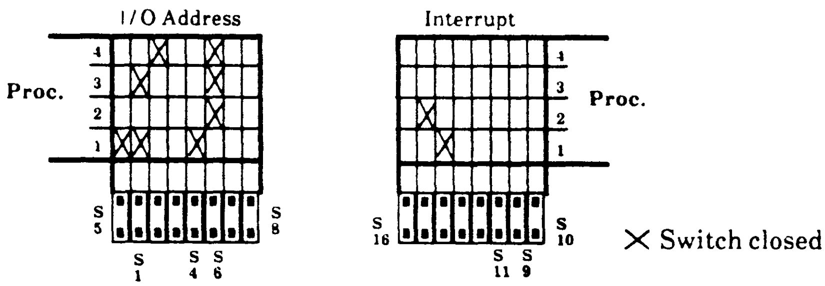
S1, S18:	CLOSED (only for test)									
S10-S17:	Multibus Interrupt Level									
	S: 17	16	15	14	13	12	11	10	Switch	
	7	6	5	4	3	2	1	0	INTERRUPT	
S2-S9:	Multibus I/O Address									
	S: 9	8	7	6	5	4	3	2	Switch	
	F	E	D	C	B	A	9	8	Address bits	

CLOSED = 1

Communication - Processor: MEGA-BOARD

DUEAK S 26361 - D 419





Basic Address	I / O Address	Interrupt
1. 2ED0000	1900	5
2. 2EE0000	2000	6
3. 2EA0000	2100	*
4. 2EB0000	2200	*

* refer to general INTERRUPT assignment

LED	ON	Self-ttest	negative
	Flashing	-"-	positive terminated
		SW not loaded	
	OFF	SW is loaded	

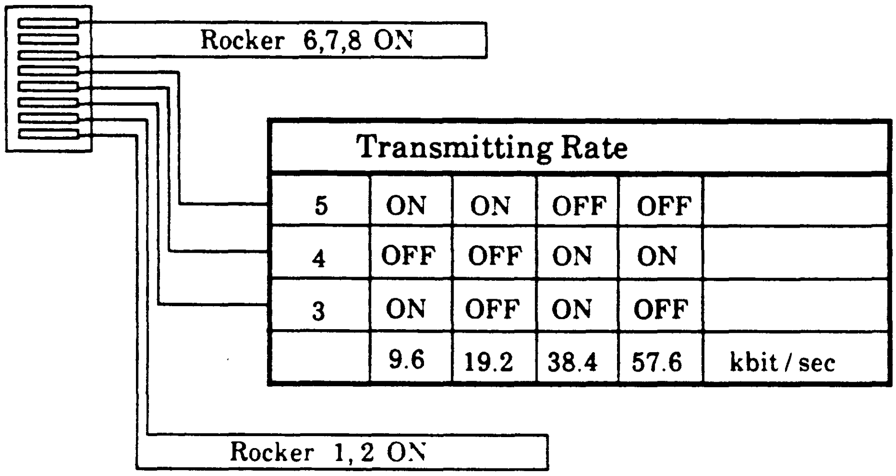
Switch Assignment:

S9-S16:	Multibus Interrupt Level									
	S: 16	15	14	13	12	11	10	9		Switch
	7	6	5	4	3	2	1	0		INTERRUPT
S1-S8:	Multibus I/O Address									
	S: 8	7	6	5	4	3	2	1		Switch
	F	E	D	C	B	A	9	8		Address bits

CLOSED = 1

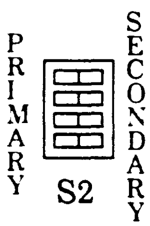
Use of CCP - WAN1 via HDLC - TRM

Switch assignment to TRM - Converter (WTUAB)



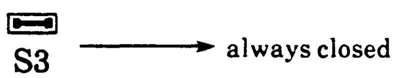
Transmitting Rate					
5	ON	ON	OFF	OFF	
4	OFF	OFF	ON	ON	
3	ON	OFF	ON	OFF	
	9.6	19.2	38.4	57.6	kbit / sec

Connecting a MS 9155 (at C30),
set Rocker 2 OFF

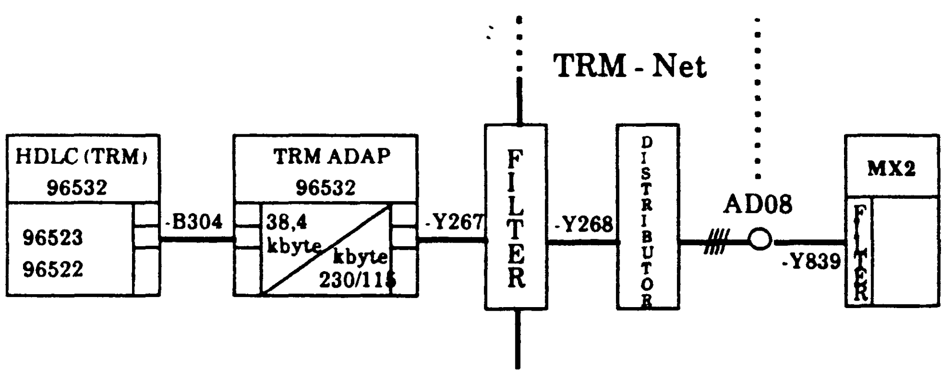


Connecting to HDLC - block buffer setup to position secondary

Operating with C30 with connector to MS 9155 via HDLC - TRM setup to position primary

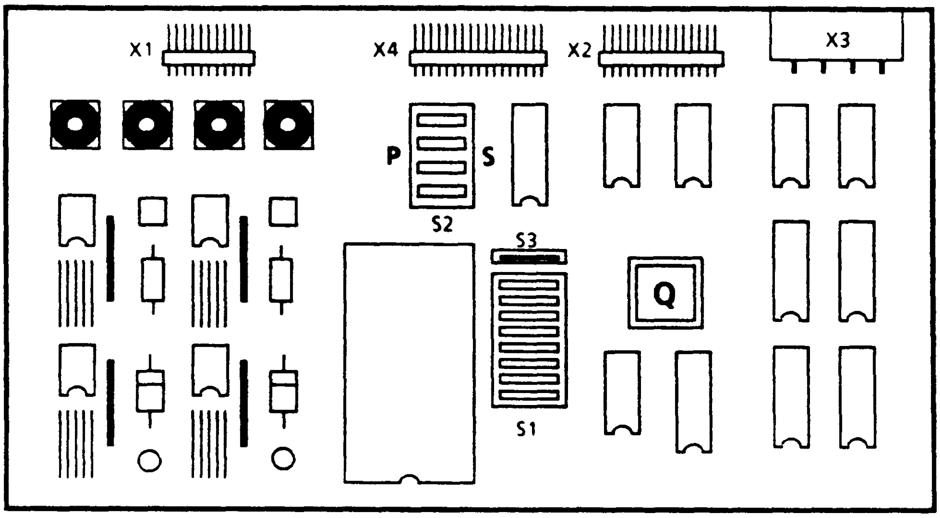


Connection to terminal computer



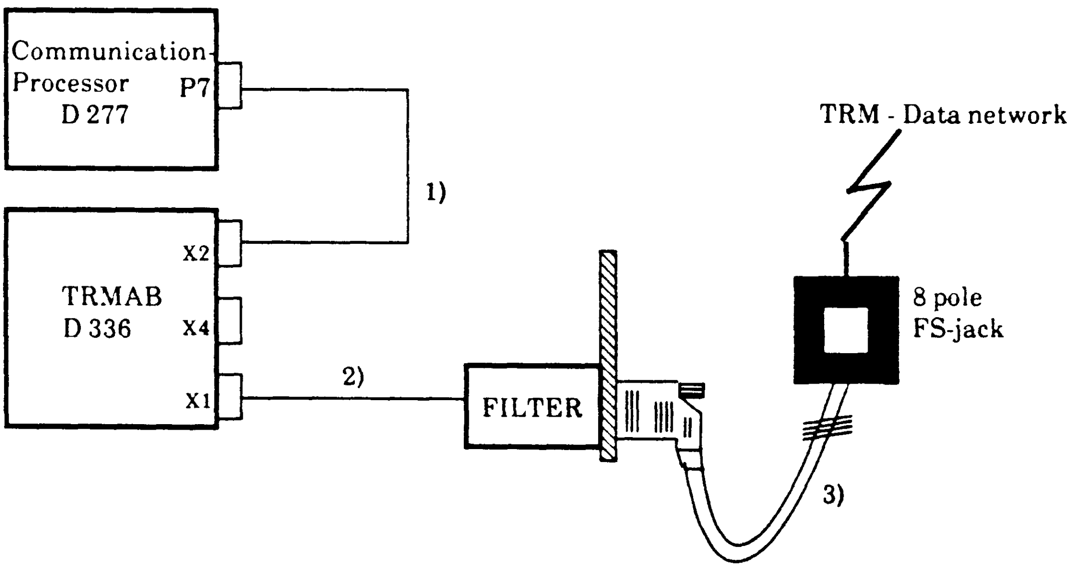
Adjusting Specifications HDLC / TRMAB Adapter

TRM-Adapter (TRMAB) S 26361 - D 336

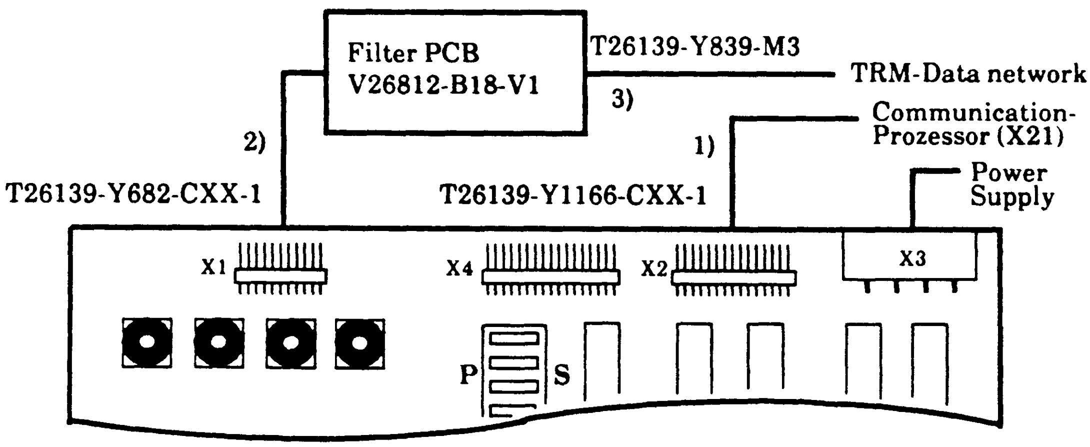


Possible Configuration

MX2 / MX300 and Derivates



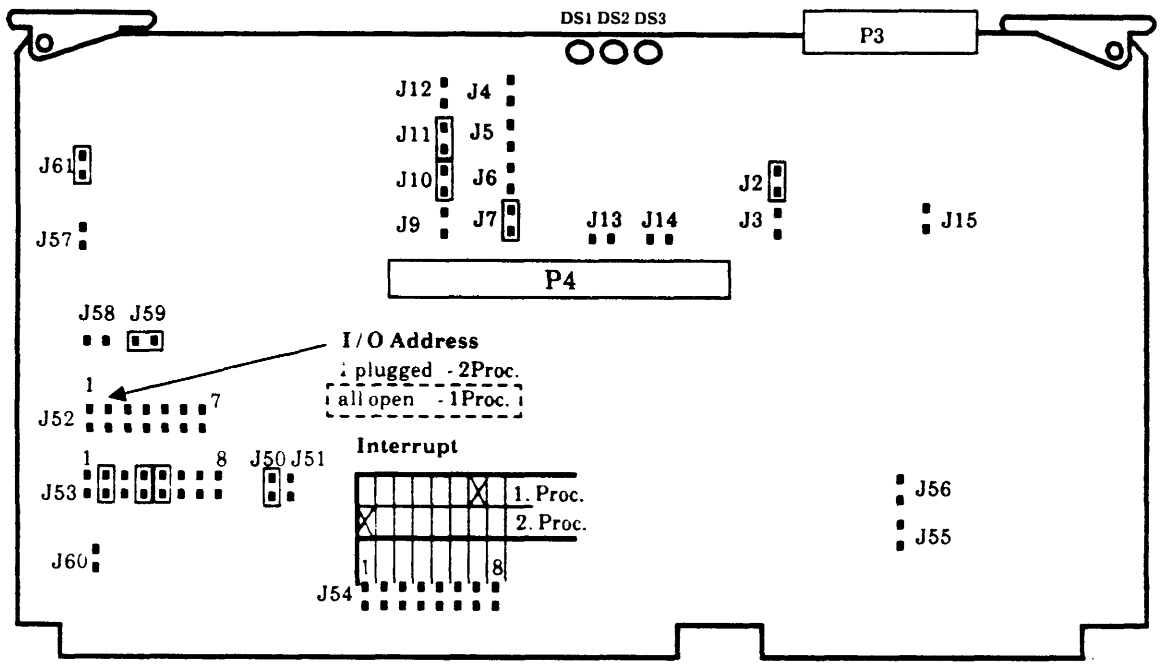
Cable connections to TRM-Converter (TRMAB)



Ethernet - Processor EXC: Exos201 -MOD3

Identification by part number at the soldering side

MOD3 (256 KByte): P/N 9900007-96



Connectors:

RP1:	Transceiver, LAN1

Basic Address Interrupt

	Basic Address	Interrupt
1.	1A00	1
2.	1A02	7

Switch Assignment:

J2:	in	Firmware EPROM 27128
J3:	out	Firmware EPROM 21256
J4:	in	Memory 256 KByte
J5:	out	Reserved
J6:	out	Boot from Network
J7:	out	Memory 256 KByte
J9:	out	Reserved
J10:	in	DMA Hardware
J11:	in	Disable SQE (Heartbeat) check
J12:	out	Reserved
J13:	out	
J14:	out	
J15:	out	Enable Watchdog Timer
J50:	in	Enable 16 Bit Address
J51:	out	Enable 8 Bit Address
J52:		Bits 1-7 of I/O Address
J53:	in	Bits 8-15 of I/O Address Jumper 2 ,4,5 closed
J54:		Interrupt level 0-7 Jumper 8 = INT. 0
J55:	out	User EPROM 27128
J56:	out	User EPROM 27256
J57:	out	
J58:	out	
J59:	in	
J60:	out	
J61:	in	No overlapped DMA

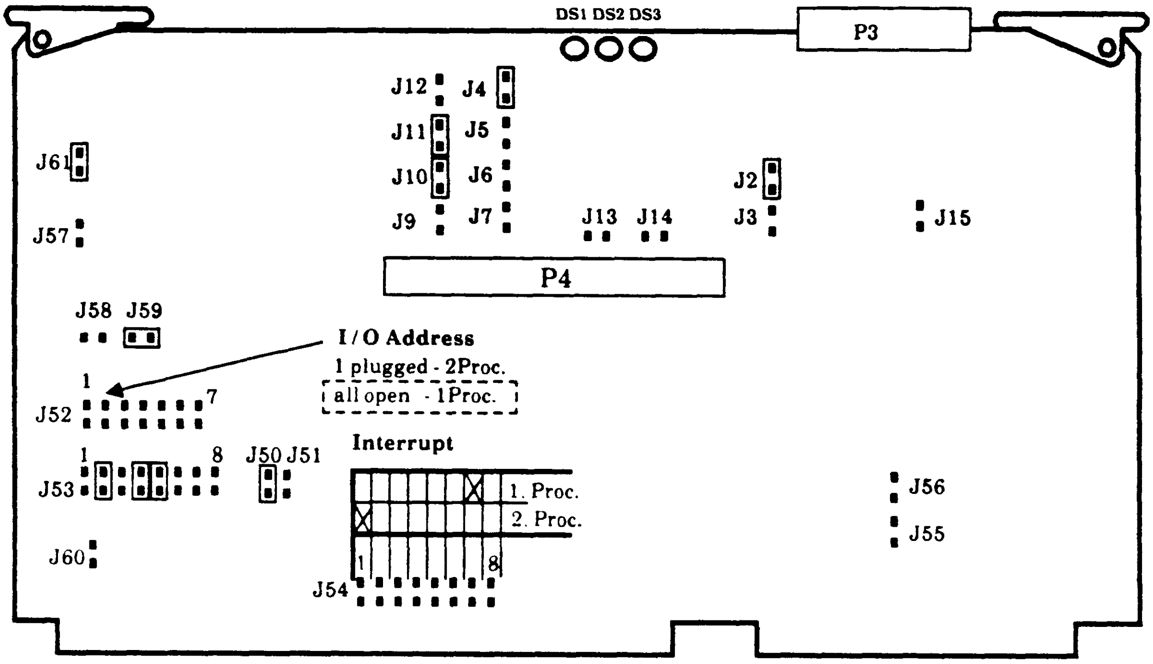
LED-Assignment:

DS1:	Firmware Status LED ON: Reset and Selftest flashing: loading Software OUT: Board ready
DS2:	Ethernet Transmit Status LED ON: Data transmitting to the Ethernet
DS3:	Multibus Status LED ON(short): Multibus acces ON(long): bad address on the Multibus

Ethernet - Processor EXC: Exos201 -MOD4

Identification by part number at the soldering side

MOD4 (512 KByte) : P/N 9900007-04



Connectors:

RP1:	Transceiver, LAN1

Basic Address / Interrupt

	Basic Address	Interrupt
1.	1A00	1
2.	1A02	7

Switch Assignment:

J2:	in	Firmware EPROM 27128
J3:	out	Firmware EPROM 21256
J4:	in	Memory 512 KByte
J5:	out	Reserved
J6:	out	Boot from Network
J7:	out	Memory 512 KByte
J9:	out	Reserved
J10:	in	DMA Hardware
J11:	in	Disable SQE (Heartbeat) check
J12:	out	Reserved
J13:	out	
J14:	out	
J15:	out	Enable Watchdog Timer
J50:	in	Enable 16 Bit Address
J51:	out	Enable 8 Bit Address
J52:		Bits 1-7 of I/O Address
J53:	in	Bits 8-15 of I/O Address Jumper 2 ,4,5 closed
J54:		Interrupt level 0-7 Jumper 8 = INT. 0
J55:	out	User EPROM 27128
J56:	out	User EPROM 27256
J57:	out	
J58:	out	
J59:	in	
J60:	out	
J61:	in	No overlapped DMA

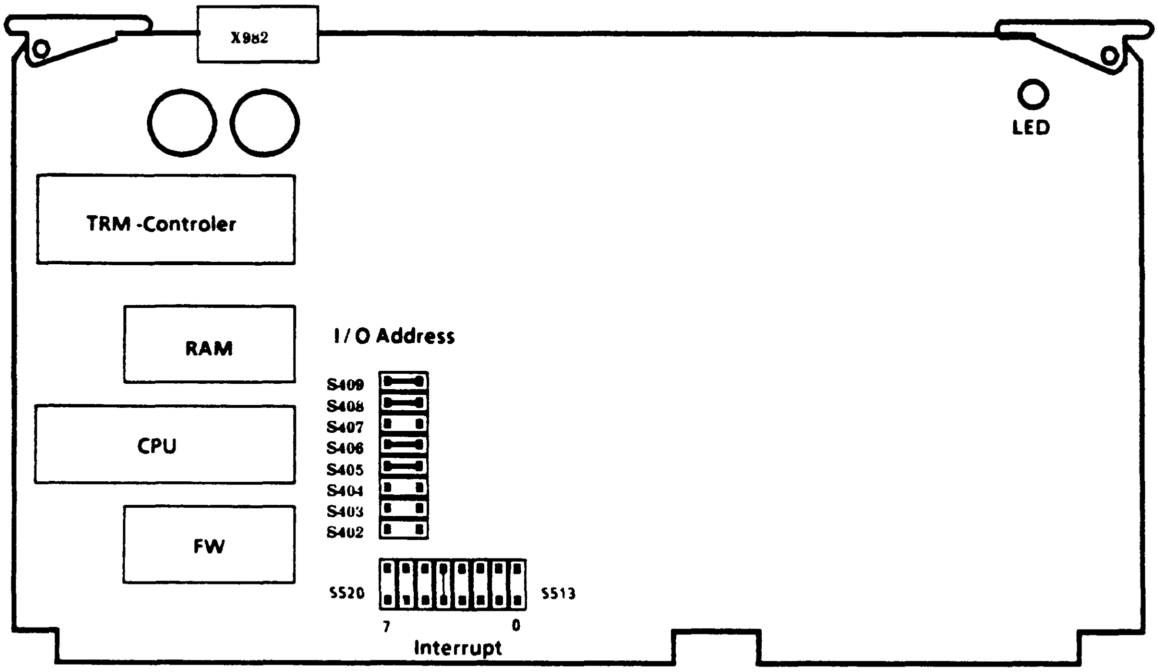
LED-Assignment:

DS1: Firmware Status LED
ON: Reset and Selftest
flashing: loading Software
OUT: Board ready

DS2: Ethernet Transmit Status LED
ON: Data transmitting to the Ethernet

DS3: Multibus Status LED
ON(short): Multibus acces
ON(long): bad address on the Multibus

BAM Processor S26361-D 367

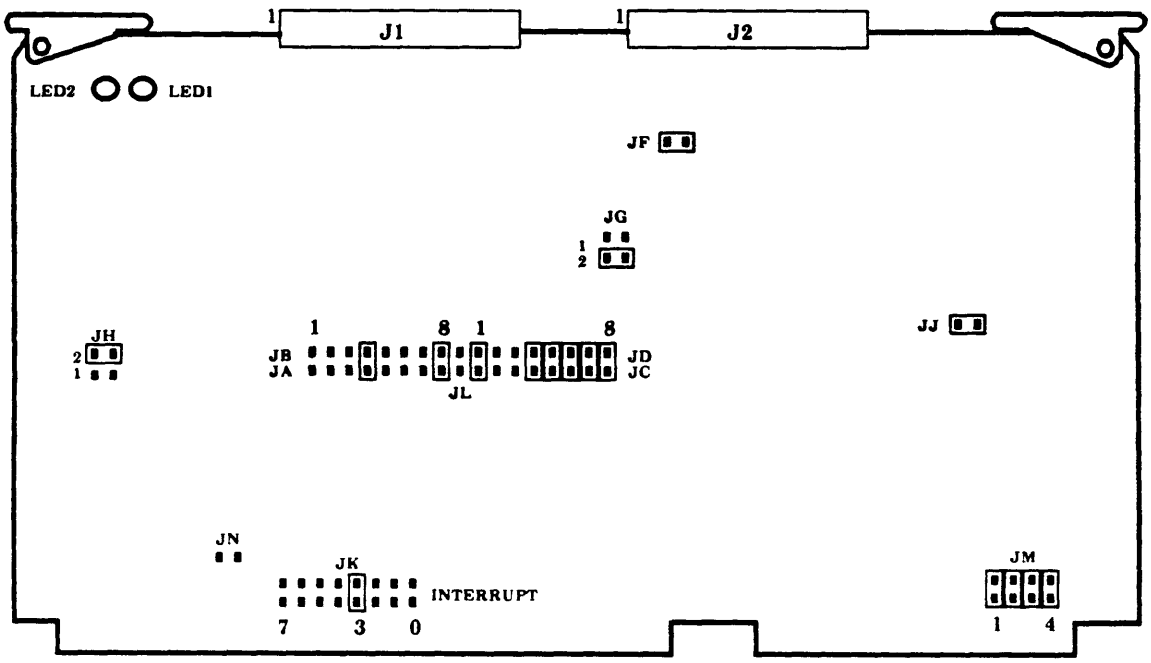


Basic Address	I / O Address	Interrupt
2E80000	1B00	4

LED description:	LED	flashing	-	After power on a self-test is running, BAM PCB is initialized
		on	-	Continous on after initializing, error detected. BAM PCB defective.
		off	-	Self-test and initializing terminated positively. BAM PCB is in operation mode.

XYLOGICS XYL: 900-472-911

Tape Controller for Pertec-MT Device



I / O Address	Interrupt
EE60	3

Switch Assignment :

JA/JB: 4, 8 closed

JC/JD: 1, 4, 5, 6, 7, 8 closed

JF : Address Relocation not plugged : 20 bit addressing mode
plugged : 24 bit addressing mode

JG : Buffer Size Position 1 : 2Kbyte
Position 2 : 8Kbyte 2 closed

JJ : Buffer Size not plugged : 2Kbyte
plugged : 8Kbyte

JH : DMA sequencer Position 1 : BCLK
Position 2 : 10MHz

JK : Interrupt 3 closed

JL : 16-Bit register addressing

JM : 24 Bit extented address

JN : Disable bus priority out plugged : serial scheme
not plugged : parallel scheme

Indicators:

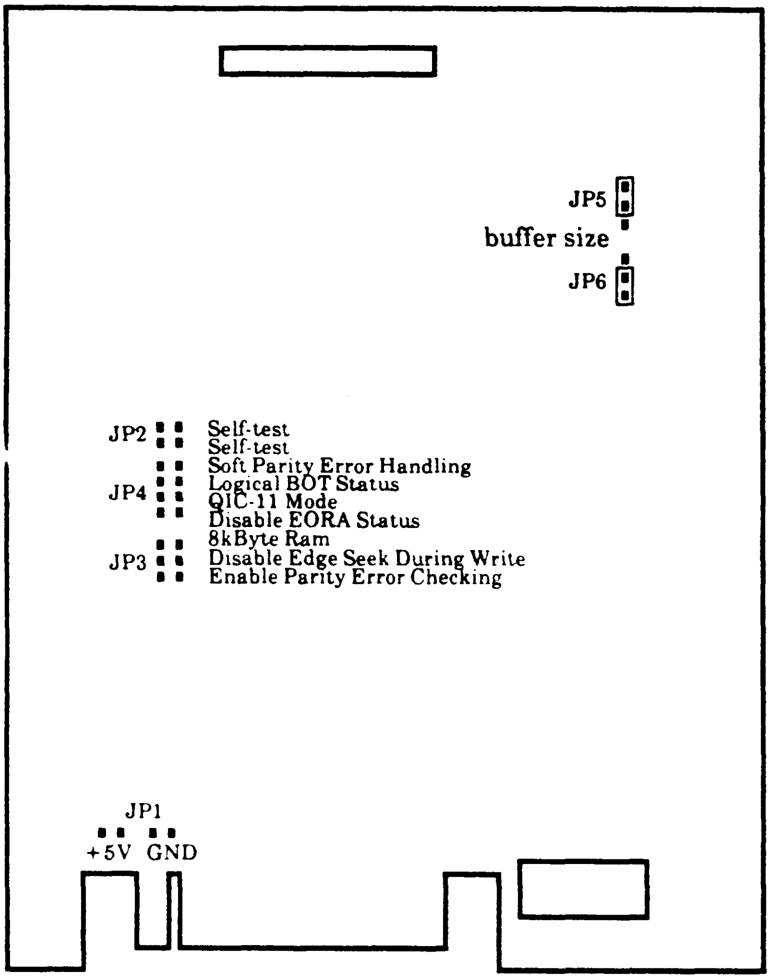
LED1: controller busy

LED2: power-up self-test busy / fail

TDC=3650 =155mb

Formatter Board   TDC3350-Mk2

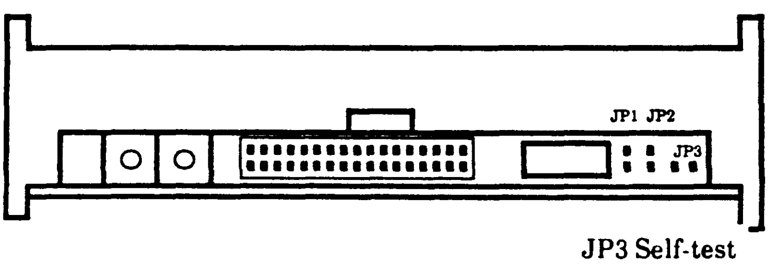
For Streamer   TDC3319



indicates assignment when opreration of PC-MX300

Streamer Unit   TDC3319

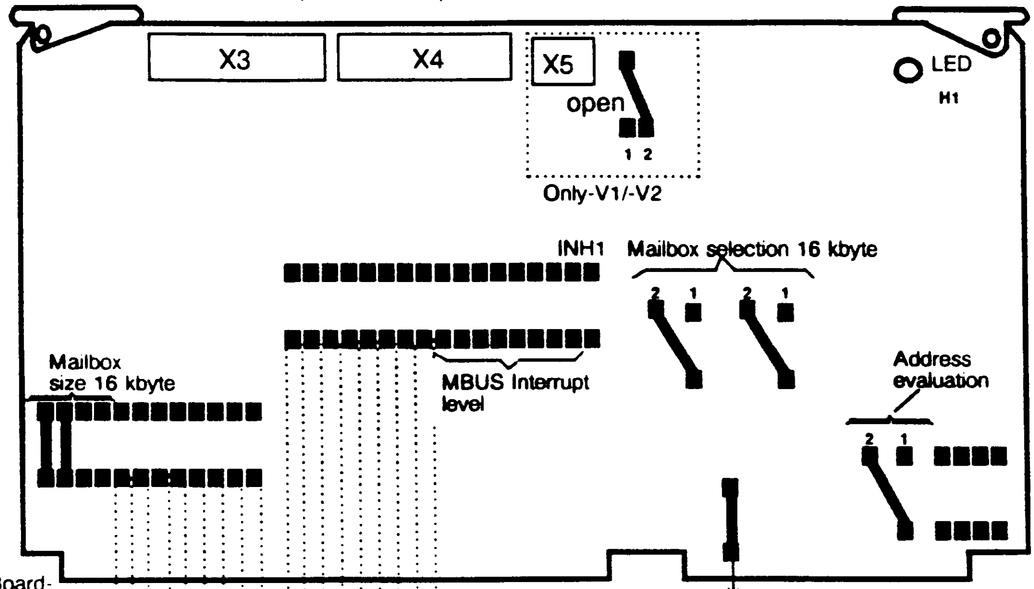
rear view



JP3 Self-test

SEAAB (16 kbyte Mailbox) I/O Controller

S26361-D364 - V1 (6 x SS97) / - V2 (4 x SS97, 2 x V.24) / - V3 (6 x V.24)



open: CTS/M2 evaluation ON
closed: CTS/M2 evaluation OFF

1. DUEAI/K not allowed in same Multibus
4. DUEAI/K not allowed in same Multibus

NSC-Systems

These settings are only valid for the MX500 with the Operating System SINIX-F V5.2x

Board-Nr.	MBUS Baseaddress							MBUS I/O Address					
1	10000				X			X					4000
2	4C000		X			X	X	X				X	4100
3	50000		X		X			X			X		4200
4	54000		X		X		X	X			X	X	4300
5	8C000	X				X	X	X		X			4400
6	90000	X			X			X		X		X	4500
7	94000	X			X		X	X		X	X		4600
8	98000	X			X	X		X		X	X	X	4700
9	9C000	X			X	X	X	X	X				4800
10	A0000	X		X				X	X			X	4900
11	A4000	X		X			X	X	X		X		4A00
12	A8000	X		X		X		X	X		X	X	4B00
13	AC000	X		X		X	X	X	X	X			4C00
14	B0000	X		X	X			X	X	X		X	4D00
15	B4000	X		X	X		X	X	X	X	X		4E00
16	B8000	X		X	X	X		X	X	X	X	X	4F00

INTEL-Systems

These settings are only valid for the MX500 with the Operating System SINIX-M V5.4x

Board-Nr.	MBUS Baseaddress							MBUS I/O Address					
1	80000	X						X					4000
2	84000	X					X	X				X	4100
3	88000	X				X		X			X		4200
4	8C000	X				X	X	X			X	X	4300
5	90000	X			X			X		X			4400
6	94000	X			X		X	X		X		X	4500
7	98000	X			X	X		X		X	X		4600
8	9C000	X			X	X	X	X		X	X	X	4700
9	A0000	X		X				X	X				4800
10	A4000	X		X			X	X	X			X	4900
11	A8000	X		X		X		X	X		X		4A00
12	AC000	X		X		X	X	X	X		X	X	4B00
13	B0000	X		X	X			X	X	X			4C00
14	B4000	X		X	X		X	X	X	X		X	4D00
15	B8000	X		X	X	X		X	X	X	X		4E00
16	BC000	X		X	X	X	X	X	X	X	X	X	4F00

X = closed

Connectors:

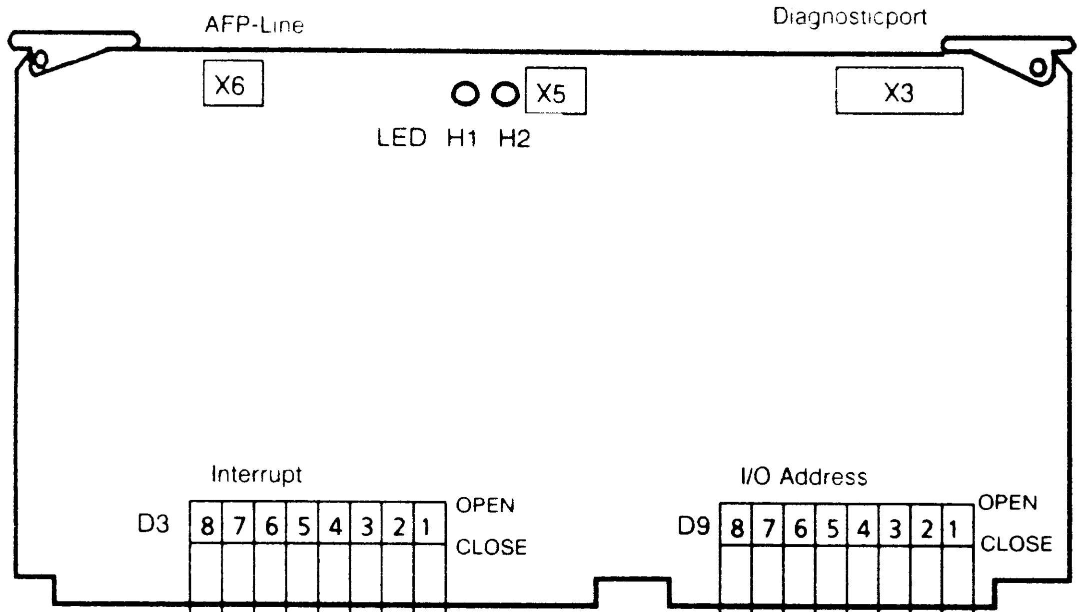
X3: Terminal or Lineadapter (Channel 0-2)

X4: Terminal or Lineadapter (Channel 3-5)

X5: not used

SIMAP
S26261-D544

Serial Interface Multiplexer SIM



Board Nr	INT-Nr.	D3 8	7	6	5	4	3	2	1	I/O-Address	D9 8	7	6	5	4	3	2	1
1	7								X	3000					X	X		
2	7								X	3100	X				X	X		
3	7								X	3200		X			X	X		

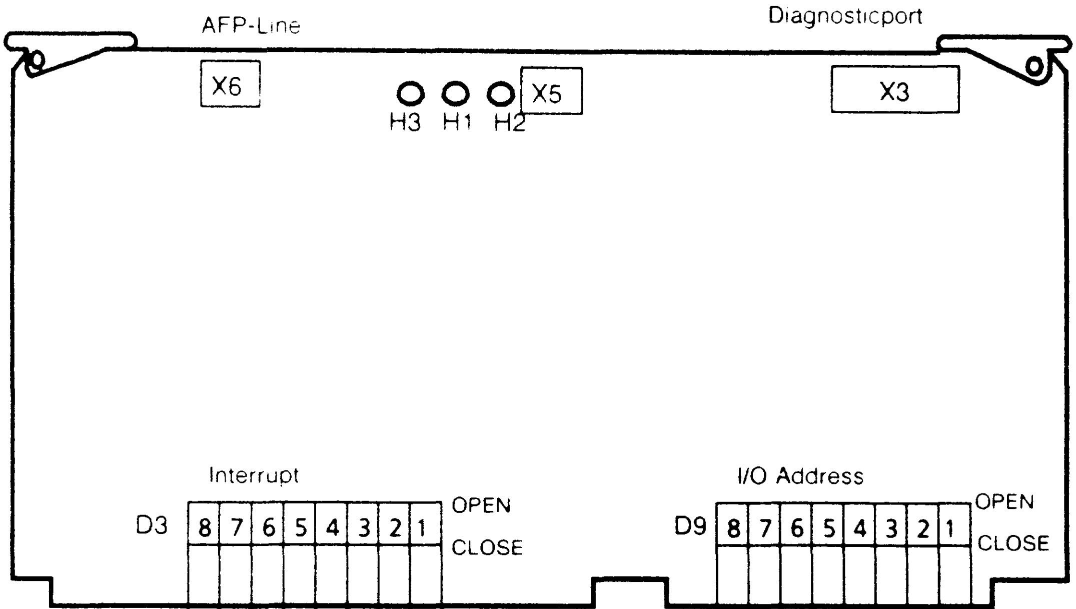
X = CLOSE

Indicator

LED H1 (red)	short ON:	after Power on and Reset
	flashing:	Indicates an Selftest error
	ON:	Indicates an Error
H2 (green)	Short ON:	after Power on and Reset
	flashing:	Board ready for loading
	ON:	Software is loaded

SIMAR
S26261-D695

Serial Interface Multiplexer SIM



Board Nr.	INT-Nr.	D3 8	D3 7	D3 6	D3 5	D3 4	D3 3	D3 2	D3 1	MEM-Address	I/O-Address	D9 8	D9 7	D9 6	D9 5	D9 4	D9 3	D9 2	D9 1
1	7								X	1000	3000					X	X		
2	7								X	4C00	3100	X				X	X		
3	7								X	5000	3200		X			X	X		

X = CLOSE

Connectors:
X6: AFP-2wire Network (Not compatible to SIMAP (-D544)

Meaning of the Indicators:
(Error code definitions)

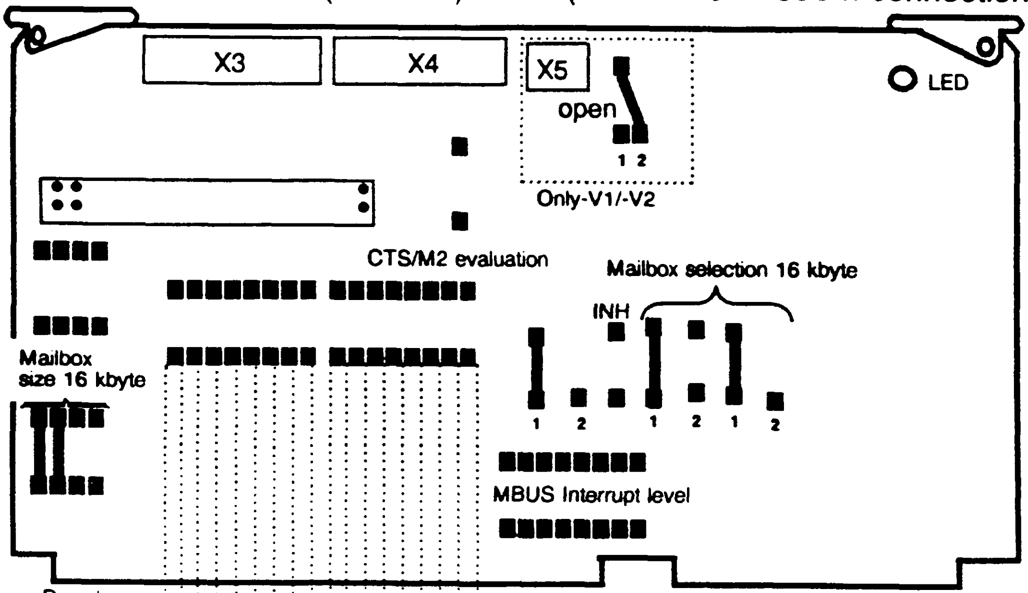
LED	H3 Line 1 green	H1 Error red	H2 Line 0 green
Meaning:			
After reset and Power-ON	short ON	short ON	short ON
Selftest runnig	blinking	OFF	blinking
Selftest failed	OFF	blinking	OFF
Selftest passed; SIM is waiting for loading	OFF	OFF	blinking
SIM-Software is loaded, but not configured	ON	OFF	ON
Short OFF after first Configurationmessage	OFF	OFF	OFF
At least one TAK on the line is active (Polling)	glowing	OFF	glowing
Datatransfer on the line	flaring	OFF	flaring
Always OFF when SIM is ready; but no TAK is configured	OFF	OFF	OFF
No TAK on the line is responding to polling	1)	OFF	1)
At least one TAK is active and at least one further TAK is not responding to polling	2)	OFF	2)
The SIM-Software has crashed, and no Diagnosticadaptor is connected to the Diagnosticport X3	OFF	fast blinking	OFF
The SIM-Software has crashed and the Diagnosticadaptor is connected to the Diagnosticport X3	OFF	ON	fast

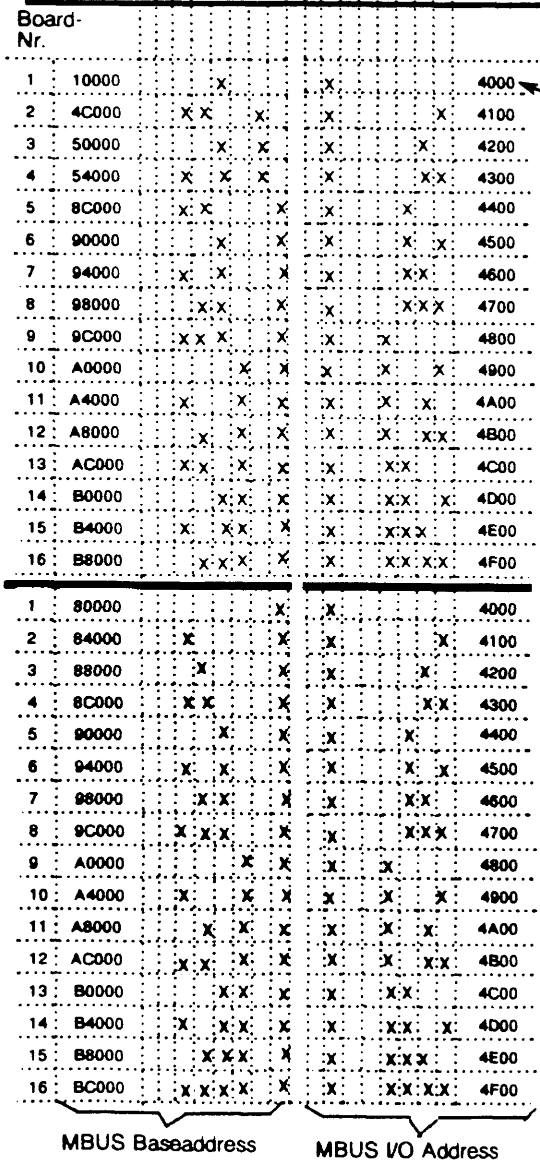
1) all 10 - 30 sec. 10 x short blinking
2) flaring or glowing and all 10 - 30 sec. short OFF

SEAAC (16 kbyte Mailbox)

I/O Controller

S26361-D501 - V1 (6 x SS97) / - V2 (4 x SS97, 2 x V.24)
- V3 (6 x V.24) / - V4 (6x V.24 for Modem connection)





X = closed

CTS/M2 evaluation:
open: CTS/M2 evaluation ON
closed: CTS/M2 evaluation OFF

1. DUEAI/K not allowed in same Multibus

4. DUEAI/K not allowed in same Multibus

NSC-Systems

These settings are only valid for the MX500 with the Operating System SINIX-F V5.2x

Connectors:

X3: Terminal or Lineadapter (Channel 0-2)

X4: Terminal or Lineadapter (Channel 3-5)

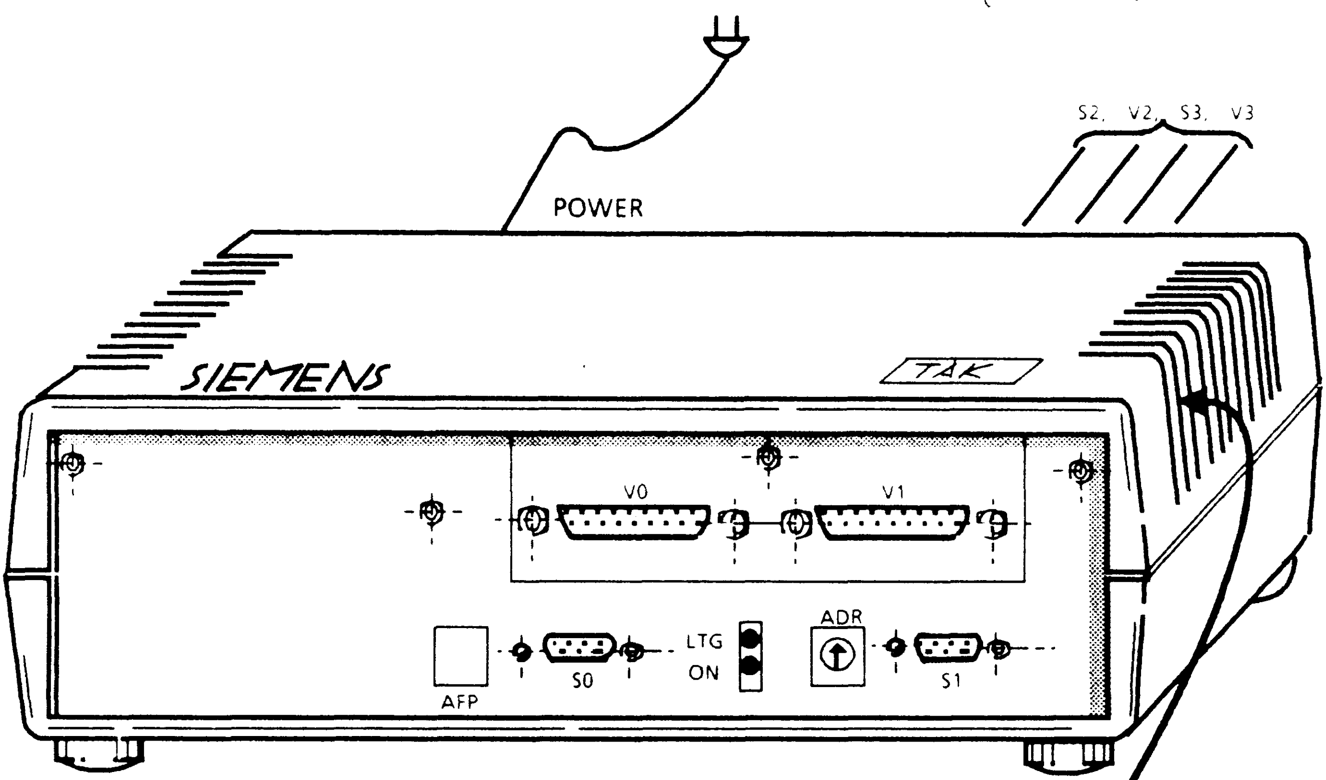
X5: not used

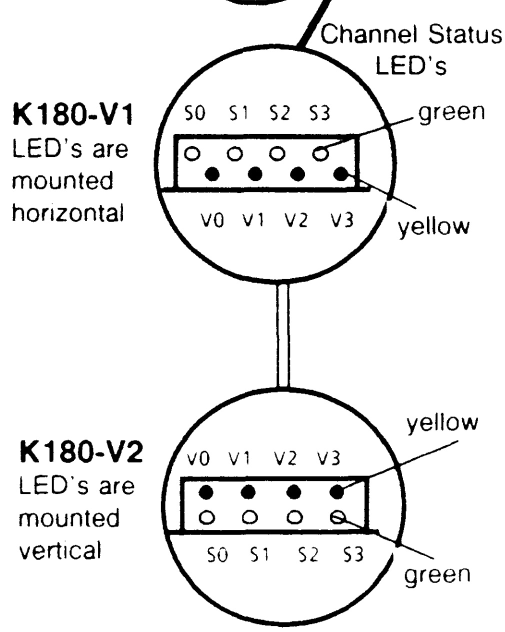
INTEL-Systems

These settings are only valid for the MX500 with the Operating System SINIX-M V5.4x

TAK
S26361-K180-V1
S26361-K180-V2 (loadable)

Terminal-Attachment-Concentrator
4 V24
4 SS97





Switch: ADR: Higher Halfbyte of the HDLC-Address (corresponding to TAK-number)

Indicators:

LTG:	ON/flaring if the HDLC-Line is active
ON:	Power ON
S0 - S3:	ON if the Channel (SS97-Lines) is active
V0 - V3:	ON if the Channel (RS232-Lines) is active

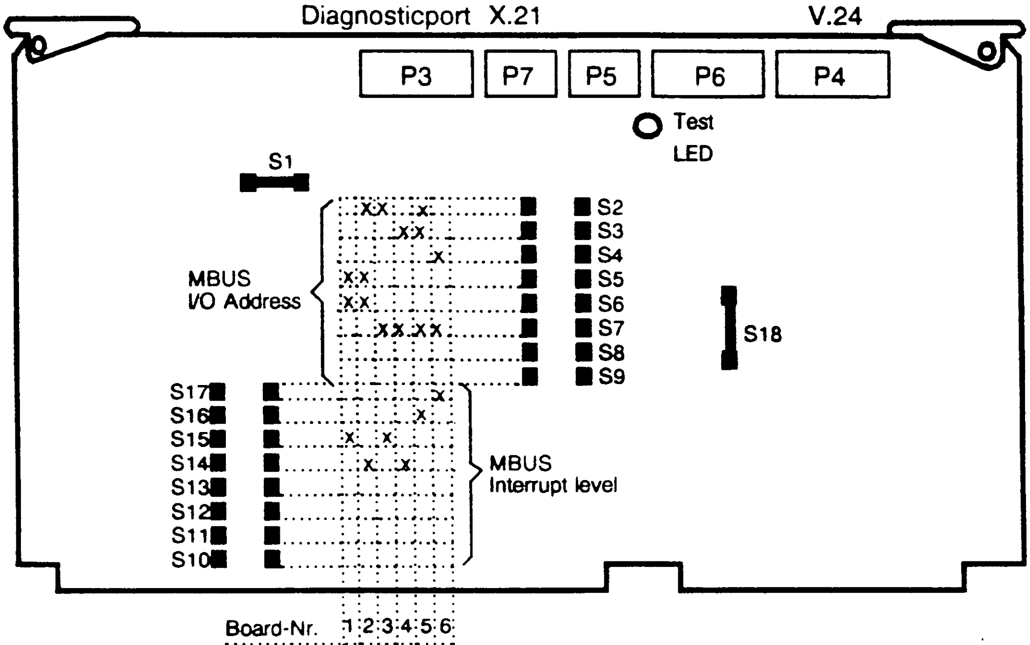
Connectors:

S0 - S3:	SS97, Channel 0 - 3
V0 - V3:	RS232, Channel 4 - 7
AFP:	AFP-2wire Network

DUEAI

Communication Controller

S26361- D277- V2



Type of Boards, which are not allowed in same Multibus	Board-Nr.	MBUS I/O Address	MBUS Interrupt level
3. DUEAI/K, all SIM; 1. SEAAB/C 16Kbyte	1	1800	5
4. DUEAI/K, all ADP32;	2	1900	4
1. DUEAI/K, all SIM;	3	2100	5
2. DUEAI/K, all ADP32; 3./4. SIM; 3./4. SEAAB/C 16Kbyte	4	2200	4
DTC 86	5	2300	6
XYL 472	6	2400	7

Configuration Switches:

S1, S18: CLOSED (only for Test)

S10-S17: Multibus Interrupt Level

S:	17	16	15	14	13	12	11	10	Dip-Fix
	7	6	5	4	3	2	1	0	INT #

S2-S9: Multibus I/O Address

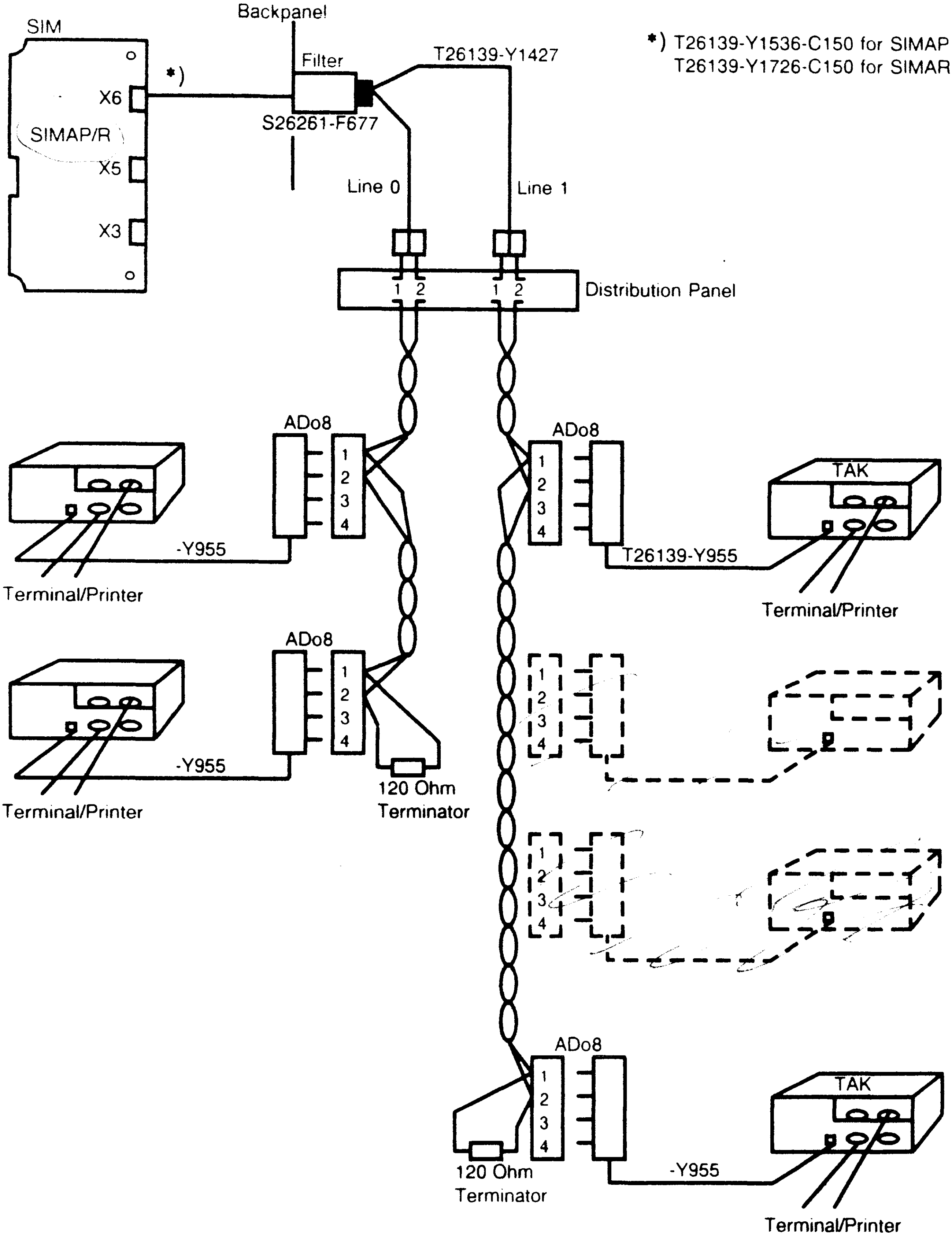
S:	9	8	7	6	5	4	3	2	Dip-Fix
	F	E	D	C	B	A	9	8	Addressbits

Attention:
Please make sure that no Interrupt is used twice in the same Multibus-Cage.

TACSI

Terminal Attachment Concept SINIX

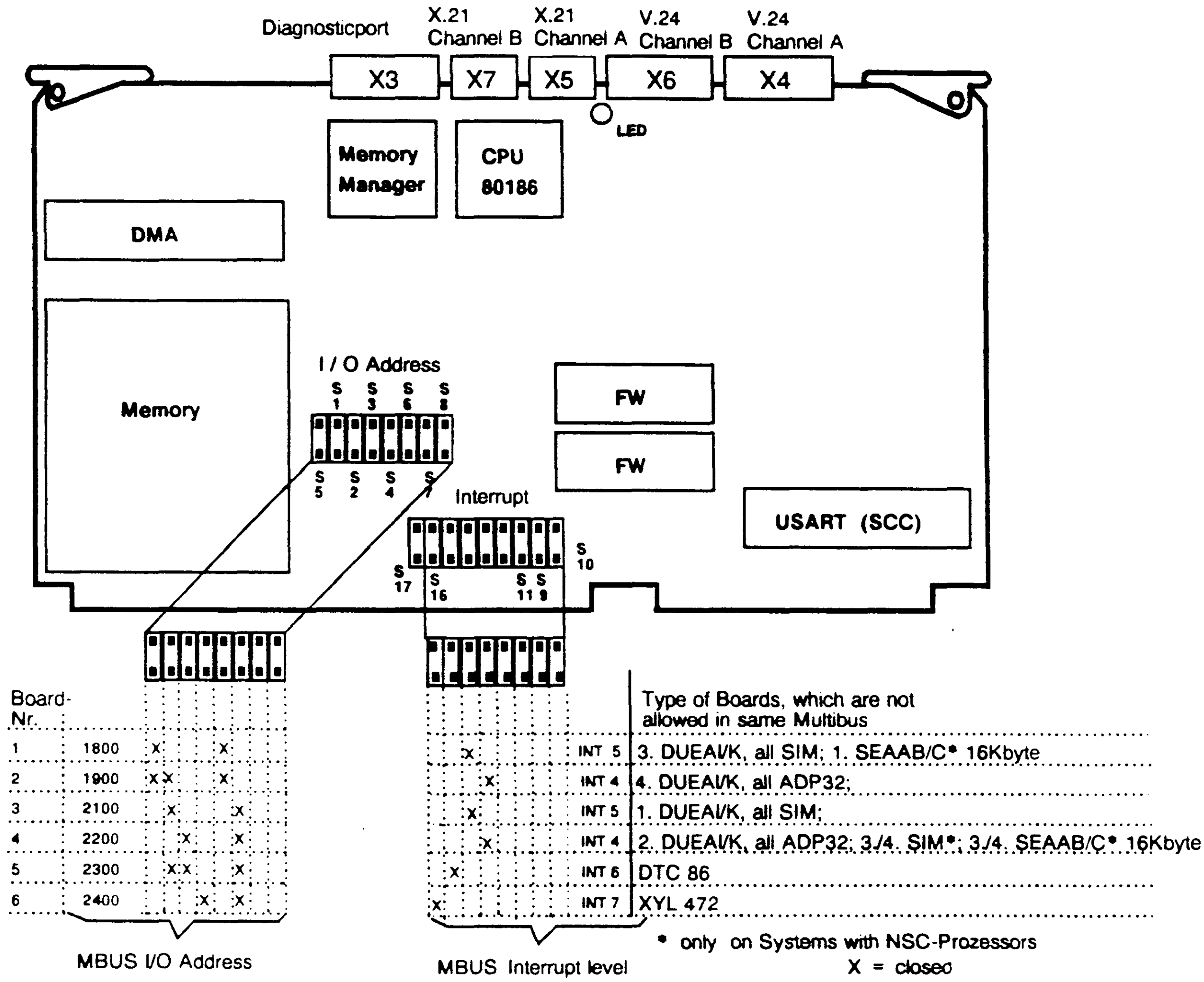
Cable layout diagram



DUEAK

Communication Controller

S26361 - D419 or S26261-D419-V1



Indicator

LED:	ON:	Selftest failed
	flashing:	Selftest good
		Software not loaded
	OFF:	Loading Software

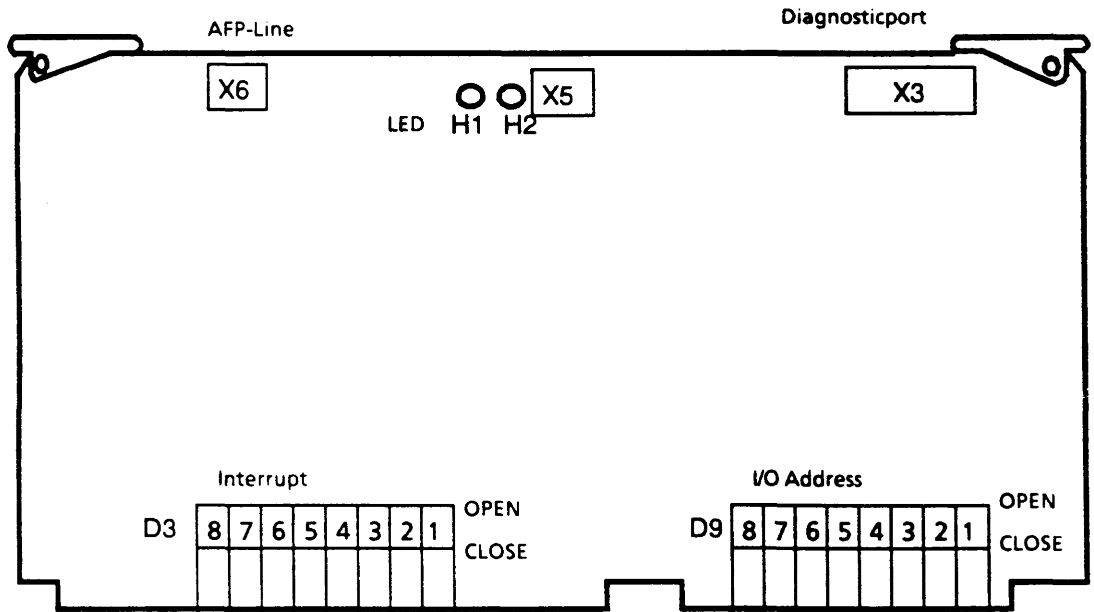
Switch

S17 (only -V1): open - with INHIBIT Signal

Attention:
Please make sure that no Interrupt is used twice in the same Multibus-Cage.

SIMAP
S26261-D544

Serial Interface Multiplexer SIM



Board Nr.	INT-Nr.	8	7	6	5	4	3	2	1
1	5						X		
2	5						X		
3	5						X		
4	5						X		
5	5						X		
6	5						X		
7	5						X		
8	5						X		
9	5						X		
10	5						X		
11	5						X		
12	5						X		
13	5						X		
14	5						X		
15	5						X		
16	5						X		

I/O-Address	8	7	6	5	4	3	2	1
5000					X		X	
5100	X				X		X	
5200		X			X		X	
5300	X	X			X		X	
5400			X		X		X	
5500	X		X		X		X	
5600		X	X		X		X	
5700	X	X	X		X		X	
5800				X	X		X	
5900	X			X	X		X	
5A00		X		X	X		X	
5B00	X	X		X	X		X	
5C00			X	X	X		X	
5D00	X		X	X	X		X	
5E00		X	X	X	X		X	
5F00	X	X	X	X	X		X	

} 4. DUEAI/K not allowed in same Multibus (only NSC-Machines)

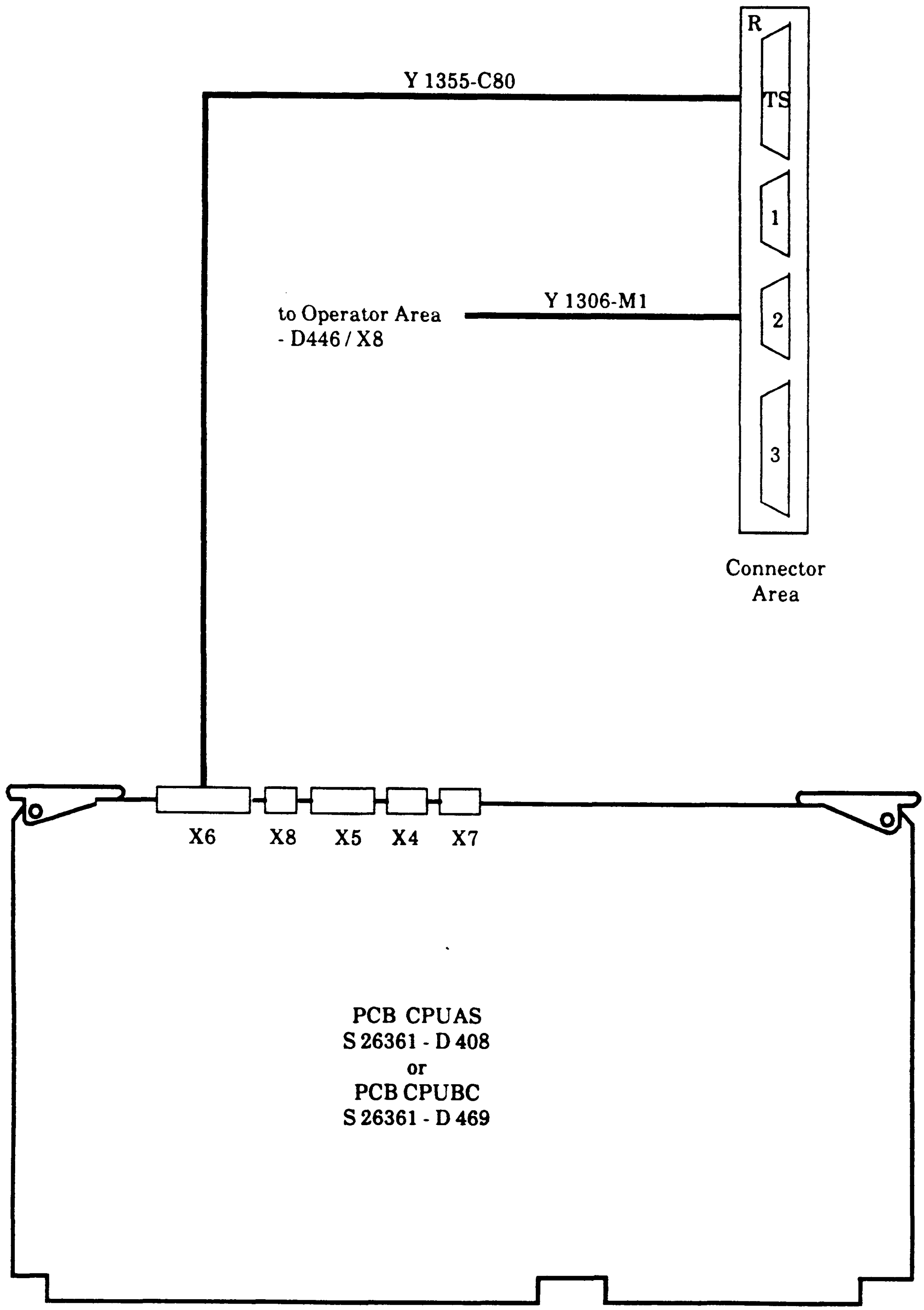
X = CLOSE

Indicator

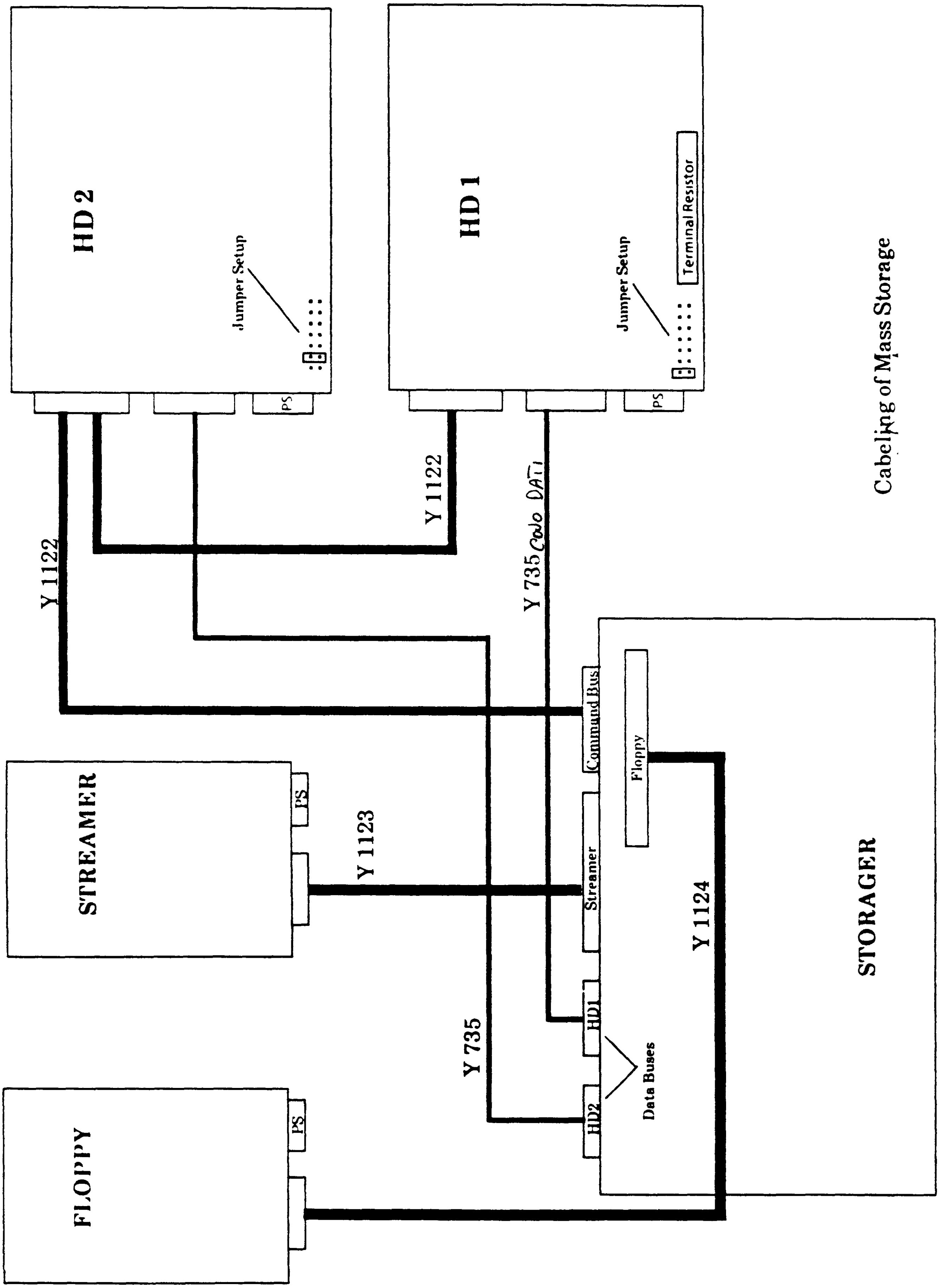
LED	H1 (red)	short ON:	after Power on and Reset
		flashing:	Indicates an Selftest error
		ON:	Indicates an Error
	H2 (green)	Short ON:	after Power on and Reset
		flasching:	Board ready for loading
		ON:	Software is loaded

4 Cable Layout

Cable Layout CPU

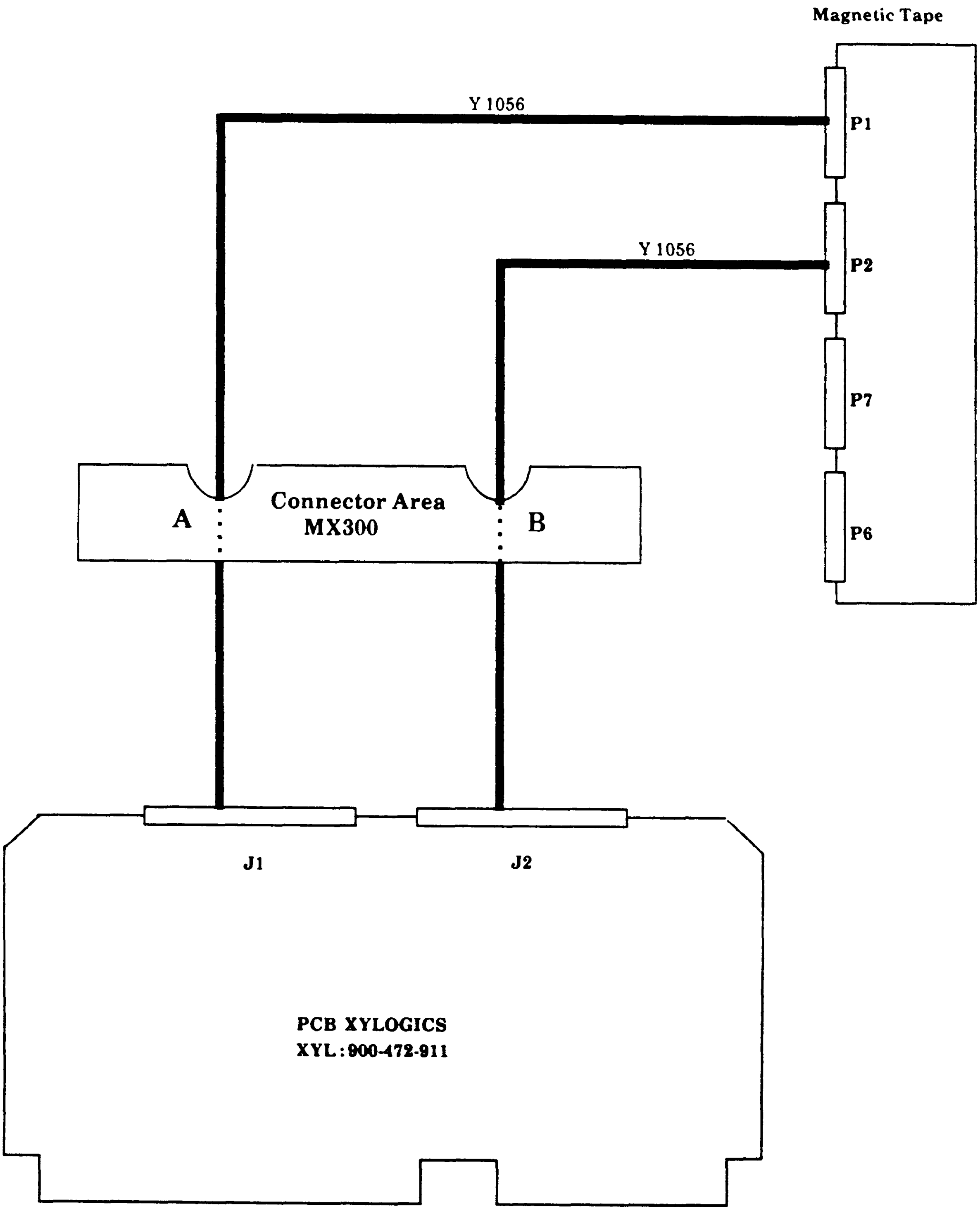


Cable Assignment to Mass Storages

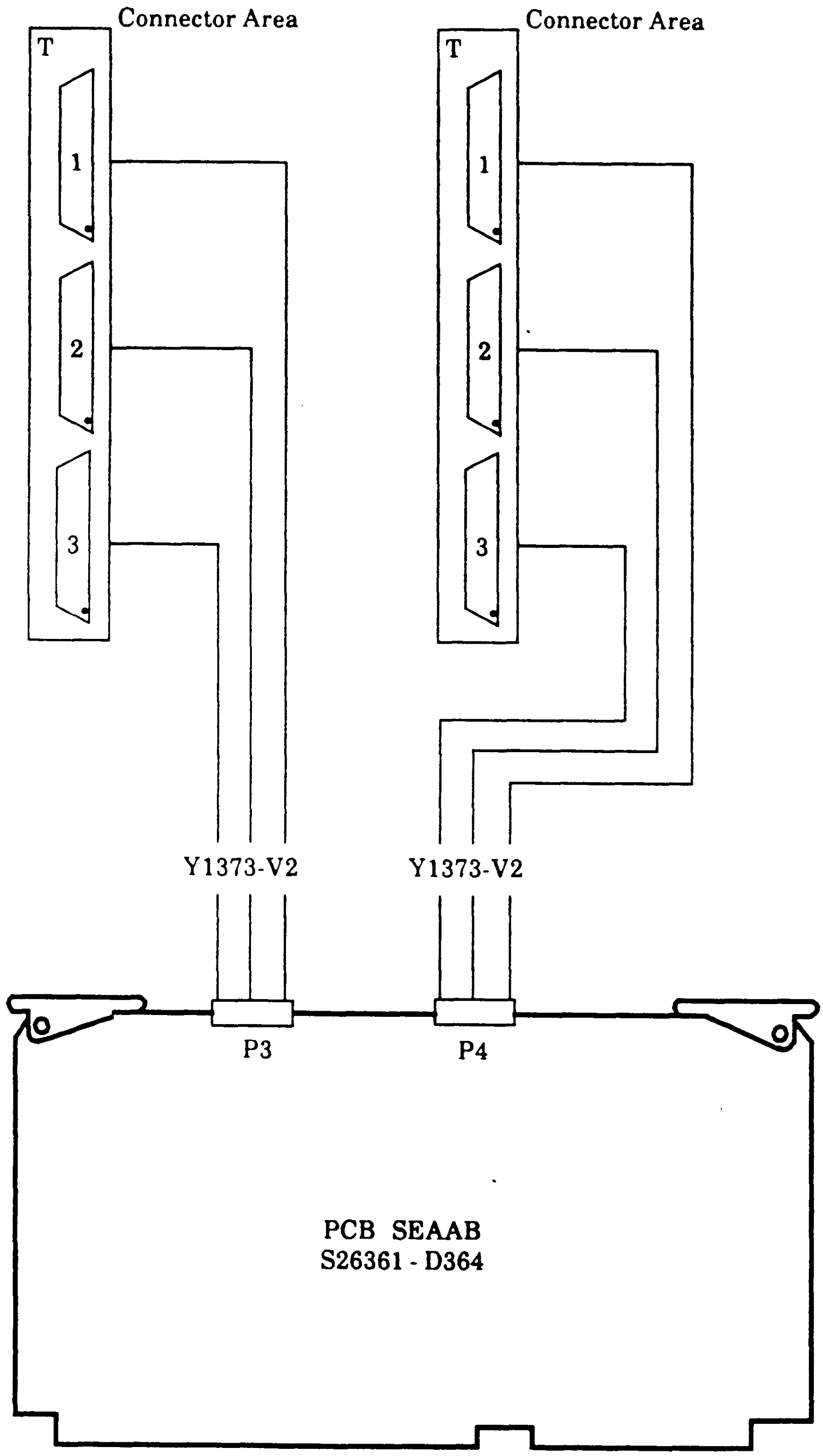


Cabeling of Mass Storage

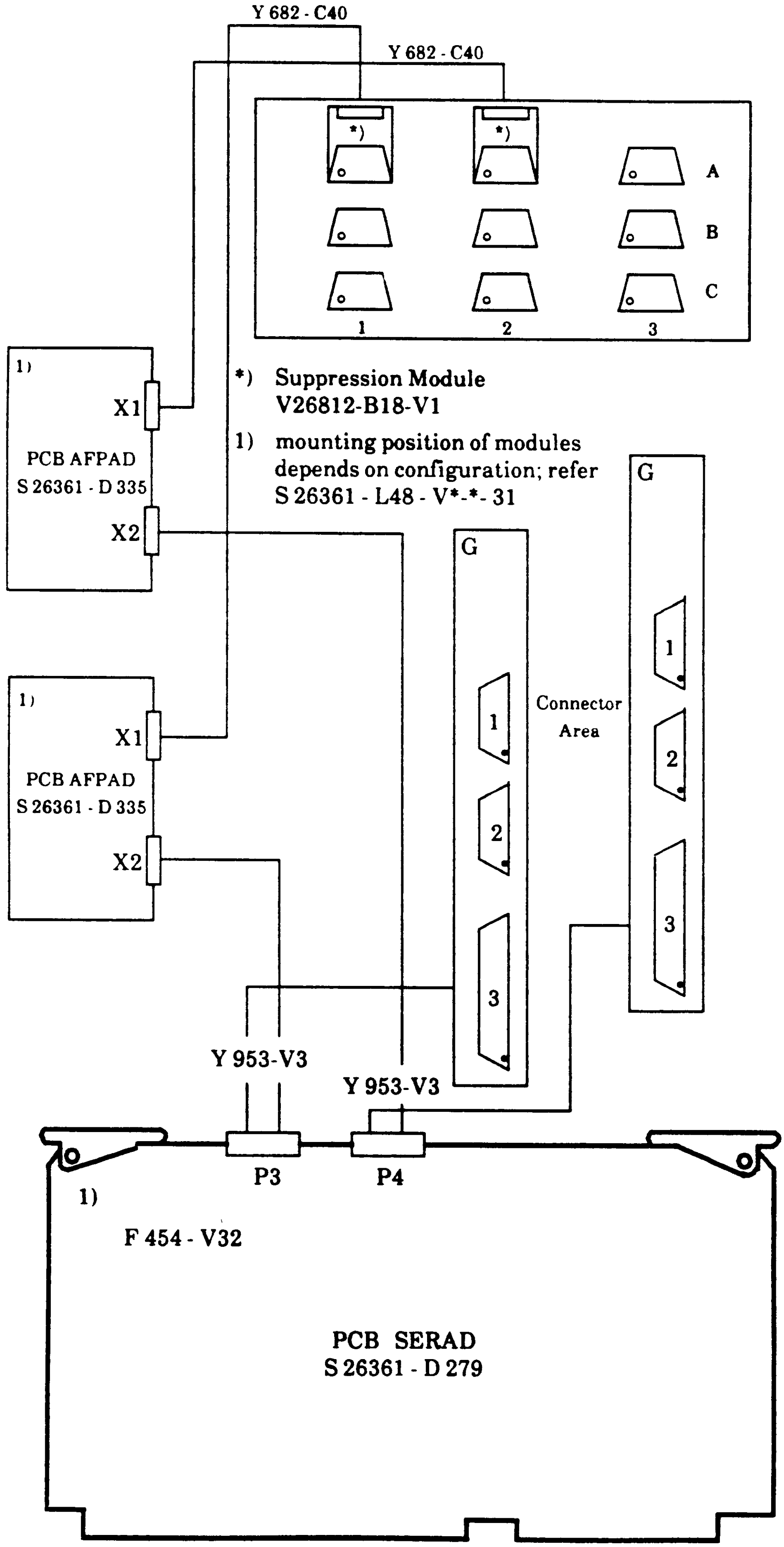
Cable Assignment to Magnetic Tape 3504 (FS1000)



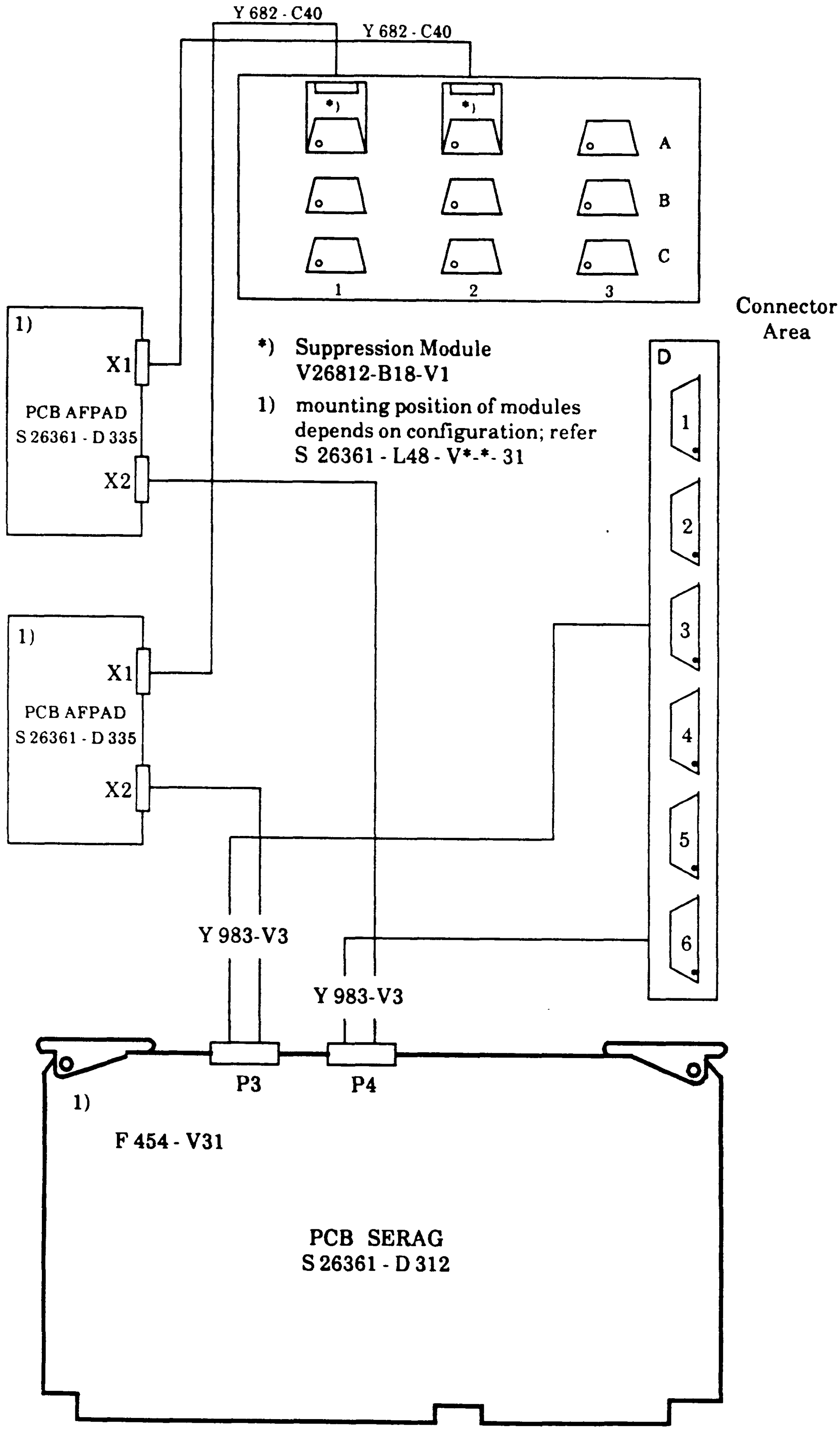
Cable Layout SEAAB



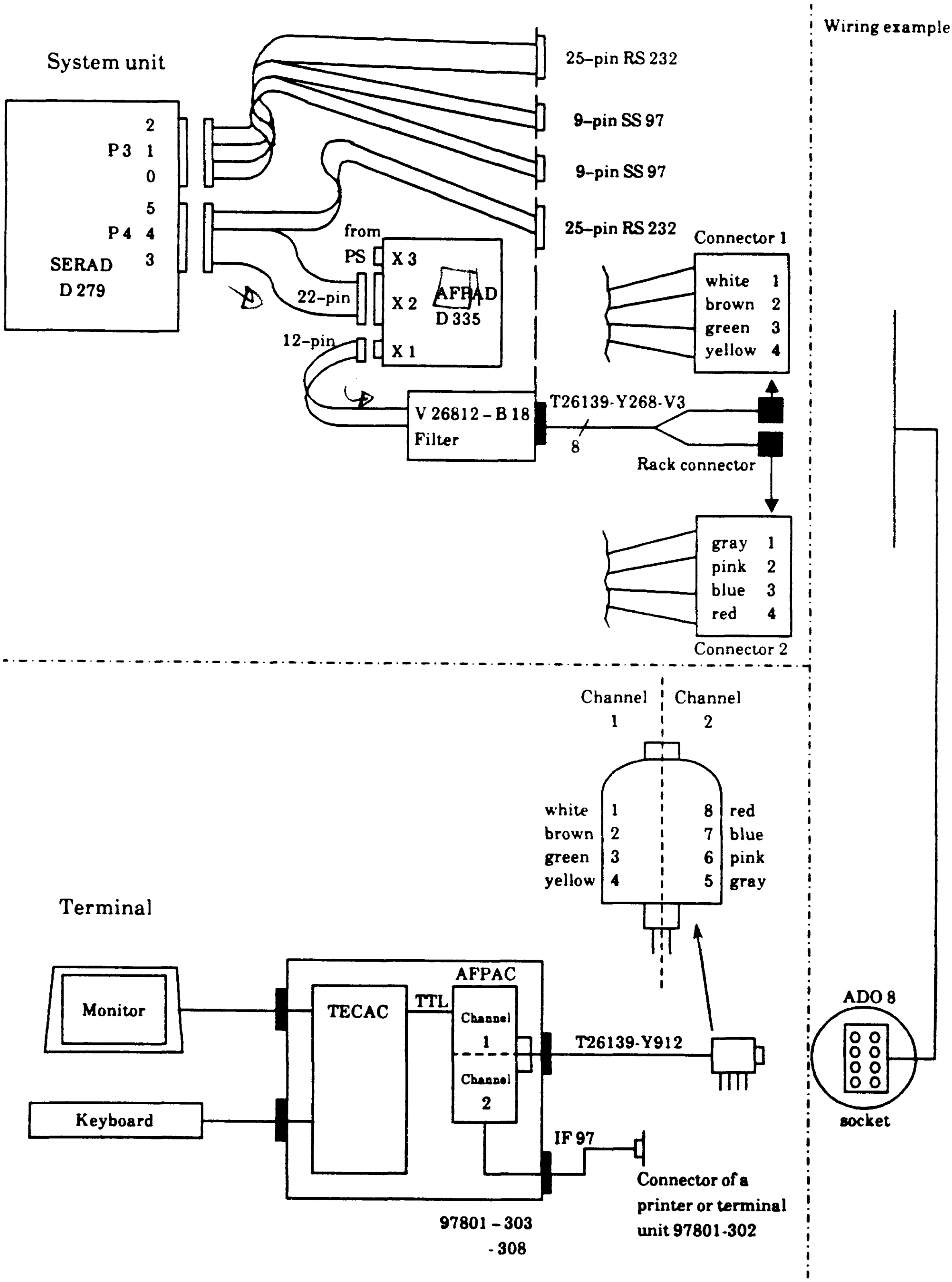
Cable Layout SERAD / AFP



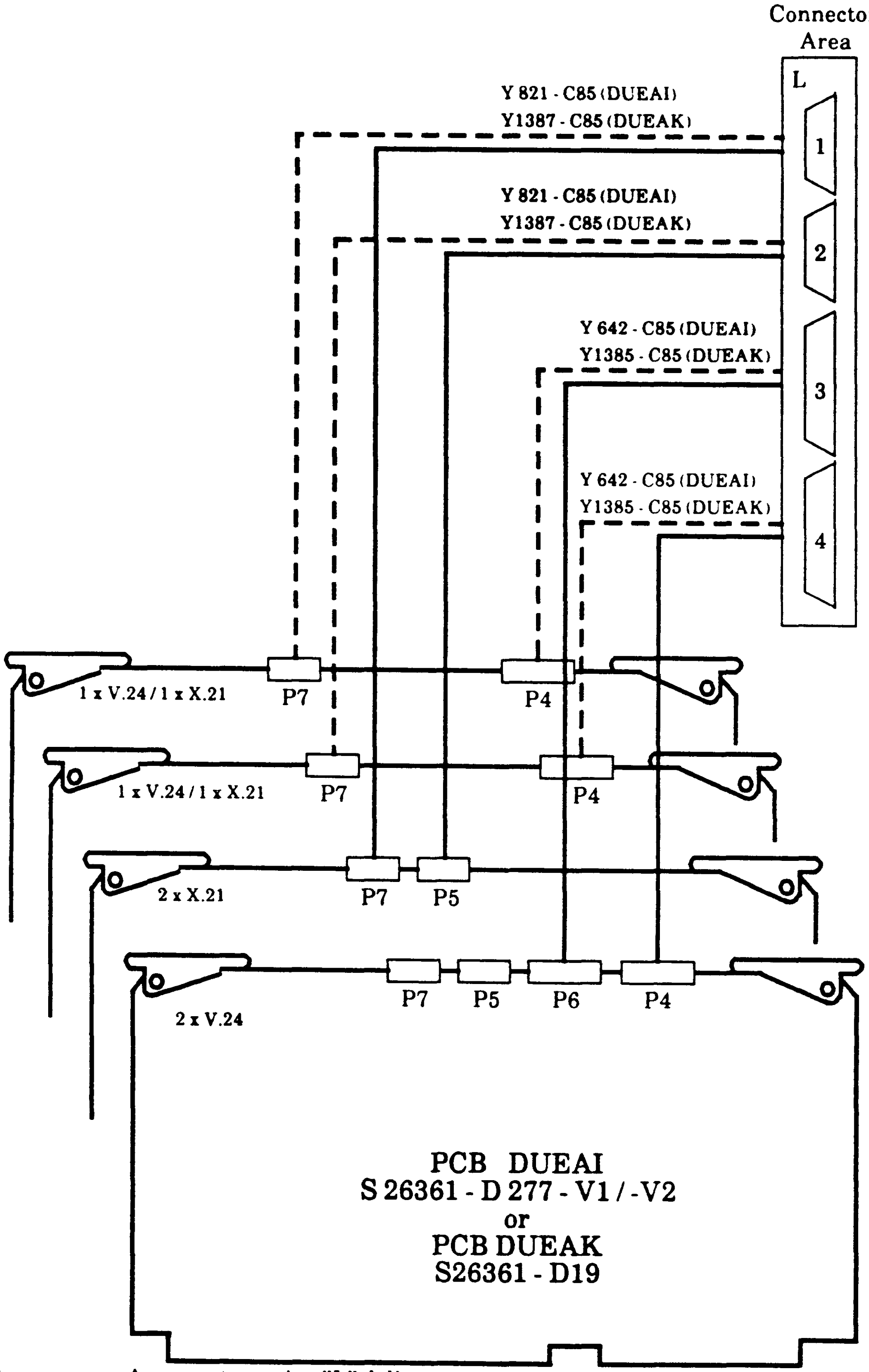
Cable Layout SERAG / AFP



AFP Connection Cable Layout



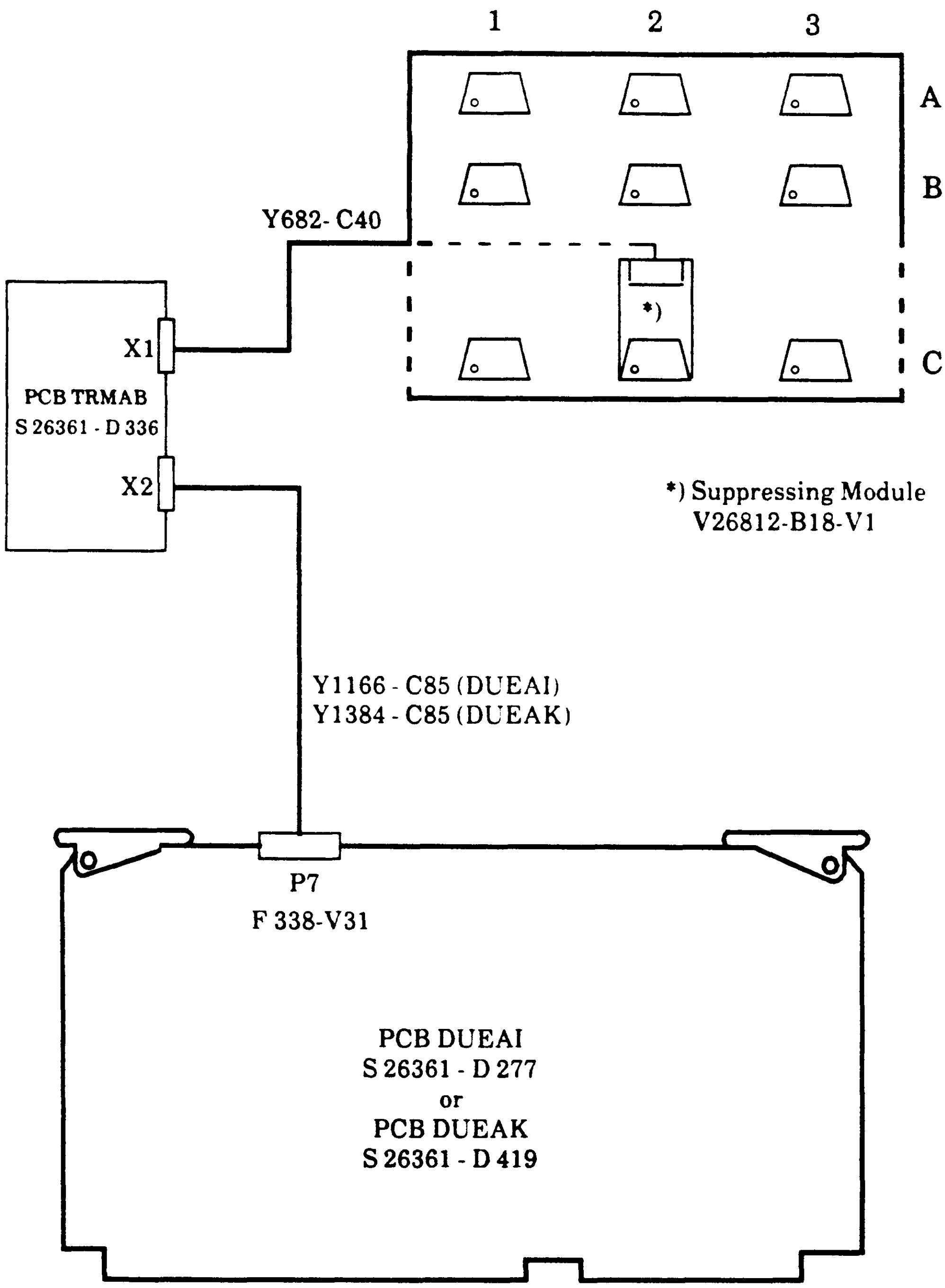
Cable Layout DUEAI / DUEAK



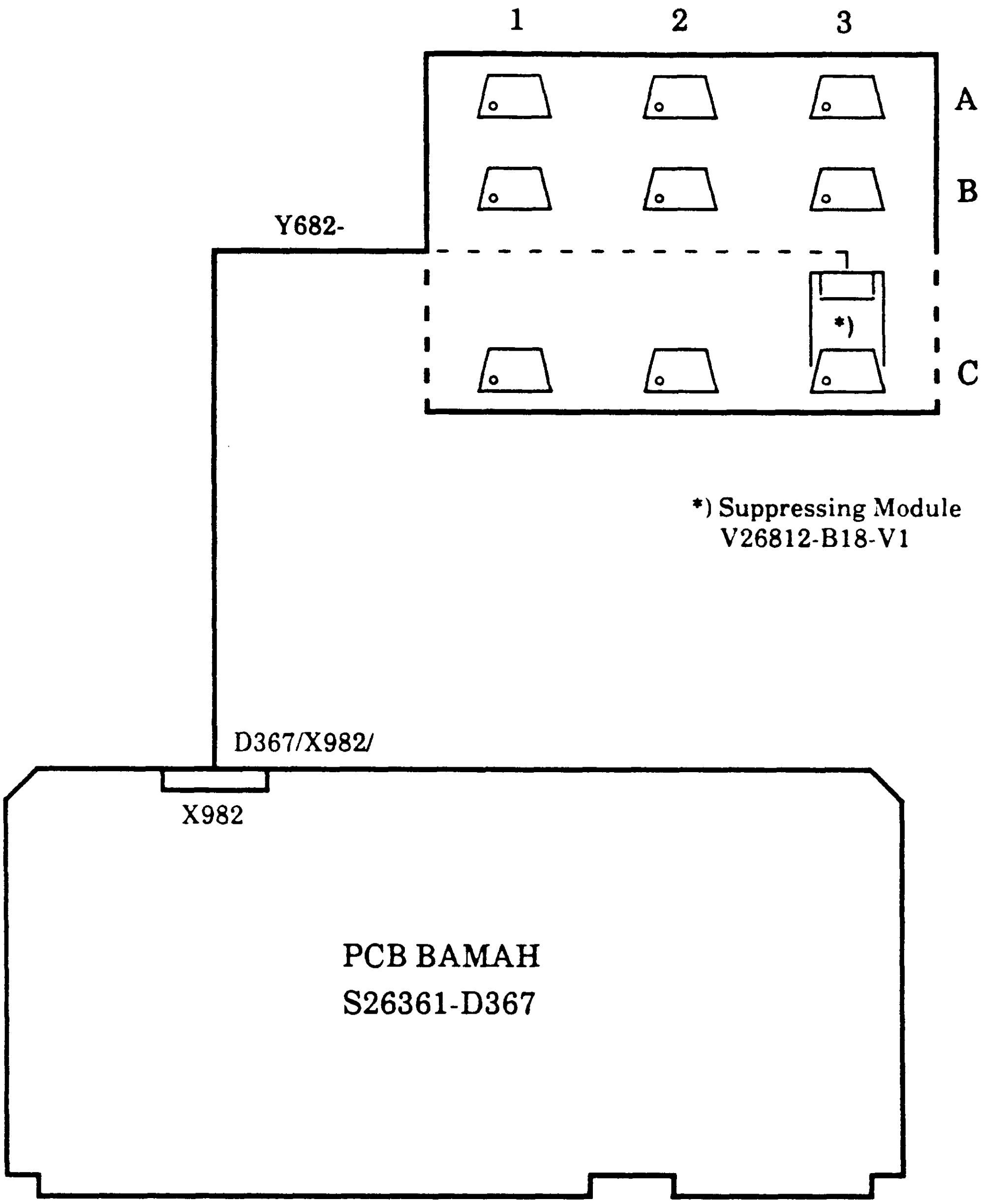
Note: A connector stripe "L" delivers up to:
- 2 communication processors with each 1 x V.24 / 1 x X.21 (---) or
- each with 2 x X.21 and one with 2 x V.24 (—)

Plug free mounting places with a blind plate inside (like a plug).

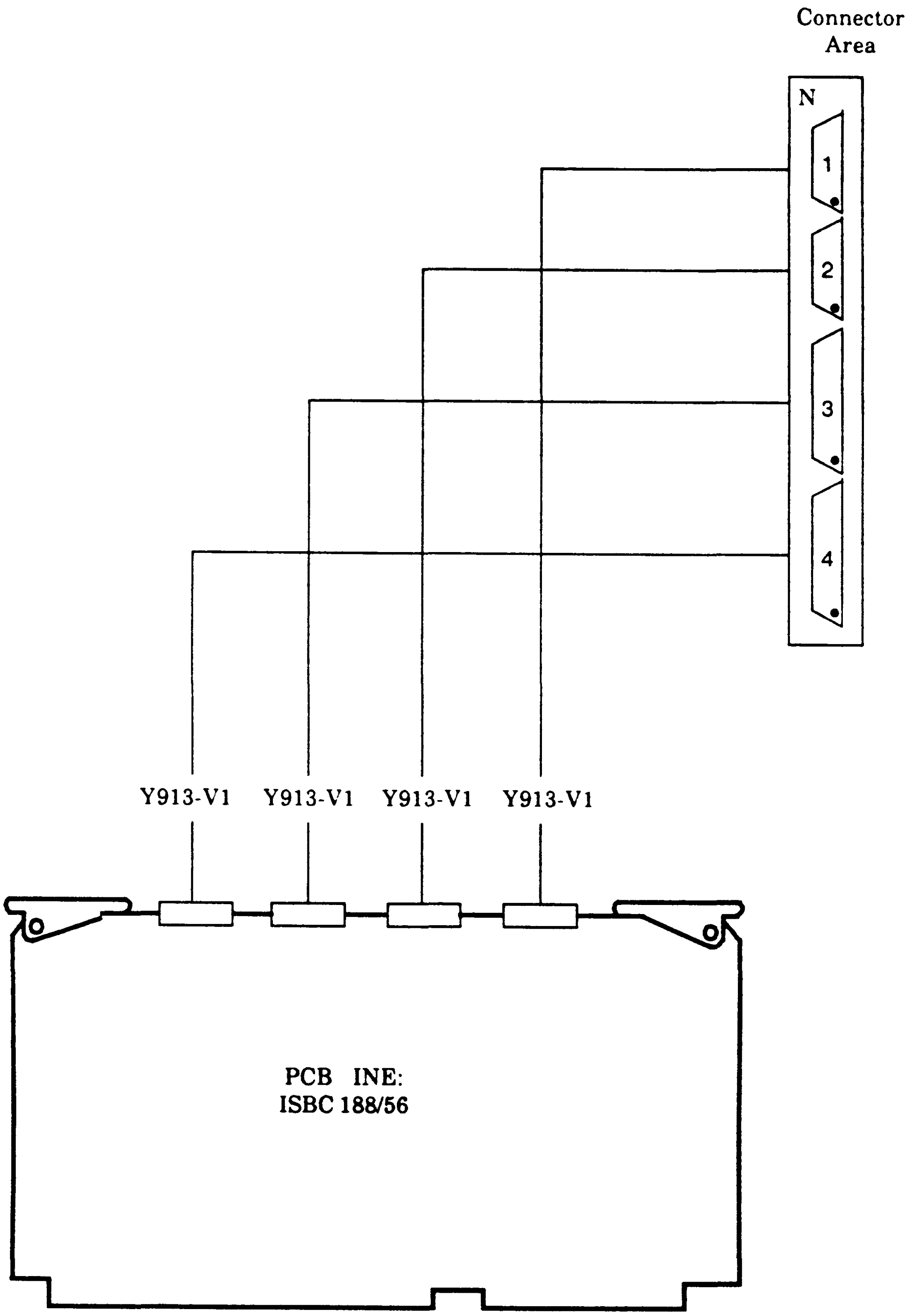
Cable Layout HDLC / TRM



Cable Layout BAM

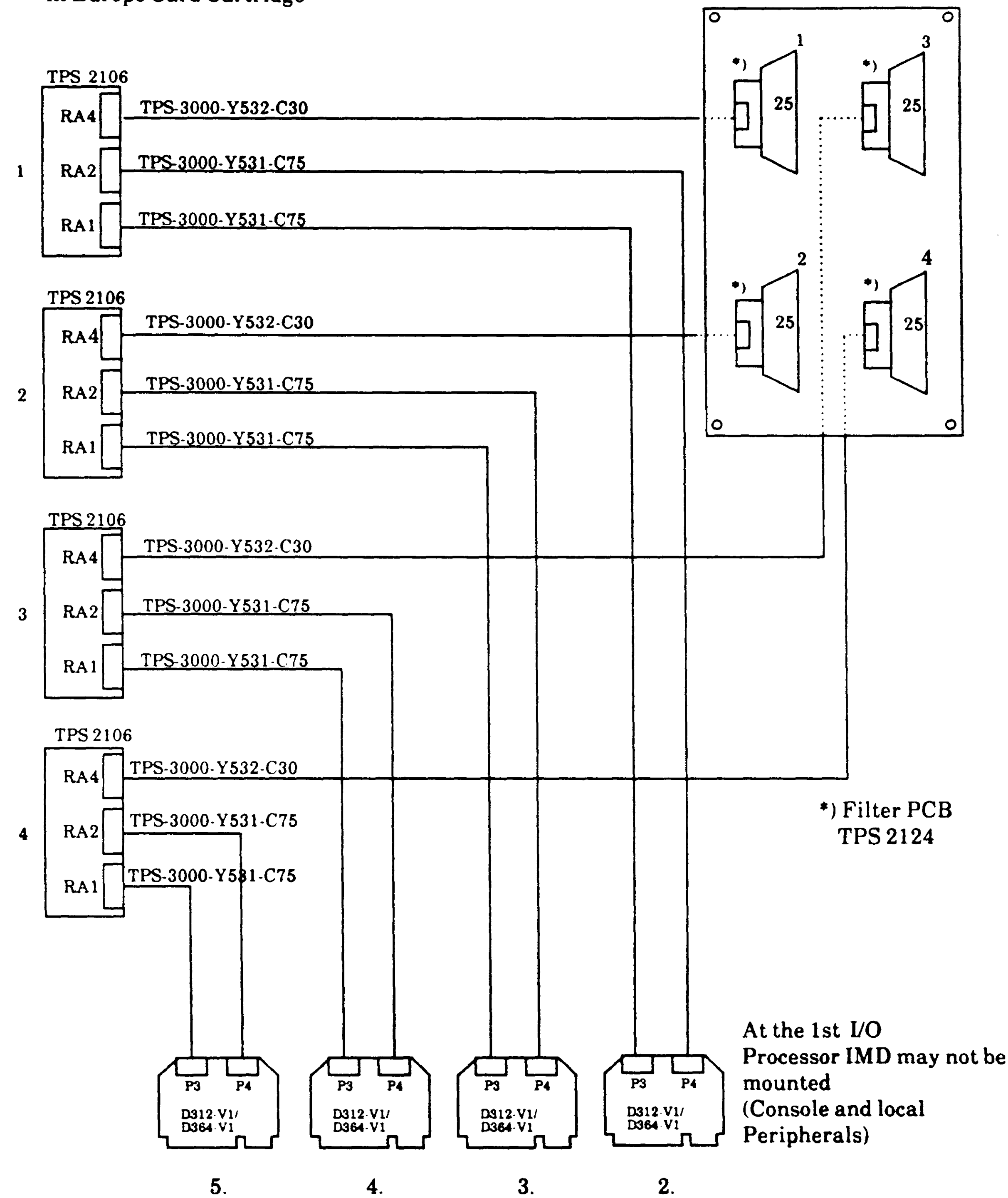


Cable Layout INE: ISBC 188/56



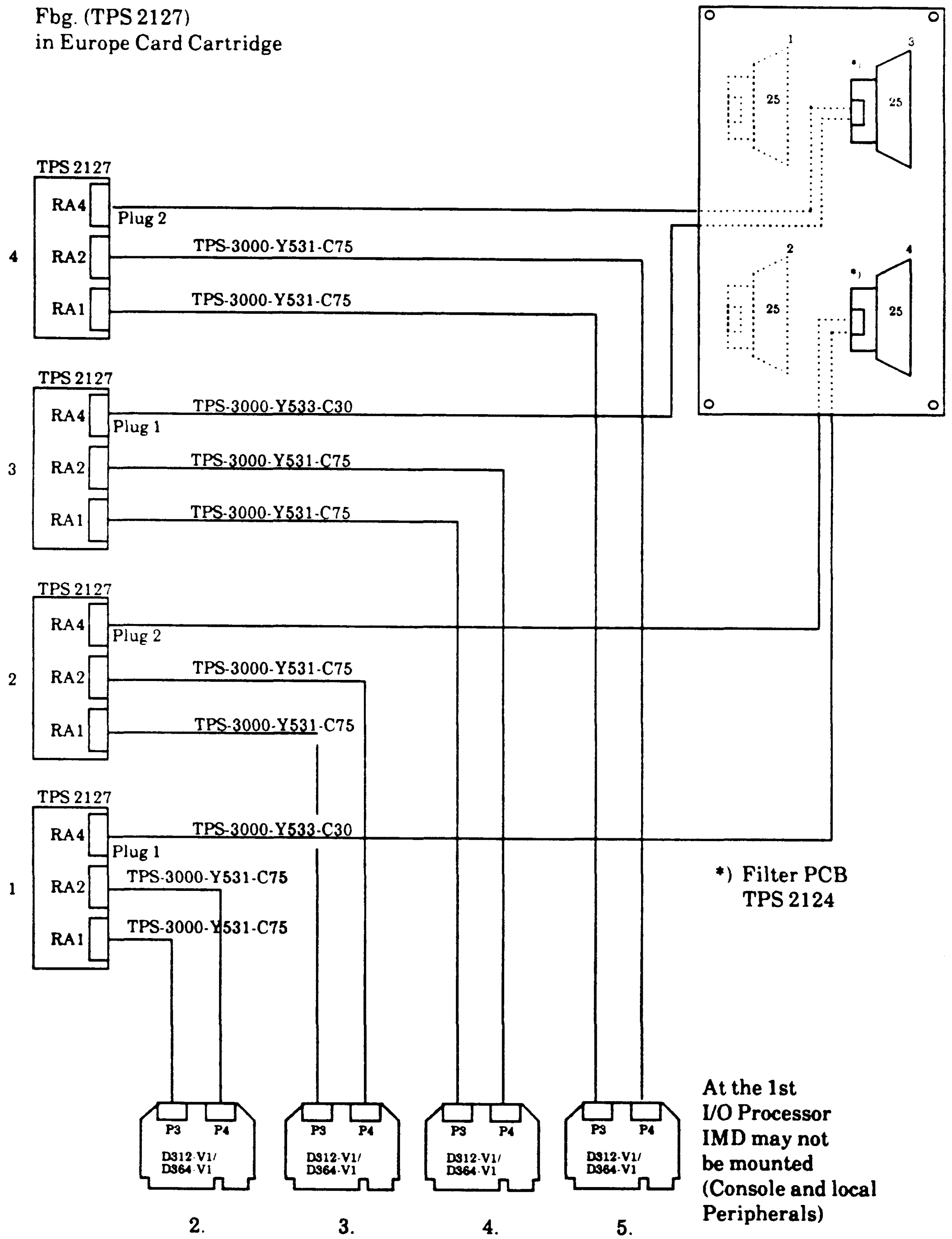
IMD 1 Channel

PCB (TPS 2106)
in Europe Card Cartridge



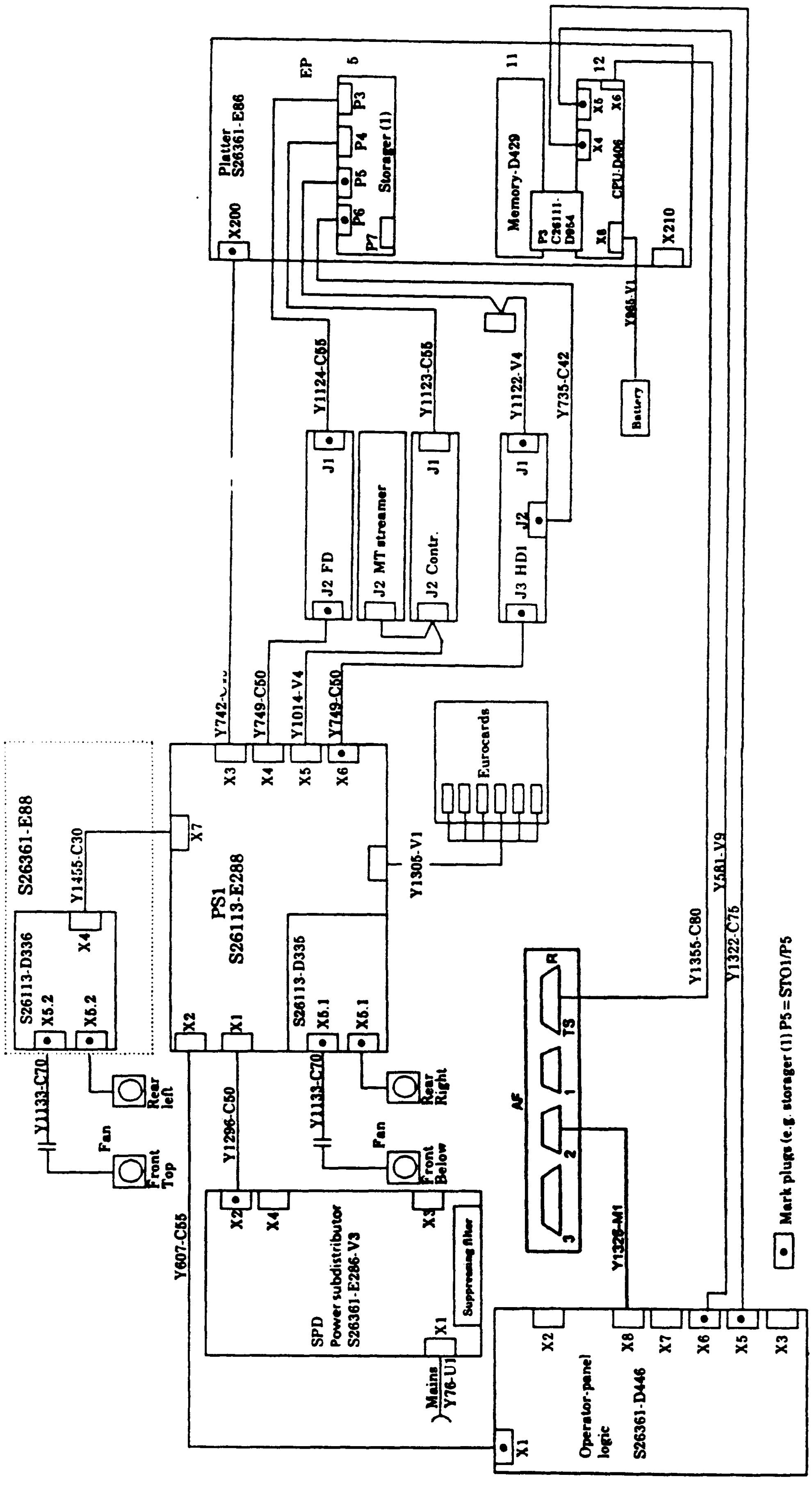
In case of minor configuration the IMD PCBs (TPS 2106) 2.-4. and the Filter PCBs (TPS 2124) of the correspondent configuration are not used.

IMD 2 Channel

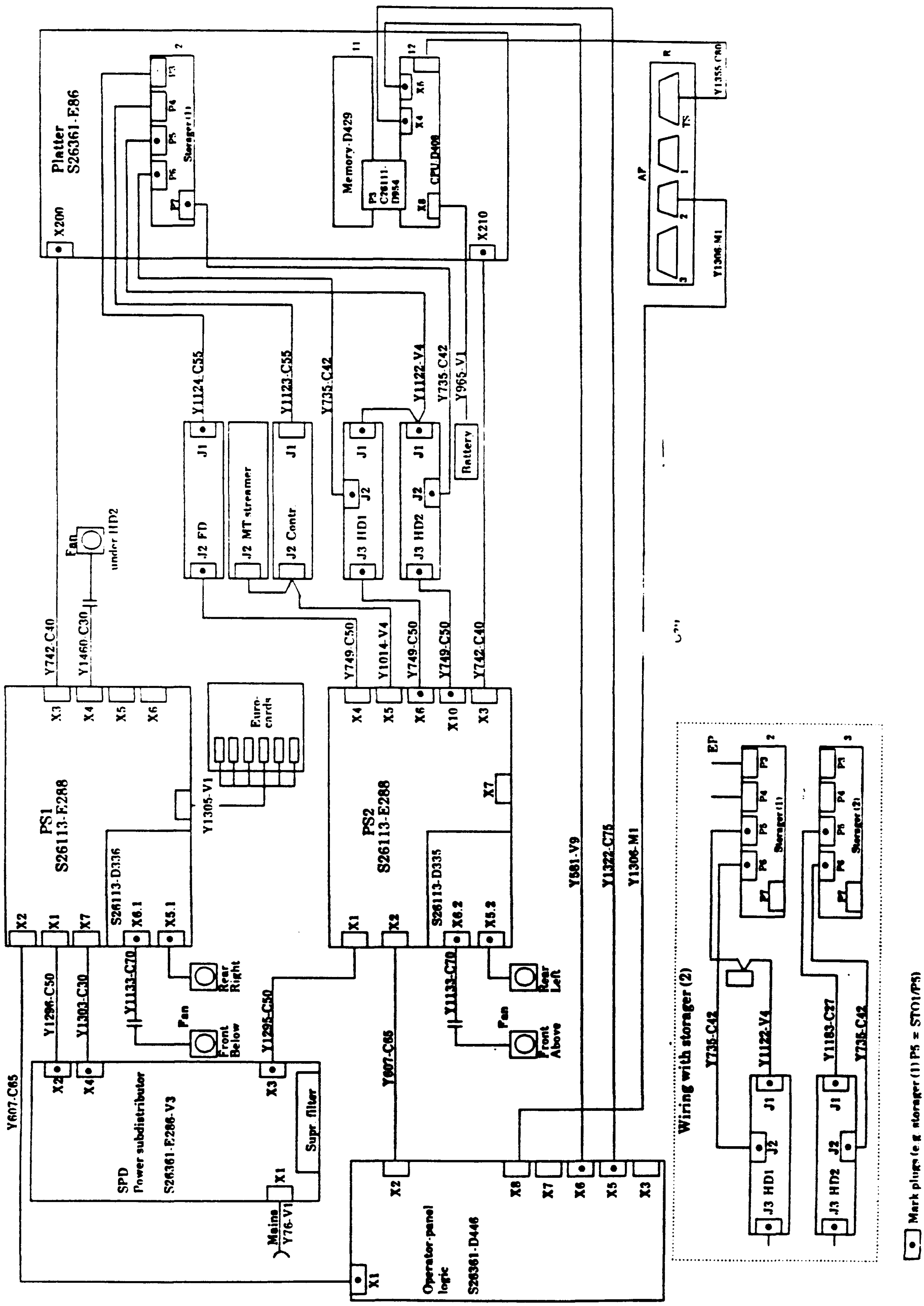


In case of minor configuration the IMD PCBs (TPS 2127) 2.-4. and the Filter PCBs (TPS 2124) of the correspondent configuration are not used.

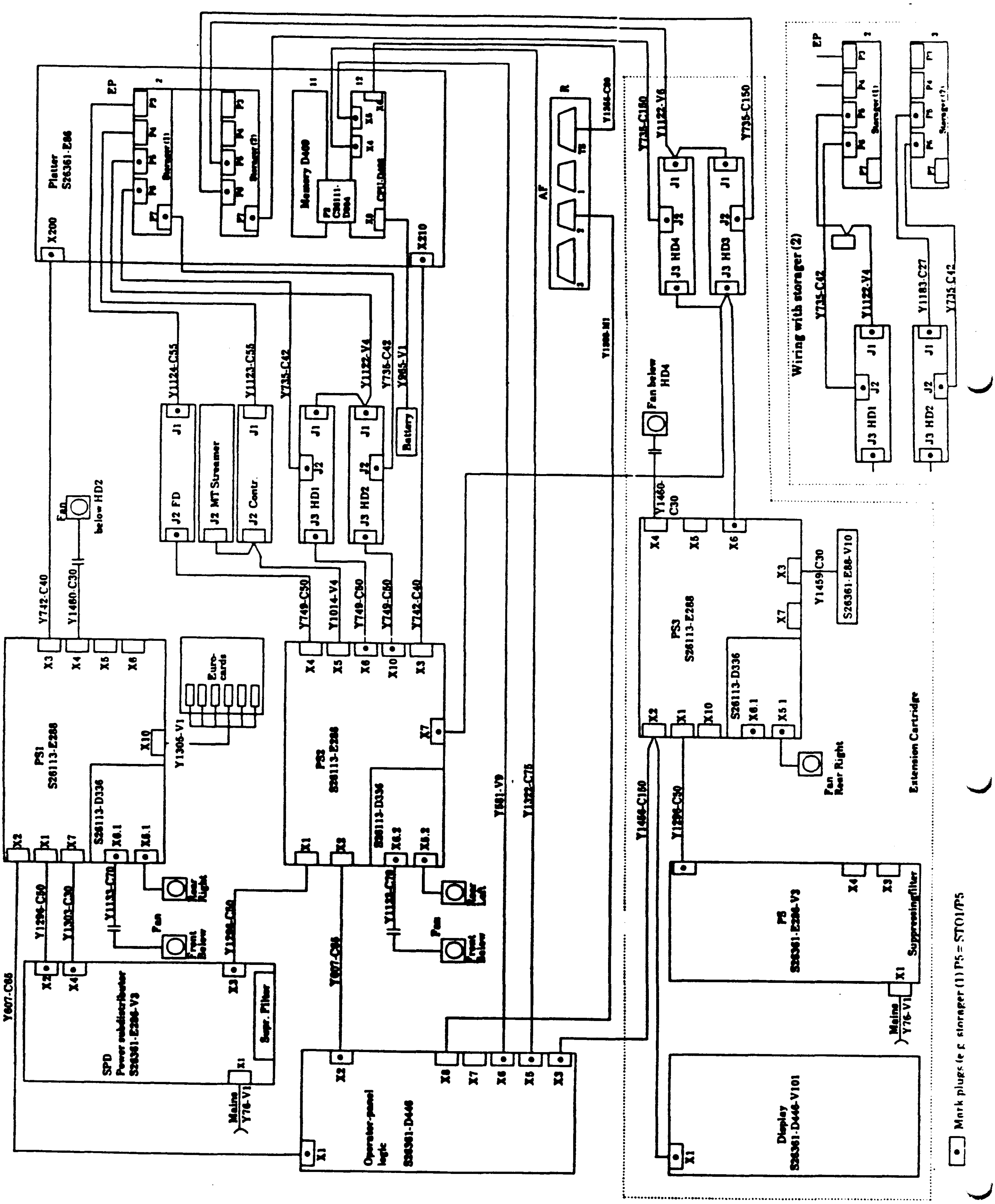
Basic Unit MX300-10



Basic Unit MX300-20

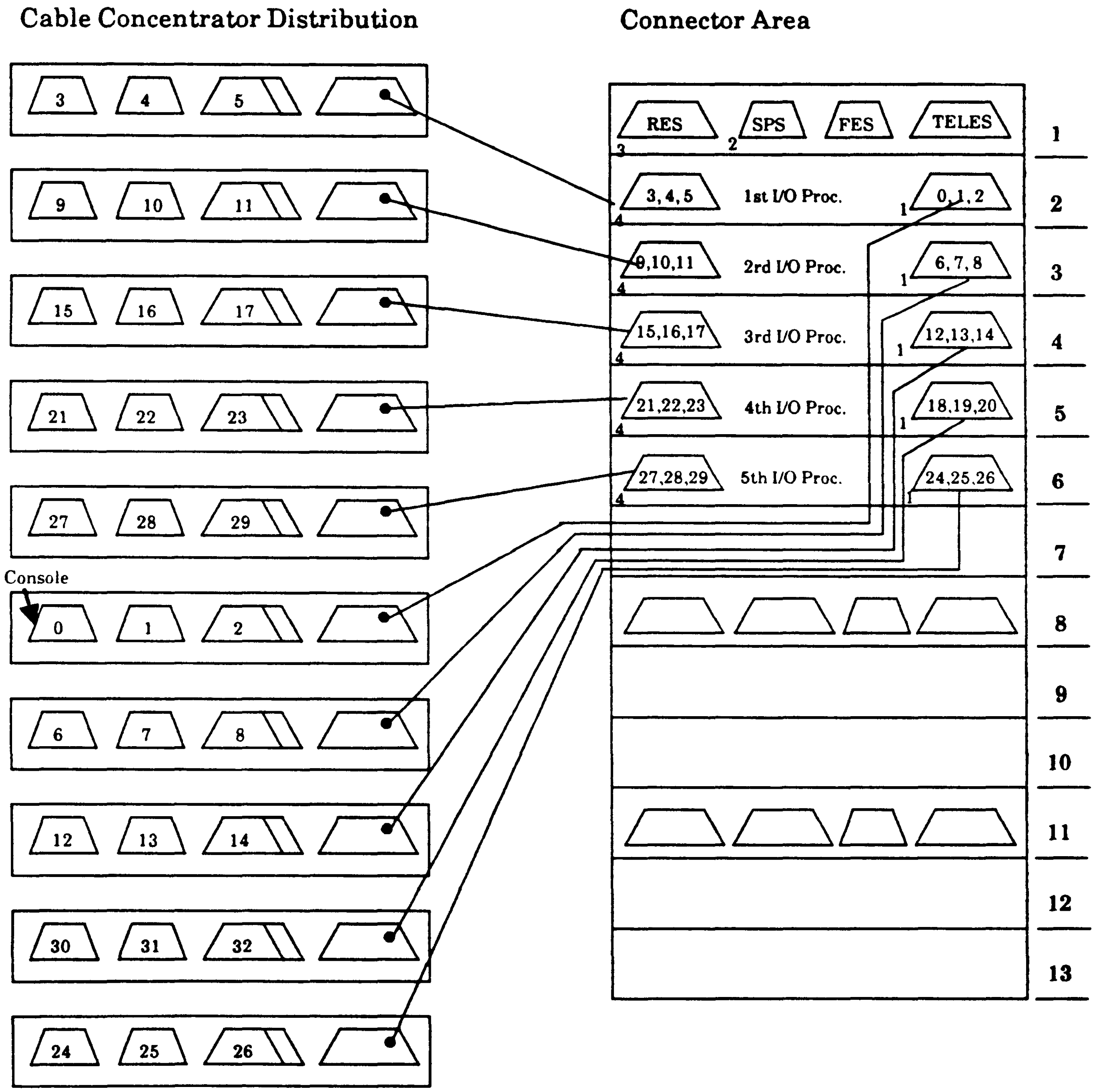


Extension Cartridge (include Basic Unit MX300)

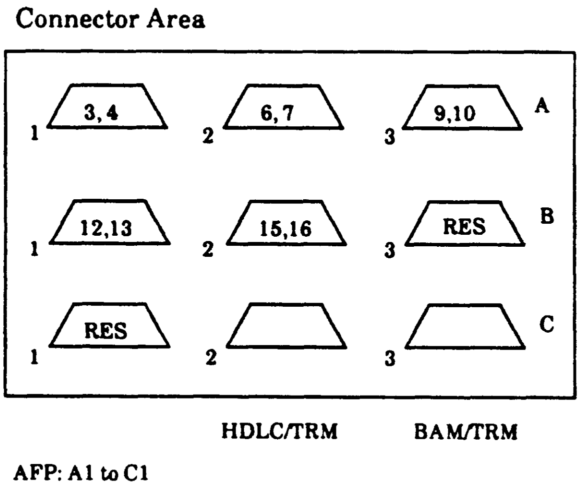


5 Connector Area MXB2

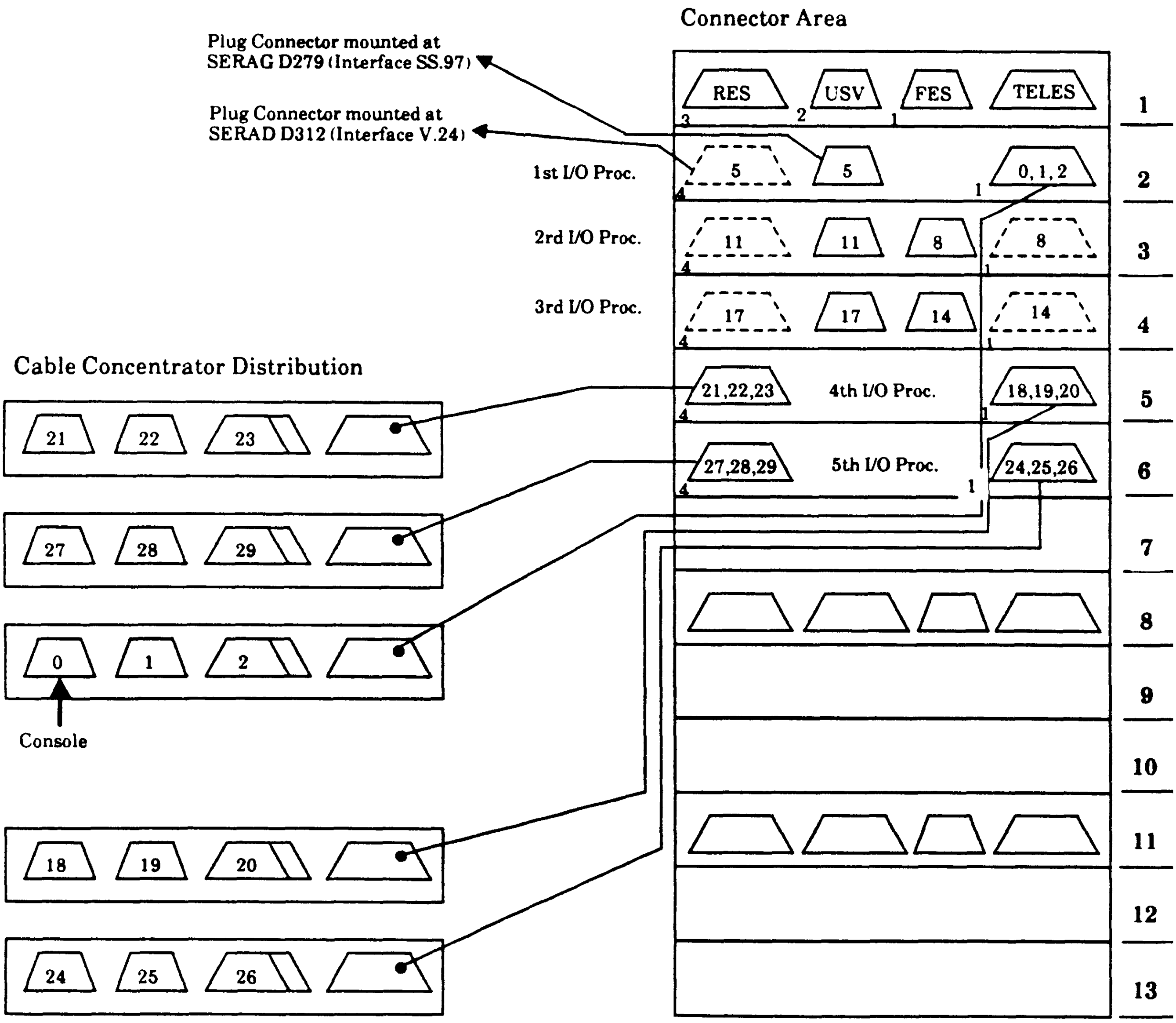
Numbering of Channels at the Connector Area with maximum Configuration without AFP



Numbering of Channels at the Connector Area with maximum Configuration with AFP



4



SIEMENS

Part IV
Mounting / Demounting

MX300 Frame
Mounting / Demounting

Installation of the Additional
Frame for the MX300

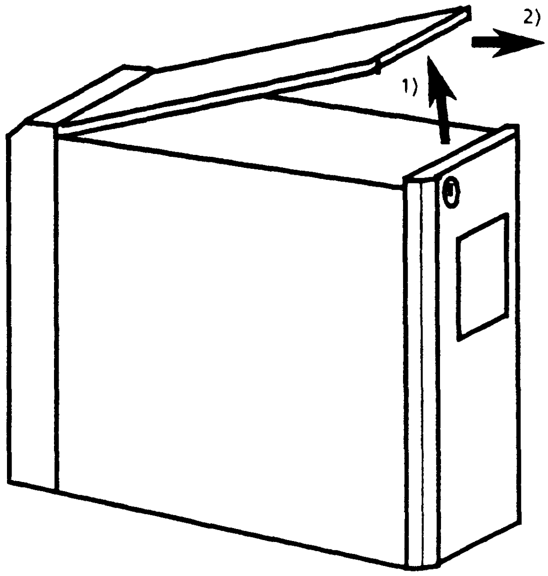
Part IV

Mounting / Demounting

Contents

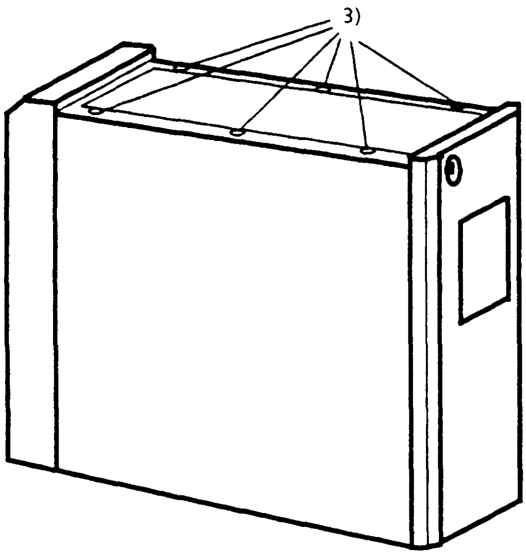
1 Frame MX300 - Mounting / Demounting

Demounting the frame

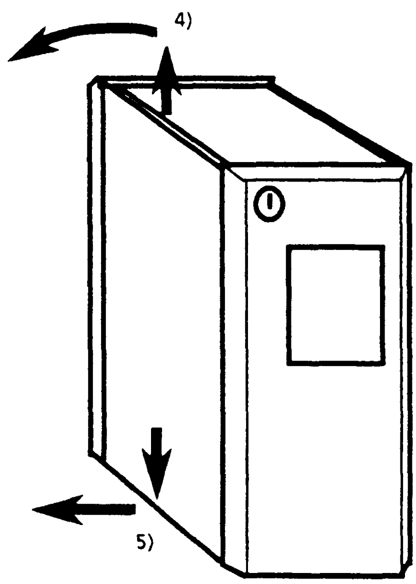


1) Unlock top cover at front side and lift it (keyswitch to ON)

2) Pull it forward from staying



3) Remove fixing screws of the side panels

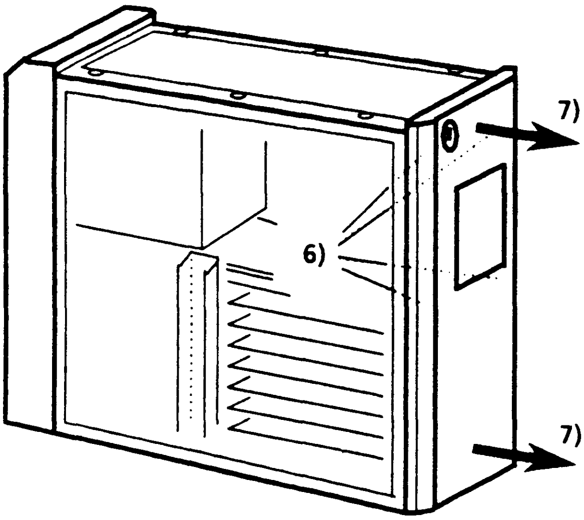


4) Lift side panel and swing it outward at the top

5) Rest it on the ground again and remove it from the staying

(The same procedure for the other side panel)

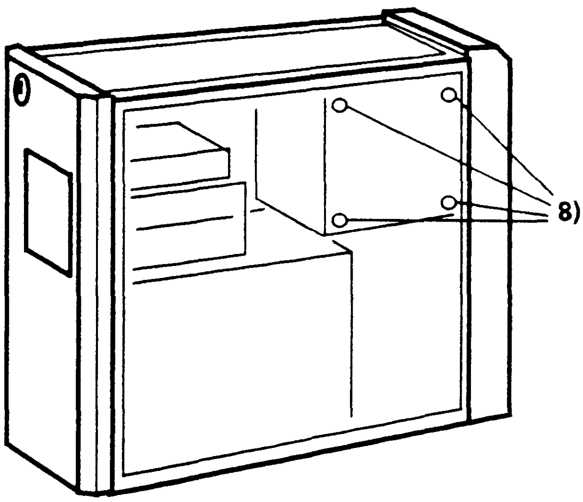
Removing the front and rear panels

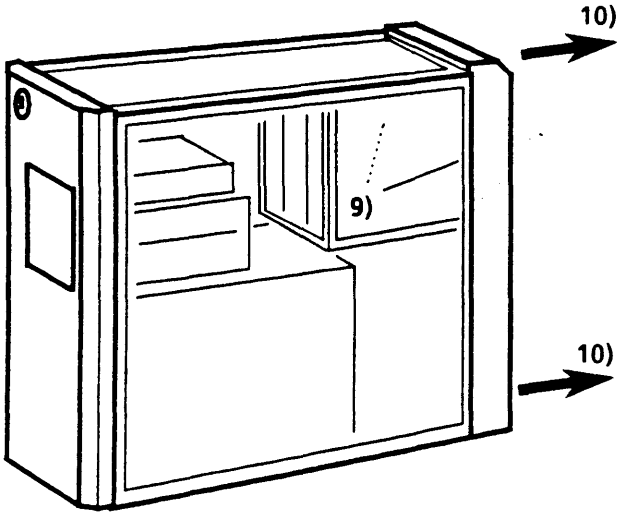


6) Undo non-losable screws in the frame (2 each to the left and right)

7) Remove front panel forward

8) Undo screws and remove cover of power supply

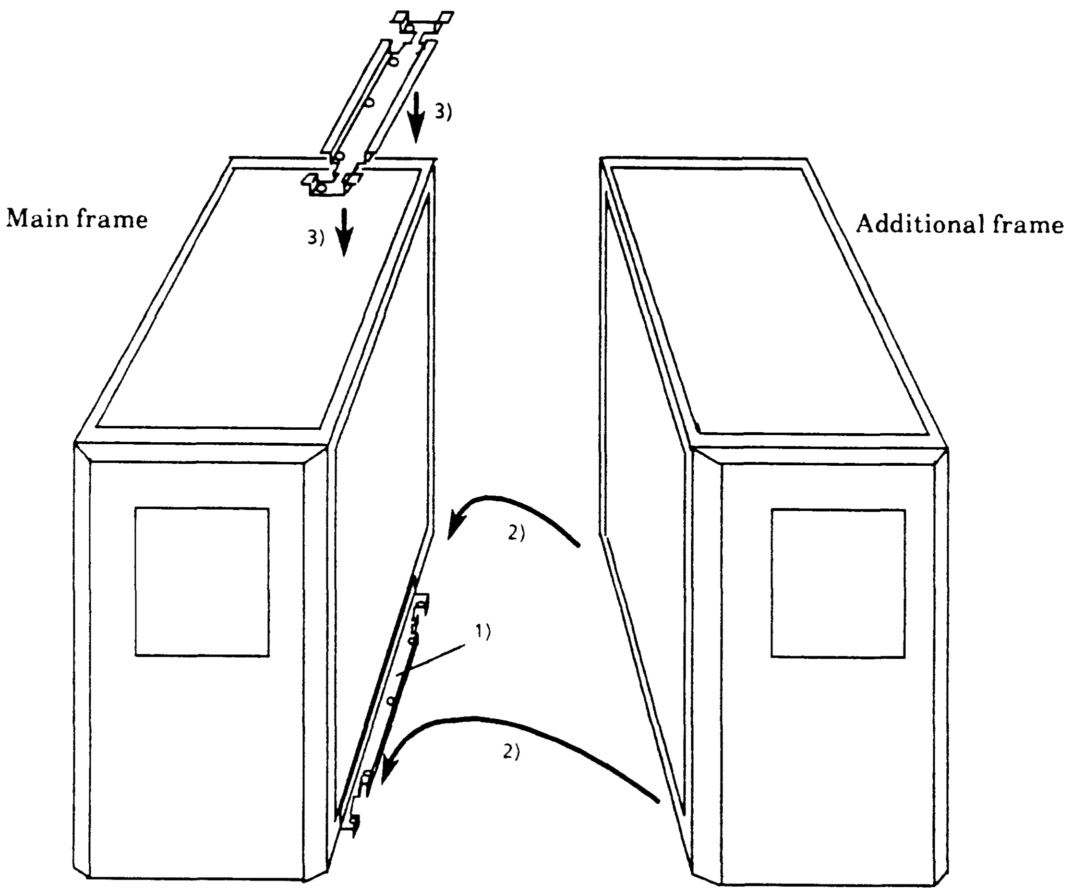




9) Undo non-losable screws in the frame and power suuply (1 each to the left and right)

10) Remove rear panel backward

2 Installation of the Additional Frame for the MX300



1) Fix one mounting ledge to the bottom of the main frame

2) Attach a second ledge to the top of the additional frame with screws

3) Hook additional frame by means of the fixed ledges in the main frame
Secure additional frame by tightening the upper ledge also to the main frame

SIEMENS

Part V
Troubleshooting

Part V

Troubleshooting

Contents

Page

1 Troubleshooting

1.1 Startup Routine

After startup, a hardware self-test is run first, then you have the opportunity to activate Teleservice. The system is booted only afterwards.

The corresponding outputs on the console may be the following (for SINIX 5.2A00):

```
teststart
ram bank 0: OK
ram bank 1: OK
ram bank 2: OK
ram bank 3: OK
mb window: 10 n3
cpu is Multibus-clockmaster
nmi test:  bto OK  parity: OK
mb mapper: OK
mmu: OK
icu: OK
fpu: OK
testend

Waiting for ESC from remote console to activate Teleservice!
Break is possible with DEL at local console.
Set timeout to 10 minutes with ESC at local console.
ESC timeout: ( 5 -> 4 -> 3 -> 2 -> ) 1 seconds
Teleservice not activated!
 READ -compl-stat: 21  sensb: 1C, Cyld = 0  Head = 0 Sect = 1
Log. Blocknr = 1
sasiopen: device 2 not ready after read
going to harddisk
load: text + data  =  17407 + 8192 = 25599 = 25 k
text__addr = x8000 dat__addr = xB3FF a__bss = x0

Boot:  in(0,0)vmunix
430080 + 90112 + 75216 = 595408d = 915D0x
SINIX-H V5.2 #6: (imh): Thu Jul 7 12:52:22 MET 1988
real mem  = 16773120
co at sr, channel 0
1 processor.
1 MULTIBUS
mc0: csr 0x7100000 ipl 0.
sc0: csr 0x7200000 intr 12 ipl 5.
ex0: HW 0.0, NX 5.3, ether 8-0-14-11-83-46
ex1: HW 0.0, NX 5.3, ether 8-0-14-12-18-56
ex0: csr 0x1a00 intr 1 ipl 5, 14 maps at 1024.
ex1: csr 0x1a02 intr 7 ipl 5, 14 maps at 1038.
in0: Storager FW rev = 26
is0 at in0 drive 0: MegaFile1300
is1 at in0 drive 1: MC1355
fl0 at in0 drive 2: Floppy
in1: Storager FW rev = 26
is2 at in1 drive 0: MegaFile1300
is3 at in1 drive 1: MegaFile1300
```

```
in0: csr 0x73f8 intr 2 ipl 5, 32 maps at 1054.
in1: csr 0x75f8 intr 2 ipl 5, 32 maps at 1088.
in2: csr 0x77f8 -- not found.
it0: Storager FW rev = 26
it0 at in0 drive 0: TDC 3319
it0: csr 0x73f8 ipl 5, 256 maps at 1120.
sd0: csr 0x800 -- not found.
ts0: csr 0x800 -- not found.
sr0: csr 0x2ef7000.
sr1: csr 0x2ef6000.
sr2: csr 0x2ef5000 -- not found.
sr3: csr 0x2ef4000 -- not found.
ly0: csr 0x2c00000 -- not found.
xt0: csr 0xee60 -- not found.
s__0: FW 2, memsize 0xf0000
s__0: csr 0x1900.
s__1: csr 0x2000 -- not found.
bam0: csr 0x1b00 -- not found.
Pseudo devices: pty(16) loop(1) cmx(32) sl__(2) due__(2) cl(2) cw(2) cx(1) psr(32)
avail mem = 14651392
using 230 buffers containing 942080 bytes of memory
Automatic reboot in progress...
Thu Jan 19 14:08:42 MET 1989
/dev/is0a: 514 files, 4957 used, 2486 free (14 frags, 309 blocks)
/dev/ris0g: ....
/dev/ris1a: ...
/dev/ris3a: ..
/dev/ris2a: ..
/dev/ris0h: ..
/dev/ris2g: ..
/dev/ris3g: ..
/dev/ris1g: ..
/dev/ris3h: ..
/dev/ris2h: ..
Thu Jan 19 14:11:45 MET 1989
Adding /dev/is0b as swap device
Adding /dev/is1b as swap device
Adding /dev/is2b as swap device
/dev/is2b: No such device
Adding /dev/is3b as swap device
/dev/is3b: No such device
local daemons: portmap pseudos.
Starting LAN: ypbind timed inetd rwhod.
more locals: lockd sendmail.
preserving editor files
clearing /tmp
System V: shmem editor files cron.
SINIX 2.1: clear tmp cron remind tnsxd loadcc
loading der zugewiesenen Boards...
loading/start from CCP-WAN1 of Board W1, approx. 40 sec.
loading/start from CCP-WAN1 of Board W1, approx. 40 sec.
load: Prozessnummer von admlog kann nicht bestimmt werden
.
standard daemons: update cron spooler.
```

--> initial screen

or like this way (SINIX 5.2A10):

```
teststart
ram bank 0: OK
ram bank 1: OK
ram bank 2: OK
ram bank 3: OK
mb window: 10 n3
cpu is Multibus-clockmaster
nmi test: bto OK  parity: OK
mb mapper: OK
mmu: OK
icu: OK
fpu: OK
testend

Waiting for ESC from remote console to activate Teleservice!
Break is possible with DEL at local console.
Set timeout to 10 minutes with ESC at local console.
ESC timeout: ( 5 -> 4 -> 3 -> 2 -> ) 1 seconds
Teleservice not activated!


READ -compl-stat: 1  sensb: 1C, Cyld = 0  Head= 0 Sect = 1
Log. Blocknr = 1

sasiopen: device 2 not ready after read
going to harddisk

load: text + data  =  17407 + 8192 = 25599 = 25 k
text__addr =x8000  dat__addr = xB3FF  a__bss = x0

Boot: in(0,0)vmunix
430080+90112+75216=595408d=915D0x
SINIX-H V5.2 #3: (ccs): Thu Dec 15 18:38:03 MET 1988
real mem  = 16773120
co at sr, channel 0
1 processor.
1 MULTIBUS
mc0: csr 0x7100000 ipl 0.
sc0: csr 0x7200000 intr 12 ipl 5.
ex0: HW 0.0, NX 5.3, ether 8-0-14-12-17-61
ex1: HW 0.0, NX 5.5, ether 8-0-14-12-35-56
ex0: csr 0x1a00 intr 1 ipl 5, 14 maps at 1024.
ex1: csr 0x1a02 intr 7 ipl 5, 14 maps at 1038.
in0: Storager FW rev = 26
is0 at in0 drive 0: MegaFile1300
fl0 at in0 drive 2: Floppy
in0: csr 0x73f8 intr 2 ipl 5, 32 maps at 1054.
in1: csr 0x75f8 -- not found.
in2: csr 0x77f8 -- not found.
it0: Storager FW rev = 26
it0 at in0 drive 0: TDC 3319
it0: csr 0x73f8 ipl 5, 256 maps at 1086.
sd0: csr 0x800 -- not found.
ts0: csr 0x800 -- not found.
```

```
sr0: csr 0x2ef7000.
sr1: csr 0x2ef6000.
sr2: csr 0x2ef5000 -- not found.
sr3: csr 0x2ef4000 -- not found.
sr4: csr 0x2ef3000 -- not found.
sr5: csr 0x2ef2000 -- not found.
ly0: csr 0x2c00000 -- not found.
xt0: csr 0xee60 -- not found.
s__0: csr 0x1900 -- not found.
s__1: csr 0x2000 -- not found.
bam0: csr 0x1b00 -- not found.
Pseudo devices: pty(16) loop(1) cmx(32) sl__(2) due__(2) cl(2) cw(2) cx(1) psr(32)
 vtty(16)
avail mem = 14626816
using 230 buffers containing 942080 bytes of memory
WARNING: Swap partitionÄ1Ü, dev=(4,9) does not exist.     /* do not
WARNING: Swap partitionÄ2Ü, dev=(4,17) does not exist.    /* 2./3./4. Floppy
WARNING: Swap partitionÄ3Ü, dev=(4,25) does not exist.    /* vorhanden
Automatic reboot in progress...
Fri Jan 20 09:11:24 MET 1989
/dev/is0a: 362 files, 4966 used, 2477 free (5 frags, 309 blocks)
/dev/ris0g: 5697 files, 57431 used, 15584 free (80 frags, 1938 blocks)
/dev/ris0h: 1395 files, 7255 used, 128320 free (312 frags, 16001 blocks)
Fri Jan 20 09:13:20 MET 1989

Adding /dev/is0b as swap device
local daemons: portmap pseudos.
more locals: lockd sendmail.
preserving editor files
clearing /tmp
System V: shmem editor files cron.
SINIX 2.1: clear tmp cron remind tnsxd loadcc
standard daemons: update cron spooler.
```

--> initial screen

2 Messages of the Firmware (Power Up Test)

The hex display outputs the run of the individual tests. In case of an error the display remains and the yellow error display outputs the error code.

hex display	individual test	
3F	reset	
00	led off, enable nmi	
01	set config register CPU, map EPROM to 7 000 000, load sp fp, initialize DUART channel A(IF97)	
02	refresh counter for memory is active	
03	sio is initialized, start refresh loop for memory	
04	refresh loop terminated, examine memory extension	1)
05	memory extension entried, initialize multibus adress area	1)
06	multibus range	
07	prepare memory test or wait until SERAx and CRT is initialised	1)
08	copy mod register to 10-50x0	
0A	initialize memory with writing 00	
0B	initializing terminated, memory test 4 MB 8 MB sec,16 MB sec	
0C	SERAx is initialized (minimum mode)	
0D	SERAx is initialized	
0E	nmi test	
0F	nmi test	
11	clear nmi register, nmi disable	
12	nmi test terminated, enable interrupts	
13	memory mapper test	
14	mmu register test	
15	generating of pagetables	
16	start mmu test	
17	mmu test terminated, next icu test	
19	next fpu test	
1C	parity nmi test, nmi disabled	
1D	parity nmi test, nmi enabled	
00	jump into the loader	

1) Will be only executed when starting up routineis running after currency failure.
Will not be executed when powerhold ff is set.

Error code (yellow LED on)

0I	error in mode register channel a (IF 97)
02	error in mode register channel b (V 24
0B	error in ram test
0E	nmi register is not clear
0F	no nmi occurred
10	wrong nmi occurred
11	nmi register is not clear
13	error in mapper test
14	error in nmu register test
16	error in nmu translation test
17	error in icu register test
18	
19	error in fpu test
1A	power hold ff can't be set
1B	power hold ff can't be cleared
1C	nmi register is not clear
1D	error in parity logic
	no nmi parity and memory extension is unequal 32 Mbyte
1E	unexpected nmi occurred
1F	unexpected parity nmi occurred, memory error
20	error address higher than memory, error in parity logic
00	loader operates, power supply for storager defective, storager defective

Status Power Up Test MX2 +

LED's	Explanation
• - - - - - - -	enable nmi
• • - - - - - -	map eprom
• - • - - - - -	load sp, fp, init duart is next
	refresh counter is running
• • • - - - - -	sio init done, refresh loop next
• - - • - - - -	refresh loop end, ram sizing next
• • - • - - - -	ram sizing done, init memory
• - • • - - - -	ram init done, set multibus range
• • • • - - - -	ram test done, copying mod-register next
• - - - • - - -	mod-register copied, initializing ram next
• - • - • - - -	initializing ram
• • • - • - - -	ram test
• - - • • - - -	serax init
• • - • • - - -	serax init done
• - • • • - - -	nmi test (nmis disabled)
• • • • • - - -	nmi test (nmis enabled)
• • - - - • - -	nmi-register cleared (nmis disabled)
• - • - - • - -	nmi test done, interrupts enabled
• • • - - • - -	mapper test
• - - • - • - -	mmu-register test
• • - • - • - -	generating pagetables
• - • • - • - -	start mmu translation test
• • • • - • - -	mmu test done, icu test next
• • - - • • - -	fpu test
• - - • • • - -	parity test (nmis disabled)
• • - • • • - -	parity test (nmis enabled)
/ \	
bottom top	

• • - - - - - -	error in mode register channel a
• - • - - - - -	error in mode register channel b
• • - • - - - -	error in setting multibus range
• • • - • - - -	error in ram test
• - • • • - - -	nmi register is not clear
• • • • • - - -	no nmi occurred
• - - - - • - -	wrong nmi occurred
• • - - - • - -	nmi register is not clear
• • • - - • - -	error in mapper test
• - - • - • - -	error in mmu-register test
• - • • - • - -	error in mmu-translation test
• • • • - • - -	error in icu register test
• • - - • • - -	error in fpu test
• - • - • • - -	power hold ff can't be set
• • • - • • - -	phff can't be cleared
• - - • • • - -	nmi register is not clear
• • - • • • - -	error in parity logic
• - • • • • - -	wrong nmi occurred
• • • • • • - -	unexpected nmi occurred
• - - - - - • -	error in parity logic

3 SINIX-Loader Messages

After run of the self-test (= program of the CPU firmware) the firmware loader (initial loader) ist started.
MX2+ (Host Adapter and Omti Hard Disk CXontroller) and
MX300 (Storager and Megafile)
use the same firmware. The configuration is detected via bus timeout.

General run

- Test of the clock NV RAM
  ok - -> reading of the bootflags (loader identification, whether storager/OMTI)

  not ok - -> entry bootflags by testing

- Exists system disk ?
  yes - -> loading of SINIX-Loader from FD

  no - -> examine HD label (track0, sector0)
  ok - -> loading of SINIX-Loader (track0, sector4)
  (in case of SINIX-Loader not ok, error messgae)

  not ok --> error message

Notes:

In case of invalid clock NV RAM

- Valid bit not set (battery plug of CPU had no contact) --> default or standard values for time and teleservice parameters are entried. Meessage of the CPU self.test:
  Time and NV-RAM invalid. ...

- no valid bootflags are entried - -> because
  no devicename in NV-RAM, trying in(0,0)

If there are no valid data in the NV RAM, the following message is displayed on terminal.If the following message remains displayed: 'Boot:', the device/program parameters may be input:

MX2+ mit 40/80Mbyte disk	Boot: sa(0,0)vmunix
for testing the floppy	sa(2,0)
MX300 mit MegaFile	Boot: in(0,0)vmunix
for testing the floppy	in(2,2)vmunix

The error message of invalid HD label may be displayed like:
READ -compl -stat: 1 senseb: 1C, Cyld = 0 Head = 0 Sect = 1
Log. Blocknr = 1

sasiopen: device 2 not ready after read
going to harddisk
sasiopen: no label sinix found
sasiopen: no label sinix found
:

In case of a defective SINIX-Loader (Boot), no equivalent message is output; only a jump to the loader occurs:
sasiopen: device 2 not ready after read
going to harddisk
:

In case of defective HD label or defective Boot the track0 must be restored (see Part VI: TDS1)

4 Configuration Example of MX300-20

```
Jul 11 10:30
. . .
SINIX-H V5.2 #1: (ccs): Wed Jun 15 08:00:54 MET 1988
real mem = 16773120
co at sr, channel 0
1 processor.
1 MULTIBUS
mc0: csr 0x7100000 ipl 0.
sc0: scr 0x7200000 intr 12 ipl 5.
ex0: HW 0.0, NX 5.3, ether 8-0-14-11-45-75
ex1: HW 0.0, NX 5.3, ether 8-0-14-10-85-61
ex0: csr 0x1a00 intr 1 ipl 5, 14 maps at 1024.
ex1: csr 0x1a02 intr 7 ipl 5, 14 maps at 1038.
in0: Storager FW rev = 24
is0 at in0 drive 0: MegaFile1300
is1 at in0 drive 1: MC1335
fl0 at in0 drive 2: Floppy
in0: csr 0x73f8 intr 2 ipl 5, 32 maps at 1054.
in1: csr 0x75f8 -- not found.
in2: csr 0x77f8 -- not found.
it0: Storager FW rev = 24
it0 at in0 drive 0: TDC 3319
it0: csr 0x73f8 ipl 5, 256 maps at 1086.
sd0: csr 0x800 -- not found.
ts0: csr 0x800 -- not found.
sr0: csr 0x2ef7000.
sr1: csr 0x2ef6000.
sr2: csr 0x2ef5000.
sr3: csr 0x2ef4000.
ly0: csr 0x2c00000 -- not found.
xt0: csr 0xee60 -- not found.
s_0: FW 3, memsize 0x40000
s_1: FW 2, memsize 0xf0000
s_0: csr ox1900.
s_1: csr ox2000.
bam0: csr 0x1b00 -- not found.
Pseudo devices:pty(16) loop(1) cmx(32) sl_(2) due_(2) cl(2)
                cw(2) cx(1) psr(32) vtty(8).
avail mem = 14651392
using 230 buffers containing 942080 bytes of memory
```

4.1 Minimal configuration MX300

co found at sr, channel 0	:	= CONSOLE
1 processor.	:	= CPU
1 MULTIBUS	:	= MULTIBUS
mc0 found at csr 0x7100000, ipl 0.	:	= CLOCK
sc0 found at csr 0x7200000, ipl 5 . . .	:	= DUART
ex0 not found	:	= EXOS LAN Board 1
ex1 not found	:	= EXOS LAN Board 2
in0 found at scr 0x73f8, ipl 5, 256 . .	:	= STOARGER
in1 not found	:	= STOARGER (not impl.)
in2 not found	:	= STOARGER (not realized)
in0: Storager FW rev = 22	:	= STORAGER FW rev = 22
is0 at in0 drive 0: MegaFile1300	:	= 1st hard disk
fl0 at in0 drive 2: Floppy	:	= floppy disk drive
it0: found at csr 0x73f8, ipl 5, . . .	:	= STORAGER (same as above)
it0: Storager FW rev = 22	:	= STORAGER FW rev = 22
it0 at in0 drive o: TDC 3319	:	= Streamer
sd0 not found	:	= MX2 Hard Disk
ts0 not found	:	= MX2 Streamer
sr0 found at csr 0x2ef7000	:	= SERAD/SERAG
sr1 not found	:	= SERAD/SERAG
sr2 not found	:	= SERAD/SERAG SEAB
sr3 not found	:	= SERAD/SERAG
ly0 not found	:	= Lynx Board
xt0 not found	:	= Xylogics Board
s_0 found at csr 0x1900	:	= DCE Board 1
s_1 not found	:	= DCE Board 2
bam0 not found	:	= BAM - Board

5 SINIX Messages

5.1 Error Messages of the Storager

All functions of the storager have an extended list of parameters to define the exact function to be performed (Input/output parameter block, iopb).

Format: 24 Bytes (0 - 23).

In case of an error this iopb is displayed on the monitor.

e.g.: trying to write to an write protected streamer cartridge.

error message:

it0: error during tape operation, iopb:
a2 11 82 8a 04 00 00 00 00 00 07 d0 ~~10 45~~ 50 00 73 fc (

Definition:

Byte 0:	command code			
Byte 1:	command options			
Byte 2:	status code:	80	operation successfull	
		81	operation in progress, busy	
		82	error on last command	
Byte 3:	error code	a)	in case Byte 2 = 82	s. error code
		b)	in case Byte 2 = 80	number of retries
Byte 4:	selected drive (LUN 0,1: 1st/2nd hard disk			
	2,3: 1st/2nd floppy drive			
	4-7: streamer tapes)			
Byte 5:	head select			
Byte 6, 7:	cylinder select / filemark count			
Byte 8, 9:	starting sector (disk operation)			
Byte 10, 11:	sector count / tape block count			
Byte 12:	DMA count			
Byte 13 - 15:	buffer address			
Byte 16, 17:	I/O address			
Byte18, 19:	relative address			
Byte 20:	tape unit number			
Byte 21 - 23:	linked iopb address.			

Command Code:

70	Run Diagnostic	self-test
71	Read Long	read 1 sector (data + ECC/CRC code) into memory
72	Write Long	write 1 sector (data + ECC/CRC code)
74	Read Headers	read header of each sector into memory
77	Read UIB	read UIB into memory
81	Read	read from cache/disk, transfer of data per DMA into memory
82	Write	logical inverse of 'Read'
83	Verify	read data from disk and check them using ECC/CRC codes
84	Format	format a single track (floppy or disk)
85	Map Bad Track	relocate a track (hard disk only)
86	Report Configuration	read controller type/firmware revision from PROM into IOPB
87	Initialize	initialize drive
88	Disk-To-Tape-Transfer	Datentransfer Platte → Stramer
89	Restore	recalibration to track 0
8A	Seek	move to the specified cylinder
8B	Reformat	see 'Format'; bad tracks were reformatted as bad tracks
8C	Format With Sector Data	see 'Format'; track is filled with data
8D	Tape-To-Disk-Transfer	Datentransfer Platte → Stramer
8E	Motor Control	floppy disk drive only
8F	Reset	reset
90	Map Bad Sector	Auslagern eines defekten Sectors
93	Read Absolute	read without retries and ECC/CRC correction
94	Read Noncached	read always from disk
95	Read Logical Sector	read logical instead of physical sector address
96	Write Logical Sector	write logical instead of physical sector address
97	Verify Logical Sector	verify logical instead of physical sector address
98	ESDI Command Pass Through	Erlaubt, optinal ESDI Commands to implementieren
99	Read ESDI Flaw Map	read flaw map information
A0	Retension Tape	seek BOT, EOT, and BOT again
A1	Read Tape	read from tape into memory
A2	Write Tape	logical inverse
A3	Verify Tape	read from tape and check
A4	Erase Tape	tape delete
A5	Write Filemark	write filemark onto tape
A6	Report Tape Drive Status	read tape status bytes into memory
A7	Configure Tape	pass parameters to the controller
A9	Rewind	seek BOT
AA	Read n Filemarks	tape is moved forward n file marks
AB	Seek n Blocks	tape is moved forwards/back n blocks
AC	Tape Command Pass Through	Erlaubt optinal Tape commands to implementieren

Error Code:

Byte 3 of the IOPB is valid, if status code (= Byte 2 of the IOPB) = 82 ("error on last command")

A. controller or disk drive errors

10	disk not ready
NO⇒ $\boxed{11}$	invalid disk unit address
12	seek error
13	ECC/CRC error data field
14	invalid command code in iopb
15	invalid cylinder address in iopb
16	invalid sector number in iopb
18	bus timeout error (Multibus address not found)
1A	disk write protected
1B	disk not selected
1C	no address mark, header field
1D	no address mark, data field
1E	drive faulted
20	disk surface overrun
22	CRC error, ID field (header)
23	uncorrectable data error
27	format timeout
28	no index pulse during format
29	sector not found
2A	ID field error
2D	seek timeout
30	recalibrate timeout
40	unit not initialized
42	gap specification error
4B	disk kann command not interprtieren
50	sectors per track specification error
51	bytes per sector specification error
52	interleave factor specification error
53	invalid head number in iopb
60	protection timeout error
61	maximum cylinder number specification error
62	number of heads specification error
63	step pulse specification error
64	reserved byte specification error
65&6C	ram failure odd byte
66&6D	ram failure even byte
67	event ram failure
69	controller in an invalid state
6A	invalid sector number
6B	timer failure

B. tape drive errors

80	tape drive not selected
81	tape drive not ready
82	tape drive not online
83	cartridge not in place
84	unexpected BOT
85	unexpected EOT
86	unexpected file mark encountered
87	uncorrectable data error
88	block in error not located
89	no data detected
8A	tape drive write protected
8B	illegal command
8C	command sequence timeout
8D	status sequence timeout
8E	data block transfer timeout
8F	filemark search timeout
90	unexpected exception
91	invalid tape unit address
92	ready timeout
93	tape timeout
94	invalid block count

SIEMENS

Part VI
TDS

TDS 1

TDS 2

Test Programs Firmware (Monitor)

Part VI

TDS (Test and Diagnostic System)

Contents

1 TDS1 Version 5.x for MX300/ MX2+

****

Information about Version 5.x

The TDS1 files are recorded in the SINIX FAR-format. Hence the following changes:

Making a backup, or changes the TDS1 floppy:

- The floppy can no longer be mounted using "/etc/mount" !
- To modify or copy the floppy it must be copied to disk by using the command "far xv *". This copies the contents to a SINIX-PC directory.
- Files can be deleted, added or modified in this directory (but: +FARDIR, TDS.txt, TDS__KERNEL, __cat, __ls, __more, mFARDIR1, mFARDIR2 "MUST NOT BE DELETED".
- Execute the command " mFARDIR1" (organizes files).
- Execute the command "far cv *" (creates a new TDS1 floppy).

****

TDS1 Description

The test and diagnostic system (TDS1) is part of the Siemens PC system family. The SINIX operating system is not necessary for the operation of TDS1. TDS1 has its own independent loader and operating system.

The TDS1 consists of:

- Test operating system.
- Test programs
- Diagnostic programs
- Utility programs
- EPROM resident programs (initial loader, self-test, monitor, SCSI, and console driver).

Brief description:

Diagnostic and/or test programs are planned for the system components CPU, MMU, FPU, ICU, memory, floppy disk, hard disk, interfaces and data communication equipment (DCE), S3510 and MC146818, or have already been implemented.

The diagnostic programs test hardware and firmware functions; errors are localized precisely. The communication with the system is executed via keyboard or monitor.
For an unobserved continuous test a file-controlled operation is also possible (even without keyboard/monitor).

Startup test:

After startup or reset the microprocessor begins with the self-test.

Loading procedure:

The test system is recorded on the floppy disk (cylinders 1 to 3). The TDS 1 is loaded into memory by the initial program loader and started. After terminating all initialization procedures without error, the floppy disk is checked up for a file named "STARTUP". If so, the batch file is executed.
If all commands have been executed or is STARTUP file is not available, a keyboard entry is expected. The prompt character is %.

On this TDS1 floppy disk the opening menu is displayed due to the STARTUP file.

Any STARTUP file may be created with "_cat >STARTUP " with TDS1.

An example hereof is the POWER_ON_MK file which enables and automatic test of a PC-MX300 on the repair site.

Operating system:

Contrary to previous TDS1 systems, the files of the present TDS1 system V5.x are saved in the FAR format.

Special features (as opposed to SINIX) are the following:

- synchronous operation
- single user
- single task
- one directory only (root)

Command entries:

The command interpreter CIN may obtain tasks in two ways:

1. Keyboard inputs are regarded as file names (after 'CR'), i.e. a file of this name is searched for on the floppy disk, it is loaded and started, if the following conditions are met:

   - the file exists
   - the file can be carried out (mode bit x is set)
   - the file is of type 0413 (a.out).

2. If only the third condition is not met (no a.out header), the contents of the file are transferred to the CIN line by line (batch file).
   CIN also receives commands from the "STARTUP" file in this way.

TDS1 programs:

TDS1 programs may either be called by a user or from a command file. The call structure resembles to that of the SINIX operating system:

prog [-opt [-opt]...][par [par ...]]

prog	:	name of the program
-	:	prefix for options
opt	:	option
par	:	parameter

The following options are default:

-!	calling the terminal prior to program start
-?	displaying notes to the user on the terminal

Other options are indicated in the individual programs.

Program call without options is possible; in this case the following items are preset:

- unique run
- all partial tests
- error messages

Interchange among Test Components

TDS1, sa_urld and the hardware monitor together form an efficient error detection and diagnostic system. The following table gives an overview of how the individual components can be called.

TDS1: Prompt %
sa_urld: Prompt &
Monitor: Prompt *
Loader: Prompt :

Source		Target	Input:	
TDS1	—>	sa_urld	sa_urld	
TDS1	—>	Monitor	<ESC>	
Monitor	—>	TDS1	G<CR><CTR Q><CR>	(if this is the source)
Monitor	—>	sa_urld	G	(if this is the source)
Monitor	—>	Loader	u	
Loader	—>	Monitor	<END> or <ESC>	
Loader	—>	Floppy (TDS1)	(32,0)	
Loader	—>	Disk (SINIX)	(00,0)	
sa_urld	—>	TDS1	e or <END>	
sa_urld	—>	Monitor	<CTR><DEL>	

Logging the Program Run

The auxiliary routine 'tmod' (terminal mode) can be used.

1. Recording the terminal output into the file 'tds.out':

before calling the program:	tmod -c 0 (deletes the file contents) tmod -i 2 (initializes tds.out)
after program run:	tmod -f 0 (saves tds.out)
reading the log file:	_more tds.out

2. Printer output: (not possible with test programs 'ser' and 'icu' or batch files containing these programs)

tmod 1: 'printer ON'
tmod 0: 'printer OFF'

The log file tds.out may be copied under SINIX (MX300, MX2, APC2001) via

far xv tds.out

into a directory and printed out like any text file.

TDS1 Auxiliary Routines

TDS1 auxiliary routines function like the corresponding SINIX shell utility routines of the same name.

date		output of current date
[-yymmddhhmmss]		Setting the clock
diskind		outputs type of the 1st hard disk
echo		SINIX echo command
fill (#) (#) (Byte)		(#) (#): hex. address of the memory that is to be written into with the (byte) pattern.
	example:	fill 200000 300000 ff writes into memory 2MB-3MB FF
io__test		tests whether a module is connected at the specified multibus I-O address
	example:	io__test 3001100 tests whether 2nd SERAD(G) is installed
__ls		SINIX ls command
__more		SINIX more command
tmod		set terminal mode
	-i	initialize tds.out log file
	-f	save the recording following tds.out
	-c	delete tds.out file
	0	output at terminal only
	1	output at terminal and printer
	2	output at terminaland file tds.out
	3	output at terminal, printer and file tds.out
	von	video timeout on
	voff	video timeout off
	int	international keyboard
	ger	German keyboard
	norm	regular terminal display
	inv	reverse terminal display
	OD	terminal display on
	Od	terminal display off
__xd		SINIX xd command

Menu Displays of the 2 TDS1 Floppy Disks

The TDS1 MX300/MX2+ versions V5.x consist of 2 floppy disks.

1st floppy contains:

- formatting programs for hard disks
- test programs for modules and processors

2nd floppy contains:

- test programs for hard disks, floppy and streamer
- programs for alternate track assignment
- programs for copying hard disks

Menu Display TDS1 floppy 1

```
          TDS 1 TEST AND FORMATTING PROGRAMS        MX300/MX2+
                    (TDS1 version 5.x   xx.x.88)

Input:    FORMAT            formatting hard disks
          FBG (PCB)         test of modules (PCB's) and processors

          select one of these possibilities
          you will get in each case a menu display

          the 2nd TDS1 floppy contains

          a)  test programs for hard disks, floppy and streamer
          b)  programs for alternate track assignment
          c)  programs for copying hard disks

menu display:        c        output TDS1 description:     b
further details:     t        shut down MX300:            end
```

Menu Display FMT

TDS 1 TEST AND FORMATTING PROGRAMS MX300/MX2+ (TDS1 version 5.E 11.5.88)			
PROGR. NAME	TESTED COMPONENT	PROGR. NAME	TESTED COMPONENT
FMT300_1	1st SM1300 format	FMT300_2S	2nd SM1300 format (stor. 2)
FMT300_2	2nd SM1300 format	FMT1355_2S	2nd MIC1325 format (stor. 2)
FMT1355_1	1st MIC1355 format		
FMT1355_2	2nd MIC1355 format		
		FMT1325_1	1st MIC1325 format (MX2+)
		FMT1325_2	2nd MIC1325 format (MX2+)
menu display: further details:	c, PCB, format t	output TDS1 description: shut down MX300:	b end

Menu Display PCB

TDS 1 TEST AND FORMATTING PROGRAMS MX300/MX2+ (TDS1 version 5.E 11.5.88)			
PROGR. NAME	TESTED COMPONENT	PROGR. NAME	TESTED COMPONENT
CPU	Processor PCB	MX300	entire MX300
DCE	1st - 4th Proc.	RAM	main memory
SER1/ SER4	1st/ 4th SERAD (G)	STOR1/2	1st/2nd storager
fpu	arithmetic processor		
icu	interrupt controller	d367	BAM processor
MMU	memory management u.	exos	Ethernet processor
menu display: further details:	c, PCB, format t	output TDS1 description: shut down MX300:	b end

Menu Display TDS1 floppy 2

```
            TDS 1 TEST AND FORMATTING PROGRAMS        MX300/MX2+
                          (TDS version 5.F   04.7.88)
--------------------------------------------------------------------------



Input:     MASS              test programs for mass memory system
           ALTR              programs for alternate track assignment

           select one of these possibilities
           you will get in each case a menu display


           the 1st TDS1 floppy contains

           a)  test programs for modules and processors
           b)  formatting programs

--------------------------------------------------------------------------
menu display:          c                output TDS1 description:       b
further details:       t                shut down MX300:            end
```

Menu Display MASS

TDS 1 TEST AND FORMATTING PROGRAMS MX300/MX2+ (TDS1 version 5.F 04.7.88)			
PROGR. NAME	TESTED COMPONENT	PROGR. NAME	TESTED COMPONENT
MF300__1/2	1st/2nd MegaFile 300Mb	CP__300__12	copies SM1300 1st -> 2nd
MIC1355__1/2	1st/2nd MIC 1355 170Mb	CP__300__21	copies SM1300 2nd -> 1st
	1st MIC1355 format	CP_1355_12(21)	copies MIC 1355
		CP_MIC_12(21)	copies MIC 1325 (MX2+)
MF300__S	1st MegaFile at 2nd Stor.	FLOP	floppy/floppy disk drive
MC1355__S	1st MIC1355 at 2nd Stor.	STR/(STR_OMT)	streamer storager/OMTI
menu display: c further details: t		output TDS1 description: b shut down MX300: end	

Menu Display ALTR

TDS 1 TEST AND FORMATTING PROGRAMS MX300/MX2+ (TDS1 version 5.F 04.7.88)			
PROGR. NAME	TESTED COMPONENT	PROGR. NAME	TESTED COMPONENT
ALTR_300_1	alt. track 1st SM1300	aLTR_300_1	alt. track 1st SM1300
ALTR_300_2	alt. track 2nd SM1300	a.s.o for other disk types	
ALTR_300_1	alt. track 1st/2nd MC1355	ALTR programs:	an attempt is made to save the contents of the track
ALTR_300_S	alt. tr. 1st MegaFile 2nd STOR		
ALTR_300_S	alt. tr. 1st MIC 2nd STOR	aLTR programs:	the contents of the track will be deleted !!!
ALTR_300_1	alt. tr. MIC1325 (MX2+)	refer to description in System Manual (chapter 6)	
menu display: c further details: t		output TDS1 description: b shut down MX300: end	

Memory test

Input: RAM
Duration: approx. 5 minutes

The memory test essentially consists of a house number test. It is realized within the subroutine sa__urld.

The entire memory excepting the reserved part for the TDS1 is tested.

MMU test

Input: MMU
Duration: approx. 1 minute

Test of Arithmetic Processor FPU

The FPU supports the CPU in computing with floating point values; the computing speed is increased by a factor of 100.

Input: fpu

The essential test segments comprise:

- testing the command set (for arithmetic, comparison, storage and conversion, check)
- testing the specified min./max. ranges
- generating flags in the fsr register
- triggering traps (e.g.: divide by zero)
- checking the bug list

Option: u untraced

Example of program call: fpu c100

If the test is terminated without errors the following message is output:

'test end fpu 32081, no error occurred at: <date/time>'

Test of the Interrupt Control Unit NS32202

Example for input: icu u A c100000 W

(100000 cycles, without Winchester Ints., no scrolling at monitor)

the test program 'icu' tests the processing of interrupts generated by a maximum of 7 interrupt sources with optionally can be switched off.

The purpose of this test is primarily to determine whether

- illegal ICU register changes occur
- interrupts are lost.

Presetting: all interrupt sources switched on
interrupt cause is indicated:

'c':	counter-int (ICU internal timer)
'w':	win-int (DTC 86)
'S':	ser-int
'D':	due-int
'X':	soft0-int
'Y':	soft1-int
'Z':	soft2-int

50 interrupts per sec, i.e. the monitor is scrolling.
The program remains in an endless loop; abortion with <DEL>.
In error case the program is also aborted.

SERAD/SERAG is put into a 'wait condition' by ser-int; the following message ist output:

'###### WAIT FOR SER-INT ######'

Example of standard output after abortion with <DEL>:

'program break at: <date/time>
cycle: 1704 timint: 313 (CERH is set) else (nominal/actual)
dueint: (221/221) serint: (49/48) winint: (400/399)
so0int: (568/568) so1int: (346/346) so2int: (245/245)'
IPNDH:0 IPNDL:18'

'nominal': generated interrupts
'actual': acknowledged interrupts

'CERH is set': in case interrupt requests occurred before the preceding interrupt request could be answered.
'IPNDH/L': is output if a nominal/actual interrupt ratio is not equal to 1 ('pending interrupts'; in this case e.g. winint, serint); i.e. the system is functioning 'too slowly').

Options: (P = presetting)

c#	number of runs of the endless loop. If # is reached, the program is aborted. # = decimal number P: endless	
d#	delayed generation of due interrupts # = decimal number P: 10	
i#	due interrupts are generated in blocks # = decimal number P: 1	
t#	number of counter interrupts per hour # = decimal number P: 180000	
r#	revision e, f of the icu # = e, f P: f	
A	do not display interrupt causes	P: no
B	after error in EPROM monitor	P: no
D	do not generate due-ints	P: no
E	do not ser-ints	P: no
W	do not generate win-ints	P: no
M#	If # interrupts of one source have occurred, the interrupts that have been generated/acknowledged up to this point are output. # = decimal number P: 100	
R	do not monitor ICU register changes	P: no
S	do not generate any soft-ints	P: no
T	monitor CERH flag	P: yes
a	auto-rotate mode	P: no
f	fixed priority mode	P: no
b#	# = decimal number switching between fixed priority- and auto-rotate-mode in module #. P: special-mask mode	

(fixed-priority-mode: priority levels remain always the same; auto-rotate mode: the interrupt source whose interrupt requests were answered most recently receives the lowest priority level.
special-mask mode: dynamic change of priority levels.)

m	cyclical disable of win-ints	P: no
p	printer output parallel (only possible without ser-ints)	P: no
s	disable stray-ints P = no, if they occur, abort with error message	P: no
u	do not output operation message	
w	do not wait for ser-ints	

Test of the DCE processors

Input: DUE4

The program now interrogates

1. which DCE processor (1st - 4th)
2. which channels of the PCB

should be tested.

Example:
Iput: due__inp 1/v/x <CR><CTR D><CR>

the 1st DCE processor channel A V24
B X21 will be tested.

The chosen channels have to be bridged with a shorting plug.

Test of SERAD D279/ SERAG D312

SER1 tests the 1st PCB
SER2 tests the 2nd PCB
SER3 3rd
SER4 4th

For IF97 and RS232 shorting plugs with the following connections are required:

IF97:	RS232:
(1 - 3)	(2 - 3)
(6 - 8)	(4 - 5 - 8)
	(6 - 20 - 22)
	(15 - 17 - 24)

The command SER consists of three test parts:

t1:	firmware test
t2	channel test (with shorting plug)
t3:	interrupt test (V24 with shorting plug)

A test channel for t2 or t3 can be selected with the option K[0..5].
If a test part failes, the test will be aborted.
After input of the command, the firmware number of the tested module is output.

Example: 'test board is a SERAD D 279 with firmware number 8x'
(SERAG D 312 x)

An error message is displayed for each not shot-circuited channel.
(If option K is not used).

Example: (1st processor, channel 2 short-circuited, channel 0 is console)

'channel 1: no receive interrupt -> shorting plug?
channel 3: no receive interrupt -> shorting plug?
. . .
. . .
channel 5: ----------------------------- " --------------------------------

program break at t2 shorting plug test
occurred errors:4 '

Further options:

b# multibus basic address
1st PCB : 2EF7000H
2nd PCB : 2EF6000H
3rd PCB : 2EF5000H
4th PCB : 2EF4000H
= hexadecimal number

i# multibus I-O address
1st PCB : 3001000H
2nd PCB : 3001100H
3rd PCB : 3001200H
4th PCB : 3001300H
= hexadecimal number

I# multibus interrupt
1st PCB : 3
= decimal number

A output '§' for each D279/D321 multibus interrupt

B BAUD rate (50, ... , 38400, adjustable)
V:19600

C Counter for poll transmit

T reports timeout t1

u do not output any information on test parts ('untrace')

p t2, t3 without multibus interrupt

General description of sa_urld

The sa_urld is a program containing primarily mass memory and mass memory controller tests. It also includes the formatting programs.

CAUTION !!!

The input of an incorrect command by the sa_urld program may destroy a large amount of data! Read the entire description before you start working with the sa_urld!

sa_urld was developed on the basis of the EPROM initial program loader and may be loaded and started without any operating program ('stand-alone').

Input:	sa_urld	The prompt character is '&'.

The test programs are contained in the individual string command K0 ... K400. These, in turn, consist of various command elements, separated by ';'.

Program call:

Input:	Kxxx
Example:	K301 formats the 300 Mb hard disk.

Listing of the individual strings:

Input:	K?xxx
Example:	K?10 lists K10 ... K29.

Auxiliary displays:

Input:	<CR>	general command elements of sa_urld
	*?	special commands for hard disk
	S?	special commands for streamer

Output control:

ON	output on printer (channel 1)
OF	inhibit
OD	output on terminal
Od	inhibit
OM[@]	output in main memory starting from address @
Om	inhibit
D[@]	output of main memory on terminal starting from address @ (ASCII)
P[@]	output of main memory on printer starting from address @

Date / Calculator:

Td	outputs date/ time
Ts	input date/ time
p	calculator on
<CR>	outputs help file
<END>	returns to sa_urld

TDS1 formatting programs

Hard disks are delivered from the manufacturer with a manufacturer defect list. It is located at the last cylinder of the hard disk and will be considered during formatting.

The program run in detail:

1. Initializing the selected drive, motor on.

2. Setting the formatting parameters (head-skew, cylinder-skew, interleave, ...)

3. Reading the manufacturer defect list

4. Formatting the hard disk

5. Allocating spare sectors/ alernate tracks for the defective sectors noted in the manufacturer defect list.

   The spare sector is allocated if 1 sector within one track (= 34 sectors + 1 spare sector) is defective.

   An alternate track is allocated if more than 1 sector is defective.
   Alltogether there are available 60 (MegaFile)
   40 (MIC 1355)

6. Writing the hard disk with pattern and proofreading. Further defective tracks are detected (occurs rarely) and spare sectors/ alternate tracks are allocated.

7. List of defective sectors/ allocated spare sectors (alternate tracks) is written into track 0 - readable for SINIX.

Duration: approx. 20 min.

Special case: manufacturer defect list cannot be read.

1.- 4. see above

5. The hard disk is written 4 times with different patterns and proofread. Defective tracks are detected and spare sectors/ alternate tracks are allocated.

6.-7. see above

Duration: approx. 70 min.

Output on the terminal:
(The examples refer to MegaFile)

1st (2nd) Megafile (Micropolis) being formatted !

load: text + data = 55248 + 50796 = 106044 = 104 K
text__addr = x C0300 dat__addr = x CDAD0 **(loading sa_urld)**

STORAGER selected **(storager as controller)**
RECAL -compl-stat: .., sensb: .. **(1st initializibg, before motor on)**

parameters from addr: FD454 **(hard disk parameters)**
SINIXdisklayout

CYL	TRK/CYL	SEC/TRK	LSEC/TRK	BYT/SEC	INTLV	STPW	STPP	STPM	REDWRCUR
1216	12	34	55	512	1	5	13	19	38

partition:	0	1	2	3	7	8
partoff:	0	408	20808	41208	494088	0
partsize:	408	20400	20400	452880	2040	496128

load text + ... **(loading sa_urld)**

.

.

STORAGER selected
headskew = 11
cylskew = 10
SINIXdisklayout **(hard disk parameters)**

.

.

§errtrk = E5E04 §altrrk = E7E50 §senseb = E33FC

(initializes part of memory for list of defective/ alternate sectors)

physical sectorlength = 608 **(bytes per sector unformatted)**
mixing mapsector map track **(refer point 5 of description)**

.... **(hard disk parameters)**

cylinder = .. head = .. **(formatting)**

altass:
unit = 0 sec/track = 34 interleave = 1 alttrk stark = 494088 alttrk number = 60

map bad sector ...
sector # .. **(allocating spare sectors, alternate tracks from manufacturer defect list;refer point 5 of description)**

.

.

assigned .. alttrks out of 60

.. cylinder written **(writes hard disk with**
.. cylinder read **pattern, proofreading)**

altass: ... **(allocationing spare sectors, alternate tracks)**

bytes transfered or top addr = E6A04 = 944644 runtime ...
date/ time **(writing the defect list into track 0)**

formatting terminated **(prompt TDS 1)**
%

Explanation:

I) Division of the partitions (MegaFile 300 Mbyte)

partition	**0**	**label of hard disk**	**408**	**sectors**
	1	**root area**	**20400**	**sectors**
	2	**swap area**	**20400**	**sectors**
	3	**usr area**	**452880**	**sectors**
	7	**alternate track area**	**2040**	**sectors**
	8	entire hard disk	496128	sectors

This division is not identical with that one in the SINIX file /etc/disktab! SINIX devides the disk depart from TDS1 and writes a new label onto track 0 when installing SINIX:

partition	0	label	408	sectors
	1 (/dev/is0a)	root	15912	sectors
	2 (/dev/is0b)	swap	42024	sectors
	3 (/dev/is0g)	usr	152592	sectors
	(/dev/is0h)	usr	283152	sectors
	7	alternate track area	2040	sectors
	8 (/dev/is0c)	entire hard disk	496128	sectors

Division of the partitions (MIC1355)

partition	0	label	272	sectors
	1 (/dev/is0a)	root	16048	sectors
	2 (/dev/is0b)	swap	41072	sectors
	3 (/dev/is0g)	usr	219776	sectors
	7	alternate track area	1360	sectors
	8 (/dev/is0c)	entire hard disk	278528	sectors

II) Hard disk parameters

INTLV	:	Interleave factor	(=1; logically consecutive sectors are also physically consecutive)
STPW	:	Step pulse width	(length of positioning pulse)
STPP	:	Step pulse interval	(frequency of positioning pulse)
STPM	:	Step pulse mode	(positioning mode; the controller transfers at short intervals the positioning pulses to the disk drive; the drive saves them and calculates therefrom the positioning.)
REDWRCUR	:	Reduced write current starting cylinder (reduced write current as of cylinder ...)	
cylskew	:	Sectors of adjacent tracks are displaced by one factor (e.g. sector 0 of track 1 is located near sector 11 of track 2 a.s.o.), in order to take into account the track-to-track seek time in the case of multisector accesses (spiral formatting).	
headskew	:	Takes into account the head-to-head access time.	

Alternate Track Assignment

TDS1 offers two possibilities of relocating defective tracks/ sectors:

1. programs ALTR_..
2. programs aLTR_..

Try always at first the programs ALTR !!!

Both, the ALTR and the aLTR programs relocate the entire track, although only one sector is defective.

Ad 1.: The ALTR programs first make an attempt to read the contents of the track. If reading is possible (i.e. the error occurrs in the ID area and not in the data area), the contents of the defective track is transfered into the alternate track.

Then the sectors of the defective track are each marked as 'defective' and the address of alternate track is mapped.

Is it not possible to read the data, there will be 8000 retries; each with a corresponding error message output.
Relocating of the track does not occur.

Ad 2.: The aLTR programs first format the defective track; then an alternate track is allocated.

The data of this track are lost !!!

Before starting to run the program you should - if possible- identify the affected files which will be deleted.
The logical block number, which is output in the error message, shows you in which of the following areas the defective sector is located:

a) root
b) swap
c) usr

1. Defective sector is located within the swap partition:

   Alternate track allocation can occur without consequences.
   No data are lost.

2. Defective sector is located within the root or usr partition:

   The affected file can be detected with a logical saving (in case SINIX still can be loaded; command sar or dump).

Input:

ALTR_300_1	(1stMegaFile 300 Mbytes)
ALTR_300_2	(2nd MegaFile 300 Mbytes)
ALTR_1355_1	(1stMicropolis 1355 170 Mbytes)
ALTR_1355_2	(2nd Micropolis 170 Mbytes)
ALTR_300_S	(1stMegaFile 300 Mbytes at 2nd storager)
ALTR_1355_S	(1stMicropolis 1355 170 Mbytes at 2nd storager)
ALTR_1325_1	(1stMicropolis 1325, MX2+)
ALTR_1325_2	(2nd Micropolis 1325, MX2+)

analogous:

aLTR_300_1
aLTR_300_2 a. s. o.

The program first shows the list containing the defective sectors/ spare sectors and/or alternate tracks detected up to now.

Then the next consecutive index number appears as a request to input the logical block number of the defective sector.

Input **D** ---> for decimal entry of the logical block number
or **H** ---> for hexadecimal entry of the logical block number.

The same index number appears again.

Now enter the number of 1st defective sector, then <CR>
of 2nd defective sector, then <CR>

a. s. o.

Check your entries again !

In case they are wrong: entry <CTR> <DEL>; you will return to monitor and must reload TDS1.

Terminate the entries with <END>.

Now the alternate tracks are allocated and the extended list of defective tracks and the TDS1 prompt '%' are displayed.

The storager offers two alternatives to handle defective sectors on the hard disk:

1. Spare sector assignment

   The hard disk is formatted in such a way that one sector each is 'reserved' per track (34 sectors + 1 spare sector). If a defective sector is detected within a track, the next consecutive sector is designed as spare sector; all the following sectors are relocated 'backwards'.

   The defective sector is marked; the storager recognizes that it has to access the adjacent sector.

   This option is only used by the formatting program; the ALTR and the aLTR programs apply the second possibility only.

2. Alternate track assignment

   The hard disk contains an alternate track partition. (partition7 consisting of the 5 last cylinders of the hard disk). Detecting a defective sector within a track, will relocate the entire track.

   A defective sector is marked with a special header. When the storager accesses this sector it detects

   1. that a track is defective
   2. the address of alternate track.

   So the hard disk access requires an additional positioning. An increasing number of defective tracks causes less performance of the system.

Hard Disk Check Program

Input:	MF300_1	check program for	1st MegaFile 300 Mbytes
	MF300_2	check program for	2nd MegaFile 300 Mbytes
	MIC1355_1	check program for	1st Micropolis 1355 170 Mbytes
	MIC1355_2	check program for	2nd Micropolis 1355 170 Mbytes
	MF300_S	check program for	1st MegaFile at 2nd storager)
	MIC1355_S	check program for	1st Micropolis 1355 at 2nd storager
	MIC1325_1	check program for	1st Micropolis 1325 (MX2+)
	MIC1355_2	check program for	2nd Micropolis 1325 (MX2+)

Duration: approx. 10 min.

The contents of the hard disk remains unchanged !

The program run in detail:

1. Initializing the selected drive, motor on.

2. Reading the list of defective tracks in initialized memory area.

3. Reading the entire hard disk twice. If defective sectors are detected, then

   a) the list of defective tracks is updated

   b) alternate tracks are allocated. In this case, the contents of the track containing the defective sector is transfered to the spare track.

4. List of defective sectors/ allocated spare sectors (alternate tracks) is written into track 0 and displayed on monitor.

Output on the terminal:
(The examples refer to MegaFile)

Hard disk check program 1st (2nd) Megafile

load: text + data = ... text_addr = ...	**(loading sa_urld)**
STORAGER selected RECAL -compl-stat: 41 sensb: 30 ..	**(storager as controller)** **(1st initializibg, before motor on)**
parameters from addr: FD454 SINIXdisklayout . .	**(hard disk parameters)**

load: text + data.... (loading sa_urld)

.

.

STORAGER selected (storager as controller)

parameters from addr: FD454 (hard disk parameters)
SINIXdisklayout

.

.

§errtrk = E5E04 ... (reading the list of
#bytes transfered or top addr = E6A04 = .. defective tracks)

control byte = C0
... cylinder read (reading the hard disk)
runtime: ..
<date/time>

control byte = 0 (hard disk parameters)
parameters from addr: FD454
SINIXdisklayout

.

.

altass:
unit =0 sec/track =34 interleave =1 alttrk stark =494088 alttrk number =60
first track ...
assigned .. alttrks out of 60
60 .. (allocating alternate tracks)

#bytes transfered or top addr = E6A04 (rewrite the list of alternate tracks)

Finally the list of defective sectors/ tracks is displayed on monitor.

Example:

index	errsect	hex	hd	cyl	alttracks		sense-b	count
0	140782	225FF	0	345	1	0	0	0
1	208107	32CFB	0	510	1	0	0	0
2	384355	5DD63	0	942	1	0	0	0
3	17459	4433	9	42	494088	14532	0	0

<date/ time>)
check program terminated (prompt TDS 1)
%

Explanation:

index:	sequencial number	
errsect:	logical block number of defective sector, decimally and hex.	
hd:	head	
cyl:	cylinder	
alttracks:	1	if spare sector was allocated (none of the 60 alternate tracks)
	xxxx	logical block number of 1st sector of the alternate track
		(The alternate track area (= partition 7 of hard disk) begins at cylinder 1211; this is identical with the logical block number 494088 (34 sectors per track, 12 tracks per cylinder)).
sense-b:	sensebyte	
count:	same entries are cumulated	

Retrieve Track 0 of a MegaFile

Errordisplay: during the system start the following error messages are displayed

.

.

is 0: can not read block 0 of device 0, drive formatted wrong?

.

.

SINIX cannot be loaded.

Action:
1. TDS1: format track 0
2. SINIX1: write label and boot onto track 0.

Ad 1.: Load TDS1 **(prompt %)**

Input: sa_urld **(prompt &)**

Input: K280

Ad 2.: Load SINIX 0

Load SINIX1

when SINIX2 tape is requested, open streamer flap, then press .

<CR> **(prompt #)**

Input:

```
/etc/disklabel  /dev/vis0c  -l
/etc/mount      /dev/is0a   /mnt
/etc/disklabel  /dev/ris0c  -f  /mnt/stand/bootwn.STOR.x
```

Edit resident strings in sa_urld

After TDS1 has been loaded, the sa_urld program is in the main memory from start address C0300 H.

Input:	sa_urld	**(call sa_urld)**
	select empty command string Kxxx	
	Kxxx = <resident command sequence> <CR>	**(enter string)**
	e	**(return to TDS1, prompt %)**
	_cat -sa_urld c0300	**(save onto TDS1 floppy disk)**
Output:	'write sa_urld from 000C0300 done'.	

Physical Save onto Streamer / Restore onto Hard Disk

You can use the described commands on condition that:

A) standard partition division of hard disk (SINIX installation)

B) 60 Mbytes cartidges are used

Duration: approx. 12 min per 50 Mbytes

Caution ! System files of SINIX V5.2 are located in the areas

/dev/is0a
/dev/is0g

When backup your operating system you have to save both partitions on tape.

Run in detail:

A) Initializing the drives (hard disk and streamer), motor on of the selected drive.
B) Rewinding the tape until BOT (begin of tape)
C) Backup onto tape or restore onto hard disk.

Input A):

sa_urld K271	1st MegaFile 1300
sa_urld K272	2nd MegaFile 1300
sa_urld K273	1st Micropolis 1355
sa_urld K274	2nd Micropolis 1355
sa_urld K276	1st Micropolis 1325 (MX2+)
sa_urld K277	2nd Micropolis 1325 (MX2+)

Input B): 1(64,

Input C):

MegaFile 300 Mbyte

root area	(/dev/is0a):	BU(8,(64,8160		
usr area	(/dev/is0g):	BU(8,179748(64,50000	(1st	tape)
		BU(8,239748(64,26296	(2nd	tape)
usr1 area	(/dev/is0h):	BU(8,29172(64,50000	(1st	tape)
		BU(8,79172(64,50000	(2nd	tape)
		BU(8,129172(64,41576	(3rd	tape)
entire disk	(/dev/is0c):	BU(8, (64,50000	(1st	tape)
		BU(8,50000(64,50000	(2nd	tape)
		BU(8,100000(64,50000	(3rd	tape)
		BU(8,150000(64,50000	(4th	tape)
		BU(8,200000(64,48064	(5th	tape)

Micropolis 1355 170 Mbyte

root area	(/dev/is0a):	BU(8,(64,8160		
usr area	(/dev/is0g):	BU(8,28696(64,55000	(1st	tape)
		BU(8,83696(64,54888	(2nd	tape)
entire disk	(/dev/is0c):	BU(8, (64,50000	(1st	tape)
		BU(8,50000(64,50000	(2nd	tape)
		BU(8,100000(64,39264	(3rd	tape)

Restoring onto hard disk: replace BU by RS.

Saving a 2nd hard disk: replace 8 by 24.

Example: backup an usr1 area of the 1st MegaFile 1300

1.	load TDS1	**(prompt %)**
2. Input:	sa__urld K271	**(prompt &)**

Insert 1st tape

3. Input:	1(64	**(prompt &)**
4. Input:	BU(8,29172(64,50000	**(prompt &)**

Insert 2nd tape

5. Input:	1(64	**(prompt &)**
6. Input:	BU(8,79172(64,50000	**(prompt &)**

Insert 3rd tape

7. Input:	1(64	**(prompt &)**
8. Input:	BU(8,129172(64,41576	**(prompt &)**

Example:re: store a complete backup of a 2nd MIC 1355

1.	load TDS1	**(prompt %)**
2. Input:	sa__urld K274	**(prompt &)**

Insert 1st tape

3. Input:	1(64	**(prompt &)**
4. Input:	RS(24,(64,50000	**(prompt &)**

Insert 2nd tape

5. Input:	1(64	**(prompt &)**
6. Input:	RS(24,50000(64,50000	**(prompt &)**

a. s. o.

Commands for MX2+ (Micropolis 1325 80Mbyte):

rewinding tape		1(84,	
root area	(/dev/sd0a):	**BU(8,(48,6192**	
usr area	(/dev/sd0g):	**BU(8,15480(48,57312**	
entire disk	(/dev/sd0c):	**BU(8, (48,50000**	**(1st tape)**
		BU(8,50000(48,22728	**(2nd tape)**

Restoring onto hard disk: replace BU by RS.

Saving a 2nd hard disk: replace 8 by 24.

2 TDS2

ON LINE

5 DISKETTE

see Service Aids Overview

Service-Software
SINIX Systeme

Order no.: U64530-J-7600

X STAMPANTI (TESTARLE)

*NOTA

XTDS2

DISCHETTI

	SINW	C30
	SINW1	MX2
	SINW2	MX300
		MX500
	SINW5	
	SINW6	C30

CREARE UTENTE

SERVICE
OTHER
EXPERT

PASSWD = SERVICE

3 Test programs Firmware (Monitor)

3.1 General

This monitor is located on the firmware of the D408 processor board. It consists of extensive test and diagnostic procedures, as well as the system loader itself.

This description shows the most important functions that may be used for localizing errors.

The firmware consists of 3 parts:

- self-test after power on
- loader
- operable test programs

Jumping from one program to any other program is possible:

from	to	Power-hold flip-flop (PHFF) set		
FW monitor	Initial program loader	u	PHFF	will be reset
Initial program loader	FW monitor	ESC	PHFF	remains reset
Initial program loader	FW monitor	END	PHFF	will be set
Monitor	Self-test	cpc,7000000 g		

The power-hold flip-flop influences the test steps. If the power-hold FF is set at the start of the FW, the system is started e.g. by rebooting. In this case, the memory and MMU are not tested, i.e. the contents of the memory remains available for diagnosis.

3.2 Firmware Monitor

The firmware monitor allows the addressing of all components on the multibus and thus a short test.

If a 9001 Printer is connected to channel tty01, all test steps can be logged (lpr on/off).

The following help menu is output:

SIEMENS-D408 Monitor (Rev. 1.2V2) 06.11.1987

@ = addr L = length C = hex-char # = number

for teleservice commands press u CR CR and see help there

all regs	a	change	c[pc,r0,..,m[b,w,d]@] = C
display	d @ L	display string	D @
move	m @ @ L [,w,d]	fill	f @ @ C [,w,d]
go/ go1 (pc)	[g,G]	step/1 (pc)	[s,S]
load	1 @ C...C	disassemble	b @ L
read [mm,ic,fp]	r [0,1,2]	write mmu	w [0,...,f] = C
memory size	t1		
urload	u	acc = acc op#	[0 + -*/%]#
lpr on/off	P	keyboard -> int	T
verify	v @ L		

3.3 Examples

Start up the monitor:

Press the DEBUG key while loading from the floppy disk.
The " * " is displayed.
Enter <CR> to display the help menu.

If loading is unsuccessful, the monitor starts automatically with the " * " character.

By means of the following commands, the memory contents can be manipulated, tested and compared. Also defined test patterns can be written onto mass-storage media, reloaded into specific memory segments and compared with each other. In this way it is possible to trace down an error without TDS1.

Display memory contents

Syntax: d @ L

d: display
@: hex. address as of which the display is supposed to start
L: Length of the segment to be displayed (hex)

Example: d 20000 20

start address: 20000 display: 32 bytes

Display memory contents, ASCII

Syntax: D @

d: display
@: hex. address as of which the display is supposed to start

Example: D 40000

Start address: 40000; all characters to be saved in the memory are interpreted as ASCII characters and displayed including the hyphen (00h).

The following functions must be called in the 'urlader' (initial loader).

Input: u
A special help menu is displayed after entering <CR> once more.

Fill memory with specific pattern

Syntax: f[b,w,d] @1 @2 C

f:	fill
b:	bytewise
w:	wordwise (2 bytes)
d:	dublewordwise (4bytes)
@1:	start address (hex)
@2:	end address (hex)
C:	fill character (hex)

Example: fd 20000 30000 abcd

Fills the memory address 20000 up to end address 30000 with the doubleword abcd

Compare memory contents

Syntax: s=,,b @1 @2 L

s:	string operation
=:	compare
b:	bytewise
@1:	start address 1 (hex)
@2:	start address 2 (hex)
L:	length of comparison (hex)

Example: s=,,b 20000 40000 20

Compares memory contents, starting with address 20000 resp. 40000. Length: 32 bytes. In case of diefferent contents, a message is displayed on monitor like:

1@00020000 = 00005555 2@00040000 = 00002020

The entry of <CR> causes further differences.

Input: <DEL>
Display: :
Input: u <CR>
Display: 'urlader' menu (IPL menu), further commands may be entered.

Move memory contents

Syntax: sm,,b @1 @2 L

s:	string operation
m:	move
b:	bytewise
@1:	start address (hex)
@2:	target address (hex)
L:	number of bytes to be moved (hex)

Example: sm,,b 20000 40000 40

Copies 64 bytes from address 20000 to address 40000. The contents in address 20000 is preserved.

Check of mass memory

The following checks are useful in case of unsuccesfully booting from floppy disk or hard disk. Those functions examine wether an access to the storage medium is generally possible. Only reading accesses should be done.

Syntax: (r,w) (unit, offset) (@,L)

r:	read	
w:	write **(Caution: Data may be lost!)**	
unit:	hard disk 0:	0
	hard disk 1:	16
	floppy disk:	32
offset:	offset in Kbytes	
@:	start address (hex) of the data area to be read or written	
L:	length of the data area to be read or written in Kbytes	

Example: r (0,0) (30000,1)
reads data from hard disk 0, block 0 starting at memory address 30000, length 1 Kbyte

r (32,0) (20000,1)
reads data from floppy disk, block 0, starting at address 20000, length 1 Kbyte

Booting of system

Syntax:	(unit, offset)
unit:	0 = hard disk 0
	32 = floppy disk
offset:	offset from beginning of partition in Kbytes

Example: (0,0)
boots from hard disk 0

(32,0)
boots from floppy disk

6.1.4 Bearbeiten einer TDS1 - Diskette

Ein "mounten" der TDS1-Diskette ist nicht möglich!

Ändern einer bestehenden Diskette ist mit Hilfe des Programms 'mFARDIR1' auf den SINIX-Rechnern MX300, MX2, MX2 + (SINIX System 5, sie-universe) möglich:

Vorgehen:

1. Einlesen der Diskette in ein leeres Directory **(tar xv)**
2. Ändern, hinzufügen, löschen von Dateien

   Achtung: TDS_KERNEL, TDS.txt, _cat, _more, _ls, mFARDIR1, mFARDIR2, tds.out dürfen nicht gelöscht werden !
3. Erzeugen der neuen Directory-Datei **(mFARDIR1)**
4. Abspeichern auf Diskette **(tar cv *)**

Eine neu formatierte Diskette kann zu diesem Zweck nicht verwendet werden, da "tar cv *" nur Partition 2 beschreibt.

In diesem Fall muß zuerst eine 1:1 Kopie der ursprünglichen TDS1-Diskette erzeugt werden.

6.1.5 Menü-System

Seit der Version 5.C ist ein neues Menü-System eingeführt.

Vorteile:
- bei kritischen Kommandos erfolgt eine Sicherheitsabfrage
- 'direkter Kontakt' mit sa_urld wird weitgehend vermieden.

Aufruf des Menü-Systems erfolgt durch das Kommando "**menue**"

Die STARTUP-Datei enthält dieses Kommando; nach Laden des TDS1 gelangt man also stets in das Menü-System.

Mit dem Kommando "**z**" wird das Menü-System verlassen und man erhält das Prompt des TDS1, " % ".

6.2.2 Protokollieren des Ablaufs

Mit dem Hilfsprogramm **'tmod'** kann der Ablauf der Tests auf Drucker oder auf Diskette (Datei **tds.out**) protokolliert werden.

1. Protokoll in die Datei tds.out:

vor Aufruf der Tests:	**tmod -c 0**	(löscht Inhalt)
	tmod -i 2	(initialisiert tds.out)
nach Ablauf der Tests:	**tmod -f 0**	(sichert Protokoll nach tds.out)
Lesen des Protokolls:	**_more tds.out**	

Die Protokoll-Datei **tds.out** kann auch unter SINIX auf die Platte kopiert und wie jede Text-Datei ausgedruckt werden.

2. Protokoll auf Drucker:

Der Protokoll-Drucker muß an Kanal 01 angeschlossen sein!

'Drucker ein':	**tmod 1**
'Drucker aus':	**tmod 0**

Es wird nur der Ablauf innerhalb des TDS1 protokolliert, nicht Programme, die unter sa_urld ablaufen!
(siehe Kapitel 6.6 Kommandos, Syntax des sa_urld)

6.1.6 Wechsel innerhalb der Test-Komponenten

TDS1, sa_urld und der Hardware-Monitor bilden zusammen ein leistungsfähiges Fehlererkennungs- und Diagnosesystem. (Der HW-Monitor und dessen Unterprogramm, der Urlader, sind auf der Firmware der CPU lokalisiert.)

Die folgende Tabelle gibt einen Überblick, wie die einzelnen Komponenten aufgerufen werden können.

	Prompt
TDS1	%
sa_urld	&
Monitor	*
Lader	:

Quelle	Ziel	Eingabe
TDS1	Menü-System	menue
Menü-System	TDS1	z
TDS1	sa_urld	sa_urld
TDS1	Monitor	<CTRL> <DEL>
Monitor	TDS1	G<CR> <CR>
Monitor	sa_urld	G<CR>
Monitor	Lader	u
sa_urld	TDS1	e
sa_urld	Monitor	<CTRL> <DEL>
Lader	Monitor	<END>
Lader	TDS1 (Diskette)	(32,0)
Lader	SINIX (Platte)	(00,0)

6.2 TDS1-Hilfsprogramme und Menübildschirme

6.2.1 Hilfsfunktionen

_cat file		Ausgabe einer Datei auf Bildschirm
_cat -file #		Sichern eines Speicherinhalts ab Adresse # in eine Datei. Die Datei muß bereits existieren.
_ls		Inhaltsverzeichnis der Diskette wird ausgegeben
_more file		Interaktiv gesteuertes Durchblättern von Dateien
_xd		SINIX xd-Kommando
breakt		Ausgabestatus des zuletzt beendeten Programms
breakt § <hexbyte>		Bei fehlerhaftem Programmende wird der Wert von <hexbyte> an das Diagnose-Register und somit an die LED des Front-Panels übergeben
breakt S		Statusauswertung des sa_urld-Programms
echo		SINIX echo-Kommando
fill # # <byte>		Beschreibt Speicherbereich mit Bytemuster Beispiel: fill 200000 300000 1a beschreibt Bereich 2 MB - 3 MB mit Muster '1a'
tmod		Terminal-Mode einstellen
	-i	Protokolldatei tds.out initialisieren
	-f	Sichern des Protokolls nach tds.out
	-c	Inhalt der tds.out löschen
	0	Ausgabe nur auf Bildschirm
	1	Ausgabe auf BS und Drucker
	2	Ausgabe auf BS und in tds.out
	3	Ausgabe auf BS, Drucker und in tds.out
	von	Video time out einschalten
	voff	Video time out ausschalten
	int	Internationale Tastatur
	ger	Deutsche Tastatur
	norm	BS-Darstellung normal
	inv	BS-Darstellung invers
	OD	Bildschirmausgabe einschalten
	Od	Bildschirmausgabe ausschalten

V.24

Beispiele für Verbindungskabel

Verbindung zweier Daten<u>end</u>einrichtungen "DEE" bzw. "DTE"

Primitives Null-Modem-Kabel

- Universalkabel (funktioniert bei allen Schnittstellen, die nicht modemfähig sind)
- schaltet jedes Hardwareprotokoll aus
- Softwareprotokoll ist notwendig

```
                            Pin                 Pin

Sendedaten                   2 ------>-------- 3  Empfangsdaten
          D1/TxD                                  D2/RxD

Empfangsdaten                3 ------<-------- 2  Sendedaten
          D2/RxD                                  D1/TxD

Signalerde                   7 --------------- 7  Signalerde
            E2/SG                                 E2/SG

Sendeteil                    4 ->-┐       ┌-<- 4  Sendeteil
einschalten S2/RTS                │       │       einschalten
                                  │       │
Sendebereitschaft?           5 -<-┘       └->- 5  Sendebereitschaft?
          M2/CTS                                  M2/CTS

Modem einge-                 6 -<-┐       ┌->- 6  Modem einge-
schaltet ?   M1/DSR               │       │       schaltet ?
                                  │       │
Verbindung aufge-            8 -<-┤       ├->- 8  Verbindung aufge-
baut ?     M5/DCD                 │       │       M5/DCD   baut ?
                                  │       │
DEE-betriebsber.            20 ->-┘       └-<- 20 DEE-betriebsbereit
          S1/DTR                                  S1/DTR
```

Der Begriff "Nullmodem-Kabel" ist nicht eindeutig definiert !

Kabel für RTS/CTS-Protokoll

Das folgende Kabel können Sie verwenden, falls das Peripheriegerät die Emfangsbereitschaft auf der RTS-Leitung (S2) signalisiert.

	Pin		Pin	
Sendedaten D1/TxD	2	——>——	3	Empfangsdaten D2/RxD
Empfangsdaten D2/RxD	3	——<——	2	Sendedaten D1/TxD
Signalerde E2/SG	7	————	7	Signalerde E2/SG

Leitungen für Datenflußprotokoll:

	Pin		Pin	
Sendeteil einschalten S2/RTS	4	——>——	5	Sendebereitschaft ? M2/CTS
Sendebereitschaft ? M2/CTS	5	——<——	4	Sendeteil S2/RTS einschalten

Bedienung der Modemleitungen M1 und M5:

	Pin		Pin	
Verbindung bereit ? M5/DCD	8	——<——	20	DEE-betriebsber. S1/DTR
Modem eingeschal-tet ? M1/DSR	6			
DEE-betriebsbereit S1/DTR	20	——>——	8	Verbindung bereit ? M5/DCD
			6	Modem eingeschal-tet ? M1/DSR

SIEMENS

Part VII Teleservice

Part VII

Teleservice (TS)

Contents

Page

1 General

Teleservice (TS) with the MX300 is posible either via SINIX or via the firmware ('urlader' = initial program loader) of the CPU.

The TS connection is always realized via the RS232 channel of the CPU PCB. (25 pin plug at at interface 1). Each MX300 is preset for teleservice (TS).

1.1 Operating Modes

TS with a MX300 operates in two operation modes:

Mode 1: SINIX is started (online teleservice)

TS is effected via a regular login channel. An init must be started for this channel. The same conditions as for a local terminal shall apply. Speed and operating mode are regulated by the files *ttys ttytype gettytab.*

The kernel messages are output at the local console.

Teleservice channel: /dev/ttyc1

Mode 2: Dialog with the firmware (offline teleservice)

A parameter of the Clock NV RAM determines whether teleservice via firmware is possible or not. If the TS enable bit is set, at any startup there is a 5 sec period to build up the connection to the firmware (also called offline TS).

If the TS enable bit is not set, no message about teleservice is output at startup.

Speed and code frame are depositted in the Clock NV RAM. If the 'TS enable flag' is set in the Clock NV Ram, at every system startup TS can run with the firmware.

If SINIX is booted it receives the TS parameters from the firmware. The kernel messages are now output on the remote console.

Teleservice channel: /dev/ttyc1

Switching the messages onto the local console is only possible by rebooting.

*** Please note the remarks at 2.3 ***
*** Important Instructions ***

1.2 Overview of Device Files

To connect TS, the V24 connector (plug X6) on the CPU is used.

			Major/ Minor	
TS console	plug X6	CPU	0,1	/dev/ttyc1
local console	plug 0	SERAD	5,0	/dev/tty00
reserved		CPU	0,0	/dev/ttyc0

Note:

The previous series up to approx. serial no. 100 has been delivered with firmware (FW) revision 4 or upgraded with customer modification 8/576. (Quickcheck: at system startup the test steps FW = 361 D0408 D098 E04682 are output).

2 Installation of Teleservice into the Customer's MX300

(See also user manual Teleservice)

The TS connection is always realized via the RS232 channel of the CPU PCP. (25 pin plug at at interface 1). Each MX300 is preset for teleservice (TS).

2.1 Prepare SINIX for online Teleservice

Hardware: All the necessary equipment is contained in the MX300, i.e.

- own channel with RS232 level on the CPU *ttyc1*
- connection line to connection area bus 1

Check of entries

/etc/ttytype	terminal type, its name ttycl must exist
...	
97801 ttycl	
...	
/usr/tele	home directory tele must exist
mkdir /usr/tele chown tele/usr/tele	otherwise create
/etc/group	ther must exist an entry in /etc/group
...	otherwise complete file
other::10:gast,mgast,tele	
...	

Set parameters of TS and release

- file /etc/ttys

```
16ttycl
||_________ speed corresponding gettytab
|           (c=300, d=600, f=1200, 6=2400, 7=4800, 2=9600)
|_________ 1 init is started     0 init is not started
```

After editing the file ttys init must be restarted, to make the entries effective.

kill -1 1

2.2 Setup Parameters of Firmware (FW) via Monitor for offline TS

All TS parameters are deposit in the Clock NV RAM.

Without setting up parameters, the following values are default:
7 bit, odd parity, 1200 b/s, Teleservice enabled

The setting of parameters is possible with the command /etc/coconfig.

Firmware Monitor

Start the FW monitor:	keys <CTRL> and <DEL> before testend
E SVC	supervisor call
*	prompt monitor
u	start loader/ TS commands
:	prompt loader
	(END = return to monitor)

Possible commands

TS?	this help
TSe [d]	TS enable [with default parameter]
TS [d,l]	TS [disable, lines (display modem line) end with <DEL>]
TSp [?] [i1 i2]	Display, set TS parameters
TShs [?] [string]	TS handshake signals [info, help] [param]
TSf [?] [string]	TS condition flags [info, help] [param]
res [e,d]	Reset with BREAK [enable, disable]

Command description

- TSe Teleservice enable: S1 is set, connection possible. Waiting time according to wfc flag. After waiting time passed, S1 is reset.

- TSe d Teleservice enable with default parameter. TS is enabled with 1200 b/sec, 7 bit, odd parity. These values are also transfered to the Clock NV RAM.

- TSd Teleservice disable: Clock NV RAM remains unchanged.

- TS1 Teleservice line: The status of modem signals S1 M1 S2 M2 M5 is displayed for information. End with <DEL>
- TSp? Teleservice line parameters are displayed

- TSp [i1] [i2]   set TS line parameters

index_1 = 0	300 bit/s	index_2 = 0	7 bit/char	odd	parity
index_1 = 1	600 bit/s	index_2 = 1	7 bit/char	even	parity
index_1 = 2	1200 bit/s	index_2 = 2	7 bit/char	no	parity
index_1 = 3	2400 bit/s	index_2 = 3	8 bit/char	odd	parity
index_1 = 4	4800 bit/s	index_2 = 4	8 bit/char	even	parity
index_1 = 5	9600 bit/s	index_2 = 5	8 bit/char	no	parity
index_1 = 6	38400 bit/s				

Example: TSp 3 0

- TShs?   Used and available modem signals are displayed.

- TShs /S1/S2/S4/M3/M4/M1/M2/M5   Set modem signals to be used.
TShs / deletes all entries

Example: TShs S1/M1

Note: Modem line M4 will not be supported and interpreted.

- TSf?   Outputs setted and available TS flags. These flags may control additional functions.

-TSf tsa/tse/wfc/pwd/S4
Sets Teleservice flags. Only the flags tse and wfc are important for the user.

tsa   Teleservice active:
is set by the firmware when connection is established and interpreted when SINIX system is started up. Is the tsa flag active, the console messages are output on TS channel (remote console).
Default: tsa not active

tse   Teleservice enable:
After self-test of firmware Ts connection may be activated. Latency see wfc flag.

With FW rev.5 the user may extend the time out period temporarily to 10 minutes with <ESC>.

wfc   Wait for connect:
When the flag is active, the latency for built up a connection is always 10 minutes.

Caution: After clearing down a TS offline connection the wfc flag must be reset.

pwd   Reserved for password inquiry (not yet supported).

Example: TSf tse

2.3 Setup Teleservice parameters via SINIX

All parameters of Clock NV RAM described under 2.2 can be set with SINIX via the command /etc/coconfig.

coconfig see next page.

Example: **coconfig default 2400 remote wfc**

COCONFIG (8) UNIX Programmer's Manual COCONFIG(8)

NAME

coconfig - configure console tty line

SYNOPSIS

/etc/coconfig [- c] [select_opt line_opt spec_opt]

DESCRIPTION

Coconfig displays or changes configuration attributes associated with the console tty line and makes them permanent.

All options expect the local/remote setting affect the remote tty line.

The options for select_opt are:

default — default setting of all parameters: local line, odd parity, 7 bit/character, 2400 baud.

local — select local line.

remote — select remote line.

The options for line_opt are:

7,8 — these specify the datasize (number of bits per character).

no, odd, even
selects the parity.

300, ..., 38400
selects the baudrate.

The options for spec_opt are:

wfc — selection of timeout at reboot.

pwd — password checking enabled.

s4 — V24 S4/M4 support.

If coconfig is invoked with -c all console configuration attributes are cleared.

All console configuration changes become first valid at the next reboot.

3 Important Instructions

Booting SINIX via Teleservice

- Avoid disconnection:
  In SINIX the connection is refused after 1 min. after a wrong/unsuccessful attempt of connection.
  This disconnection has to be avoided during booting. For this purpose input some blanks after the fsck message /dev/is0a xxx files... is output. The 1 min. timer is stopped in this way.

- Remote console, local console
  If the remote console (TS) is active, the console messages are output only there.
  A switchover to local console is only possible by rebooting. Prior to a disconnection from TS, the system must be switched over to local console by rebooting. Otherwise, all processes that output a console message are locked.
  Example: su

- Renewals with firmware rev. 5
  With the Teleservice enable flag (TSe) set, the user has only 5 sec. to set up a TS connection.

  With rev. 5 the user has the opportunity to extend the wait time for a process to 10 min. at the local console with the ESC key.

Kabel für DTR-Handshake

<u>Grundregeln für Hardwareprotokoll:</u>

- Die M2-Leitung muß über das Druckerkabel mit der Leitung verbunden werden, auf der das Peripheriegerät seine Emfangsbereitschaft signalisiert (hier: S1/DTR).
- Die Modem-Leitungen müssen mit einer Leitung verbunden werden, die immer auf +12 V steht.

Die meisten Drucker oder Plotter signalisieren ihre Empfangsbereitschaft über die DTR-(Data-Terminal-Ready) Leitung. Bei dem folgenden Beispielkabel handelt es sich daher um ein typisches Drucker- oder Plotterkabel:

	Pin		Pin	
Sendedaten D1/TxD	2	——>——	3	Empfangsdaten D2/RxD
Empfangsdaten D2/RxD	3	——<——	2	Sendedaten D1/TxD
Signalerde E2/SG	7	————	7	Signalerde E2/SG

Leitungen für Datenflußprotokoll:

	Pin		Pin	
Sendebereitschaft ? M2/CTS	5	——<——	20	DEE-betriebsber. S1/DTR
DEE-betriebsbereit S1/DTR	20	——>——	5	Sendebereitschaft ? M2/CTS

Bedienung der Modemleitungen M1 und M5:

	Pin		Pin	
Sendeteil einschalten S2/RTS	4	——>——	8	Verbindung bereit ? M5/DCD
			6	Modem eingeschal-tet ? M1/DSR
Verbindung bereit ? M5/DCD	8	——<——	4	Sendeteil einschalten S2/RTS
Modem eingeschal-tet ? M1/DSR	6			

SIEMENS

Part VIII
HW-Description

Part VIII

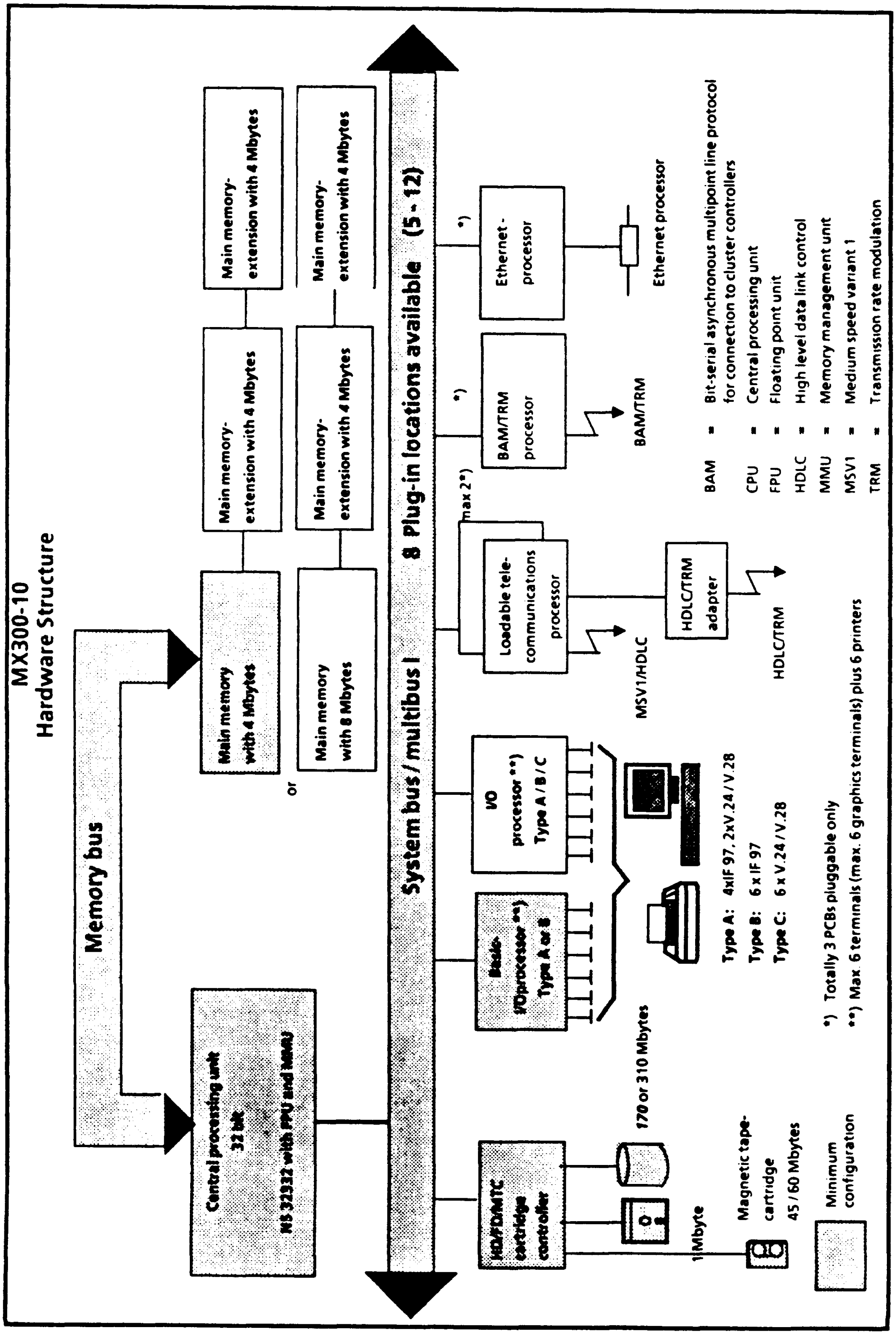
Power Supply MX300

Contents

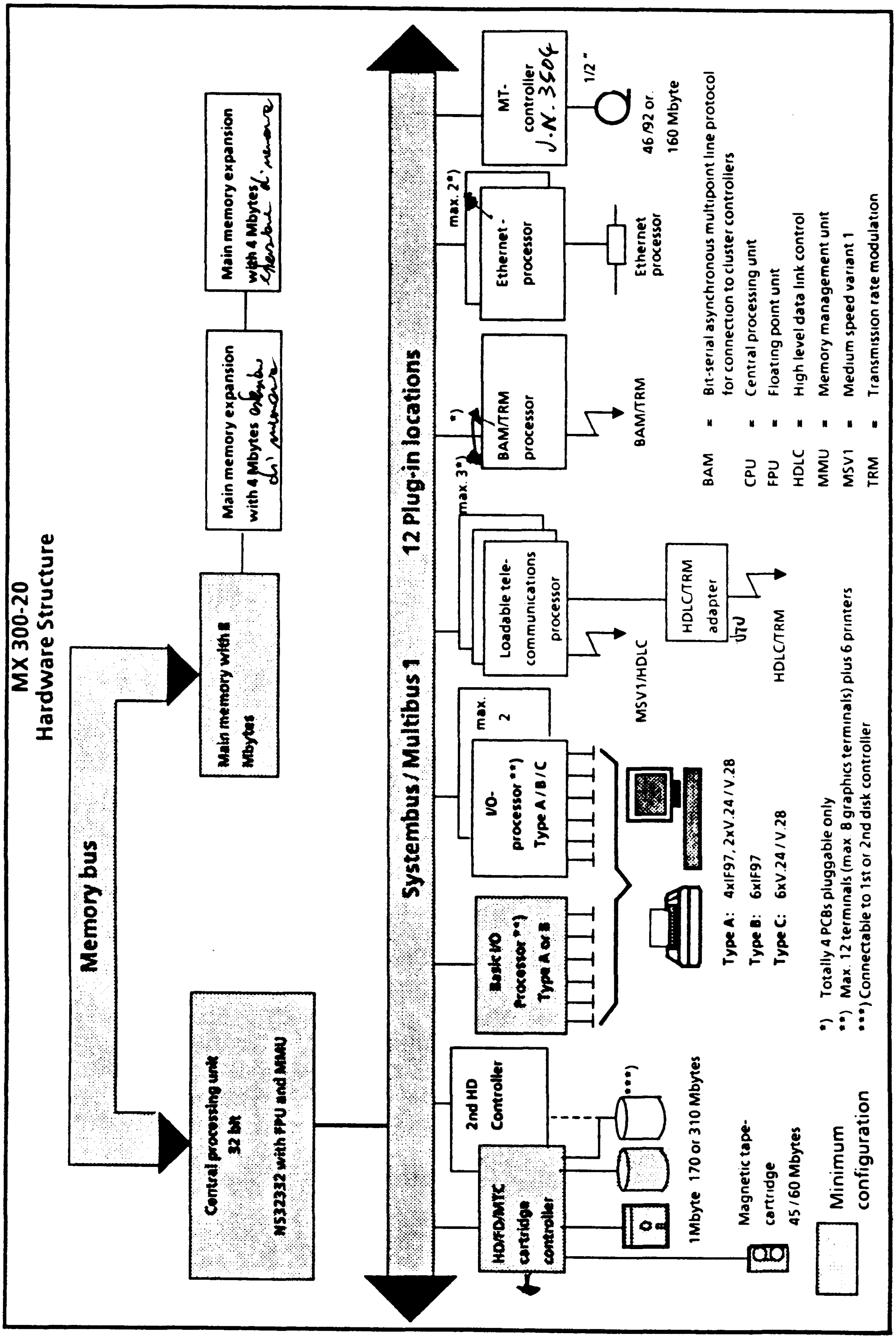
Page

1 Summary Description and Overview

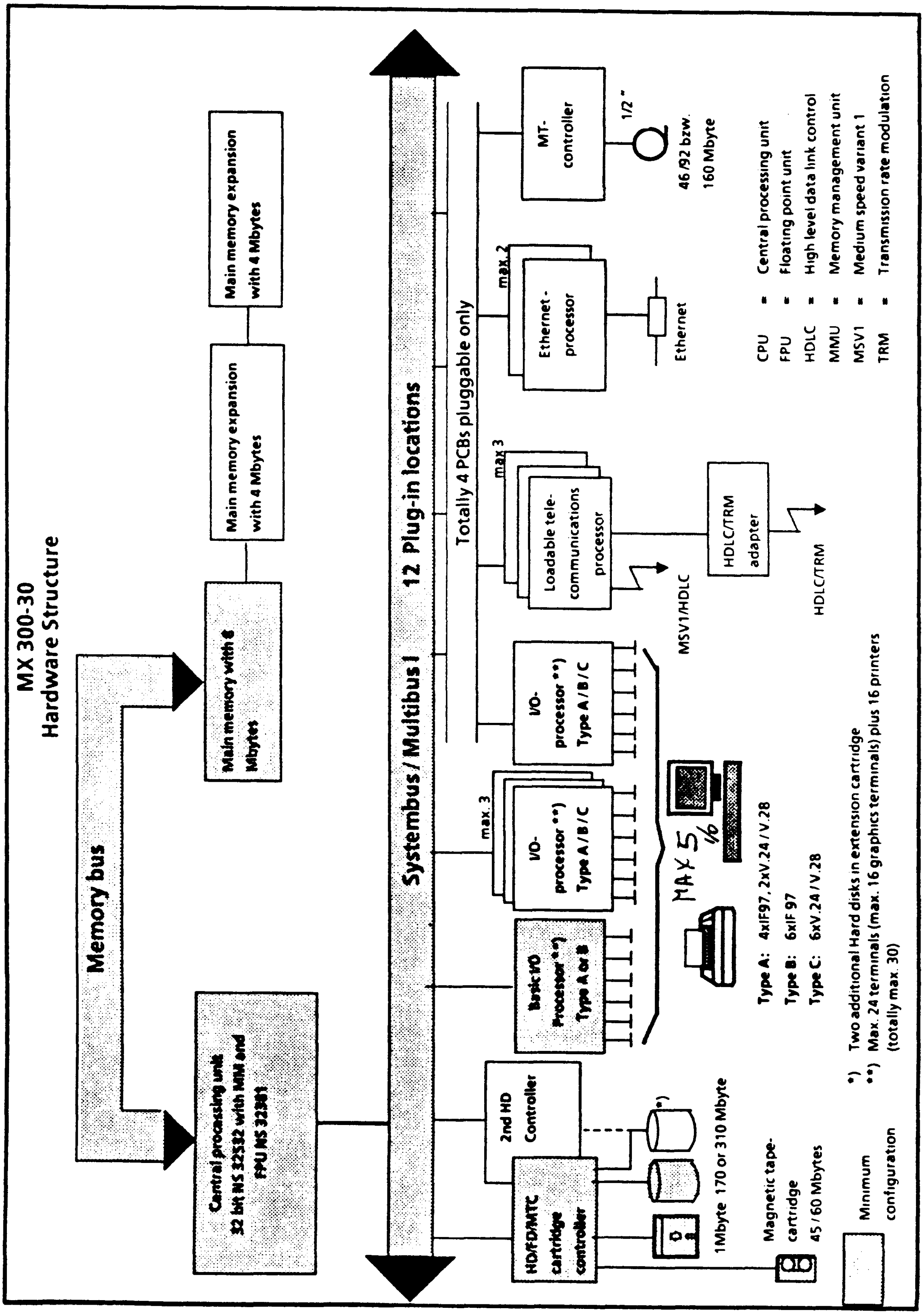
1.1 MX300-10 Hardware Structure



1.2 MX300-20 Hardware Structure



1.3 MX300-30 Hardware Structure



2 CPU and Memory Board Functional Description

Item code no.:	S 26361 - D 408		(CPUAS)	
Item code no.:	S 26361 - D 469		(CPUBC)	
Item code no.:	S 26361 - D 409-V4	(4 Mbyte)	(MEMAL)	
Item code no.:	S 26361 - D 409-V8	(8 Mbyte)	(MEMAL)	
Item code no.:	S 26361 - D 449	(4 Mbyte)	(MEMAF)	(babyboard)

2.1 Overview CPU

The characteristical components for the performance of the CPUAS are the National Semiconductor microprocessor NS 32332, the memory management unit (MMU) NS 32382 and the floating point unit (FPU) NS 32081 which all operate with a 15MHz clock frequency.

A virtual memory up to 4 Gbyte can be addressed via demand paging with a page size of 4 kbyte.

However, the new alternative processor PCB CPUBC is equipped with the microprocessor NS 32532 and integrated MMU, instructions cache (1 Kbyte) and a new FPU NS32381, which increases the ferquency up to 25 MHz and multiplies the performance 2-3 times.

Further characteristics:

* INTEL MULTIBUS I compatible.
* Maximal speed by means of:
  1. 15 MHz clock pulse for CPU NS32332 / MMU NS32382 / FPU NS32081
  2. Due to a discreet RAM controller the memory is accessed via a 32-bit local data bus with a wait state (= 5 pulses). In the burst mode, however, that is automatically switched on by the CPU in data, read and prefetch cycles, the access to max. 4 doublewords takes only 11 pulses (as compared to the zero wait state = 16 pulses).
* Other busmasters may access the memory via the multibus by means of the dual port logic on the PCB.
* Quick transfer of data via the multibus interface by means of multibus-control logic
* In case of DMA the multibus mapper effects the translation of virtual address to physical address of the logical memory area
* Up to 64 kB EPROM available for booting as well as a monitor with minimal test and diagnosis.

* Motorola clock MC146818 with external battery
* The interrupt control unit (ICU) NS32202 coordinates up to 16 interrupts and also has two internal, independent timers.
* NMI controller with resettable registers for displaying the NMI cause and address.
* Two serial interfaces SS97, one can be switched to V24

2.2 Functional Groups

Memory address area of the firmware

The PCB D408 comprises a 64 kbyte ROM area consisting of a 512-kbit component which includes the hardcore text, the loader and the monitor.After RESET the entire I/O area begins at address 0. Hence the processor also starts execution of the ROM program at address 0.

At the beginning of the firmware program the firmware maps the entire ROM area in an address area starting with address 7 000 000H and by setting the MAPIO bit to 0 the lower address are is switched off for the IO decoding. Then, the entire local memory is available both to the processor and the multibus as of address 0.

Multibus address area

After power-on an automatic multibus address setting is carried out on the PCB.
The firmware determines during the memory test the size of the connected local memory and adjusts accordingly the multibus address area. If, for example, the connected local memory has a size of 8 Mbyte, the multibus address area of the PCB is automatically set from 0 to 8 Mbyte. If the memory size is 16 Mbyte, the multibus address area is analogously set from 0 to 16 Mbyte.

As the maximal size of the multibus address area is only 16 MB, another multibus memory can overlap in this case a part of this local memory area by setting the INH1/ signal. As regards the CPU, the entire 16 Mbyte local memory can furthermore be addressed.

The automatic address setting can be modified via software.

The multibus mapper

The multibus mapper is essential, for example, to the saving of data from disk to streamer, since large data blocks have to be made available quickly to the streamer via a linear address area.

The mapper consists of three fast 4 kbyte x 4 static RAMs with 35 ns access time. Thus it is possible to virtually map the 16 Mbyte multibus address area in steps of 4 kbyte into the local memory of max 16 Mbyte.

2.3 Memory Board

By using 1-Mbit components it was possible to develop for the PC-MX300 the new memory board MEMAL (S26361-D409-V*). There are two versions:

V4 with a memory capacity of 4 Mbyte, and
V8 with 8 Mbyte.

It can be operated with both CPU PCBs CPUAS and CPUBC.

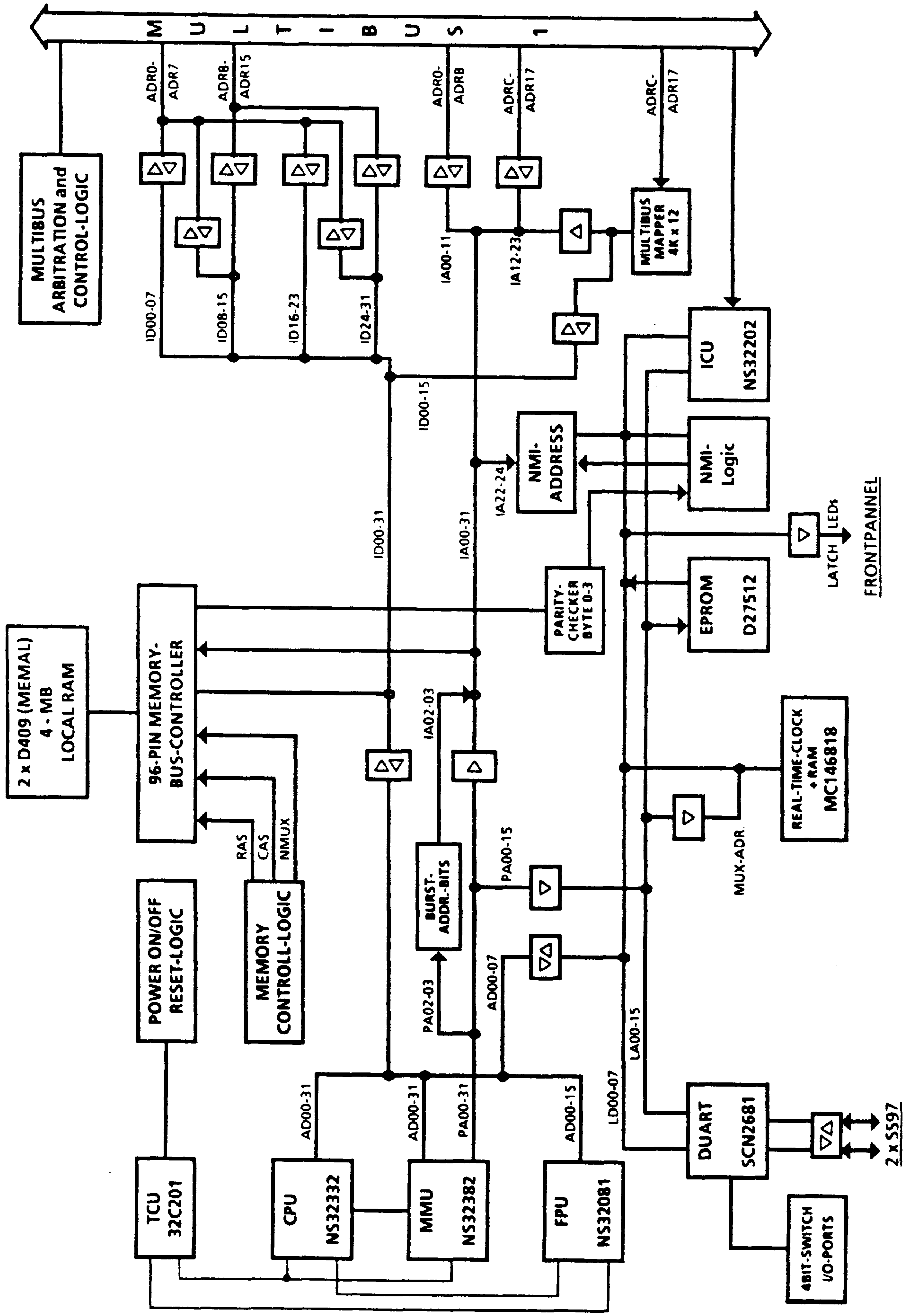
Both versions are provided with two plug-in locations each for the memory expansions MEMAF (S26361-D449) of 4 Mbyte capacity. By means of these baby-boards it is possible to upgrade a MEMAL
from 4 to 8 or 12 Mbyte, or
from 8 to 12 or 16 Mbyte total capacity.
4 Mbyte each are comprised in a "ram bank" (bank0 up to bank3), and these in turn are subdivided into BYTE0, BYTE1, BYTE2 and BYTE3 of 1 Mbyte each.

The refresh logic sets approx. every 15 microseconds a refresh request. In case of the CAS-before-RAS refresh a refresh counter is incremented automatically in the 1-Mbit chip.

The memory is organized doubleword by doubleword, each byte being secured with a parity bit (8bit + parity). Each parity error can generate independently an NMI.

The PCB is plugged in the Intel multibus in the platter, however, it is supplied by the CPU via a 96-pin memeory bus as far as addresses and data are concerned. Only power is supplied by the Intel multibus.

Block Diagram CPU



Siemens AG, 9783, U64510-J-7600, 11.88

3 Hardware Software Interface

3.1 Division of the Address Area (4Gbyte)

	Data bus width	
8 bit LOCAL I/O, after mapping 0 - 16 Mbyte. (EPROM-BOOT)	32 bit	00 000 000 H – 00 FFF FFF H
Reserve local RAM 16 Mbyte	32 bit	01 000 000 H – 01 FFF FFF H
From 32 Mbyte to 48 Mbyte 16 Mbyte MULTIBUS-RAM	16 bit	02 000 000 H – 02 FFF FFF H
From 48 Mbyte: 64 Kbyte External MULTIBUS-I/O. After 64 Kbyte repeated	16 bit	03 000 000 H – 03 00F FFF H
From (48 Mbyte + 64 Kbyte) unused address area up to 64 Mbyte		03 010 000 H – 03 FFF FFF H
From 64 Mbyte to 80 Mbyte: 16 Mbyte multibus mapper	16 bit	04 000 000 H – 04 FFF FFF H
Reserve 16 Mbyte	16 bit	05 000 000 H – 05 FFF FFF H
Reserve 16 Mbyte	16 bit	06 000 000 H – 06 FFF FFF H
16 Mbyte unmapped LOCAL I/O area from 112 Mbyte to 128 Mbyte	8 bit	07 000 000 H – 07 FFF FFF H
Repeat block 0 to 7 fff fff H consecutively		08 000 000 H – FF FFF FFF H (4 Gbyte)

3.2 Local I/O Addresses

EPROM area repeated in 64 Kbyte		07 000 000 H
		07 0FF FFF H
Basic address UHR MC146818 (NCSUHR) Memory of 50 byte Repeat 64 bytes consecutively		07 100 000 H
		07 100 03F H
Every I/O basic address starts at an 1 Mbyte limit		07 1FF FFF H
Basic address DUART SCN2681 : (CSDUART) (repeating 16 bytes)		07 200 000 H
Basic address single bit: controller (repeating 8 bytes)	xxxxxxx	07 400 000 H
Addr. prog. NMI : (FNMI) (repeating)	xxxxxxx	07 600 000 H
Addr. read NMI cause (NRDNMI) (repeating 1 byte)	xxxxxxx	07 700 000 H
Addr. diagnosis register (NCSPBD) (panel board) (repeating)	xxxxxxx	07 A00 000 H
Addr. reset NMI register (NRESNMI) (repeating 1 byte)	xxxxxxx	07 B00 000 H
Addr. Read NMI address (NRDNMIAD) (repeating 1 byte)	xxxxxxx	07 C00 000 H
Set lower MB DMA addr. and read address setting: (NCSWINDOW_LO) (repeating 1 byte)	xxxxxxx	07 D00 000 H
Set higher MB DMA addr. and read address setting: (NCSWINDOW_HI) (repeating 1 byte)	xxxxxxx	07 E00 000 H
Basic address ICU NS32202: (repeating 32 bytes)		07 F00 000 H (FF FFF E00 H)

3.3 Internal I/O Register

Register of the Motorola clock MC146818

D7 ... D0	Address
SECONDS	07 100 000 H
SECOND ALARM	07 100 001 H
MINUTES	07 100 002 H
MINUTE ALARM	07 100 003 H
HOURS	07 100 004 H
HOUR ALARM	07 100 005 H
WEEK-DAY	07 100 006 H
MONTH-DAY	07 100 007 H
MONTH	07 100 008 H
YEAR	07 100 009 H
REGISTER A	07 100 00A H
REGISTER B	07 100 00B H
REGISTER C	07 100 00C H
REGISTER D	07 100 00D H
50 Bytes USERRAM	07 100 00E H – 07 100 03F H

3.4 The Interrupt Entries of the ICU NS32202

The following signals are allocated to the interrupt entries of the ICU.

G0/IR0	:	INT0/	;Multibus interrupt
IR1	:	INT1	;Multibus interrupt
G1/IR2	:	H–COUNTER	;Internal counter (basic pulse =)
IR3	:	INT2/	;Multibus interrupt
G2/IR4	:	INT3	;Multibus interrupt
IR5	:	L–COUNTER	;Internal counter (basic pulse =)
G3/IR6	:	INT4/	;Multibus interrupt
IR7	:	INT5/	;Multibus interrupt
G4/IR8	:	INT6/	;Multibus interrupt
IR9	:	NPOWOFFINT	;Power-on line no longer active
G5/IR10	:	NAUS_INT	;Soft-off from control panel
IR11	:	INT7/	;When activating the INT7/-FF mask this interrupt
G6/IR12	:	NDUARTINT	;Interrupt from DUART SCN2681
IR13	:	not used	;Software interrupts
G7/IR14	:	not used	;Software interrupts
IR15	:	not used	;Software interrupts

4 Function Description of the I/O Processors

4.1 General

The following I/O procesors are currently being installed:

- SERAD S26361-D279
  4 * interfaces IF 97, 2 * V24

- SERAG S26361-D312
  6 * IF97

- SEAAB S26361-D364-V* in three versions
  V1 - 6 * interface IF 97
  V2 - 4 * IF 97, 2 * V24
  V3 - 6 * V 24

An I/O processor allows the connections of 6 asynchronous peripheral devices to the PC-MX300.

The data transfer rate and code frames may be set for each channel via softare.

Character output:

Characters to be output are written by the operating system to channel-specific buffers (mailbox) of programmable length.
These characters are tranferred by the I/O processor autonomously to the connected device.

Character input:

Received characters are stored by the I/O processor in the same manner in the receive buffer and read out by the operating system depending on the channel.

The data and instruction exchange is performed via a dual port RAM, a 4 kbyte RAM, that is located within the address range of 16 Mbyte.
This window can be read by both processors, the main processor and the I/O processor.
The arbitration logic prevents collisions at simultaneous access of both processors. The basic address of the window can be set via switches.

As soon as the set address has been recognized on the multibus, the I/O processor generates the INHIBIT1 signal.

Both processors can prevent a bus transfer to the respective other processor by LOCK instructions.

4.2 Technical Data

Processor 8085 with 10 MHz

Technical possible data rate

6 channels with 38 400 b/s
maximum performance of send mode approx. 150 kBit/sec
(SEAAB-V3 approx. 120 kBit/sec)
maximum performance of receiving mode approx. 150 kBit/sec
(SERAD, SERAG approx. 90 kBit/sec)

Power draw	+ 5V 1.8 A 12 V 10 mA

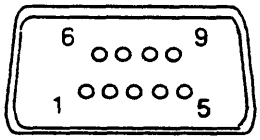
4.3 Connections of the I/O PCBs

P1 86 pin connection Intel-Multibus
P2 60 pin connection Intel-Multibus
P3 30 pin connection IF D0-D2
P4 30 pin connection IF D3-D5
P5 6 pin connection Remote ON
P6 6 pin connection not used

SS97

4.4 Pin Assignment of the Interfaces IF97 and V24

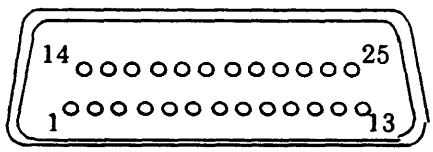
Interface IF97:



Plugs

Pin:	Name	Description
1	DIN-P	Receiving data — IMPORTANTE
6	DIN-N	
3	DOUT-P	Sending data — IMPORTANTE
8	DOUT-N	
4	CRS-P	Reset signal from PC when Power ON
9	CRS-N	
7	FE/PO-L	Remote ON (Power ON signal PC to periphal device) MX 2 PLUS
5	0 V	Ground —
2	UH	Auxiliary voltage + 12V (max. 30 mA)

Interface V24: Plugs



V24

Pin:	Name DIN	Name I/O	Description
1	E1	PG	Protection ground
2	D1	TCD	Sending data
3	D2	RCD •	Receiving data
4	S2	RTS	Sending device ON
5	M2	CTS	Clear to send
6	M1	DSR	Operation active
7	E2	SG	Signal ground
8	M5	DCD	Receiving signal level
20	S1	DTR	DEE active
24	T1	--	Sending rate, not applied

5 Hard-Disk System

The following types are used:

MegaFile	1300	S26261-K111
Micropolis	1355	S26261-K184

5.1 Technical Data

	MF1300		MIC1355	
Capacity (non formatted)	310.5	Mbyte	170	Mbyte
Capacity (formatted)	248.1	Mbyte	146.8	Mbyte
No. of disks	7		5	
No. of heads	12		8	
Tracks per head	1216		1024	
Sectors per head	34	+ 1 spare-s	34	+ 1 spare-s
Bytes per sector (data)	512		512	
Transfer rate	10	Mbit/s	10	Mbit/s
Positioning time track to track	5	ms	6	ms
Average	25	ms	28	ms
Maximum	50	ms	62	ms
Rotational speed	3534	rpm	3600	rpm
Alternate tracks	60		40	

5.2 Organisation of the Data on Hard Disk

Each hard disk head consists of 1216 tracks (resp. 1024 tracks in the case of the 170 Mbyte disk), each again subdivided in 35 sectors.

Each sector consists of:

A. Address area (ID field)

B. Data area

A. Address area: contains essentially

1. Synchronisation pattern (synchronisation via data bus)
2. Address field (caylinder, head, sector, flags)
3. Check code (error correction code)

B. Data area: contains essentially

1. Synchronisation pattern
2. Data field (512 bytes)
3. Error correction code bytes (ECC)

5.3 Mass Memory Controller Storager

Brief description

The storager operates with a 68000 microprocessor (12.5 MHz). Up to 12 KByte data can be temporarily stored in an 16 K on board memory.

The storager support

- 2 hard disk drives (ESDI-, ST506- or ST412HP-interface)
- 1 floppy disk drive
- 1 streamer tape (QIC-02-interface)

All units connected to the storager II controller have a so-called logical address (LUN = logical unit number) for their identification.

Storager no.	Unit	LUN
1	1st disk	0
1	2nd disk	1
1	Floppy	2
1	Streamer	4
2	1st disk	0
2	2nd disk	1

The magnetic tape unit 3504-160 is the only unit connected to the XYLOGICS controller and therefore it needs no particular LUN.

General Features

- Virtual Buffer Architecture

  The 12 Kbytes can be treated as series of sector buffers. At any given time, individual buffers may be allocated to any of three devices: the disk, the tape, or the multibus. Since each device has a seemingly limitless supply of buffers. Disk/multibus and tape/multibus operations can proceed simultaneously and independently.

- Intelligent Caching

  When the storager has completed a read operation and transferred the requested data, it will continue to read and cache sectors until it has either filled all its available buffer, or it receives another command from the host. This form of caching is particularly useful for UNIX-like operation systems (disk activity decreases in case of a large number of short transactions and hence system throughput will greatly improve).

- Zero Latency

  Storager begins reading data as soon as the heads land on the track and begins transferring data as soon as it encounters a sector of interest. It does not wait to rotate around to the beginning of the requested string. In this manner, the storager will never take more than a single revolution to transfer an entire track of data. (System throughput- improvement in case of large transactions).

- Automatic Error Correction (ECC)

  The following correction routines are available in case of the storager cannot read/write the data of a requested sector:

  1. The storager made 8 retries being not successfull
  2. Recalibration to track 0. New positioning to the requested sector and once more 8 retries being not successfull
  3. ECC is used. Being not successfull, an error message is referred to SINIX.

Diagnosis LED's

DS2:			ON	68000 processor active
DS3:	a. normal mode	Bit 0:	ON	(idle)
		Bit 1:	ON	(busy)
		Bit 2:	ON	power on test
		Bit 3:	ON	RUN diagnostics
	b. error mode	DS 3	displays the iopb.	

6 Intel Multibus 1

6.1 Brief Description

The multibus represents a versatile communication path on which highly different subsystems can exchange information. The subsystems act as master or slave units, respectively.

The master units can be transferred parallelly in a width of up to 32 bit.

The bus consists of the two subunits P1 and P2.

The MX300 works with a virtual address area of 4 Gbyte and also with 32 address lines.P1 and P2 are needed for this purpose.

The data width on the multibus is 16 bit (only the jumper between CPU and memory is 32 bit wide).

The entire Intel multibus 1 mainly consists of:

16 data lines
32 address lines
8 interrupt lines
control lines
power supply lines

Multibus P1

	Plug No..	Side of Components		Plug No.	Side of Conntrol lines	
		Mnemonic	Function		Mnemonic	Function
Power Supply	1 3 5 7 9 11	GND +5V +5V +12V -5V GND	0 Volt +5 Volt +5 Volt +12 Volt -5 Volt 0 Volt	2 4 6 8 10 12	GND +5V +5V +12V -5V GND	0 Volt +5 Volt +5 Volt +12 Volt - 5 Volt 0 Volt
Control Signals	13 15 17 19 21 23	BCKL/ BPRN/ BUSY/ MRDC/ IORC/ XACK/	Bus Clock Bus Priority in Bus Busy Memory Read Command I/O Read Command Transfer Acknowledge	14 16 18 20 22 24	INIT/ BPRO/ BREQ/ MWTC/ IOWC/ INH1/	Inititalize Bus Priority Out Bus Request Memory Write Command I/O Write Command Inhibit 1 disable RAM
Control Signals and Addresses	25 27 29 31 33	 BHEN/ CBRQ/ CCLK/ INTA/	Reserviert Byte High Enable Common Bus Request Constant Clock Interrupt Acknowledge	26 28 30 32 34	INH2/ AD10/ AD11/ AD12/ AD13/	Inhibit 2 disable PROM or ROM Adress bus
Interrupt	35 37 39 41	INT6/ INT4/ INT2/ INT0/	Interrupt Requests	36 38 40 42	INT7/ INT5/ INT3/ INT1/	Interrupt Requests
Addresses	43 45 47 49 51 53 55 57	ADRE/ ADRC/ ADRA/ ADR8/ ADR6/ ADR4/ ADR2/ ADR0/	Address bus	44 46 48 50 52 54 56 58	ADRF/ ADRD/ ADRB/ ADR9/ ADR7/ ADR5/ ADR3/ ADR1/	Address bus
Data	59 61 63 65 67 69 71 73	DATE/ DATC/ DATA/ DAT8/ DAT6/ DAT4/ DAT2/ DAT0/	Data bus	60 62 64 66 68 70 72 74	DATF/ DATD/ DATB/ DAT9/ DAT7/ DAT5/ DAT3/ DAT1/	Data bus
Power Supply	75 77 79 81 83 85	GND -12V +5V +5V GND	0 Volt Reserved -12 Volt +5 Volt +5 Volt 0 Volt	76 78 80 82 84 86	GND -12V +5V +5V GND	0 Volt Reserved -12 Volt +5 Volt +5 Volt 0 Volt

Multibus P2

	Plug No.	Side of Components		Plug No.	Side of Conntrol lines	
		Mnemonic	Function		Mnemonic	Function
	1	GND	0 Volt	2	GND	0 Volt
	3	VCC9	+5V Battery	4	VCCB	+5V Battery
	5		Reserved	6	VCCPP	+5 Volt
	7	VBBB	+5V Battery	8	VBBB	-5V Battery
	9		Reserved	10	Reserved	+
	11	VDDB	+12V Battery	12	VDDB	+12V Battery
	13	PFSR/	Power Failure			
			Reset	14	Reserved	+
	15	VAAB	+12V Battery	16	VAAB	-12V Battery
	17	PFSN/	Power Failure	18	ACLO	AC Low
	19	PFIN/	Power Failure Interrupt	20	MPRO/	memory Protect
	21	GND	0 Volt	22	GND	0 Volt
	23	+15V	+15 Volt	24	+15V	+15 Volt
	25	-15V	-15 Volt	26	-15V	-15 Volt
	27	PAR1/	Parity 1	28	HALT/	Bus Master HALT
	29	PAR2/	Parity 2	30	WAIT/	Bus Master WAIT STATE
	31			32	ALE	Bus Master ALE
	33			34	Reserved	
	35			36	Reserved	
	37			38	AUX RESET/	Reset Switch
	39			40		
	41			42		
	43	Re-		44		
	45	ser-		46		
	47	ved		48	Reser-	
	49			50	ved	
	51			52		
	55			56		
	57			58		
	59			60		

Initiation

INIT

This initiation signal generates a certain defined initial state in the entire system. The INIT signal can be generated by one of the master units or by external logic.

Addressing

ADR0 - ADR13 (hexadecimal)

These twenty address lines are used for transferring the addresses of memory locations and input/output channels. The most significant bit is ADR13, the least significant bit is ADR0. What are referred to as 8-bit master units use the 16 lines ADR0 to ADRF to output memory addresses and the 8 lines ADR0 to ADR7 for the output of addresses of input/output channels. What are referred to as 16-bit master unit output memory addresses on all twenty address lines and input/output addresses on the address lines ADR0 to ADRB. (The 8088 can output 20-bit addresses although it is classified as 8-bit CPU.)

INH1

This signal (INHibit) prevents RAM units from responding to address signals on the bus. INH1 selects ROM units when both RAM and ROM units are connected to the bus.

INH2

This signal is capable of preventing part of the ROM units from responding to address signals on the bus. INH2 can be used for selecting 1 group from two groups of units if the same address occurs in both groups.
INH1 and INH2 can also be used to separately activate memory locations and input/output channels with memory addresses (memory mapped I/O).

BHEN

This signal (Byte High ENable) indicates that a byte is to be transferred on the upper 8 data lines of the multibus. The signal is used in systems containing 16-bit memories and/or 16-bit input/output channels.

Data

DAT0 to DATF

On these sixteen lines, data can be transferred in both directions, that is to and from memory units and input/output channels. DATF is the most significant bit. In 8-bit systems, however, only the 8 lines DAT0 to DAT7 are used, here DAT7 is the most significant bit. DAT0 is always the least significant bit.

Synchronization and Priorities

$\overline{\text{BCLK}}$

With the trailing edge of $\overline{\text{BCLK}}$ (Bus CLocK), the information streams on the bus are synchronized. $\overline{\text{BCLK}}$ does not run synchronously with clock signal CLK for the 8086, it can be faster or slower or occur in signal pulses during troubleshooting.

$\overline{\text{CCLK}}$

This signal (Constant CLocK) is a frequency-stable clock signal with non-defined frequency.

$\overline{\text{BPRN}}$

This signal (Bus PRiority iN) indicates to a master unit that no unit of the higher priority requests access to the bus. $\overline{\text{BPRN}}$ is synchronized with $\overline{\text{BCLK}}$.

$\overline{\text{BPRO}}$

$\overline{\text{BUSY}}$

This signal is ouput by the respective current master unit to indicate that the bus is busy. Another unit queries to find out whether it can gain control over the bus. $\overline{\text{BUSY}}$ is synchronized with $\overline{\text{BCLK}}$.

$\overline{\text{BREQ}}$

This signal (Bus REQest) is output by units wishing to gain control over the bus. $\overline{\text{BREQ}}$ is synchronized with $\overline{\text{BCLK}}$.

$\overline{\text{CBRQ}}$

This signal is used by other units to indicate to the current master unit that they want to gain control over the bus. If the H level is on line $\overline{\text{CBRQ}}$, this indicates to the current master unit that no other unit needs control over the bus. The respective current master unit can therefore keep its control over the bus and continue bus cycle execution, if required.

Transfer (Log) Signals

The master unit that currently has control over the bus must output all transfer signals. The signals on the address lines must be stable at least 50 ns prior to the transfer signal, in case of output also the signals on the data lines, and remain stable until at least 50 ns after the end of the transfer signal. The transfer signals are not synchronized with $\overline{\text{BLCK}}$.

$\overline{\text{MRDC}}$

This signal (Memory ReaD Control) indicates to a memory unit that the address of a memory location is on the address lines and that the memory unit can put the contents of the memory location on the data lines.

$\overline{\text{MWTC}}$

The signal (Memory WriTe Control) indicates that a memory address is ready on the address lines and that information for the address memory location is ready on the data lines.

$\overline{\text{IORC}}$

This signal (Input Output Read Control) indicates that the address of an input channel is on the address lines and that data from the input channel can be put on the data lines.

$\overline{\text{IOWC}}$

This signal (Input Output Write Control) indicates that the address of an input channel is ready on the address lines and that data for the address output channel is ready on the data lines.

$\overline{\text{XACK}}$

Each forwarding of information requires an acknowledge signal. The appropriate slave unit therefore sends the acknowledge signal $\overline{\text{XACK}}$ (eXchange ACKnowledge) to the outputting master unit. The master unit thus learns that a certain procedure is completed.

$\overline{\text{AACK}}$

This signal (Advanced ACKnowledge) is used by the 8080A. It is an acknowledge signal advanced in time, which permits the CPU to recognize certain operations as terminated without assuming some kind of wait state. Slave units sending an $\overline{\text{AACK}}$ signal must also send the $\overline{\text{XACK}}$ signal, since not all potential master units are capable of accomodating $\overline{\text{AACK}}$.

Asynchronous Interrupt Signals

$\overline{\text{INT0}}$ to $\overline{\text{INT7}}$

In the case of parallel priority control, interrupt requests are sent on these 8 lines (INTerrupt). $\overline{\text{INT0}}$ has the lowest, $\overline{\text{INT7}}$ the highest priority.

$\overline{\text{INTA}}$

This signal (INTerrupt Acknowledge) is used by the current master unit to indicate to another unit that it is expecting the vector ID of an interrupt on the data lines.

7 XYLOGIC Processor and MT 3504

7.1 General

The XYLOGIC processor is the controller PCB for th. . '2" magnetic tape unit MT 3504-160.

Part number:

XYLOGIC processor: S26361-F419V 31
MT 3504-160: S26261-K102

Product number:

XYLOGIC processor: 97832-430
MT 3504-160: 97835-430 (MT with controller)

As a rule, this magnetic tape unit is used by SINIX-BS2000 systems (PC2000, C30, WS2000) and actual BS2000 computers for saving data of BS2000 files and partitions.

Software programs used there are, for example, ARCHIVE, SYSUPD, INIT and TSOSMT.

Furthermore, this device can also be addressed with SINIX commands, as already known from the floppy and Tandberg streamer.

The corresponding SINIX commands are the following:

tar
sar
stphys

A physical data saving with TDS1 by means of sa_urld is not possible as sa_urld only accesses the disk controller (storager II and OMTI 5400 in the case of MX2) and not the XYLOGIC controller.

7.2 XYLOGIC Processor

The XYLOGIC processor (D472) is Intel-multibus compatible and may be inserted in any unused plug-in location of the platter.

Attention: In the case of MX300-10 only the platters 5 to 12 are supplied with power by PS1.

The processor system allows it to address up to 4 tape units with the controller by means of a so-called tape-drive daisy chain.
This connection, however, is not supported by the present system.

When the system is starting up a selff-test is running ass well al with other PCBs. In the same moment the test LED is lit. After properly "testend" the LED turns off. If the LED is still on the testprogram recognized a hardware error.

The connection from controller to MB 3504-160 is provided by seperate 2x 50 pins cable connector.

Depot No.	Manufactrer No.
1135325	T26319 Y 1056 M 6

Contoller data:

Manufacturer	:	PERTEC	
Processor	:	8031	
Clock frequency	:	10 MHz	
Adress lines	:	16/20/24	switching possible
Data lines	:	8/16	switching possible
Data buffer (FIFO)	:	2 Kbyte	optional 8 Kbyte
Interrupts	:	0-7	Set of MX300: I = 3

7.3 Magnetic Tape Unit 3504

The magnetic tape unit 3504-160 (FS1000) of the manufacturer PERTEC is an automatically loading 1/2 " streamer tape unit.

The main components are:
Basic unit (integrated with the writing control)
Reading unut and
Formatter unit.

The standard operation performs 1600bpi/25ips, its also changeable to 3200bpi/50ips. Therefore the memory capacity of this unit is 45 Mbyte up to 90 Mbyte.

The default GAP value of 4.8" is gradually variable from 0.6" up to 10". The tape speed and the GAP value are are adjustable at the front of the operator panel.

Diagnostic and test methods:
1. Calling of internal test routines via operator panel.
2. TDS1

Tools:
MG gage for HW justages : MG 16 depot no.: 1165380
Set of american hexagon screwer
Cross head screwer
flat-head screwer.

For furher informations sie: WHB MBE 3504-160
Order no.: U64389-J

8 Platters

8.1 General

A 4-layered platter with 12 plug-in locations for multibus-I PCBs is used in the MX300. The division is at 0.8".

8.2 PS-Related Division

The platter is divided up as regards the power supply (+5V, +/-12V).
The plug-in locations 5 - 12 are supplied by power supply 1 (MX300-10). Power supply 2 feeds the PCBs of plug-in locations 1 - 4.
The potentials 0V and +5V are routed on one level, +12V and -12V resp., in the layers for the signals.

8.3 Platter Equipment

The equipment of the platter depends on the configuration versions (MX300-10 or MX300-20).

For MX300-10 applies:

Plug-in location	5:	storager
Plug-in location	6:	any PCB
Plug-in location	7:	any PCB
Plug-in location	8:	any PCB
Plug-in location	9:	any PCB
Plug-in location	10:	memory
Plug-in location	11:	CPU
Plug-in location	12:	adapter for AT/XT or any PCB

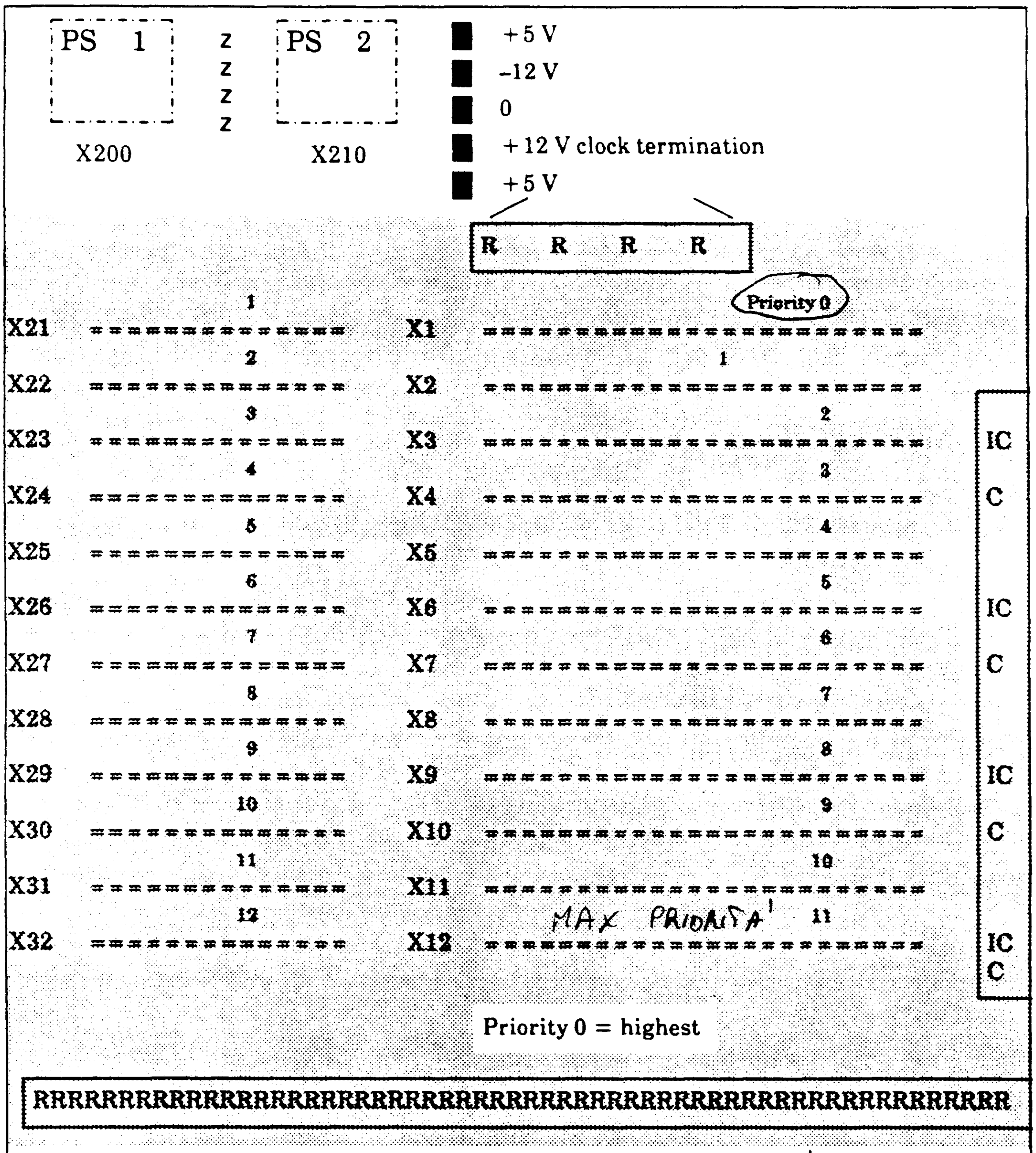
For MX300-20 applies:

Plug-in location	1:	storager
Plug-in location	2:	any PCB
Plug-in location	3:	any PCB
Plug-in location	4:	any PCB
Plug-in location	5:	any PCB
Plug-in location	6:	any PCB
Plug-in location	7:	any PCB
Plug-in location	8:	any PCB
Plug-in location	9:	any PCB
Plug-in location	10:	memory
Plug-in location	11:	CPU
Plug-in location	12:	adapter for AT/XT or any PCB ?

Notes:

- When upgrading the MX300-10, the storager has to be replugged to plug-in location 1.
- The 8 interrupt singals (INT0 . . . 7) are routed via all 12 plug-in locations.

8.4 Principle of the +5V Division on the Platter and Component Arrangement



PS1/PS2	Connection of the power supply 1/2
IC	74S138/74F148
C	Capacitors
RRRRRR	R-component or single resistors
z	Solder points for 0V, +5V, -5V, -12V, -12V (with labelling)

The labelling on the R-network can be read from here

9 Power Supply

9.1 Description of the Power Supply and Fan System (see Fig. 1)

9.1.1 General

The power connection of the device is single-phased via a 3 m power cable with a ground plug. Operation is possible with 220-240 V as well as with 110-120 V, by switching. The power supply and the fan systems mainly consist of:

- Power distributor PCB XUNVM S26113-E286-V3
- Power supply XSVDJ (S26113-E288) (maximum 2 devices in one cartridge) with forced ventilation via cabinet fan.
- Operator-panel logic PCB BFAAB (S26361-D446) and
- 12 V fan V26815-B107 (maximum 4 devices).

A battery (underneath the PS cartridge) ensures operation of the clock NV RAM on CPUAS PCB-D408 in case of power off.

9.1.2 Central Power Supply Control (see Fig.2)

9.1.2.1 Activating the Power-Supply System

a) Key "EIN" (ON) on the operator-panel logic PCB BFAAB

The activation of the PS system via the key "EIN" is only possible when the switch key is in position 2. This causes the startup of the system.

Notes:

- Is no UPS (uninterruptable power supply) existing, the pins 5 and 6 at location X7 on the operator-panel logic PCB must be bridged (shorting plug).
- To avoid a high current pulse when applying mains voltage to the power supply, the mains voltage for all further power supplies (MX300-20 and extension device) is activated in time intervals.

b) Remote activation (e.g via FES 83800)

The remote activation is effected via FES 83800 with the defined interface (connector in the connector panel).

The release for permissible remote activation and deactivation is performed by the software.

In case of released remote activation and deactivation:

- Remote activation and deactivation is applied independently of the switch key position.

- Remote ativation of a deactivated system causes always a startup. Remote activation of an already activated system has no effect on the system.
- Remote deativation shuts down the system via "/etc/poweroff".
- The OFF signal of FES causes the shutdown of the system ("hard off").

c) Reactivation after power failure
When mains voltage returns, the PS system only turns on if it was in ON status before power failure.
The reactivation cannot be stopped.

d) Activation with PS error
In case of a PS error the pressing of the "EIN" key generates an activation pulse (NPO) of 3 minutes.

- Is no LED indicator lit, PS1 and perhaps PS2 are defective. PS2 may only be activated when PS1 operates correctly.
- If only PS1 LED is lit, PS2 is defective (only at MX300-20). The error code "3F" is displayed on the hexadecimal indicator.

9.1.2.2 Deactivating the Power-Supply System

a) Key "AUS" (OFF) on the operator-panel logic PCB BFAAB
The use of this key is only neccessary in special cases or in error cases.

The use of the "AUS" key deactivates the PS system immediately ("hard off"). This function is only applicable in switch key position 2.

With active operating system, the system must be turned off beforehand by the system administrator via "/etc/poweroff".

b) Deactivation via system software

- With the "/etc/poweroff" command the polarized PS relays EIN/AUS (on/off) at the operator panel PCB is set to OFF position and the PS is turned off via the signal "N SV AUS" (N PS OFF) at the PCB CPUAS after completing the saving routine.
- In UPS mode the signal "N-POWER-ON" is removed after power failure.

  The "N PO" signal for the PS is still generated via the power hold flip flop on the CPUAS PCB.

  After completing the saving routines the power supplies are turned off by the power hold flip flop. The "PS ON/OFF" relay on the operator-panel PCB remains in ON position, so that the power supplies are activated when power returns and UPS is corrected.

c) Remote deactivation (e.g. via FES 83800)

see 9.1.2.1.b

9.1.3 Power ON/OFF of the Extension Device

The activation and deactivation of the power supply in the extension device is performed by the basic device.

The power supplies in the extension device are controlled via PON.

The power supplies are activated in time intervals.

9.1.4 Monitoring and Signalling

9.1.4.1 DC Voltage Monitoring

The active state of the power supplies PS1 and PS2 is indicated by the green LEDs "SV!" and "SV2" (when existing) at the operator panel.

If the voltage of PS1 +5V or +12V falls below the power supply undervoltage monitoring limit, the PS system is deactivated. The LEDs SV1 and SV2 at the operator panel are off. No automatic reactivation is performed.

If the voltage of PS2 +5V or +12V falls below the power supply undervoltage monitoring limit, only PS2 is deactivated (error code "3F"). In case of temporary errors an automatic reactivation is performed.

The voltages -5V and -12V are not monitored. In case of an error, no deactivation of PS1 and PS2 is performed.

9.1.4.2 Mains Voltage Monitoring

If the mains voltage monitoring of a power supply is activated (see 9.2.2.4) the system sends the message.

9.1.4.3 Temperature Monitoring

Each power supply has an overtemperature monitor.

If the temperature monitor is active:

- at PS1 the power supply system is deactivated, the LEDs SV1 and SV2 are turned off.
- at PS2 only the power supply PS2 is deactivated, the LED SV2 is turned off (error code "3F").

If the temperature reaches the valid range again, the power supply is reactivated.

9.1.5 Control of Fan Speed

Depending on the temperature at the heat dissipator of the power supply a thermo-contact turns on or off a Z-diode in the fan power supply line of the PS.

The switching level is at about 36°C ambient temperature.

Thus only the speed of the power-supply fan (plug X5 in the respective power supply) is increased or decreased.

Thermo-switch	Fan voltage
open	approx. +8 V
closed	approx. +12 V

The logic fans are always supplied via a Z-diode. The logic fan power supply is approx. 8 V (plug X6).

9.1.6 Uninterruptable Power Supply (UPS) (OPTION)

9.1.6.1 Task

The uninterruptable power supply serves a defined system shut-down in case of power failure.

9.1.6.2 Function Description

The following comments are based on the assumption that the accumulator battery of the UPS is fully charged.

If a power failure >10ms occurs, the UPS switches to battery-driven operation. Depending on the UPS setting the MX300 is at once or after 20 seconds informed via the signal USVOKP="0" that the system has switched to battery-driven operation. The system shut-down is performed.

After termination of all activities, the PS in the MX300 is deactivated. This is signalled to the UPS (SVONP="0"). The UPS interrupts thereupon the line connection to the MX300.

When mains voltage is supplied again and the battery is uncharged there are two possibilities to start up the system again:

- operation of MX300 is first possible when the battery is fully charged and signal USVOKP="1".
- if operation of MX300 is requiredwith insufficient charge of battery the signal USVOKP="1" has to be simulated. A shorting plug C26139-Y1388-V1 (jumper between pins 8 and 9) has to be plugged in UPS plug-in location (pin 2) at the MX300 connector area. In case of a new power failure a proper shut-down is not guaranteed.

9.1.6.3 Signal Interface

UPS(= USV) and MX300 have a signal interface (plug-in location X7) at the operator-panel logic PCB or at the MX300 connector area (pin 2) with the following signals:

USV ——————> MX

USV-OK-P = 1	- mains voltage exists - battery loaded
USV-OK-P = 0	- mains voltage out of tolerance - battery not loaded - UPS set out of operation by MX

MX ——————> USV

SV-ON-P = 1	- UPS is controlled by MX
SV-ON-P = 0	- UPS set out of operation by MX

In case of MX300 operation without UPS the signal USVOKP = "1" must be simulated by:

- a shorting plug or a bridge (pins 5 and 6) at plug-in location X7 of the operator-panel logic PCB

or

- a shorting plug C26139-Y1388-V1 or a bridge (pins 8 and 9) at UPS plug-in location (pin 2) of the connector area.

9.1.7 Documents

The following documents are available on microfiche or in the document package:

• Logic diagram	S26361-L48-V1-*-12 S26361-L52-V1-*-12	(Basic Unit) (Extension Cartridge)
• Power subdistributor - Circuit diagram - Wiring diagram	 S26113-E286-V3-*-11 S26113-E286-V3-*-2	
• Power supply - Circuit diagram - Wiring diagram	 S26113-E288-X-*-11 S26113-E288-A1	

9.2 Description of the Power Supply S26113-E288 XSVDJ

9.2.1 General

The power supply XSVDJ generates the dc voltages necessary for the operation of the MX300.

It is set up as a replaceable unit and located in a closed metal housing. For ventilation purposes, a fan is mounted on the cabinet. All interface connections can be plugged. The voltages cannot be modified in the field.

9.2.2 Activation/Deactivation and Signalling

9.2.2.1 Activation

The power supply is activated by applying 0 V to plug-in location X2/1 or 6 (Tab. 1), signal NPON.

9.2.2.2 Deactivation

The power supply is deactivated by removing 0 V from plug-in location X2/1 or 6.

9.2.2.3 Automatic Reactivation

a) With sporadic PS errors,
e.g. in case of short-circuit of the +5V or +12V the PS checks whether the short-circuit persists by reactivating the system three time at 4 sec. intervals.

b) With power failure
After power failure the system is reactivated after approx. 3 - 8 sec.

9.2.2.4 Signals

- NACF
  - Connector X2/8

  Is set to "0" if the mains input voltage is below the mains voltage range at a charge of 80%.
  Is set to "0" if a mains voltage interruption occurs at rated voltage > 10 ms or NPONRES is at "0".
  Is set to "1" if the rated voltage is in the tolerance range and NPONRES is at "1" (TTL level).

- NPONRES
  - Connector X2/9

  Is set to "0" if the voltages +5V or +12V fall below the undervoltage limit.
  Is set to "1" if the +5V and the +12V exceed the undervoltage limits for approx. 350 ms.
  In case of power failure and a charge of 80%, the NPONRES signal is obtained at the earliest 10 ms after the ACF-N "0" signal.

9.2.3 Plug-in Locations and Their Assignment

The plug-in locations and their assignment may be taken from Fig. 4.

9.2.4 Specifications

9.2.4.1 Input

Voltage	$U = 110–120$ V, $220–240$ V $\pm 10\%$ 1)
Frequency	$f = 47–63$ Hz
Power at $U_N = 220$ V	$I_N = 4.3$ A / 2.4 A
Apparent power	$P_S = 490 / 560$ VA
Mains voltage dips at rated conditions	$t = 10$ ms, -100%

1) Operation at 110-120 V is possible after switching over the power supply

9.2.4.2 Output

U_N [V]	I_N [A]	Voltage tolerance [mV] 3)	Residual ripple [mVpp]	Monitoring limits		Current limitation
				Over-voltage	Under-voltage	
+12.1 1)	7.0	±480	<50	13.9 V ±3%	11.05 V ±3%	
+5.1	30.0	±150	<50	5.68 V ±2%	4.73 V ±2%	2)
-12.0	0.3	±480	<50			
- 5.0	0.3	±250	<50			

1) 12 A 1 minute
2) When exceeding the total output power
3) Measuring points are the PS output plug-in locations

9.3 Troubleshooting the Power-Supply and Fan System

9.3.1 Safety Precautions

Attention!

- Please observe the applicable safety rules when working on the power-supply system.
- When replacing power supplies please check the orderly seat of the plugs and observe the ESD regulations.
- Be careful when operating the device without rear and front panel as the fans have no protective grid.

9.3.2 General

Troubleshooting the power-supply and fan systems is effected by replacing the

- power supplies XSVDJ (up to 2 per cabinet)
- ac voltage fan (up to 5 per cabinet)
- operator-panel logic PCB BFAAB
- battery

The repair of the components in the field is not provided for.

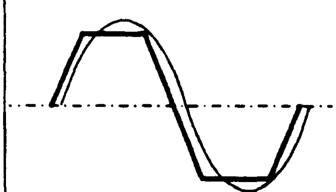
9.3.3 Maintenance Aids

The following maintenance aids are available:

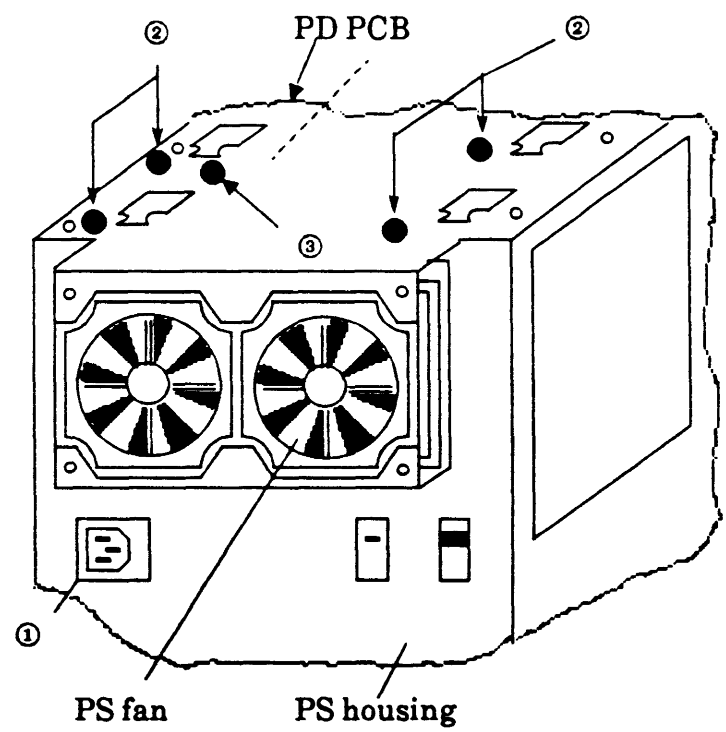
- Description of the power supply (see sections 1-2, Fig. 1-5 and Tab. 1-3)
- LEDs PS1 and PS2 of the operator-panel logic BFAAB
- Table 4 with measuring values and measuring points of the power-supply voltages
- Notes on replacing the power supplies and fans, section 9.4

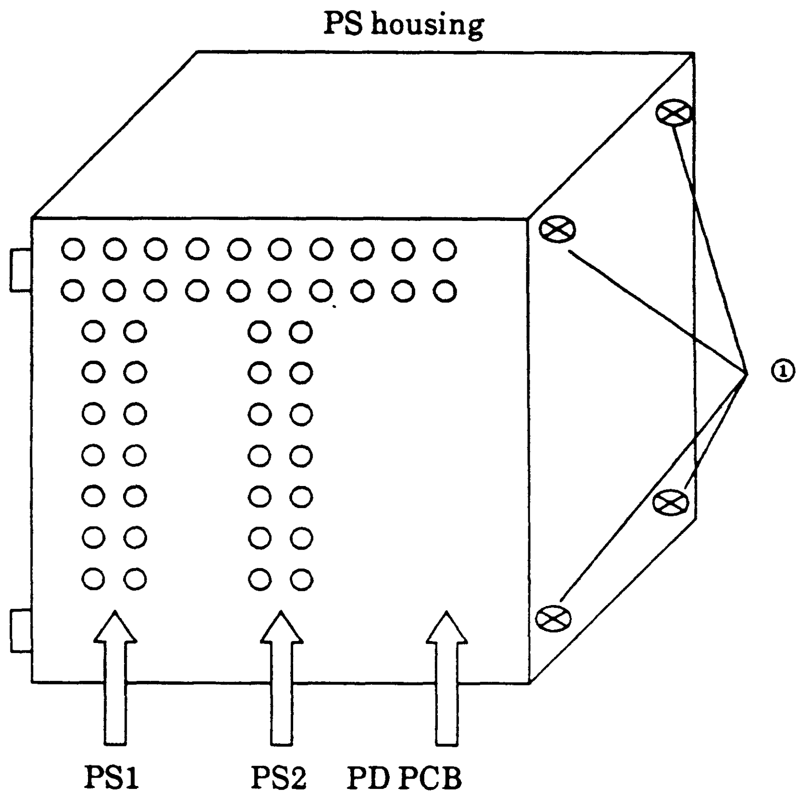
9.3.4 Notes on Error Isolation

Error symptom	Possible causes	Remedial actions RIMEDI
Device cannot be activated No LED is lit on the operator panel	• No mains voltage applied	1. Check mains voltage – Check whether ground and/or rubber plug are plugged orderly – Check whether mains voltage is applied to the rubber plug – Check line fuses and replace them, if necessary
	• Overcurrent in PS1 by consumer	2. Determine and eliminate cause for overcurrent by disconnecting step by step the consumers supplied by PS1 (see Fig. 1)
	• Operator-panel PCB BFAAB defective	3. Check function of PS1 – Pull plug X1 on operator-panel PCB BFAAB – Connect DV to connector 1 of the line plug (from PS1) – If PS1 can be activated, replace operator-panel PCB BFAAB
	• Temperature monitor in PS1 has reacted because: – the ambient temperature is too high – the fan filter is clogged – the fan is defective	4. Check ambient temperature 5. Check fan filter and replace it 6. Make sure that air supply and exit of air are not obstructed 7. Check function of PS fan and logic fan and replace them, if necessary (see item 9.4.3)
	• PS1 defective	8. Replace PS1 (see item 9.4.2)

Error symptom	Possible causes	Remedial actions
Only LED PS2 is not lit on the operator panel The hex display indicates error code "3F"	• Mains relay on PD PCB defective	9. Check whether mains voltage is applied to plug-in location X3, connectors 2 and 5 (the two central connectors) on the lower side of the PS housing (PS1 must be activated) – If no mains voltage is applied, the PS PCB XUMVM has to be replaced
	• Overcurrent in PS2 by consumer	10. See remedial actions, item 2
	• Operator-panel PCB BFAAB defective	11. See remedial actions, item 3 (pull plug X2 on the operator-panel PCB)
	• Temperature monitor in PS2 has reacted	12. See remedial actions, item 4 to 7)
	• PS defective	13. Replace PS1 (see item 9.4.2)
System switches off sporadically	• Mains voltage dip >10 ms / 100% • Mains voltage <198 V • Mains voltage distorted, e.g. 	14. Check power supply
	• Overcurrent by consumer	15. Detect and remedy cause for overcurrent
	• Loose contact	16. Check plug connections
	• PS defective	17. Replace PS

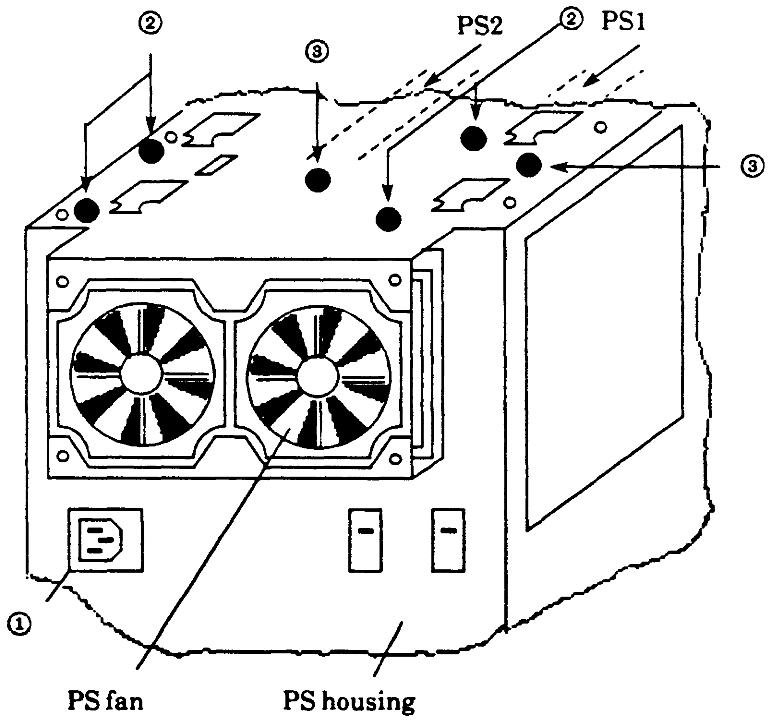
9.4 Replacing Instructions for the Power Supplies and Fans

9.4.1	Replacing Instructions
Replacing the power distributor (PD) PCB XUNVM	**Dismantle** • Deactivate device (pull ground or rubber plug ①) • Remove top and left side panel (see parts IV, Chapter 1) • Remove power-supply housing - Pull all plugs on the lower side of the PS housing (plugs X2, X3, X4, X5 and X6) - Pull plugs X200 and X201 from platter - Pull all plugs of the power supply lines from the PCBs in the euro-card housing - Open cable tie on controller housing - Remove fixing screws ② on the PS hosing and PD PCBs ③  - Pull PS housing forwards (in the direction of the operator panel) out of the self-support, swing out laterally and put on a corresponding base **Attention!** Do not damage filter PCB and lines while you swing out the housing!

9.4.1	Replacing Instructions
Replacing the power distributor (PD) PCB XUNVM	• Remove cover of PS housing – Loosen fixing screws ① and remove cover  • Pull PD PCB from the PS housing **Install** • Install the parts in the reverse order

9.4.2	Replacing Instructions
Replacing the power supplies PS1 or PS2 XSVDJ	**Dismantle**

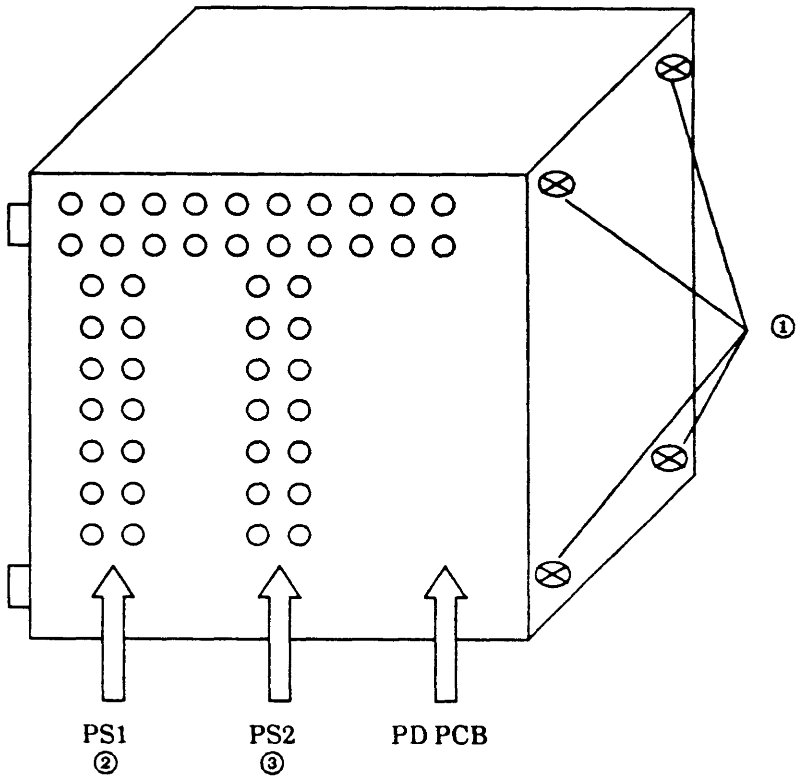
- Deactivate device (pull ground and/or rubber plug ①)
- Remove top and left side panel
  (see chapter 4 item 1)
- Remove power-supply housing
  - Pull all plugs on the lower side of the PS housing (plugs X2, X3, X4, X5 and X6)
  - Pull plugs X200 and X201 from platter
  - Pull all plugs of the power supply lines from the PCBs in the euro-card housing
  - Open cable tie on controller housing
  - Pull plugs X1 or X2 of the PS control line on the operator panel
  - Remove fixing screws ② on the PS housing and power supplies ③



- Pull PS housing forwards (in the direction of the operator panel) out of the self-support, swing out laterally and put on a corresponding base

Attention!
Do not damage filter PCB and lines while you swing out the housing!

9.4.2	Replacing Instructions
Replacing the power supplies PS1 or PS2 XSVDJ	• Remove cover of PS housing – Loosen fixing screws ① and remove cover

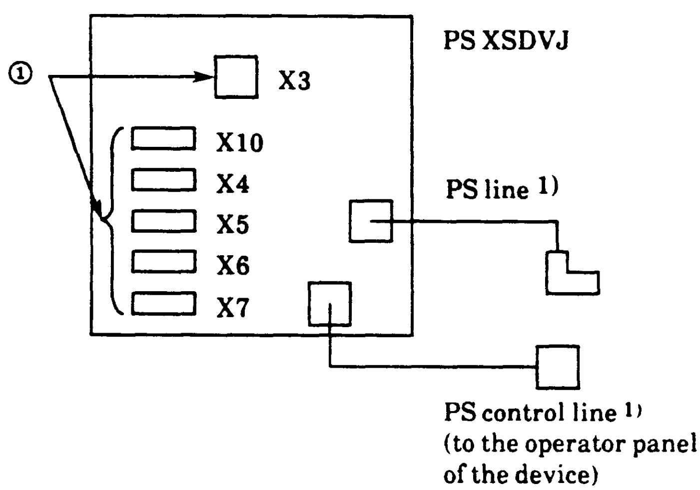


• Pull PS PCB from PS housing, PS1 ② oder PS2 ③

Attention!

Please observe ESD regulations!

• Pull plugs X3–X10 ① of the dc voltage line in the power supply



1) These lines are part of the power supply

9.4.2 Replacing Instructions

Replacing the power supplies PS1 or PS2 XSVDJ

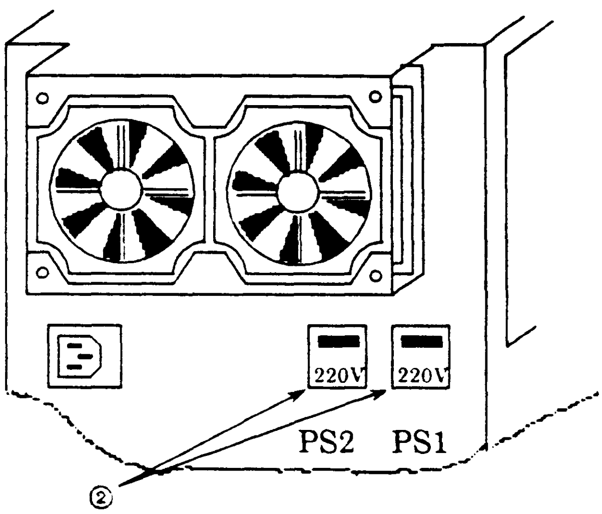
Install

- Install the parts in the reverse order

Attention!

After installation

- check whether the position of the mains voltage selector switch ② corresponds to the available mains voltage; if necessary, change switch position (the lettering of the available mains voltage has to be visible)



- check whether the dc voltages at the test points near connector X200 (PS1) and X201 (PS2) on the platter are within the admissible tolerance range

PS1 and PS2	
U_N [V]	Admissible tolerance
- 5.1 V	4.8 V - 5.15 V
- 12.0 V	11.5 V - 12.5 V
+ 12.1 V	11.6 V - 12.6 V
+ 5.0 V	4.9 V - 5.15 V

9.4.3	Replacing Instructions
Replacing the power-supply fans	**Dismantle**

Dismantle

- Deactivate device
- Remove top and left side panels of the housing (see Part IV, Chapter 1)
- Remove fixing screws on connector panel and unhinge connector panel ①
- Pull fan plug X5 on the lower side of the PS housing
- Remove snap-in rivet on the fan-fixing brackets ② and remove fan

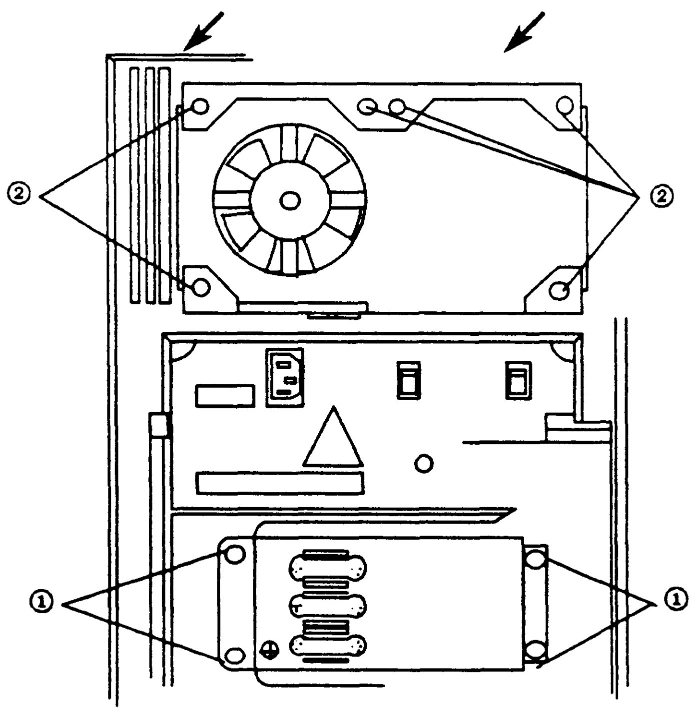
Install

- Install the parts in the reverse order

  Attention!

  - The fans have no protective grid
  - Observe correct mounting position ③ during installation

③ Blowing direction



③ The blowing direction is marked with arrows on the fan housing

9.4.4	Replacing Instructions

Replacing the logic fan

Dismantle

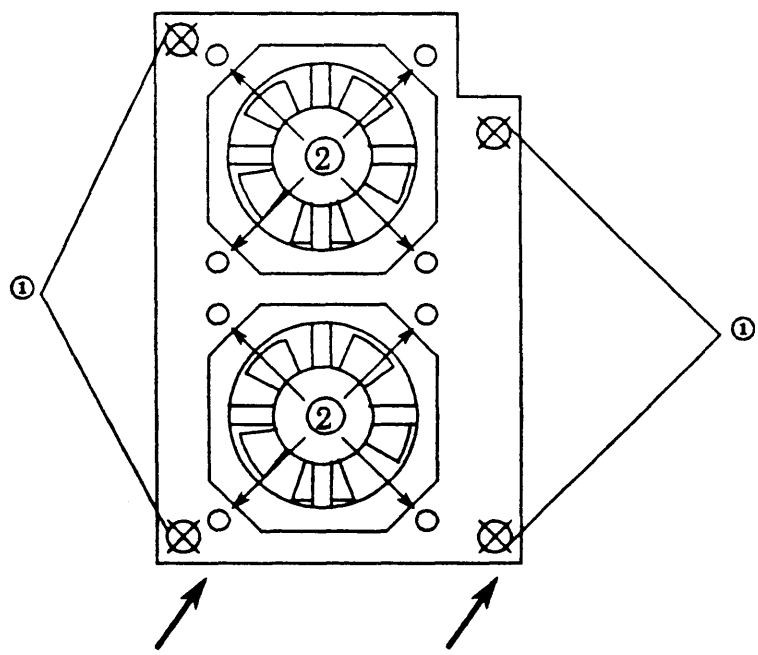
- Deactivate device
- Remove top and left side panels of the housing
  (see Part IV, Chapter 1
- Pull line plugs of both fans and open line attachment
- Loosen fixing screws of the fan module ① and remove fan module
- Remove snap-in rivet ② on the fan module and remove fan

Install

- Install the parts in the reverse order

  Attention!

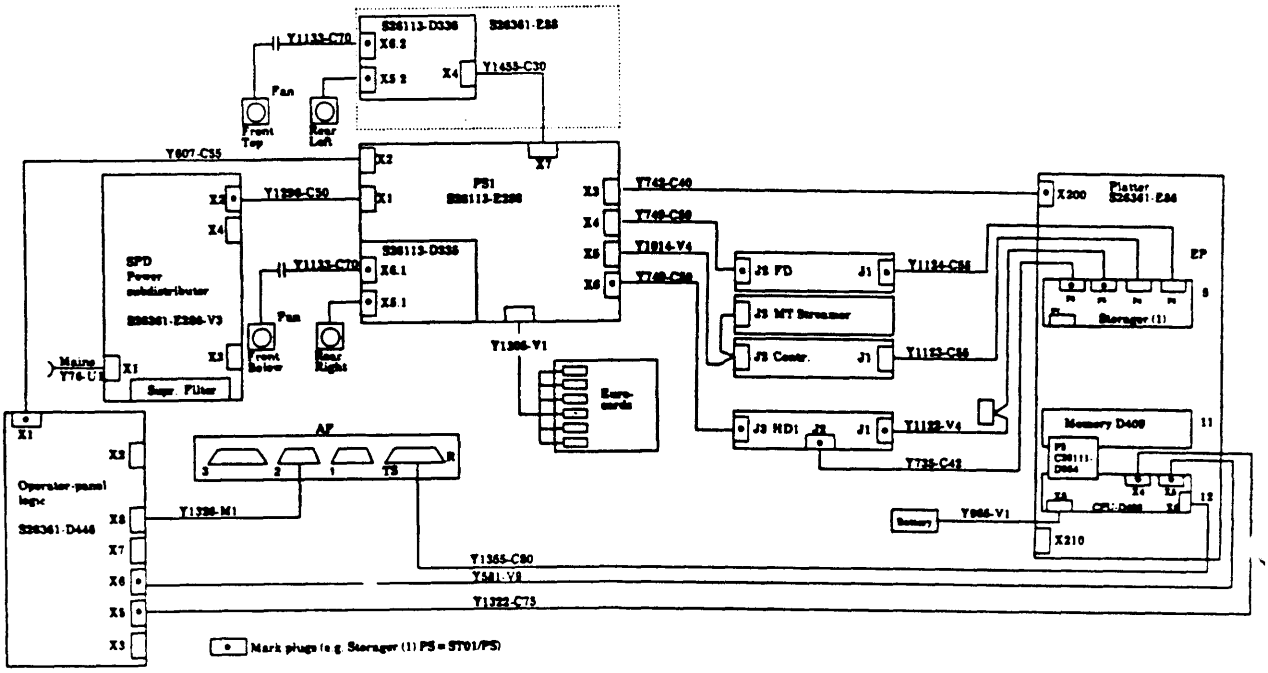
  - The fans have no protective grid
  - Observe correct mounting position ③ during installation



Blowing direction

③ The blowing direction is marked with arrows on the fan housing

Basic Unit MX300-10



Basic Unit MX300-20

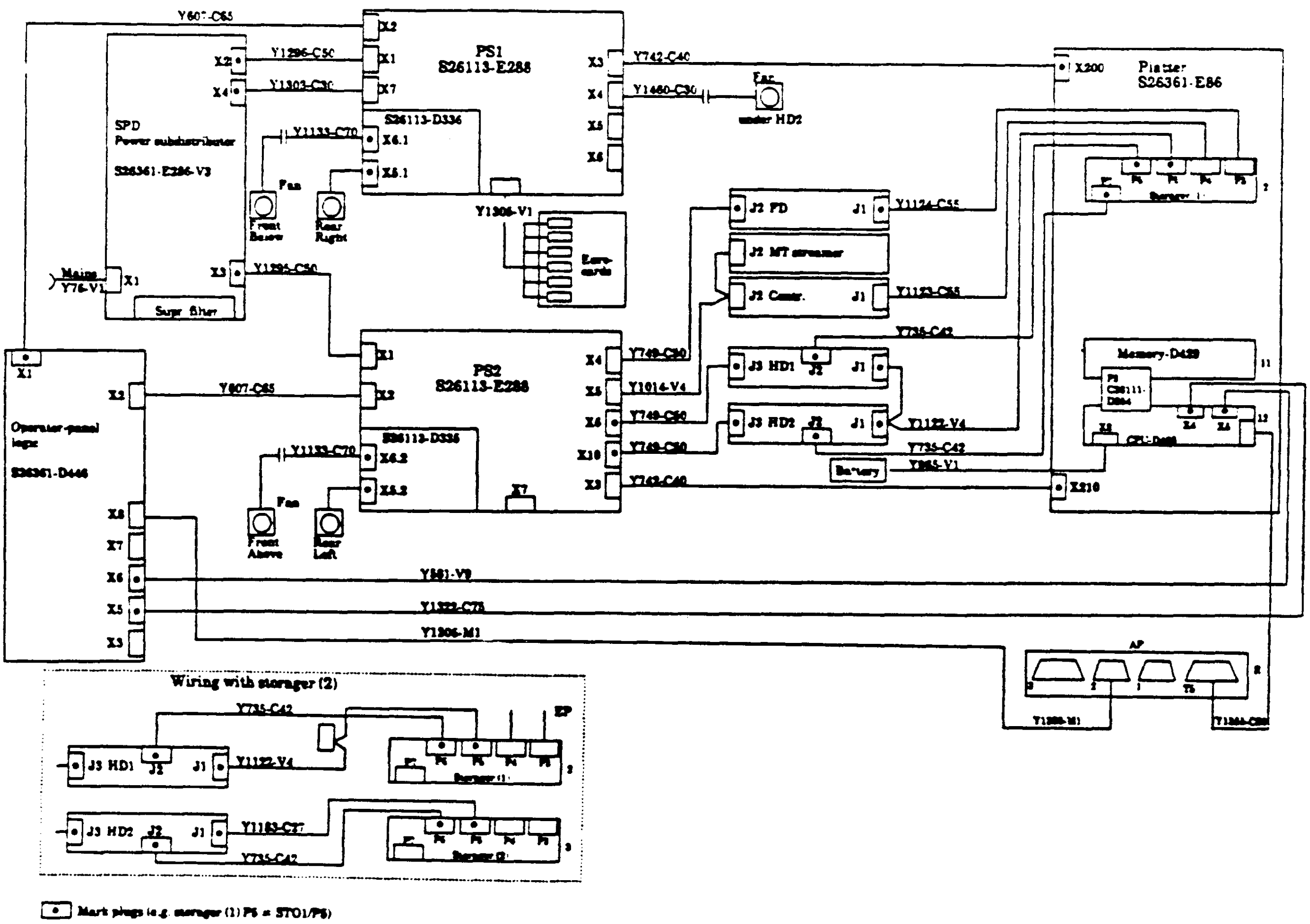


Fig. 1: Logic diagram of the basic power-supply system

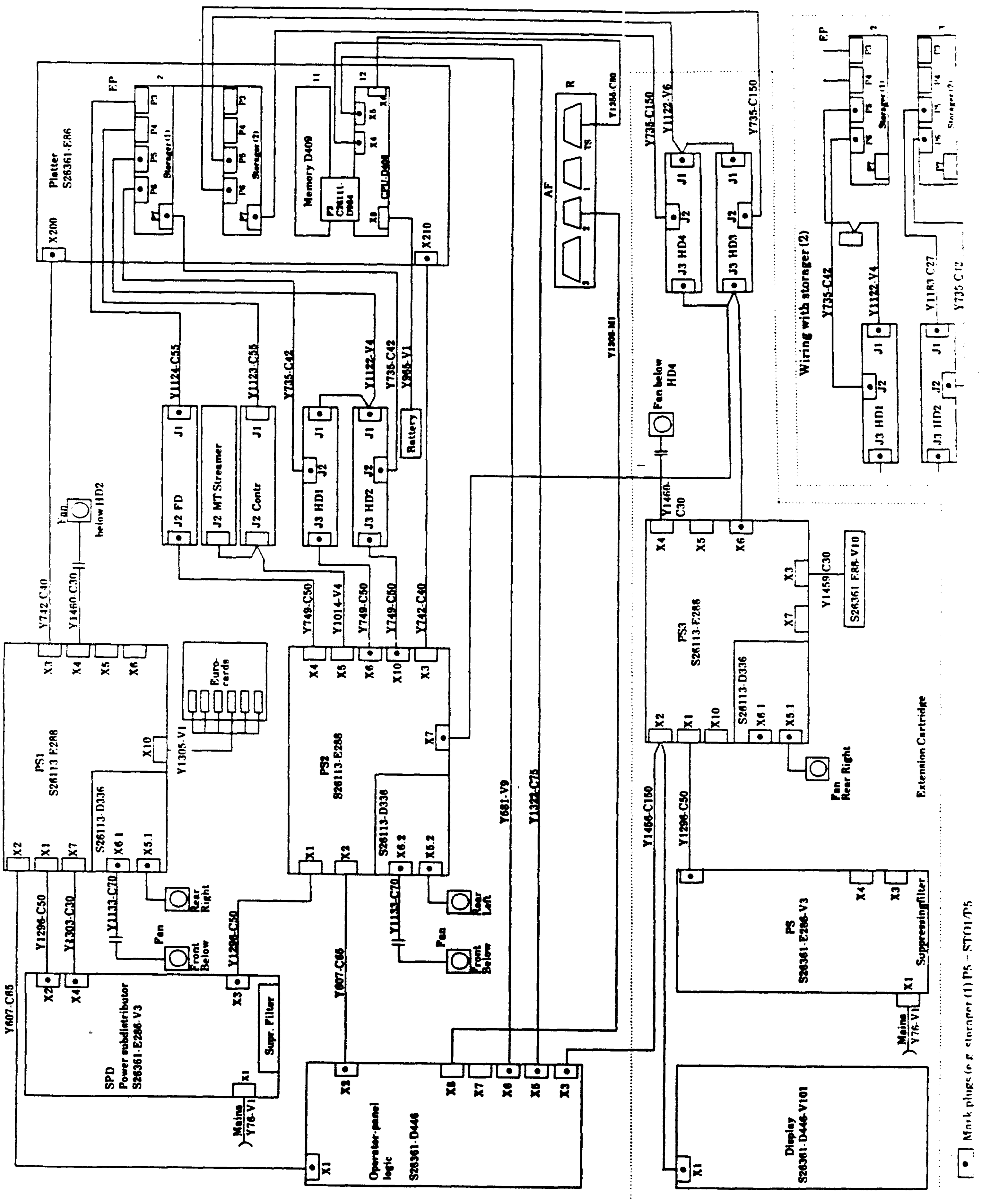


Fig. 2: Logic diagram of the basic power-supply system with extension cartridge

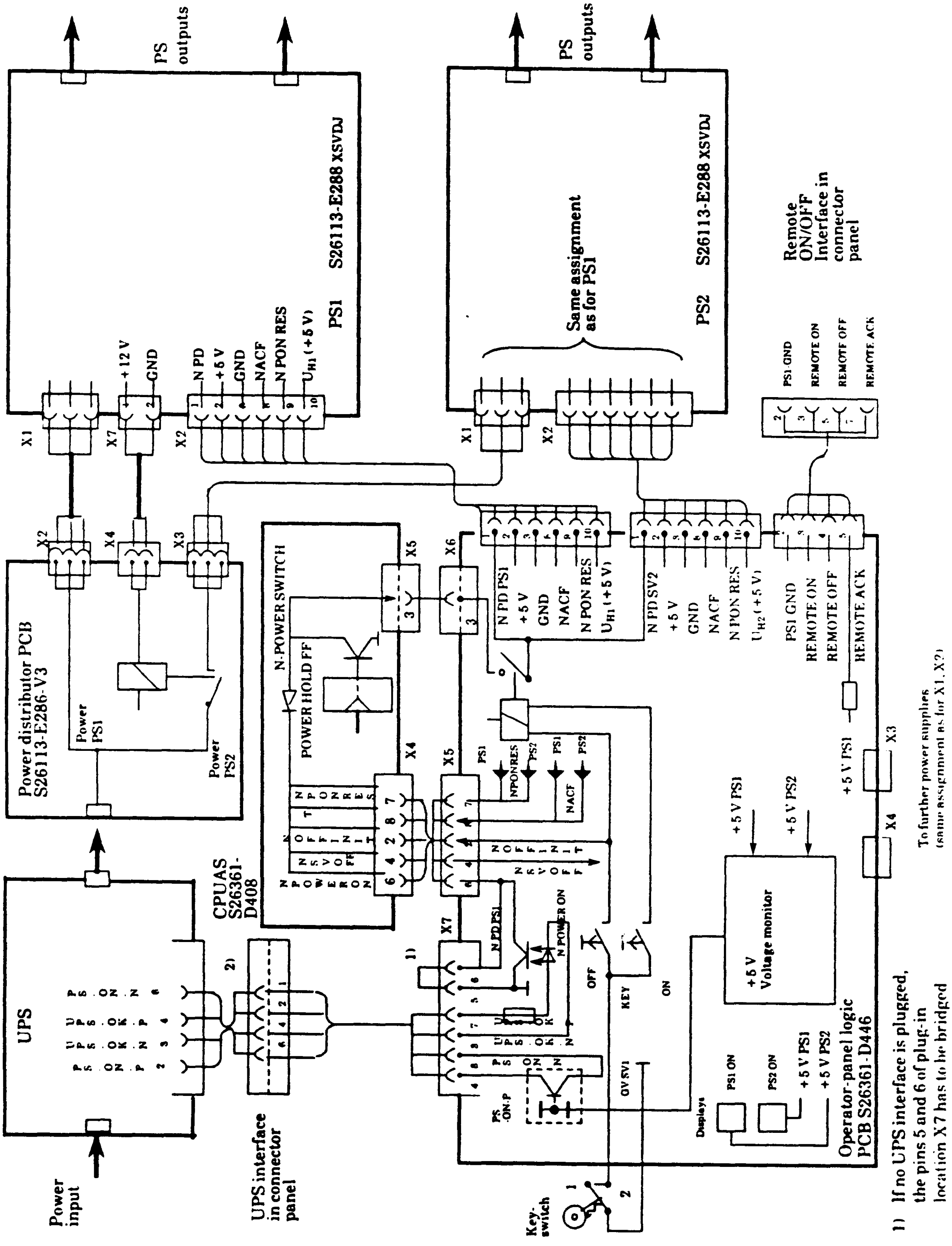


Fig. 3: Activation circuit and monitor of the MX300 power-supply system

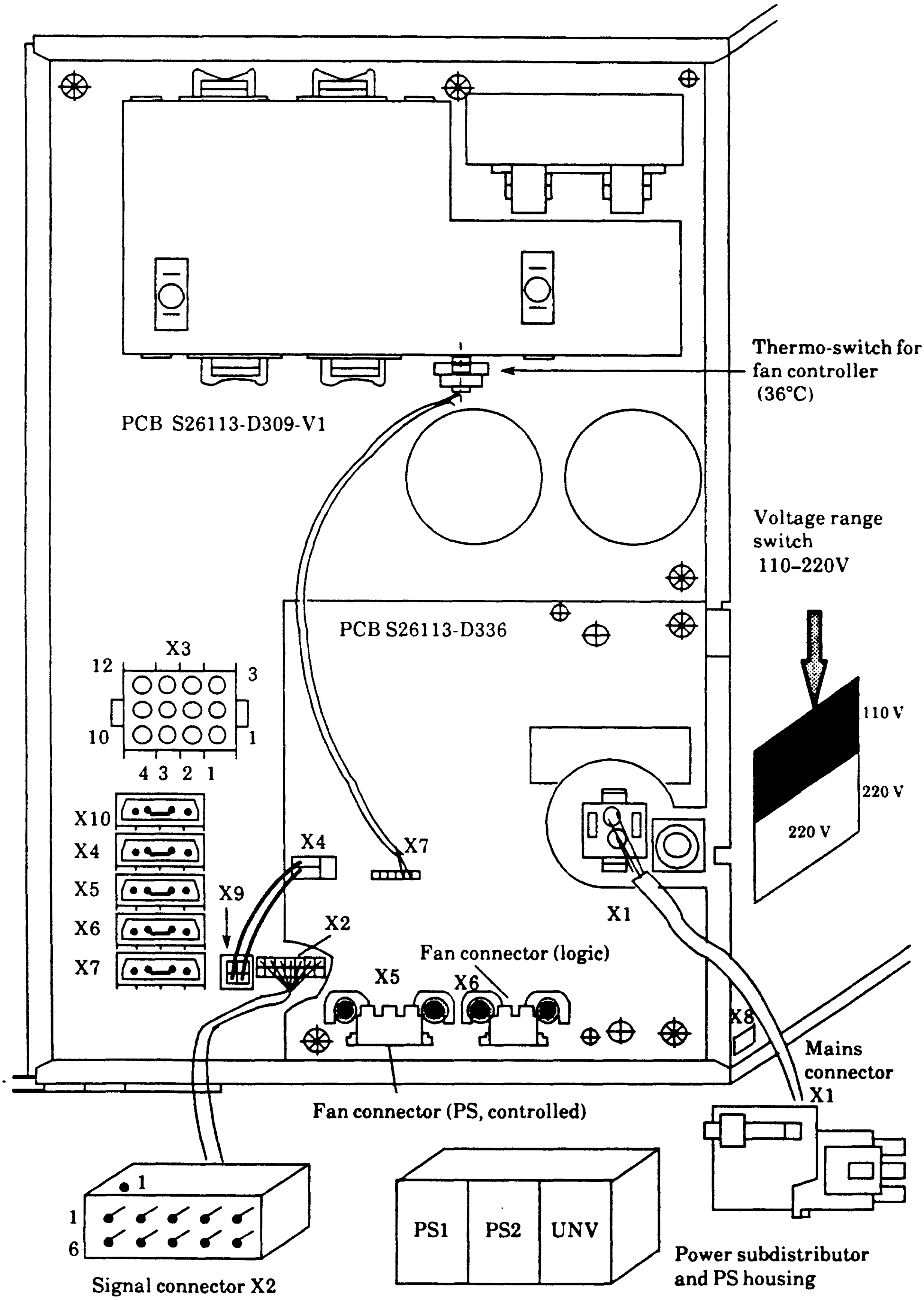
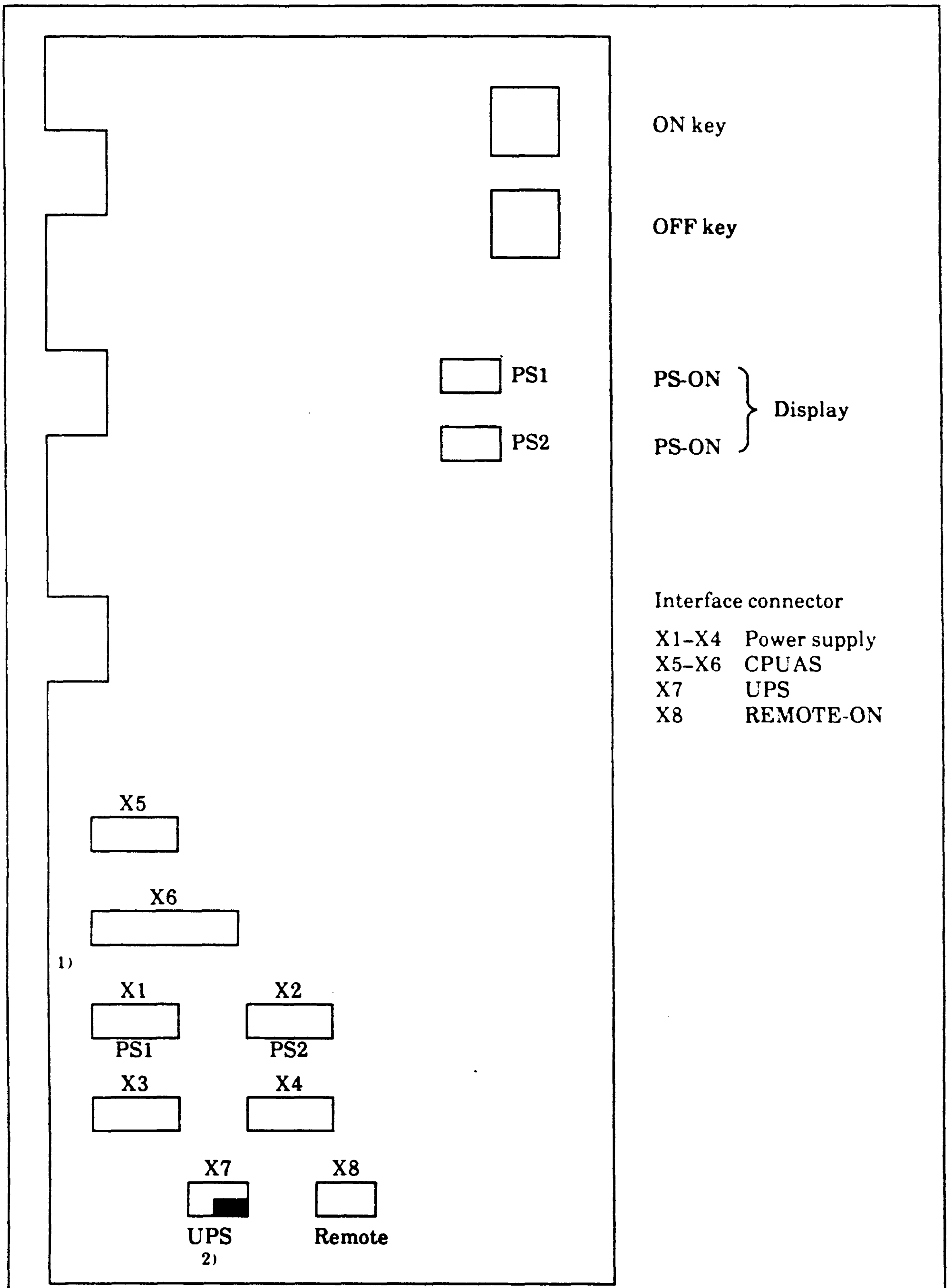


Fig. 4: Plug-in locations and connectors of the power supply XSVDJ S26113-E288



1) All plug-in locations are on the solder side
2) Jumper plug, if no UPS available (short pin 5 and 6)

Fig. 5: Plug-in locations and maintenance aids on the operator-panel logic PCB BFAAB

Plug-in location			Assignment
PS PCB S26113- D309-V1	Mains plug	X 1	Power input Connector 1 } 110–120 V~ / 220–240 V Connector 2
	Signal plug to operator-panel logic PCB BFAAB	X 2	Pin 1 = NPO Pin 2 = +5 V Pin 3 = 0 V Pin 4 = MC Pin 5 = Coding Pin 6 = NPO Pin 7 = Coding Pin 8 = ACF-N = POWER GOOD Pin 9 = PONRES-N Pin 10 = +5 V Auxiliary voltage
		X 8	Connector = MC (Marginal Check) only used in factory
	Output voltages	X 3	Connector 1 = - 5 V Connector 2 = + 12 V Connector 3 = - 12 V Connector 4 = ACF-N = POWER GOOD Connector 5 = 0 V Connector 6 = 0 V Connector 7 = + 5 V Connector 8 = 0 V Connector 9 = 0 V Connector 10 = + 5 V Connector 11 = + 5 V Connector 12 = + 5 V
		X 4 X 5 X 6 X 7 X 10	Pin 1 = +12 V Pin 2 = 0 V Pin 3 = 0 V Pin 4 = +5 V
	Fan plug Output PS	X 9	Pin 1 = 0 V Pin 2 = +12 V
Fan PCB S26113- D336	Fan plug Input	X 4	Pin 1 = 0 V Pin 2 = +12 V
	Fan plug Output	X 5	Pin 1 = 0 V Pin 2 = approx. +8 V or +12 V
	Fan plug Output	X 6	Pin 1 = 0 V Pin 2 = approx. +8V via Z-diode Pin 3 = 0 V
	Thermo-switch to PS heat dissipator	X 7	Pin 1 Fan control Pin 3 36 °C

Table 1: Assignment of the plug-in locations of the power supply XSVDJ

Plug-in location (see Fig. 3)		Assignment
Signal plug to the power supplies	X 1-X 4	see Table 1, Connector X2
Signal plug to CPU -D408 (X4)	X 5	Pin 2 = NOFF-INT (from message to CPUAS) Pin 4 = NSV-OFF (Switching via CPUAS) Pin 6 = N POWER ON Pin 7 = N PONRES Pin 8 = N ACF (mains failure) Pin 3, 5 = not used Pin 10 = not used
Signal plug to CPU -D408 (X5)	X 6	Pin 3 = N POWER SWITCH
Signal plug REMOTE-ON/OFF Connector panel	X 8	Pin 2 = PS1- 0 V Pin 3 = REMOTE-ON N Pin 4 = REMOTE-OFF N Pin 6 = REMOTER-ACK (+5 V)
Signal plug to UPS	X 7	Pin 2 = USVOK-P Pin 3 = USVOK-N Pin 4 = PS-ON-P Pin 5 = NO-USV-N *) Pin 6 = NO-USV-P *) Pin 8 = PS-ON-N

*) Jumper plug on PCB BFAAB, if no UPS available

Table 2: Assignment of the plug-in locations of the operator-panel logic PCB BFAAB

	U_N[V]	Admissible tolerance 1)	Measuring point
PS1	- 5.1 V	4.8 V - 5.15 V	**Platter MX300** X200 PS1 - 5 V - 12 V 0 V + 12 V + 5 V X210 PS2 - 5 V - 12 V 0 V + 12 V + 5 V
	- 12.0 V	11.5 V - 12.5 V	
	+ 12.1 V	11.6 V - 12.6 V	
	+ 5.0 V	4.9 V - 5.15 V	
PS2	- 5.1 V	4.8 V - 5.15 V	
	- 12.0 V	11.5 V - 12.5 V	
	+ 12.0 V	11.6 V - 12.6 V	
	+ 5.0 V	4.9 V - 5.15 V	
Batt.	3.6 V	≥3V	Battery under PS housing

1) The tolerance limits can be exceeded during idling.
The voltages cannot be set in the field.

Table 3: Measuring values and measuring points of the PS voltages

SIEMENS

Part IX
Monitors

Part IX

Monitors

Contents

Page

1 Monitors and Options

Since the end of 1987 the monitors 97801-302 and 97801-303 are not available anymore. They have been replaced by the new monitors 97801-305, 97801-306 and 97801-308.

Overview over the monitors and options:

Product	Item Code	Connection and Designation	replacing	
97801-305	S26361-L35-V1	Standard model with IF 97	97801-302	S26361-L16-V3
97801-306	S26361-L35	IF 97 + connecting facility for badge reader	-	-
97801-308	S26361-L35	2 x 4 wire AFP, the second AFP channel is transformed to IF 97 + connecting facility for badge reader	97801-303	S26361-L16-V11
97801-211	S26361-D398-V2	Extension from -305 up to -306	-	-
97801-212	S26361-D398-V1	Extension from -305 up to -308	-	-
97801-3980	S26361-F450-V1	Loadable character generator installation option for -305, -306 and -308	-	-
97001-24	S26361-F518-V1	Converter cable from interface IF 97to RS232	-	-
97007-97	S26381-H24-V1	AWL for connection to 97801-306 and -308	-	-
97801-370	S26381-K164-V	Control unit -305 without monitor for connection to a VTX monitor	-	-

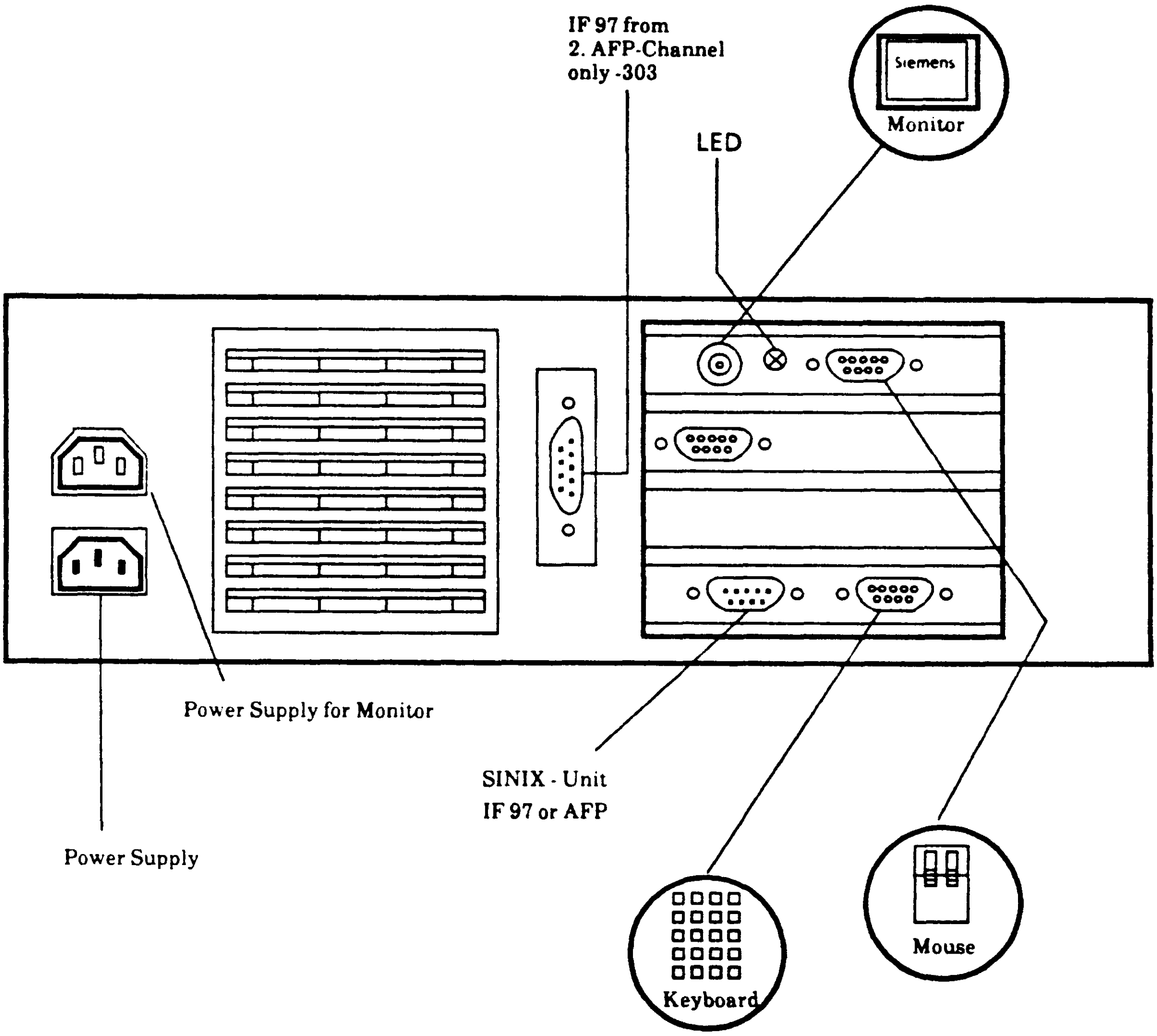
- Approximately at the end of 1988 a new generation of 14" CRT monitors will be available. The cluster of product numbers will be 97801-4xx.

- Approximately mid of 1988 new keyboards with a new technology (foil keyboards) will be available. User interface and product number will be as usual. The item code cluster will be S26381-K81-Vxxx.

2 Blitgraph Terminal 97808

2.1 Back View Blitgraph

97808	- 302 with IF 97	(DUEAM S 26361 - D 421)
	- 303 with 2 Kanal AFP	(AFPAL S 26361 - D 426)



2.2 Operation Guide

Key

The key in right front of the control panel is used to

- lock the frame mechanicaly
- lock the keyboard pads.

Monitor

The brightness is regulated with the rotory knob right underneath the monitor. The separately poweron for the monitor is regulated by the left rotory knob underneath (operating mode is ON). The monitor can be turned to either side for optimum ergonomically setup location.

During the startup procedure the ESC-key must be kept in pressed position until the following screen appears.

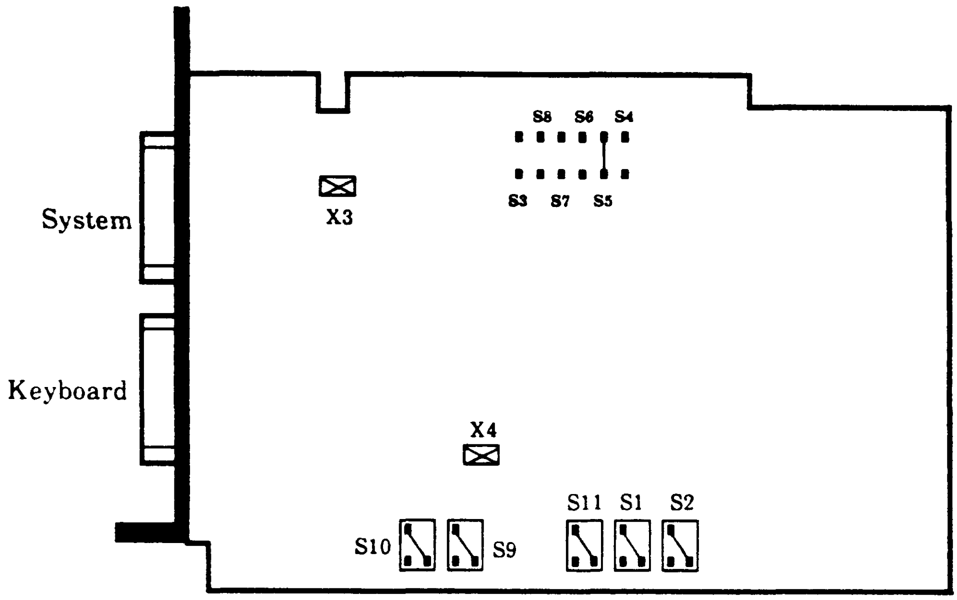
Connection to MX300

↓

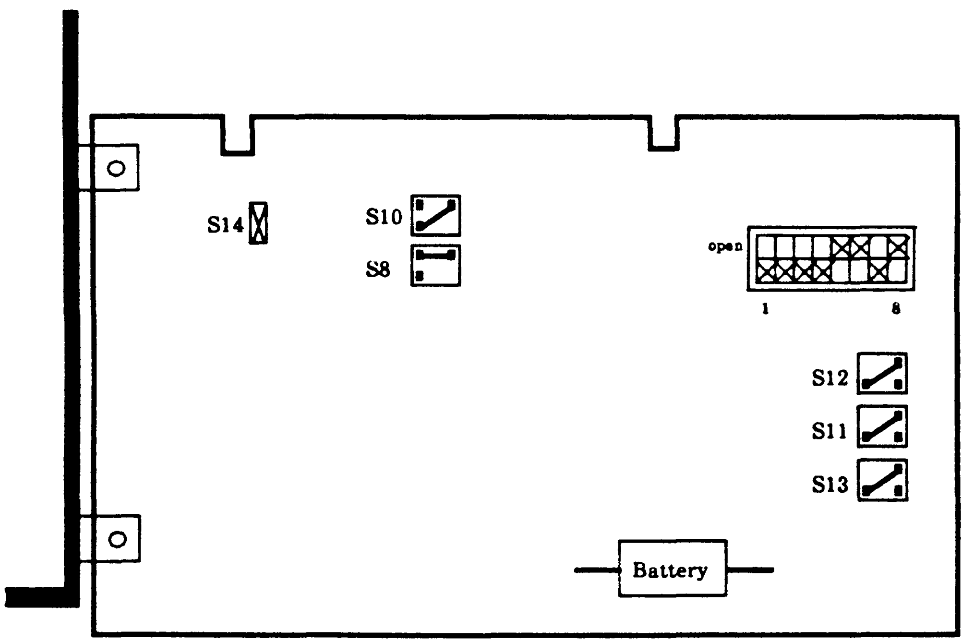
characteristics	selection	select field
baud	38400	45,5 50 75 110 150 300 600 1200 1800 2000 2400 4800 9600 19200 38400
character length	7 bit	7 8 bit
stopbit length	1 bit	1 2 bit
parity	odd	odd even off
line	dedicated	dialup dedicated
operator inputs	- selection: - acknowledge: - terminate selection:	CURSOR - keys ↵ or ENTER END

2.3 Setup Instructions Blitgraph 97808

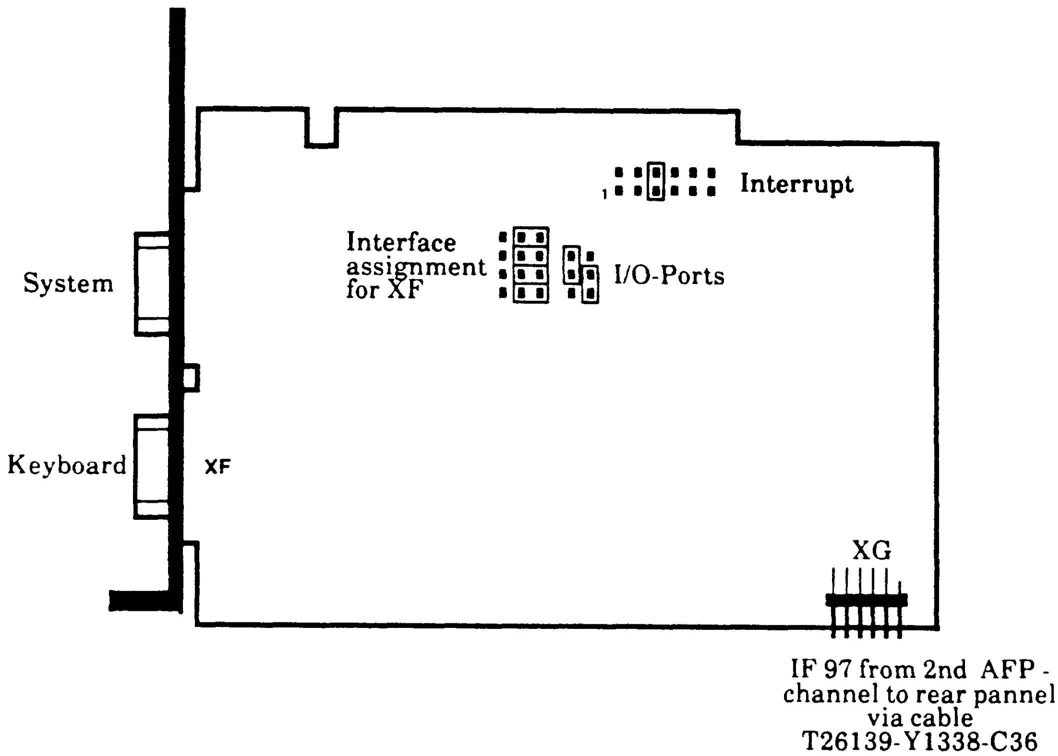
DCEAM
S26361-D421



RAM
S26361-D431



AFPAL
S26361-D426



Press key during powerup test:

ESC : menu for adjusting the interface parameters
RETURN : mini emulation will be startedalthough 97801 emulation is loaded
MENU : starts the monitor program

Key combinations during actual mini emulation:

CTRL-MENU-PRINT: Graphik-Testbild zum Abgleich des Monitors

Operation:	<CR>	... switches to positive/negative image
	Blank	... switches to 540 / 400 lines
	Mouse	... moves a white rectangle to any position
	<END>	... return to mini emulation

CTRL-MENU-MODE: Local loopback mode (Input wird auch ohne System-Anschluß auf Bildschirm abgebildet).

CTRL-MENU-START: Restart of terminal software (reset)

CTRL-MENU-END: Call of the monitor program

Key combination during actual 97801 emulation:

CTRL-MENU-START: Restart of the 97801 emulation

CTRL-MENU-END: Call of the monitor program

ESC [3 ; Pm x Modifies screen modes Pm = 1 ... 80 x 25 (standard)
= 2 ... 90 x 36
= 3 ... 80 x 27

The following ESC sequences have been added to the 97801 ESC sequences:

ESC [1 ; 1 x	Load COLLAGE
ESC [2 ; 1 x	Start COLLAGE
ESC [3 ; Pm x	Modifies screen mode
ESC [4 ; Pm x	Pm - no. of lines a HW - Scroll is performed
ESC [5 x	Status of the EXEC version, e.g. B0 1.27
ESC [14 y	FW status of the mouse controller
ESC [13 y	Status request of operation mode

Possible answers you will get:

ESC [P 13 y 0 ESC\	Mini ANSI is running
ESC [P 13 y 1 ESC\	ANSI is running
ESC [P 13 y 2 ESC\	ANSI is running and COLLAGE is loaded
ESC [P 13 y 3 ESC\	COLLAGE is running

The following control sequences are not supported in regard to 97801:

ESC [3 s	Keyboard click ON / OFF
ESC R B . . . . ESC\	Loading of the character generator with new symbol

Error Messages of the 97808 Hardware test (Power-up test):

ERROR	0:	no error (error-status request only)
ERROR	1:	Boot EPROM checksum error
ERROR	2:	reserved
ERROR	3:	RAM error (main memory)
ERROR	4:	video RAM error
ERROR	5:	keyboard ROM checksum error
ERROR	6:	keyboard RAM error
ERROR	7:	keyboard timeout
ERROR	8:	error in SCC 8530 (interface chip)
ERROR	11:	RAM with battery buffer defecive
ERROR	13:	DUAL port RAM error
ERROR	14:	acknowledgement of mouse controller missing
ERROR	15:	error in mouse controller
ERROR	16:	error in UPI-41 micro controller
ERROR	17:	battery empty

The errors 3, 4, 13, 14 and 15 are not output on screen but acoustic in morse-code and lead to breakdown of test.

Morse code:

1:	.----	6:	-....
2:	..---	7:	--...
3:	...--	8:	---..
4:	....-	9:	----.
5:	.....	0:	-----

SIEMENS

Part X
Peripherals

Part X

1. Peripherals

Contents

Page

1 Peripherals

The number of available interfaces IF97 and V.24 for the direct connection of peripheral devices depends on the configuration stage (number of I/O processors) of the PC-MX300-10/-20/-30.
Siemens provides a special cable under the product no. 97001-24 for the conversion of an IF97 interface into a V.24 interface.
The reverse conversion (V.24 to IF97) is only possible via non-Siemens products.

1.1 Peripherals supported by the System

It is possible to install video workstations and printers directly via AFP in the menu system of the admin identification under

system administration / configuration of the local system

The following units are supported:

the graphics terminal 97808,
the 'common' terminals (97801-3xx, 97801-4xx),
either with international or national keyboard,

as well as the Siemens printers 9001- 9001-b,
9004, 9012, 9013,
9022, 9025, 9047.

The above-mentioned printers are operated with the corresponding default setting. This can be taken from the current maintenance pocket manual for printers.

1.2 Peripherals by non-Siemens Manufacturers

Peripherals produced by non-Siemens manuafacturers have to be configured manually. You can obtain information on this topic from the responsible system service.

SIEMENS

Part XI
System Software

Part XI

System Software

Contents

1 Installation of SINIX V5.2A

Insert the SINIX0 floppy and switch on the MX300 (press ON key on the system unit, switch on console).

The start program loads a mini-system core from the SINIX0:

testend

.

.

SINIX-H V5.2 #....

.

.

.

SINIX1 <-/

When the mini-sinix has been loaded from the floppy, the system requests the SINIX1 floppy.

Remove the SINIX0 floppy, insert the SINIX1 floppy (not write-protected!) and acknowledge with the RETURN key.

At first, the consistency of the file system on the SINIX1 floppy is checked ("fsck" in "/etc/rc") and then the actual installation is started (".profile" on the SINIX1 floppy). Should the file system on the SINIX1 floppy not be in good order, the system attempts a REBOOT. In this case you have to insert again the SINIX0 floppy and restart.

At the request

"Please now insert SINIX2 into streamer and acknowledge with RET"

you have to insert the magnetic tape cartridge SINIX2 into the streamer drive. Leave the SINIX1 floppy in the disk drive because you will need it for the further installation procedure.

The streamer tape is first rewinded and then the installation procedure asks you questions which you can answer in the following way (the user entries are underlined).

Is console type national or international ? (n = default/i) > n

In case the console is equipped with an international keyboard, enter here i. **It is important to national** versions that 'n' relates only to the German keyboard assignment (initial state of the terminal). National key tables cannot be loaded yet at this point of time.

In the following questions "is0" stands for the 1st disk, "is1" for the 2nd disk and "a", "g" or "h" for disk partitions:

Disk is0 will now be overwritten -
do you want to save the contents first? > n

In case you still have unsaved data on the first disk, you may pull here the "emergency brake" and abort installation with y.

\# If a second disk is connected:

\# *Disk is1 will now be relabeled -*
\# *do you want to save the contents first? > n*

\# If the partition of the second disk has changed, data will be completely lost during rewriting.
\# If there are still unsaved data on the 2nd disk, you may now abort installation with y.

label installed
boot installed

/dev/is0a: ...
.
.

The label area of the disk(s) is now rewritten.
\# Then the installation procedure outputs the disk type of your two hard disks (possible disk
\# types are "MegaFile1300" and "MC1355") and inquires on which disk the "/usr" file system
\# and the "/usr/rtmp" directory are to be created:

\# *Choose configuration as follows :*

\# *0) /usr file system on /dev/is0g including /usr/rtmp space*

\# *1) /usr file system on /dev/is1g and /usr/rtmp on /dev/is1a*

\# *(0/1) > 0*

\# It is up to you which decision you take.

/dev/is0g: ...
.
.

\# *new filesystem on /dev/is1a ? (n = default/y) > y*

\# In case there are already data on the 2nd disk, enter here n. However, after termination of the installation procedure you have to enter manually the disk areas of the 2nd disk in the file "etc/fstab" and create corresponding empty directories.

\# *where to mount /dev/is1a ? (default /usr/rtmp) > /usr/rtmp*

\# /usr/rtmp is used as a temporary directory in the sie- and att-universe. In case you intend to use /dev/isla for user data, you have to indicate here a file system the name of which starts with "usr" or "/usr", e.g. "/usr1a". We strongly advise you, however, to choose the default suggestion.

\#) This part of the installation procedure is only executed, if your MX300 is equipped with two disks.

\# /dev/is1a: ...

.

.

\# *new filesystem on /dev/is1g ? (n = default/y) >* y

\# In case there are already data on the 2nd disk, enter here n. However, after termination of the installation procedure you have to enter manually the disk areas of the 2nd disk in the "etc/fstab" file and create corresponding empty directories.

\# *where to mount /dev/is1g ? (default /usr1) >* /usr1g

\# The name of the file system which you indicate here has to start with the letters "usr" or "/usr".

\# /dev/is1g: ...

.

.

\# The installation procedure creates as standard a second swap area on the second disk ("/dev/is1b").

If the 1st disk is of the "MegaFile1300" type:

Also new filesystem on /dev/is0h ? (n = default/y) > y

In case there are already data on the h-partition of the 1st disk, enter here n. However, after termination of the installation procedure you have to enter manually this partition in the "etc/fstab" file and create a corresponding empty directory.

where to mount /dev/is0h? (default = /usr1) > /usr0h

The name of the file system which you indicate here has to start with the letters "usr" or "/usr".

\# If the 2nd disk is of the "MegaFile1300" type:

\# *Also new filesystem on /dev/is1h ? (n = default/y) >* y

\# In case there are already data on the h-partition of the 2nd disk, enter here n. However, after termination of the installation procedure you have to enter manually this partition in the "etc/fstab" file and create a corresponding empty directory.

\# *where to mount /dev/is1h? (default = /usr2) >* /usr1h

\# The name of the file system which you indicate here has to start with the letters "usr" or "/usr".

#) This part of the installation procedure is only executed, if your MX300 is equipped with two disks.

Now starts the installation of the root file system on the hard disk.

Restore root file system:

Restore MX300 specific root files

Making standard devices

Root file system extracted

ATTENTION PLEASE:

.

.

Please acknowledge with RET to start the reboot >

Acknowledge this information with the RETURN key.

Now booting off real root file system...

Please wait until the system is loaded from the hard disk "SINIX-H V5.2 '... " and then remove the SINIX1 floppy.

When the system is loaded from the hard disk, the shell prompt "#" is output. Call now the procedure **"restore.more"**.

<u>restore.more</u>

The procedure "restore.more" inquires which parts of the distribution set are to be installed.

The following examples of answers show what a sensible installation could look like:

---> System V Environment (5 MB) ? (n/y) <u>y</u>

X/OPEN interface of SINIX V5.2

---> System V man pages (2 MB) ? (n/y) <u>n</u>

English online manual of the X/OPEN-compatible commands.

---> SINIX 2.1 Environment (3 MB) ? (n/y) <u>y</u>

SINIX V2.1 interface of SINIX V5.2

---> administration man pages (2 MB) ? (n/y) <u>n</u>

English online manual system administration

---> System V Includes (1 MB) ? (n/y) <u>y</u>

for C-development with X/OPEN-compatible CES V5.2

---> CES Environment (5 MB) ? (n/y) <u>y</u> (or <u>n</u>)

Development environment for C-programming after X/OPEN.

---> *unformatted administration man pages (2 MB) ? (n/y)* n

Unformatted English manual pages for printout (9001, 9013)

---> *articles of UNIX Volume 2 (3 MB) ? (n/y)* n

UNIX documentation for experts

---> *miscellaneous files (4 MB) ? (n/y)* y

Only sensible for C-developers and system experts. If you do not intend to develop programs, you can enter here n.

---> */usr/games (1 MB) ? (n/y)* n

Games with English surface

The /usr space available is about 88 MB (for MC1355)
(58 MB for MegaFile1300)
and the /usr space needed is about 18 MB -
do you want to repeat the selection ? (n = default/y) n

After termination of your entries, the automatic installation begins which takes approx. 30 minutes.

If you have entered the answers of the above example, approx. 70 MB are still available in the "/usr" area of the first disk (for MC1355) or 40 MB (for MegaFile1300) for further software products and user data.

There are available for user data for an average user:

a)	in case the 1st disk is MegaFile1300:		/usr0h with 122017 kbyte
b)	in case the 2nd disk is MegaFile1300:		/usr1g with 65713 kbyte
			/usr1h with 122017 kbyte
		opt.	/usr1a with 6698 kbyte
c)	in case the 2nd disk is MC1355:		/usr1g with 92706 kbyte
		opt.	/usr1a with 6745 kbyte

Contents of the Installation Volume SINIX2

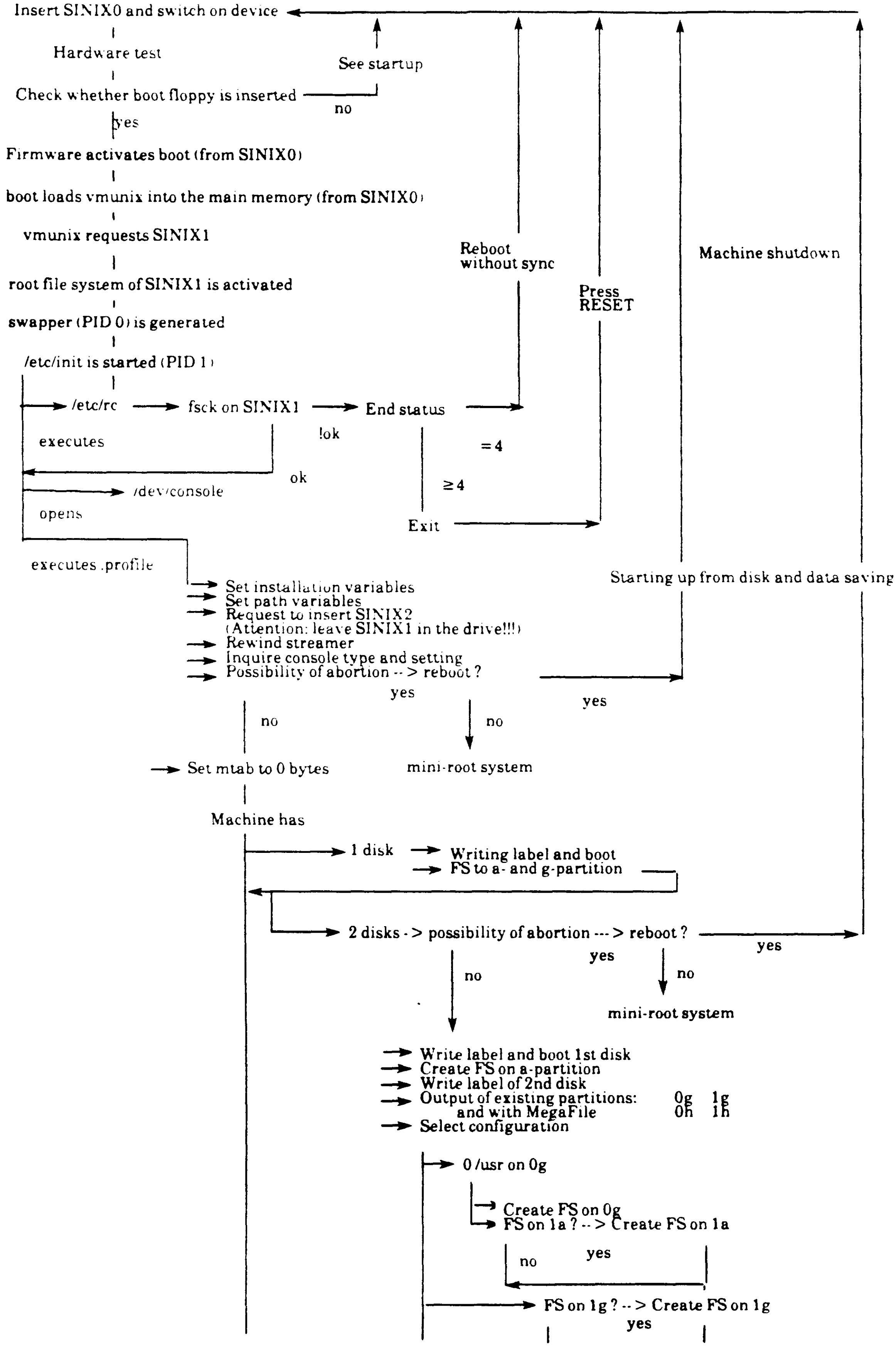
tapefile	what	format
0	tape.info	ascii
1	root file system	tar
2	machine dependent kernels	tar
3	MX2+ dependent utilities	tar
4	MX300 dependent utilities	tar
5	/usr file system	tar
6	MX300 specific /usr files	tar
7	files to build MX2 kernel (/usr/sys)	tar
8	files to build MX300 kernel (/usr/sys)	tar
9	install script for system V	tar
10	System V Environment (/usr/att)	tar
11	System V Includes MX2 (/usr/att/usr/include)	tar
12	System V Includes MX2+, MX300 (/usr/att/usr/include)	tar
13	install script for SINIX 2.1 Environment	tar
14	SINIX 2.1 Environment (/usr/sie__root)	tar
15	formatted man pages (/usr/man/cat*)	tar
16	unformatted man pages (/usr/man/cat*)	tar
17	articles of UNIX Volume 2 (/usr/doc)	tar
18	games (/usr/games)	tar
19	miscellaneous files	tar
20	System V man pages (/usr/att/usr/catman)	tar
21	install script for CES Environment	tar
22	CES Environment	tar

Contents of the File System on the SINIX1 Floppy

```
.:
total 20
-rwxr--r--    1  bin      12419  May  30  16:45  .profile
drwxrwxrwx    2  bin        104  May  10  11:47  bin
drwxrwxrwx    2  bin        528  May  10  11:47  dev
drwxrwxrwx    2  bin        512  May  11  09:07  etc
drwxr-xr-x    2  root      4096  May  10  11:47  lost+found
drwxrwxrwx    2  bin         24  May  10  11:47  mnt
drwxrwxrwx    2  bin         72  May  10  11:47  stand
drwxrwxrwx    2  bin        512  May  11  09:07  tmp

bin:
total 132
-rwxrwxrwx    1  bin       6144  May  10  11:47  echo
-rwxrwxrwx    1  bin      16384  May  10  11:47  ed
-rwxrwxrwx    1  bin      20480  May  10  11:47  mt
-rwxrwxrwx    1  bin      26624  May  10  11:47  sh
-rwxrwxrwx    1  bin      49152  May  10  11:47  tar
-rwxrwxrwx    1  bin      16384  May  10  11:47  uname

dev:
total 0
crw-r--r--    1  bin    11,   0  May  11  09:06  clock
crw-r--r--    1  bin    10,   0  May  11  08:42  console
crw-rw----    1  bin     6,   0  May  10  11:47  drum
brw-rw-rw-    1  bin     0, 121  May  10  11:47  fl1
brw-rw-rw-    1  bin     0, 122  May  10  11:47  fl2
brw-rw-rw-    1  bin     4, 122  May  10  11:47  ifl2
brw-r-----    1  bin     4,   0  May  11  08:48  is0a
brw-r-----    1  bin     4,   1  May  10  11:47  is0b
brw-r-----    1  bin     4,   6  May  10  18:53  is0g
brw-r-----    1  bin     4,   7  May  10  11:47  is0h
brw-r-----    1  bin     4,   8  May  11  08:54  is1a
brw-r-----    1  bin     4,  14  May  11  08:55  is1g
brw-r-----    1  bin     4,  15  May  10  11:47  is1h
crw-r-----    1  bin     2,   1  May  10  11:47  kmem
crw-r--r--    1  bin     2,   0  May  10  11:47  mem
crw-rw-rw-    1  bin     2,   2  May  11  09:06  null
crw-rw-rw-    1  bin    15,   0  May  10  11:47  ris0
crw-r-----    1  bin     8,   2  May  11  08:48  ris0c
crw-r-----    1  bin     8,  10  May  10  11:47  ris1c
crw-r-----    1  bin     8,  18  May  10  11:47  ris2c
crw-r-----    1  bin     8,  26  May  10  11:47  ris3c
crw-rw-rw-    1  bin    15,   8  May  10  11:47  ris8
crw-r-----    1  bin     7,   2  May  10  15:01  rsd0c
crw-r-----    1  bin     7,  10  May  10  11:47  rsd1c
crw-rw-rw-    1  bin    12,   0  May  11  11:47  rts0
crw-rw-rw-    1  bin    12,   8  May  10  11:47  rts8
brw-r-----    1  bin     0,   0  May  10  15:01  sd0a
brw-r-----    1  bin     0,   1  May  10  11:47  sd0b
brw-r-----    1  bin     0,   6  May  10  15:03  sd0g
brw-r-----    1  bin     0,   8  May  10  11:47  sd1a
brw-r-----    1  bin     0,  14  May  10  11:47  sd1g
brw-r-----    1  bin     1,   0  May  10  11:47  swap
```

```
etc:
total 315
-rw-r--r--   1  roo*       0  May 11 08:42  .sie_utmp
-rw-r--r--   1  roo        0  May 11 08:42  .utmp
-rwxrwxrwx   1  bin    20480  May 10 11:47  disklabel
-rwxrwxrwx   1  bin     7807  May 10 11:47  disktab
-rwxrwxrwx   1  bin    20480  May 10 11:47  disktype
-rwxrwxrwx   1  bin    49152  May 10 11:47  fsck
-rwxrwxrwx   1  bin    16384  May 10 11:47  fsirand
-rw-r--r--   1  bin      112  May 10 11:47  group
-rwxrwxrwx   1  bin    20480  May 10 11:47  init
-rwxrwxrwx   1  bin    24576  May 10 11:47  mkfs
-rwxrwxrwx   1  bin    53248  May 10 11:47  mount
-rw-r--r--   1  root       0  May 11 09:07  mtab
-rwxrwxrwx   1  bin    24576  May 10 11:47  newfs
-rw-r--r--   1  bin      655  May 10 11:47  passwd
-rwxr--r--   1  bin      625  May 10 11:47  rc
-rwxrwxrwx   1  bin    20480  May 10 11:47  reboot
-rw-r--r--   1  bin        8  May 11 11:47  ttys
-rwxrwxrwx   1  bin    53248  May 10 11:47  umount

lost+found:
total 0

mnt:
total 0

stand:
total 45
-rwxrwxrwx   1  bin    20258  May 10 11:47  bootwn.x.MX2
-rwxrwxrwx   1  bin    25091  May 10 11:47  bootwn.x.MX200

tmp:
total 0
```

Installation Procedure - SINIX V5.2A (MX2/MX300)



no

1) /usr on 1g and /usr/rtmp on 1a

Possibility of abortion

usr on 0g ---> FS on 0g

yes

no

no

Mini-root FS

New FS on 1a and 1g

New FS on 0g ?

Create FS on 0g

yes

1st disk MegaFile --> FS on 0h ? --> Create FS on 0h

yes

yes

no

Mount from 0a partition to /mnt

Tape positioning (archive 1) ----> exit 2

Error

Read in root FS to 0a ("Restore root file system")

Set boot flags (machine-dependent)

Create DVZ usr

DVZ = file table

Create cond. sym. link /etc/utmp

Read in corresponding kernel ----> exit 3

Error

Create link sinix

Tape positioning (MX300 only)

exit 4

MX2 +

Read in machine-specific root files (only MX2 +, MX300)

Error

MX300

exit 5

Rewrite label and boot of 1st disk (only MX2 +, MX300)

Unmount and fsck of 0a (root FS of disk) ----> exit 6

Mount root FS

Error

Entry in /etc/versionlog

Configuration of Teleservice

Create system file /etc/fstab based on the previous data
Attention: no DVZ name must be specified twice

Create the directories entered in fstab

Create the standard devices

Delete the device entries for the c-partition

Create the restore.more file

Move /etc/rc to /etc/rc.final

Copy uname from SINIX1 to /mnt/bin

Sync

Unmount 0a partition

Reboot
(after reboot, the SINIX1 floppy may be removed)

Hardware test

Firmware activates boot (from disk)

boot loads vmunix into the main memory (from disk)

root file system of disk is activated

swapper (PID 0) is generated

/etc/init is started (PID 1)

→ /dev/console
opens
→ starts sh

Single-user mode (#)

Enter restore.more

→ Inquire console type and setting
→ Tape rewinding + positioning to archive 5
→ Check whether /usr/bin exists

→ Installation of system administr. env

yes no

→ Unmount /usr
→ Mount /usr ---- >exit 2
Error
→ Create /usr/rtmp, /.tmp
→ Create CSL /tmp
→ Read in archive 5 ---- > exit 5
Error
→ In case of MX2 + /MX300:
Read in archive 6 ---- > exit 6
Error
→ Sort ttys and ttytype
→ Move rc.final to rc

Display of free space on disk

Select usr parts to be installed:
System V Environment
System V man pages
SINIX 2.1 Environment
administration man pages
System V Includes
CES Environment
unformatted administration man pages
articles of UNIX Volume 2

miscellaneous files
games

Display of free space still available after installation of the selected parts

Inquiry whether selection is to be repeated

yes

no

Check whether /usr is mounted

Read in the selected usr parts:
att-universe (via 5install.sh)
System V Includes
sie-universe via sie_install.sh
formatted man pages (system administration)
unformatted man pages
/usr/doc
/usr/games
miscellaneous files
System V man pages
CES Environment (via CESinstall.v5)

Create HOME-DVZ for Teleservice

Tape rewinding and output of date

Sync and reboot of system in multi-user mode

System configuration by system administrator

Installation of a second hard disk.

All works have to be carried out in single-user mode.

1. Write SINIX label to 2nd di....

   Input:
   /etc/mknod /dev/risîc c 8 10
   /etc/disklabel -1 /dev/ris1c
   rm /dev/ris1c

2. Create file system on 2nd disk:

   Input:

/etc/newfs	**/dev/is1a 1300**	if 2nd disk is of the "MegaFile 1300" type
/etc/newfs	**/dev/is1g 1300**	
/etc/newfs	**/dev/is1h 1300**	N.Te. 1558
/etc/newfs	**/dev/is1a 1355**	if 2nd disk is of the "Micropolis 1355" type
/etc/newfs	**/dev/is1g 1355**	

   The c-partition must not be overwritten in the case of SINIX V5.2A, as it contains the boot, label and voids list.

3. Mount - Create directories

   When operating a second hard disk, the following disk partitions can be mounted:

   /dev/is1a --> /usr/rtmp
   /dev/is1g --> /usr1g
   /dev/is1h --> /usr1h

   It is also possible to install the usr-partition on the second hard disk. Please proceed as described in the installation instructions in the release notice MX300.

   The h-partition is only available for disks of the "MegaFile 1300" type. The names of the file systems must begin with "/usr" or "usr", if they are supposed to be selected by the user in the standard menu system.

   We recommend you to hold the tmp area of the sie- and att-universe on an own partition. Therefore you should mount the partition /dev/is1a to /usr/rtmp. Due to the symbolic link /tmp, the /tmp area of these two universes is then located on the partition /dev/is1a. In case you want to use the area /dev/is1a for user data, you have to indicate a file system the name of which starts with "/usr", for example, /usr1a.

   Input:

mkdir /usr1g	Create the mount directory
mkdir /usr1h	
chmod 755/usr1?	Allocate access rights
rm /usr/rtmp/*	Delete the files in /usr/rtmp in order to prevent hidden data from occupying the disk.
	Attention: At this point of time, user programs should no longer be buffered under /usr/rtmp.

4. Extend /etc/fstab
(For meaning of parameters see chapter 11, System Software)

Input:

/dev/is1a	**/usr/rtmp**	**4.2**	**rw**	**1**	**3**
/dev/is1b	**- -**	**swap**	**sw**	**-**	**-**
/dev/is1g	**/usr1g**	**4.2**	**rw**	**1**	**4**
/dev/is1h	**/usr1h**	**4.2**	**rw**	**1**	**5**

Attention:
Enter in any case a 2nd swap partition (is1b)!

5. Reboot system

The partitions of the 2nd disk are thus mounted corresponding to the entries in the /etc/fstab.

Input:
/etc/reboot

Installation of a third and fourth hard disk

All works have to be carried out in single-user mode.

1. reate device files for the 3rd and 4th disk:

Input:
cd /dev
MAKEDEV is2 for the 3rd disk
MAKEDEV is3 for the 4th disk

2. Write SINIX label to 3rd and 4th disk:

Input:

/etc/disklabel -l /dev/ris2c	Label for 3rd disk
/etc/disklabel -l /dev/ris3c	Label for 4th disk
rm /dev/ris2c /dev/is2c	Delete the c-devices in order not to overwrite
rm /dev/ris3c /dev/is3c	accidentally the voids list.

3. Create file systems on the 3rd and 4th disk:

Input:
3rd disk:

/etc/newfs	**/dev/is2a**	**1300**	if the 3rd disk is of the "MegaFile 1300" type
/etc/newfs	**/dev/is2g**	**1300**	
/etc/newfs	**/dev/is2h**	**1300**	
/etc/newfs	**/dev/is2a**	**1355**	if the 3rd disk is of the "Micropolis 1355" type
/etc/newfs	**/dev/is2g**	**1355**	

4th disk:

/etc/newfs	**/dev/is3a**	**1300**	if the 4th disk is of the "MegaFile 1300" type
/etc/newfs	**/dev/is3g**	**1300**	
/etc/newfs	**/dev/is3h**	**1300**	
/etc/newfs	**/dev/is3a**	**1355**	if the 4th disk is of the "Micropolis 1355" type
/etc/newfs	**/dev/is3g**	**1355**	

The c-partition must not be overwritten in the case of SINIX V5.2A, as it contains the boot, label and voids list.

4. mount - Create directories

The partitions of the 3rd and 4th disk can be mounted as follows:

3rd disk:
/dev/is2a --> /usr2a
/dev/is2g --> /usr2g
/dev/is2h --> /usr2h

4th disk:
/dev/is3a --> /usr3a
/dev/is3g --> /usr3g
/dev/is3h --> /usr3h

The h-partition is only available for disks of the "MegaFile 1300" type. The names of the file systems must begin with "/usr" or "usr", if they are supposed to be selected by the user in the standard menu system.

Input:

mkdir	/usr2a	Create the mount directories
mkdir	/usr2g	
mkdir	/usr2h	
mkdir	/usr3a	
mkdir	/usr3g	
mkdir	/usr3h	
chmod	755 /usr2? /usr3?	Allocate access rights

5. Extend /etc/fstab
(For meaning of parameters see chapter 11, System Software)

Input:

/dev/is2a	/usr2a	4.2	rw	1	3
/dev/is2b	--	swap	sw	-	-
/dev/is2g	/usr2g	4.2	rw	1	4
/dev/is2h	/usr2h	4.2	rw	1	5
/dev/is3a	/usr3a	4.2	rw	1	3
/dev/is3b	--	swap	sw	-	-
/dev/is3g	/usr3g	4.2	rw	1	4
/dev/is3h	/usr3h	4.2	rw	1	5

Attention:
Enter in any case a 3rd and 4th swap partition (is2b and is3b)!

6. Reboot system

The partitions of the 3rd and 4th disk are thus mounted corresponding to the entries in the /etc/fstab.

Input:
/etc/reboot

2 Startup and Shutdown of SINIX V5.2A

Switch on device

Hardware test

Check whether boot floppy is inserted ---> see installation procedure

no yes

Firmware activates boot (from disk)

boot loads vmunix into the main memory (from disk)

root file system is activated

swapper (PID 0) is generated

/etc/init is started (PID 1)

executes → /etc/rc → transfers stdout and stderr to /dev/console
→ sets HOME, PATH, LANG variables
→ fasthalt ---> no FS check

yes

no

→ autoboot ----> output of date

no

yes

<END> pressed (*)

→ Output of date
→ /etc/fsck on all FS ---> end status ---> exit

in /etc/fstab !ok >4

ok 4

→ Output of date Reboot without sync

→ Delete /etc/nologin
→ /etc/passwd destroyed ---> attempt of recovery

yes

no

→ Set mtab to 0 byte
→ Mount local file system
→ Determine system type

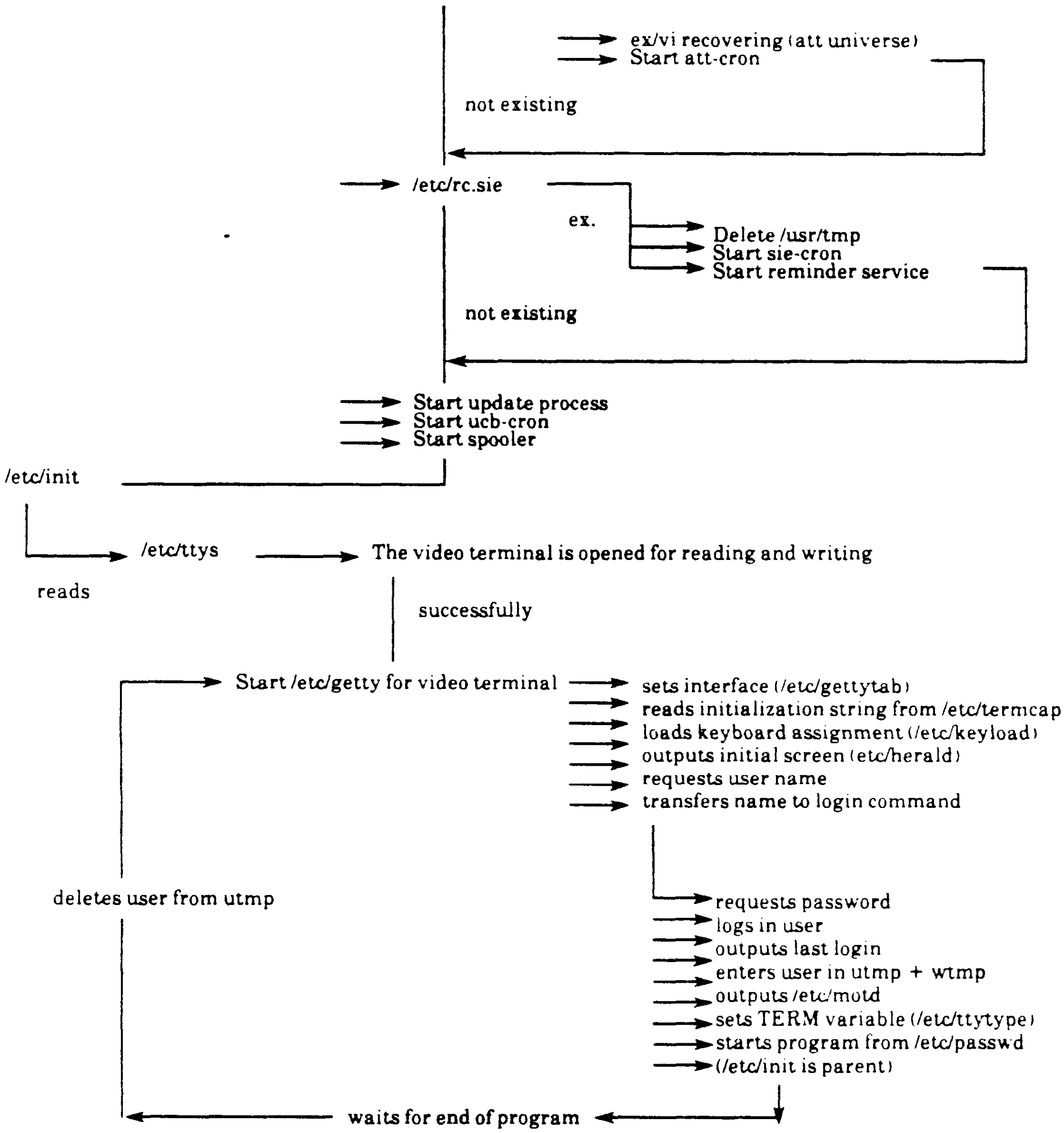
MX2 → Set buffering of streamer to 200 kB
Set boot flags

MX2+/MX300 → Set appropriate boot flags

→ Save memory dump, if created
→ Activate all swap areas indicated in /etc/fstab
→ /etc/rc.locl

→ Set host- and domain names
→ Start port mappers
→ Start LAN (if installed)
→ Start lock daemon
→ Start send mail
→ User entries are possible here

→ vi/ex recovering
→ Erase tmp area
→ /etx/rc.sys5 ex. → Erase and create the standard-shared memory area



(*) Please bear in mind that the consistency of the file system is not checked when you press the <END> key to start up the system. This may lead to system crashes or failures in the course of operation, if the file system is defective.

Shutdown of SINIX V5.2 (MX2/MX300)

Password shutdown

When logging into this password, the /etc/poweroff procedure is automatically called and thus the machine is switched off (power off).
You can enter here programs/messages which are to be executed/output prior to the shutdown.

/etc/shutdown

Shutdown into the single-user mode or complete deactivation of the machine.

Call:
/etc/shutdown <switch> time

Without indicating a switch, the machine is shutdown into the single-user mode.

Switches:
-h   complete deactivation of the machine (power off)
-r   shutdown in the monitor and immediate reboot

Example: /etc/shutdown -h +5
    The system is shut down in 5 minutes. Logged-in users receive a message.

The command shutdown can be called from each terminal as super-user.

Switching off the console (MX2 only)

After switching off the console the /etc/poweroff procedure is run through which executes the command /etc/shutdown -h now, thus deactivating completely the computer (power off).

Interference in the SINIX V5.2 system (MX2/MX300)

You can load the system from SINIX0/SINIX1 with the following sequence of commands and optionally carry out repair works.

Insert SINIX0 and switch on system.

Insert SINIX1 on request and acknowledge with <CR>.

Do **not** insert the SINIX2 tape but acknowledge the request with <CR>.

You get the single-user prompt # and you can take action on a minimum floppy system.
The command "echo *" is available for orientation in the file system.

Write label to recognize disk

```
#   /etc/disklabel -1 /dev/rsd0c        (MX2/MX2+)
        or
#   /etc/disklabel -1 /dev/ris0c        (MX300)
```

Check the root file system

```
#   /etc/fsck -y /dev/sd0a          (MX2/MX2+)
        or
#   /etc/fsck -y /dev/is0a          (MX300)
```

Mount the root file system

```
#   /etc/mount /dev/sd0a   /mnt   (MX2/MX2+)
        or
#   /etc/mount /dev/is0a   /mnt   (MX300)
```

Set important variables

```
#   PATH = /mnt/ .bin: /mnt/etc:$PATH
#   export PATH

#   TERMCAP= /mnt/ etc/ termcap
#   TERM=97801
#   export TERMCAP
#   cd mnt
```

It is only possible to read in files from the SINIX2 tape (e.g. kernel) or to save data to the streamer.

After termination of the repair works:

```
#   cd /
#   /etc/unmount -a
#   /etc/reboot
```

MX2+ In the present chapter and in the following ones the designation MX2+ is used to designate a PC-MX2 with installed performance feature.

3 System Software in General

The Three Universes

Links - SINIX V5.x

System sizes - SINIX V5.x

Tape commands - SINIX V5.2A

System files of the terminal handling - SINIX V5.2A

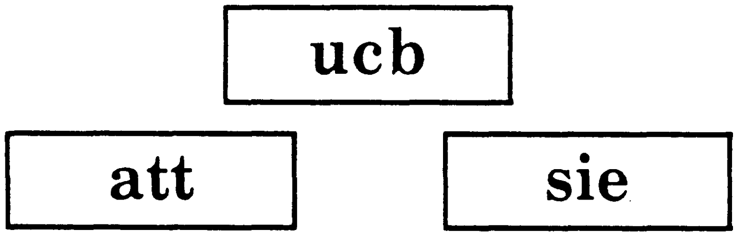
System files of the spool system - SINIX V5.2A

Configuration of the I/O boards - SINIX V5.2A

Disk format - SINIX V5.2A

System crashes - SINIX V5.2A

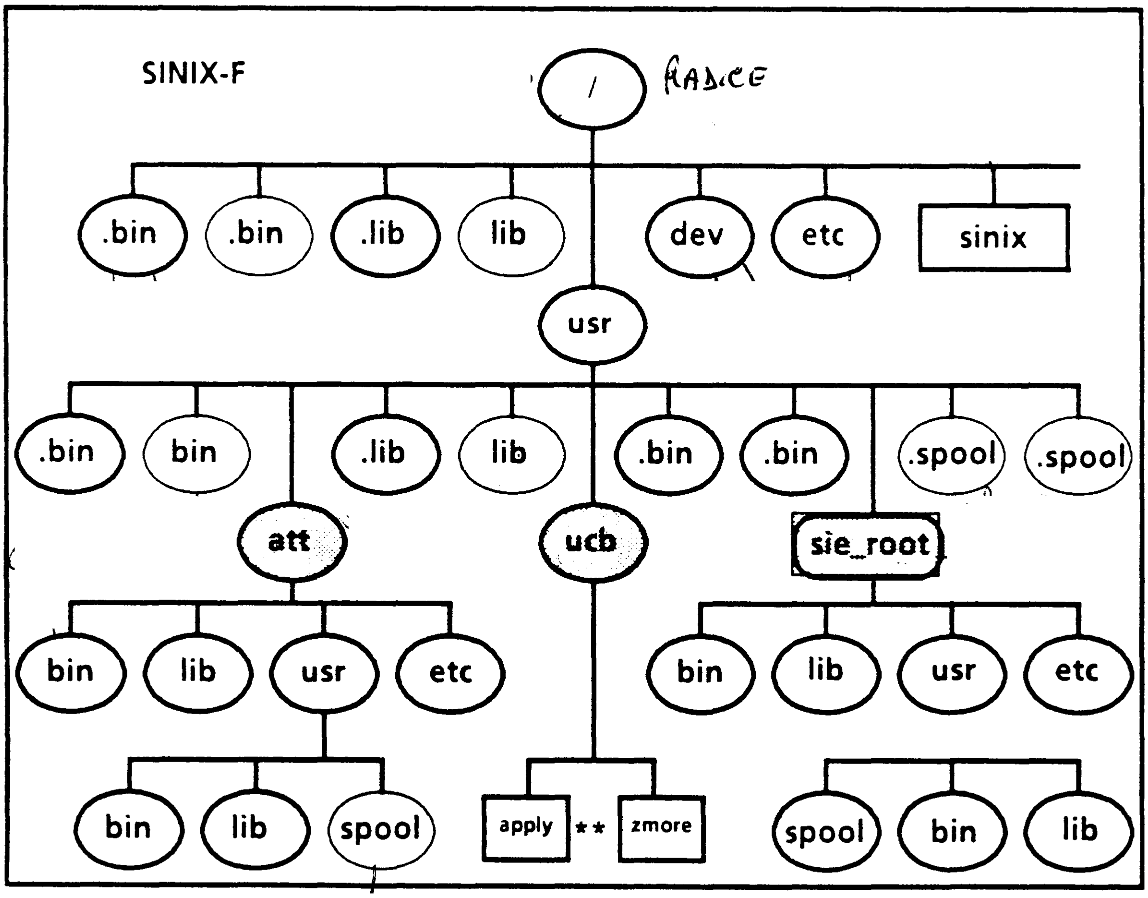
The Three Universes of the SINIX 5.2 System



The ucb universe is largely compatible with UNIX 4.2 bsd

The att universe is largely compatible with the UNIX System V

The sie universe corresponds to SINIX V2.X



Commands to the Universes

- * universe
- * ucb
- * att
- * sie

- It is always possible to change the universe
- Commands of another universe can be used in each universe
- A new subshell is created each time the universe is changed
- When changing the universe, call the correct terminal driver (line discipline) in the ucb universe:

from ucb --> att or sie

```
#   stty sys5
#   att (or sie)
```

from sie or att --> ucb

```
#   ucb
#   stty old
```

Links - SINIX V5.x

Hard link: Collegamento

This is a DVZ entry which is different from the original DVZ entry. File name and link name have the same inode. Every change in the file is independent from the called file name. Hardlinks may only be established between files and must not go beyond the file system limits. The file is only deleted when the last link with it is deleted too.

Syntax:
ln name linkname

Parameters:

name	name of original file (must exist!)
linkname	name of hardlink

Symbolic link (SL):

An SL contains only the file names of the original file. Hence, the original file and the SL are two different files, i.e. the files have different inodes. SLs may go beyond the file system limits and relate to directories. If the system encounters an SL when interpreting a path, its contents are inserted here. If the SL contains an absolute path name it will be used, otherwise the name is inserted relative to the present position.

Syntax:
ln -s name linkname

Parameters:

name	name of the original file (must exist!)
linkname	name of the symbolic link

Conditional symbolic link (CSL):

A CSL is an SL that depends on the universe. This means, for instance, in the case of a directory that you can address with a symbolic linkname different directories depending on the universe you are in.

Syntax:
ln -c ucb = name1 att = name2 (sie = name3) linkname

Parameters:

name1	name of the original file in the ucb universe
name2	name of the original file in the att universe
name3	name of the original file in the sie universe
linkname	name of the conditional symbolic link

Conditional symbolic and symbolic links can only be created out of the ucb universe and are only recognizable in the ucb universe ("ucb ls -l" indicates them with l as identifier).

/sinix

Please observe that in the case of SINIX V5.2A sinix is a symbolic link on vmunix. This means that if you delete vmunix there is no longer a kernel on the disk.

System sizes - SINIX V5.x

Operating system version	V5.2A			V5.0A V5.1A	V5.1B
Machine type	MX300	MX2+	MX2	MX500	MX500
Max. number of processes	222	222	126	532	532
Max. number of processes/users (with the exception of "root" and "admin")	40	40	40	26	40
Max. number of active inodes	318	318	214	644	644
Max. number of open files	470	470	304	1051	1051
Max. number of open files/processes	64	64	64	64	64
Max. number of user passwords (standard menu system)	300	300	300	300	300

Tape Commands - SINIX V5.2A

/bin/mt command for positioning on the tape (cartridge) and for setting the buffer size.

Examples:

a) Positioning

/bin/mt -f /dev/rts8 fsf 1

Indicates the number of archives advanced (relative to the starting point)

Indicates the no-rewind-device of the streamer in order to remain on the tape mark after positioning

/bin/mt -f /dev/rts0 rewind
Rewinding of the tape

b) Setting the buffer

/bin/mt -f /dev/rts0 bufsize 200
Setting the buffer to 200 kB for MX2+ and MX300

/bin/mt -f /dev/rts255 bufsize 200
Setting the buffer to 200 kB for MX2 (rc file)

/bin/mt -f /dev/rts0 status
Inquiring the size of the set buffer

The preset buffer is 1000 kB. For MX2 this buffer is set to 200 kB in the rc file and cannot be changed again.
For MX2+ and MX300 it is possible to move the buffer size up and down during operation.
The buffer setting is only effective with the cartridge inserted.

Saving commands

There are two commands available for the logical saving. A physical saving is no longer supported.

tar	for the logical saving of files/directories
dump	for the logical saving of unmounted disk partitions
restore	for reading in dumped savings from tape to disk It is possible to read in again the entire partition or (interactively) selected files/directories.

The commands and their switches are described in the system administrator manual.

Copying the tape directory

The tape directory is not written in the tar format on tape. You can find it on the tape in the following way:
/bin/mt -f /dev/rts0 rewind
cp /dev/rts8 tapeinhalt
Load the file tapeinhalt in the vi and write it back in order to eliminate the hexadecimal zeros.
Now print out the tape directory.

Copy procedure of the SINIX2 tape

```
if  [ ! -s KOPIE]                        (KOPIE = COPY)
then
        mkdir KOPIE
        cd KOPIE
else
        echo "Bitte wechseln Sie in ein DVZ, daß kein Unter-DVZ mit Namen KOPIE enthält"
        exit 1
fi

ant=n
echo "Zum Kopieren benötigen Sie 45 Mbyte auf der aktuellen Partition"
echo "Soll der Kopiervorgang wiederholt werden? (j/n) "
read ant
if  ["$ant" != "j"  ]
then
        exit 2
fi

ant=n
while ["$ant" != "j"  ]
do
        echo "Bitte Eingabeband einlegen und mit j bestätigen"
        read ant
done

/.bin/mt -f /dev/rts0 rewind

i=0
while ["$i"  -ne 23  ]
do
        /bin/cp /dev/rts8  tape.$i
        i= 'expr $i + 1'
done

ant=n
while  ["$ant" != "j"  ]
do
        echo "Bitte Ausgabeband einlegen und mit j bestätigen"
        read ant
done

/.bin/mt  -f /dev/rts0  rewind

i=0
while ["$i"  -ne 23  ]
do
        /bin/cp  tape.$i  /dev/rts8
        i= 'expr $i + 1'
done

echo "Kopie des SINIX2-Bandes wurde erstellt"

/.bin/mt  -f  /dev/rts0  rewind

cd..
rm -rf KOPIE
```

System Files of the Terminal Handling - SINIX V5.2A

/etc/ttys

The entries into this file determine whether the terminal at issue is active or inactive and what type of terminal it is.
The entries for the local terminal are input by the standard menu system here during configuration.

97801

Example: 1Stty06
1Btty07
0Sttyp0

Entry in the 1st column:
1 terminal active (local terminal)
0 terminal inactive (local terminal)
0 terminal active (pseudoterminal (LAN))
1 terminal inactive (pseudoterminal (LAN))

Entry in the 2nd column:
Due to this entry the getty program is able to identify which initialization entry has to be taken from the /etc/gettytab file for this terminal.
B graphics terminal (97808)
S alphanumeric terminal (97801)

Entries in the 3rd - 7th column:
Terminal specification

The commands /etc/enable and /etc/disable for activating and deactivating the terminal do no longer exist as of V5.x. To deactivate a local terminal you have to set the entry in the 1st column for this terminal from 1 to 0 (e.g. 0Stty06) and then call the command kill -1 1.

/etc/gettytab

This file defines the terminal setting (e.g. baud rate, parity ...) which is set by the getty program for the respective terminal.

Except from /etc/gettytab:

S | std.38400 |38400-baud:\
8 BIT SENZA PARITA
ANY PARITÀ :ap!:op:rw:lc:ht:ce:ck:cb:cl=\E[H]\EJ:in=\177:=er\010:\
7 BIT P. DISP.
:kl = \030:fd#0:sp#38400:tt=97801:
B:\
:ap!:op:rw:lc:ht:ce:ck:cb:cl=\E[H]\EJ:in=\177:=er\010:\
:kl = \030:fd#0:sp#38400:tt=97808:

Entry in the 1st column:
This is a reference entry that characterizes the terminal in the /etc/ttys file (S - 97801, B - 97808). The next lines describe the terminal characteristics separated by : (colon). An explanation of the abbreviations used here is given in the Interface Manual MX500 (order no. U2300-J-Z95-3) or in the COLLAGE chapter.

The characteristics of a non-Siemens terminal have to be defined in this file in a separate reference entry.

/etc/ttytype

This file defines the allocation of the terminal type to the terminal device.
Due to system installation all entries are already available. For a graphics terminal the corresponding entry is modified by the standard menu system during configuration.
The assignment of the TERM variables is thus determined.

Example:

```
97808  tty07
97801  tty08
97801  ttyp0
97801  ttyA0   (if COLLAGE is installed)
```

/etc/termcap

The standard entries do not differ from those in V2.0/V2.1. To support application also on graphics terminal, an additional termcap identification entry has to be created.

Example: menus | me97801 | me97808:

These termcap identification entries exist for the standard entries.

/usr/lib/terminfo

Ever since the att universe has been introduced, a further library containing the functions of the terminal handling is available. This libcurses.a library does not access as the hitherto known libtermcap.a entries in the /etc/termcap file, but works with terminal-describing files under the /usr/lib/terminfo directory (in the att universe).
Each terminal-describing file is localized in the directory consisting of the first letter of the terminal-describing file.
Corresponding links and files have to exist for supporting graphics terminals.

Example: /usr/lib/terminfo/9/97808 is a link on /usr/lib/terminfo/9/97801.

Device files

Major and minor device numbers of the terminal device files

Tipo terminale

Device file	Major number	Minor number
/dev/tty	1	0
/dev/console	10	0
/dev/tty00- /dev/tty17	5	0 - 17
/dev/ptygen	4	255
/dev/ttyp0- /dev/ttypf	3	0 - 15
/dev/ttyA0-/dev/ttypEf	24	0 - 79

Meaning of the terminal device files:

/dev/tty	Special device file that allows a direct connection to the allocated terminal (as, for instance, needed by the passwd and login commands).
/dev/console	The console outputs are executed during installation and in single-user mode via this file.
/dev/tty00- /dev/tty17	Local terminal device file
/dev/ptygen	Special device file that determines the pseudo-terminal of the slave side pertinent to the master side.
/dev/ttyp0- /dev/ttypf	Device files for pseudo-terminals (LAN) (slave side)
/dev/ttyA0- /dev/ttyEf	Device files for virtual terminals (COLLAGE)

COLLAGE applications work with virtual terminals. There are device files available for this purpose named ttyXY, X representing the letters A to E and Y the hex. values 0 to f.

/usr/spool/spooler/conkey

The standard menu system reads from this file the possible keyboard assignments (e.g. inter, deut, belquaz, ...).

/usr/menus/sabin/ttype

The standard menu system reads from this file the initialization string pertinent to the keyboard assignment and enters it in the /etc/termcap file at the pertinent terminal.

System Files of the Spool System - SINIX V5.2A

File hierarchy of the spooler

The spool files are localized in the /usr/spool/spooler directory.

In order to access the same spool files from all universes, it is necessary to link the spool directories with symbolic and conditional symbolic links.

Spooler left:

```
/usr/spool
|      att
|-------------------> /usr/att/usr/spool
|                                   |
|                                spooler --> /usr/.spool/spooler
|      ucb
|-------------------> /usr/.spool
|                             |
|                          spooler
|      sie
|-------------------> /usr/sie__root/usr/spool
|                                          |
|                                       spooler --> /usr/.spool/spooler
```

/etc/daemon Spool administration program
Two daemon processes have to be always active. If the son process crashes, the daemon is automatically reloaded in case the parent process is still running. Reloading is attempted up to 10 times. A regular termination of daemon is only possible with lpr -dg, the SIGTERM signal or the procedure call /usr/spool/spooler/startup. If the last still running backend is removed from daemon, daemon does no longer terminate automatically. Backends can be reloaded with -ld or -vld.

/bin/lpr User interface of the spool system (see system administrator manual and commands)

Files under /usr/spool/spooler:

CONFIG Configuration file of the spool system

CONFIG.bin Binary configuration file

digest Program that generates the binary configuration file from the CONFIG file

POOLDAT Job file

interface	Backend for connecting non-Siemens printers
lp9001	Backend for supporting the 9001 printer
lp9001-b	Backend for supporting the 9001 printer (wide)
lp9004	Backend for supporting the 9004 printer
lp9012	Backend for supporting the 9012 printer
lp9013	Backend for supporting the 9013 printer
lp9022	Backend for supporting the 9022 printer
lp9025	Backend for supporting the 9025 printer
lp9047	Backend for supporting the 9047 printer
startup	Procedure for reinitializing the spool
conV11	All printers that can be operated at a IF97 interface are entered here by the standard menu system.
conV24	All printers that can be operated at a V24 interface are entered here by the standard menu system.
drucker	The standard menu system enters all printers in this file, which have been configured via the standard menu system.
gruppen	The standard menu system enters all printer-group names in this file, which have been configured via the standard menu system.
bdef	Type-band definition file for generating tables for the 9047 printer. You can add your own entries here.
gentab	Generation program for creating tables for the 9047 printer. It generates tables on the basis of the information laid down in the bdef file.
gentab.c	Source code for the gentab program

/usr/spool/spooler/band:

band.21	Tables for supporting the various type bands of the 9047 printer.
band.41	The corresponding table must be entered in the CONFIG file as follows:
band.42	D07 '/usr/spool/spooler/9047 -band = id' /dev/lp9047-D07 ...
band.43	id represents the hexadecimal band id code of the type band (e.g. 0x42).
band.44	
band.45	
band.46	
band.47	
band.61	
band.62	
band.63	
band.64	

/usr/menus/sabin/dtype

Printer description file accessed by the standard menu system during configuration. You can enter here additional backends to the standard menu system, e.g.
9077;V11;/usr/spool/spooler/lp9077;/dev/lp9077-D;;-pb= ... or
9077;V11;/usr/spool/spooler/interface -prog=/usr/spool/spooler/lp9077 ...
... -speed=B9600;/dev/lp9077-D;;-pb ...

Please note that the printer type name (9077) has to start with 9 and has to be contained in the backend name (lp9077) and in the device file name (lp9077-D) analogously to the example.

/usr/spool/spooler/sp

The temporary print files are stored in the directory, which are transferred to the spooler via PIPE or by means of the switches -cp or +co at lpr call.

/usr/spool/spooler/stat

This directory stores faulty feedbacks (status messages) of the printers. The backends write printer feedbacks which they recognize as faulty to the pertinent status files.

/usr/spool/spooler/tmp

The daemtrc file is created in this directory at every spool reinitialization. If errors occur at reinitialization, they are shown here. Additionally, you can find here the backend trace files and the daemon trace file, if traces are switched on.

Configuration of I/O Boards - SINIX V5.2A

I/O boards should be configured exclusively via the standard menu system.
As the standard menu system accesses different system files during configuration, inconsistencies may occur easily if only one of these files has been changed by the user or if, for instance, a SERAG board has been exchanged against a SERAD board.

The following files have to remain consistent:

/usr/spool//spooler/drucker

This file must include precisely the printer names defined in the CONFIG file.

/usr/spool/spooler/gruppen

This file must include precisely the name of printer groups defined in the CONFIG file.

/usr/spool/spooler/CONFIG

All printers and printer groups included here have to be entered via the standard menu system. Real own backends or backends that are connected via the interface backend have to be introduced to the standard menu system as possible configuration entries via the dtype file (s. below) and then configured via the standard menu system.
Each printer defined here must have a pertinent device file.

/usr/menus/sabin/dtype

All printers are entered in this file, which can be configured via the standard menu system. The standard menu system creates by means of these entries the printer entries in the CONFIG file. By making further entries you may configure own backends via the standard menu system. (For instance, see system file of the spool system.)

/usr/menus/sabin/ttype

This file contains all keyboard initialization strings supported by the standard menu system. The standard menu system creates the termcap keyboard entries of a terminal by means of these entries.

/usr/spool/conbrd (important: sie universe)

The standard menu system recognizes by means of this file whether the board to be configured is SERAD or SERAG (2 stands for SERAD, 1 stands for SERAG). In case the file is deleted, the standard menu system creates a new one.

/usr/menus/app/control/condef?.mac

? stands for 0, 1 or 2 depending on which I/O board is addressed. These files contain the interface assignments of the I/O boards for the standard menu system.

Example condef0.mac
The comments have been added as an explanation.

```
:
:
:define n0=00 e
:define n1=01 e
:define n2=02 e
:define n3=03 e
:define n4=04 e
:define n5=05 e
:
:define seralt=V24 e                    #  board type
:
:define a1=AFP m 1 "SS97 AFP" e         #  AFP port
:define a1=AFP m 1 "SS97 AFP" e         #  or not
:                                       #  interface assignment
:define g0=BILDSCHIRM m 1 "frei BILDSCHIRM DRUCKER GRAPHIK" e
:define g1= DRUCKER m 1 "frei BILDSCHIRM DRUCKER GRAPHIK" e
:define g2=free m 1 "frei BILDSCHIRM DRUCKER GRAPHIK" e
:define g3=BILDSCHIRM m 1 "frei BILDSCHIRM DRUCKER GRAPHIK" e
:define g4=GRAFIK m 1 "frei BILDSCHIRM DRUCKER GRAPHIK" e
:define g5= DRUCKER m 1 "frei BILDSCHIRM DRUCKER GRAPHIK" e
:
:define t0=deut e                       #  keyboard or printer type
:define t1=9001 e
:define t2=free e
:define t3=deut e
:define t4=inter e
:define t5=9025 e
:
:
```

/etc/ttys

All active terminals are described here. A device file corresponding to each terminal defined here has to be available.

/etc/ttytype

The standard menu system enters in the terminal allocation file whether the terminal at issue is of the 97801 or 97808 type so that the TERM variable is correctly assigned at login.

/etc/termcap

Eeach active terminal is entered in this file with the configured terminal initialization string.

/dev/tty*
/dev/lp*

One device file has to exist for each terminal defined in the /etc/ttys file and for each printer defined in the /usr/spool/spooler/CONFIG file.

I/O-board replacement

If you replace a SERAD board by a SERAG board or vice-versa, please observe the following:

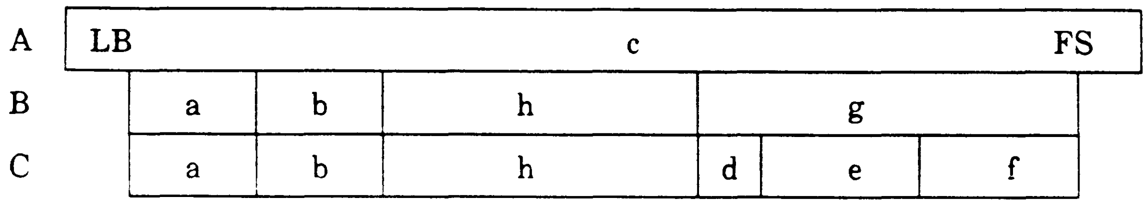
- All interfaces have to be configured beforehand to "free" (on the board with the console all interfaces except for the console have to be configured to "free").
- No printer must be entered in the CONFIG file which has not be configured via the standard menu system.
- After replacing the board the /usr/spool/conbrd has to be deleted (in the sie universe).
- Reconfiguration of the board is now possible.

Disk Partitions - SINIX V5.2A

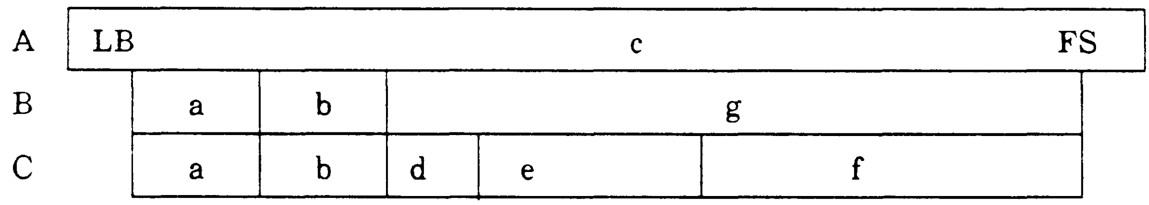
Possible disk types:	MX300	MX2
	MC1355	MC1323
	ME1300	MC1325

Graphic representation of the disk partitions (not true to scale):

ME1300:



MC1323/MC1325/MC1355:



LB stands for label and boot area
FS stands for voids list

There are three different divisions A, B and C for the hard disks of SINIX V5.2A as standard. Up to 8 disk partitions can be logically addressed which partly overlap (partition a - h). Partition "c" always designates the entire logical disk area. Please note that also the boot and label area as well as the voids list are part of the "c" partition of the logical disk area. **Therefore it is not allowed to either copy the entire "c" partition or to create a file system on this partition.** The root area is always installed on the "a" partition of the first disk.

Logical format of the hard disks

MX300:

MC1355 (5 1/4 inches)	
Partition	Cap. (kB)
/dev/is*a	8024
/dev/is*b	20536
/dev/is*c	139264
/dev/is*d	8024
/dev/is*e	28016
/dev/is*f	73848
/dev/is*g	109888

MC1300 (5 1/4 inches)	
Partition	Cap. (kB)
/dev/is*a	7956
/dev/is*b	21012
/dev/is*c	248064
/dev/is*d	7956
/dev/is*e	28152
/dev/is*f	40188
/dev/is*g	76296
/dev/is*h	141576

MX2:

MC1355 (5 1/4 inches)	
Partition	Cap. (kB)
/dev/sd0a	6120
/dev/sd0b	4104
/dev/sd0c	36864
/dev/sd0d	4104
/dev/sd0e	8208
/dev/sd0f	13824
/dev/sd0g	26136

MC1325 (5 1/4 inches)	
Partition	Cap. (kB)
/dev/sd*a	6120
/dev/sd*b	9288
/dev/sd*c	73728
/dev/sd*d	6120
/dev/sd*e	14400
/dev/sd*f	36792
/dev/sd*g	57312

* stands for 0 or 1 (0 - first disk, 1 - second disk)
The specifications in kB relate to the formatted capacity without file system.

Attention is drawn again to the fact that no file system must be created on the c-partition because this would destroy the voids list, the label and the boot area.

Alternate super-blocks

ME1300:

/dev/is?a	32, 13136
/dev/is?d	32, 13136
/dev/is?e	32, 13136, 26240, 39344, 52448
/dev/is?f	32, 13136, 26240, 39344, 52448, 65552, 78656
/dev/is?g	32, 13136, 26240, 39344, 52448, 65552, 78656, 91760, 104864, 117968, 131072, 144176
/dev/is?h	32, 13136, 26240, 39344, 52448, 65552, 78656, 91760, 104864, 117968, 131072, 144176, 157280, 170384, 183488, 196592, 208928, 222032, 235136, 248240, 261344, 274448

MC1355:

/dev/sd?a	32, 8784
/dev/sd?d	32, 8784
/dev/sd?e	32, 8784, 17536, 26288, 35040, 43792, 52544
/dev/sd?f	32, 8784, 17536, 26288, 35040, 43792, 52544, 61296, 69664, 78416, 87168, 95920, 104672, 113424, 122176, 130928, 139296
/dev/sd?g	32, 8784, 17536, 26288, 35040, 43792, 52544, 61296, 69664, 78416, 87168, 95920, 104672, 113424, 122176, 130928, 139296, 148048, 156800, 165552, 174304, 183056, 191808, 200560, 208928, 217680

MC1325:

/dev/sd?a	32, 4672, 9312
/dev/sd?d	32, 4672, 9312
/dev/sd?e	32, 4672, 9312, 13952, 18592, 23232, 27872
/dev/sd?f	32, 4672, 9312, 13952, 18592, 23232, 27872, 32512, 36896, 41536, 46176, 50816, 55456, 60096, 64736, 69376
/dev/sd?g	32, 4672, 9312, 13952, 18592, 23232, 27872, 32512, 36896, 41536, 46176, 50816, 55456, 60096, 64736, 69376, 73760, 78400, 83040, 87680, 92320, 96960, 101600, 106240, 110624

? stands for 0 or 1

Commands

The three commands disklabel, disksize and disktype have been introduced into the system with SINIX V5.2A.
All three commands have to be applied to the raw-device of the c-partition. This device file does not exist intentionally in the installed system in order to avoid accidental overwriting of the information included in this partition (boot, label, voids list). The file must either be created prior to using this command **(delete it afterwards by all means)** or the system must be booted from SINIX0 and SINIX1. The SINIX1 floppy contains the corresponding device entries.

Device file	Major number	Minor number	System
/dev/ris0c	8	2	MX300 1st hard disk
/dev/ris1c	8	10	MX300 2nd hard disk
/dev/rsd0c	7	2	MX2/MX2+ 1st hard disk
/dev/rsd1c	7	10	MX2/MX2+ 2nd hard disk

/etc/disklabel

This program writes to block 0 information on the disk structure (label) and the boot program. Disk information and boot program can be written separately.
Call:
/etc/disklabel rdev -l
or
/etc/disklabel rdev -f boot

Parameter:
rdev raw-device of the corresponding c-partition

MX2/MX2+:	/dev/rsd0c, /dev/rsd1c
M300:	/dev/ris0c, /dev/ris1c

boot indicates boot program

MX2:	/stand/bootwn.x.MX2
MX2+/MX300:	/stand/bootwn.x.MX200 (for root installation only)
MX2+:	/stand/bootwn.OMTI.x
M300:	/stand/bootwn.STOR.x

/etc/disksize

Command to query the disk capacity
Call:
/etc/disksize rdev

Parameter:
rdev see /etc/disklabel

/etc/disktype

Command to query the disk type
Call:
/etc/disktype rdev

Parameter:
rdev see /etc/disklabel

/etc/fstab

The directories to be mounted and the swap areas are entered in the /etc/fstab file at startup:

Example:

```
            /dev/is0b   -       swap     sw      -       -
            /dev/is0h   /usr1   4.2      rw      1       3
               |          |       |       |      |   fsck sequence
        Partition device  |       |       |   Saving #
                          |       |   Type of access
                          |   Type of file system
                      Root DVZ of the partition to be mounted
```

Type of file system

4.2	local file system
ignore	entry is ignored
swap	swap area
nfs	remote file system (only in case DFS is installed on your computer)

Type of access

sw	for swap devices
rw	for devices with read and write access

Saving #
Saving frequency on days for dump command

fsck sequence
The fsck runs through the file system in the sequence indicated here (starting with the lowest number)

The commands fsck, mount, umount, dump, swapon work with this file.

/usr/ucb/swapon -a

All swap areas entered in the /etc/fstab file are made available. Only b-partitions can be made available.

System Crashes - SINIX V5.2A

In case the system crashes with Panic, a dump is drawn automatically prior to startup, if the boot flags have been set correctly.
By pressing the RESET key you can intentionally initiate the drawing of a main memory dump.

The boot flags are set in the /etc/rc file and should not be changed during operation.
If you remove the battery from the CPU board for a longer period of time, the boot flags are lost.

Boot flag setting for MX2/MX2+:

In case the 1st disk is MC1323:

```
/etc/bootflags -zo -b 'sa(0,0)'  -d 'sa(1,1)' -s 2048  -u sd1b ;;
```

In case the 1st disk is MC1325:

```
/etc/bootflags -zo -b 'sa(0,0)'  -d 'sa(0,1)' -s 2048  -u sd0b ;;
```

Boot flag setting for MX300:

```
/etc/bootflags -zo -b 'in(0,0)' -d 'in(0,1)' -s 8192 -u is0b ;;
```

Parameters of the /etc/bootflags command:

-z		Parameters that have been previously set are set to zero
-o		Existing memory dump in swap may be overwritten
-b	'in(0,0)'	Boot vmunix from the root area of the 1st disk (storager)
	'sa(0,0)'	(Omti)
-d	'in(0,1)'	Dump device (swap area of the 1st disk, storager)
	'sa(0,1)'	(Omti, 1st disk)
	'sa(1,1)'	(Omti, 2nd disk)
-s		Offset for writing the memory dump (in sectors)
-u	is0b	/etc/savecore fetches from this drive the dump
	sa0b	the dump
	sa1b	

The standalone command **dump** saves the memory dump in the swap area of the disk. The main memory dump saved in the swap area is saved from here to the usr area of the disk by means of the /etc/savecore command when starting up the system (presetting: /usr/crash).
A memory dump that can be evaluated, always includes the files vmunix.# and vmcore.#.
Enter in /etc/rc: /etc/savecore /usr/crash
Instead of /usr/crash you can also create another directory and indicate it in the rc file.
The files minfree and bounds are always in the /usr/crash directory.

bounds contains the number of the next dump to be saved
minfree indicates the number of the minimum free blocks that have to exist in the file system (presetting 1000) so that savecore initiates a saving

A memory dump can be evaluated with the /etc/crash command. However, a vast knowledge of the kernel is necessary. The following sections describe a few commands which might be helpful on site.

Syntax: /etc/crash vmcore.# vmunix.#

or

/etc/crash /dev/mem /vmunix
Attention: In this case the crash command is released onto the living system.

After calling the reason of crash is output (**Panic string**).

Example:

```
Version 5.00 of 1/28/88 9:11 (portland!root)
3003 total symbols (2457 = global) 81% useful
Version: SINIX-H V5.2 #3: (ccs): Thu Jan 28 13:58:10 MET 1988
Panicstr: dup biodone
System crashed at: Thu Feb 18 13:21:10 1988
```

The following evaluation might be useful for a diagnosis via telephone:

Example: The kernel stack of the process is output that has caused the crash and also its position in the process table.
In case of several crashes you can possibly conclude which utility is faulty by comparing the kernel stacks.

```
*** Proc slot 39 ***
(addr: 0xc9f1, bottom 0xe19f, top 0xf9f1)
fp_offset: 0x7f360f, va_uarea: 0x800000, guessfp: 0xf75d
unknown(0x5b8fc, 0x8011020, 0x19f3d, 0xa8210) from _hardclock+0x1cb
_hardclock(0x2, 0xbb8) from vecint+0x55
vecint(0x8011020, 0x30073f8, 0xc, 0x802dcc, 0x1fe61) ???? from _napms+0x15
_napms(0x4e20), 0x66500, 0x66ec8, 0x802de0, 0x2c26b) ???? from _panic+0x3d
_panic(0x66ec8, 0x75c78) from _biodone+0x1a
_biodone(0x75c78, 0x75c78) from _mydone+0x3f
_mydone(0x75c78, 0xa8494, 0x30073f8) from _update_buf+0x8b
_update_buf(0xa8210, 0, 0x1a000, 0x92e450, 0x456068) ???? from _istimer+0x19e
_istimer(0, 0x81736c) from vecint+0x55
vecint(0x8011020, 0x1b0, 0x5c3c9, 0, 0x802f74) ???? from _bcopy+0x125
_bcopy(0x92e450, 0x1a000, 0x3b0, 0x802f00, 0) ???? from _uiomove+0x41
_uiomove(0x92e450, 0x3b0, 0, 0x802f74, 0) ???? from _soreceive+0x340
_soreceive(0x92f60c, 0, 0x802f74, 0, 0, 0x287c1) from _soo_rw+0x29
_soo_rw(0xc946c, 0, 0x802f74, 0x802fe8, 0x9) ???? from _rwuio+0xf1
_rwuio(0x802f74, 0, 0x802f88) from _read+0x25
_read(0x801080, 0x9) from _syscall+0x392
_syscall(0x5, 0x7fffcd48) from svc+0x1f
svc(0xb001020, 0, 0x24000075, 0x64616548, 0x203a7265) ???? from _insert_client+0x4d
```

p slotnr Outputs process information for this process

Example:

SLT	ST	PID	PPID	PGRP	UID	PRI	CPU	EVENT	NAME	FLAGS
39	R	1670	1669	1560	0	113	255		dump	1

cu The user area of the current process is output. In case of a Panic crash it is, as a rule, the process that has caused the crash.

u slotnr The user area of the process with the indicated number is output.

Example:

```
PER PROCESS USER AREA:
USER ID's:     uid: 0, gid:0, ruid: 0, rgid: 0
PROCESS MISC:  proc slot: 39, cntrl tty: maj(05) min(04)
ACCOUNTING:    command: dump
               memory: ts: 14, ds: 19, ss: 2, type: fork, magic: 0x12ea
               start: Thu Feb 18 13:20:35 1988
umask: 022, universe: 1, tuniverse: 0
OPEN FILES:, lastfile: 9
file desc:               0    1    2    3    4    5    6    7    8    9
file-table index:      275  275  275   96   88   89   90   91   92   93
```

The information in lastfile, for instance, shows whether a process has opened too many files

The crash command also allows to route the outputs via PIPE, e.g. p ! cat > diagnose.

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System Files

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```
case "`/bin/uname`" in
        SINIX-I-OM)     TYPE=I;;
        SINIX-C-OM)     TYPE=C;;
        SINIX-H-OM)     TYPE=H-OM;;
        SINIX-H-ST)     TYPE=H-ST;;
        *)              /bin/echo "Unknown floppy kernel!">/dev/console; exit;;
esac

/bin/echo "Checking consistency of Floppy-Filesystem" >/dev/console
case "$TYPE" in
I|C|H-OM)       floppy=/dev/fl2;;
H-ST)   floppy=/dev/ifl2;;
esac
/etc/fsck -p $floppy >/dev/console
case $? in
0)
        /bin/echo "fsck complete" >/dev/console
        ;;
4)
        /etc/reboot -n
        ;;
8)
        echo "Automatic reboot failed... help!" >/dev/console
        exit 1
        ;;
12)
        echo "Reboot interrupted" >/dev/console
        exit 1
        ;;
*)
        echo "Unknown error in reboot" > /dev/console
        exit 1
        ;;
esac
```

```
#
# restore.root.sh
#
# This shell script is used during initial system load from
# tape. It prompts the user for affirmative replies prior to
# loading files from tape.
#
whitescreen='<ESC>[21u'
clearscreen='<ESC>[2J'
CR='<ESC>)w<CTRL>N1e<CTRL>O'
international='<ESC>[6u'

trap "" 2 15
/bin/echo ${clearscreen}${whitescreen}
/bin/echo 'Build the root file system'
TYPE=`/bin/uname -m`
case $TYPE in
        MX2|MX2+) DISK=sd; TAPE=ts0; tape=ts8; FLAGS="xfpB /dev/rts8";;
        MX300)    DISK=is; TAPE=is0; tape=is8; FLAGS="xfpB /dev/ris8";;
        *)        echo "Unknown Machine '$TYPE'"; exit 1;;
esac
PATH=/mnt/bin:/mnt/etc:/bin:/etc:.
export PATH
/bin/echo -n "
ATTENTION PLEASE:
    Do not remove SINIX1 floppy disk or SINIX2 streamer tape until you are
    instructed to!

Please now insert SINIX2 into streamer and acknowledge with $CR > "
read anything
/bin/echo "Retensioning streamer tape - please wait..."
/bin/mt -f /dev/r$TAPE ret || { echo "Problems with Tape"; exit 1; }
/bin/echo -n "${clearscreen}
Is console type national or international ? (n=default/i) > "
read contype
case "$contype" in
        i|I)    echo $international >/dev/console;;
        *)      ;;
esac
/bin/echo -n "${clearscreen}
Disk ${DISK}0 will now be overwritten -
 do you want to save the contents first? (y=default/n) > "
read save
case "$save" in
        n)      ;;
        *)      /bin/echo -n "${clearscreen}
SINIX installation terminated.

To save the contents of disk ${DISK}0, you must first reboot from the original
system. Then save what you want to and restart the installation with SINIX0 !!

You are now in single user mode of a mini root system living on /dev/fl2
with the following commands, files and devices:

/bin:  `cd /bin; /bin/echo *`

/etc:  `cd /etc; /bin/echo *`

/dev:  `cd /dev; /bin/echo *ts* *${DISK}*`

Pay attention please:   You cannot access those disk partitions until you have
                        run the appropriate /etc/disklabel!

Do you want now to reboot from the original system? (y=default/n) > "
                read answer
                case $answer in
                        n)      exit 1;;
                        *)      /etc/reboot;;
                esac;;
esac

>/etc/mtab

D2TYPE=`/etc/disktype /dev/r${DISK}1c 2>/dev/null`
case "$D2TYPE" in
"")     ########## there is no second disk ##########
        g0name=/usr
```

```
        case "$TYPE" in
                MX2)        /etc/disklabel /dev/r${DISK}0c -f /stand/bootwn.x.MX2;;
                MX2+|MX300) /etc/disklabel /dev/r${DISK}0c -f /stand/bootwn.x.MX200;;
        esac
        case "$?" in
                0)      ;;
                *)      echo "cannot label $DISK disk"; exit 1;;
        esac
        DTYPE=`/etc/disktype /dev/r${DISK}0c`
        /bin/echo
        /etc/newfs /dev/${DISK}0a $DTYPE || { echo "cannot make new file system"; exit 1; }
        /bin/echo
        /etc/newfs /dev/${DISK}0g $DTYPE || { echo "cannot make new file system"; exit 1; }
        /bin/echo
        ;;
*)      ########## there is a second disk ###########
        /bin/echo -n "
Disk ${DISK}1 will now be relabeled -
 do you want to save the contents first? (y=default/n) > "
        read save
        case "$save" in
                n)      ;;
                *)      /bin/echo -n "${clearscreen}
SINIX installation terminated.

To save the contents of disk ${DISK}1, you must first reboot from the original
system. Then save what you want to and restart the installation with SINIX0 !!

You are now in single user mode of a mini root system living on /dev/fl2
with the following commands, files and devices:

/bin:  `cd /bin; /bin/echo *`

/etc:  `cd /etc; /bin/echo *`

/dev:  `cd /dev; /bin/echo *ts* *${DISK}*`

Pay attention please:   You cannot access those disk partitions until you have
                        run the appropriate /etc/disklabel!

Do you want now to reboot from the original system? (y=default/n) > "
                        read answer
                        case $answer in
                                n)      exit 1;;
                                *)      /etc/reboot;;
                        esac;;
        esac
        case "$TYPE" in
                MX2)        /etc/disklabel /dev/r${DISK}0c -f /stand/bootwn.x.MX2;;
                MX2+|MX300) /etc/disklabel /dev/r${DISK}0c -f /stand/bootwn.x.MX200;;
        esac
        case "$?" in
                0)      ;;
                *)      echo "cannot label $DISK disk"; exit 1;;
        esac
        DTYPE=`/etc/disktype /dev/r${DISK}0c`
        /bin/echo
        /etc/newfs /dev/${DISK}0a $DTYPE || { echo "cannot make new file system"; exit 1; }
        /bin/echo
        /etc/disklabel /dev/r${DISK}1c -l
        echo "${clearscreen}
This $TYPE is equipped with two disks:

        /dev/${DISK}0 = ${DTYPE}        and        /dev/${DISK}1 = ${D2TYPE}

Configurable partitions are:

        /dev/${DISK}0g                          /dev/${DISK}1g"

        case $DTYPE in
             MegaFile1300|MC1558)
                echo -n "         /dev/${DISK}0h";;
             *)
                echo -n "                  ";;
        esac
```

```
        case $D2TYPE in
             MegaFile1300|MC1558)
                echo -n "                                 /dev/${DISK}1h";;
        esac

echo

echo -n "                                       /dev/${DISK}1a

Choose configuration as follows:

  0)  /usr file system on /dev/${DISK}0g including /usr/rtmp space (default)

  1)  /usr file system on /dev/${DISK}1g and /usr/rtmp on /dev/${DISK}1a

 (0/1) > "
        read USRon0or1
        case "$USRon0or1" in
        1)      echo -n "
/dev/${DISK}1a and /dev/${DISK}1g now will be reinstalled -
 do you want to save contents first? (y=default/n) > "
                read sd1tosave
                case "$sd1tosave" in
                        n|N)    /bin/echo
                                /etc/newfs /dev/${DISK}1a $D2TYPE ||
                                     { echo "cannot make new file system"; exit 1; }
                                /bin/echo
                                /etc/newfs /dev/${DISK}1g $D2TYPE ||
                                   { echo "cannot make new file system"; exit 1; }
                                /bin/echo
                                a1name=/rtmp
                                g1name=/usr
                                echo -n "${clearscreen}new filesystem
                                       on /dev/${DISK}0g? (n=default/y) > "
                                read USR0g
                                case "$USR0g" in
                                y|Y)    /bin/echo
                                        /etc/newfs /dev/${DISK}0g $DTYPE ||
                                   { echo "cannot make new file system"; exit 1; }
                                        /bin/echo
                                        echo -n "where to mount /dev/${DISK}0g? (default=/usr3) > "
                                        read g0name
                                        case "$g0name" in
                                        "")     g0name=/usr3;;
                                        /*)     ;;
                                        *)      g0name="/$g0name";;
                                        esac;;
                                esac
                                ;;
                        *)      echo -n "
Next restore.more run will implicitly install the /usr filesystem on /dev/${DISK}0g
Please save contents of /dev/${DISK}1 after restore.more and then reorganize your
disks as required!

Disk partition /dev/${DISK}0g will now be overwritten -
 do you want to save the contents first? (y=default/n) > "
read save
                                case "$save" in
                                        n)      ;;
                                        *)      /bin/echo "${clearscreen}
SINIX installation terminated.

You are now in single user mode of a mini root system living on /dev/f12
with the following commands, files and devices:

/bin:  `cd /bin; /bin/echo *`

/etc:  `cd /etc; /bin/echo *`

/dev:  `cd /dev; /bin/echo *ts* *${DISK}*`

To save the contents of /dev/${DISK}0g, you may only use these commands.
When the shell prompt (#) appears save what you want to (e.g. first mount
/dev/${DISK}0g on /mnt, tar the appropriate files to /dev/rts0 and umount
finally /mnt) and then restart the installation with SINIX0 !!
"
                                                exit 1;;
                                esac
```

```
                                USRon0or1=0
                                g0name=/usr
                                /bin/echo
                                /etc/newfs /dev/${DISK}0g $DTYPE ||
                                     { echo "cannot make new file system"; exit 1; }
                                ;;
                esac
                ;;
        *)      g0name=/usr
                /bin/echo
                /etc/newfs /dev/${DISK}0g $DTYPE ||
                     { echo "cannot make new file system"; exit 1; }
                echo -n "${clearscreen}new filesystem on /dev/${DISK}1a? (n=default/y) > "
                read USR1a
                case "$USR1a" in
                y|Y)    /bin/echo
                        /etc/newfs /dev/${DISK}1a $D2TYPE ||
                            { echo "cannot make new file system"; exit 1; }
                        /bin/echo
                        echo -n "where to mount /dev/${DISK}1a? (default=/usr/rtmp) > "
                        read a1name
                        case "$a1name" in
                        "")     a1name=/usr/rtmp;;
                        /*)     ;;
                        *)      a1name="/$a1name";;
                        esac;;
                esac
                /bin/echo
                echo -n "new filesystem on /dev/${DISK}1g? (n=default/y) > "
                read USR1g
                case "$USR1g" in
                y|Y)    /bin/echo
                        /etc/newfs /dev/${DISK}1g $D2TYPE ||
                                     { echo "cannot make new file system"; exit 1; }
                        /bin/echo
                        echo -n "where to mount /dev/${DISK}1g? (default=/usr1) > "
                        read g1name
                        case "$g1name" in
                        "")     g1name=/usr1;;
                        /*)     ;;
                        *)      g1name="/$g1name";;
                        esac
                        ;;
                esac
                ;;
        esac
        ;;
esac

case "$DTYPE" in
MegaFile1300|MC1558)
                echo -n "${clearscreen}Also new Filesystem on /dev/is0h? (n=default/y) > "
                read new
                case "$new" in
                y|Y)    /bin/echo
                        /etc/newfs /dev/${DISK}0h $DTYPE ||
                                     { echo "cannot make new file system"; exit 1; }
                        /bin/echo
                        echo -n "where to mount /dev/is0h? (default=/usr1) > "
                        read h0name
                        case "$h0name" in
                        "")     h0name=/usr1;;
                        /*)     ;;
                         *)      h0name="/$h0name";;
                        esac;;
                esac;;
esac

case "$D2TYPE" in
MegaFile1300|MC1558)
                echo -n "Also new Filesystem on /dev/is1h? (n=default/y) > "
                read new
                case "$new" in
                y|Y)    /bin/echo
                        /etc/newfs /dev/${DISK}1h $D2TYPE  ||
                                     { echo "cannot make new file system"; exit 1; }
                        /bin/echo
```

```
                        echo -n "where to mount /dev/islh? (default=/usr2) > "
                        read hlname
                        case "$hlname" in
                        "")     hlname=/usr2;;
                        /*)     ;;
                         *)      hlname="/$hlname";;
                        esac;;
                esac;;
esac
/etc/mount /dev/${DISK}0a /mnt || { echo "cannot mount /dev/${DISK}0a"; exit 1; }

wait

/bin/mt -f /dev/r$tape fsf 1 ||
        { echo "Problems with tape"; exit 1; }                          ### file 0

/bin/echo "${clearscreen}Restore root file system:
"
cd /mnt && tar ${FLAGS} ||
        { echo "Problems with Tape"; exit 2; }                          ### file 1

case "$TYPE" in
MX2|MX2+) /mnt/etc/bootflags -oz -b 'sa(0,0)' -d 'sa(0,1)' -s 2048 -u sd0b ;;
MX300)    /mnt/etc/bootflags -oz -b 'in(0,0)' -d 'in(0,1)' -s 8192 -u is0b ;;
esac
mkdir usr
rm -f etc/utmp
ln -c ucb=/etc/.utmp att=/etc/.utmp sie=/etc/.sie_utmp etc/utmp
# select corresponding kernel

case $TYPE in
        MX2)        KERNEL=vmunix.MX2 ;;
        MX2+)       KERNEL=vmunix.MX300-OM ;;
        MX300)      KERNEL=vmunix.MX300-ST ;;
esac
cd /mnt && tar ${FLAGS} ${KERNEL} && mv ${KERNEL} vmunix ||
        { echo "Problems with Tape"; exit 3; }                          ### file 2
chown root vmunix
chgrp root vmunix
ln -s vmunix sinix
case $TYPE in
MX300)
        mt -f /dev/r$tape fsf 1 ;;                                      ### file 3
esac
case $TYPE in
MX2+)   echo "Restore $TYPE specific root files"
        rm -f /mnt/stand/boot*.x
        cd /mnt && tar ${FLAGS} || \
                { echo "Problems with Tape"; exit 4; } ;;               ### file 3
MX300)  echo "Restore $TYPE specific root files"
        rm -f /mnt/stand/boot*.x
        cd /mnt && tar ${FLAGS} || \
                { echo "Problems with Tape"; exit 5; } ;;               ### file 4
esac
/bin/mt -f /dev/r$TAPE noret || { /bin/echo "Problems with Tape"; exit 1; }

case "$TYPE" in
        MX2+)  /etc/disklabel /dev/r${DISK}0c -f /mnt/stand/bootwn.OMTI.x;;
        MX300) /etc/disklabel /dev/r${DISK}0c -f /mnt/stand/bootwn.STOR.x;;
esac

cd /; /etc/umount /mnt; /etc/fsck /dev/${DISK}0a
case "$?" in
0)      ;;      *)      /bin/echo "Problems with Filesystem"; exit 6;;
esac
/etc/mount /dev/${DISK}0a /mnt
cd /mnt

# make a log file for subsequent installations of software
echo "`date` - `uname -a`" > etc/versionlog
chmod 644 etc/versionlog

coconfig default >/dev/null
```

```
# Create /etc/fstab as desired.
#
echo > /mnt/etc/fstab "/dev/${DISK}0a   /      4.2    rw   1   1"
echo >>/mnt/etc/fstab "/dev/${DISK}0b   -      swap   sw   -   -"
case "${g0name}" in
"")     ;;
*)      echo >>/mnt/etc/fstab "/dev/${DISK}0g   ${g0name}  4.2    rw   1   2"
esac
case "${h0name}" in
"")     ;;
*)      echo >>/mnt/etc/fstab "/dev/${DISK}0h   ${h0name}  4.2    rw   1   3"
esac
case "${alname}" in
"")     ;;
*)      case "${hlname}" in
        "")     echo >>/mnt/etc/fstab "/dev/${DISK}la   ${alname}  4.2    rw   1   3";;
        *)      echo >>/mnt/etc/fstab "/dev/${DISK}la   ${alname}  4.2    rw   1   4"
        esac
esac
case "${D2TYPE}" in
"")     ;;
*)      echo >>/mnt/etc/fstab "/dev/${DISK}lb   -      swap   sw   -   -"
esac
case "${glname}" in
"")     ;;
*)      echo >>/mnt/etc/fstab "/dev/${DISK}lg   ${glname}  4.2    rw   1   2"
esac
case "${hlname}" in
"")     ;;
*)      echo >>/mnt/etc/fstab "/dev/${DISK}lh   ${hlname}  4.2    rw   1   3"
esac

chown root /mnt/etc/fstab
chgrp daemon /mnt/etc/fstab
chmod 0644 /mnt/etc/fstab

mkdir /mnt${g0name} /mnt${h0name} /mnt${alname} /mnt${glname} /mnt${hlname} 2>/dev/null

cd /mnt/dev
echo
echo
echo 'Making standard devices ...'
MAKEDEV std
echo

cd /mnt
rm -f /mnt/dev/${DISK}?c /mnt/dev/r${DISK}?c

cat >restore.more <<EOF
#!/bin/sh
/bin/echo "The output of \"restore.more\" is going to be collected in \"/restore.out\"..."
/etc/restore.more.sh 2>&1 | /bin/tee -a /restore.out
EOF
chmod +x restore.more

cd /
mv /mnt/etc/rc /mnt/etc/rc.final || { echo "cannot make new file system"; exit 1; }
cp /bin/uname /mnt/bin
sync
/etc/umount /mnt
wait

/bin/echo -n "${clearscreen}Root file system extracted.

ATTENTION PLEASE:
   When the following reboot has finished (i.e. the \"#\" prompt appears)
   you should remove the SINIX1 floppy disk and continue installing from
   the SINIX2 streamer tape by typing in \"restore.more$CR\".
   If you don't want to continue installing, remove the SINIX2 streamer tape.

Please acknowledge with $CR to start the reboot > "
read anything
/bin/echo 'Now booting off real root file system...'
/etc/reboot
```

```
#!/bin/sh
umask 77
PATH=$PATH:/.bin:/etc:.
export PATH
MACHINE=`uname -m`
for i
do
case $i in

# These should be 'sort of' in sync with /sys/conf/GENERIC
generic)
        MAKEDEV std
        MAKEDEV ttyp0
        MAKEDEV sr1 sr2 sr3
        ;;

std)
        case "$MACHINE" in
        MX2|MX2+)       sh MAKEDEV sd0 sd1 df0 ts0 srx sr0 ttyp0 local;;
        MX300)          sh MAKEDEV is0 is1 df0 ts0 xt0 srx sr0 ttyp0 local;;
        esac
        mknod console       c 10 0  ; chmod 622 console
        mknod tty           c 1  0  ; chmod 666 tty
        mknod ttyc0         c 0  0  ; chmod 644 ttyc0
        mknod ttyc1         c 0  1  ; chmod 644 ttyc1
        mknod mem           c 2  0  ; chmod 640 mem;        chgrp daemon mem
        mknod kmem          c 2  1  ; chmod 640 kmem;       chgrp daemon kmem
        mknod null          c 2  2  ; chmod 666 null
        mknod drum          c 6  0  ; chmod 660 drum;       chgrp daemon drum
        mknod swap          b 1  0  ; chmod 660 swap;       chgrp daemon swap
        mknod clock         c 11 0  ; chmod 644 clock
        ;;

ts*)
        umask 0; unit=`expr $i : '..\(.*\)'`
        case $unit in
        0)
                case "$MACHINE" in
                MX2)    mknod rts0 c 12 0
                                mknod rts255 c 12 255
                                chmod 600 rts255
                                mknod rts8 c 12 8;;
                MX2+)   mknod rts0 c 12 0
                                mknod rts8 c 12 8;;
                MX300)          mknod rts0 c 15 0
                                mknod rts8 c 15 8;;
                esac
                ln -s rts0 rts
                ln -s rts0 orts
                ln -s rts0 crts
                ln -s rts8 nrts
                umask 77
                ;;
        *)
                echo bad unit for tape in: $1
                ;;
        esac
        ;;

xt*)
        umask 0 ; unit=`expr $i : '..\(.*\)'`
        case $i in
        xt*) blk=6; chr=13;;
        esac
        case $unit in
        0|1|2|3)
                four=`expr $unit + 4`; eight=`expr $unit + 8`
                twelve=`expr $unit + 12`;
                thirtytwo=`expr $unit + 32`; thirtysix=`expr $unit + 36`;
                mknod mt$unit       b $blk $unit
                mknod mt$four       b $blk $four
                mknod mt$eight      b $blk $eight
                mknod mt$twelve     b $blk $twelve
                mknod mt$thirtytwo b $blk $thirtytwo
                mknod mt$thirtysix b $blk $thirtysix
                mknod nmt$unit      b $blk $four ;: sanity w/pdp11 v7
                mknod nmt$eight     b $blk $twelve ;: ditto
                mknod nmt$thirtytwo         b $blk $thirtysix;: ditto
```

```
		mknod nrmt$unit	c $chr $four ;: sanity w/pdp11 v7
		mknod nrmt$eight	c $chr $twelve ;: ditto
		mknod nrmt$thirtytwo c $chr $thirtysix ;: ditto
		mknod rmt$unit	c $chr $unit
		mknod rmt$four	c $chr $four
		mknod rmt$eight	c $chr $eight
		mknod rmt$twelve	c $chr $twelve
		mknod rmt$thirtytwo c $chr $thirtytwo
		mknod rmt$thirtysix c $chr $thirtysix
		case $unit in
		0)
			rm -f sctmtm0 rsctmtm0 sctmtml28 rsctmtml28
			ln mt$unit sctmtm0
			ln mt$four sctmtml28
			ln rmt$unit		rsctmtm0
			ln rmt$four		rsctmtml28
			chmod 666 sctmtm0 rsctmtm0 sctmtml28 rsctmtml28
			;;
		esac
		umask 77
		;;
	*)
		echo bad unit for tape in: $1
		;;
	esac
	;;

is*|sd*)
	unit=`expr $i : '..\(.*\)'`
	name=`expr $i : '\(.*\)..'`
	case "$MACHINE" in
	MX300)		blk=4
			chr=8;;
	MX2|MX2+)	blk=0
			chr=7;;
	esac
	mknod ${name}${unit}a	b $blk `expr $unit '*' 8 + 0`
	mknod ${name}${unit}b	b $blk `expr $unit '*' 8 + 1`
	mknod ${name}${unit}c	b $blk `expr $unit '*' 8 + 2`
	mknod ${name}${unit}d	b $blk `expr $unit '*' 8 + 3`
	mknod ${name}${unit}e	b $blk `expr $unit '*' 8 + 4`
	mknod ${name}${unit}f	b $blk `expr $unit '*' 8 + 5`
	mknod ${name}${unit}g	b $blk `expr $unit '*' 8 + 6`
	mknod ${name}${unit}h	b $blk `expr $unit '*' 8 + 7`
	mknod r${name}${unit}a	c $chr `expr $unit '*' 8 + 0`
	mknod r${name}${unit}b	c $chr `expr $unit '*' 8 + 1`
	mknod r${name}${unit}c	c $chr `expr $unit '*' 8 + 2`
	mknod r${name}${unit}d	c $chr `expr $unit '*' 8 + 3`
	mknod r${name}${unit}e	c $chr `expr $unit '*' 8 + 4`
	mknod r${name}${unit}f	c $chr `expr $unit '*' 8 + 5`
	mknod r${name}${unit}g	c $chr `expr $unit '*' 8 + 6`
	mknod r${name}${unit}h	c $chr `expr $unit '*' 8 + 7`
	for j in a b c d e f g h; do
		chgrp daemon ${name}${unit}$j
		chmod 640 ${name}${unit}$j
		chgrp daemon r${name}${unit}$j
		chmod 640 r${name}${unit}$j
	done
	;;

df*)
	unit=`expr $i : '..\(.*\)'`
	name=df
	case "$MACHINE" in
	MX300)		blk=4
			chr=8;;
	MX2|MX2+)	blk=0
			chr=7;;
	esac
	UNIT=1
	case $unit in
	0)
		mknod ${name}${unit}a	b $blk `expr $UNIT '*' 100 + 20`
		mknod ${name}${unit}b	b $blk `expr $UNIT '*' 100 + 21`
		mknod ${name}${unit}c	b $blk `expr $UNIT '*' 100 + 22`
		mknod ${name}${unit}d	b $blk `expr $UNIT '*' 100 + 23`
		mknod ${name}${unit}e	b $blk `expr $UNIT '*' 100 + 24`
```

```
		mknod ${name}${unit}f		b $blk `expr $UNIT '*' 100 + 25`
		mknod ${name}${unit}g		b $blk `expr $UNIT '*' 100 + 26`
		mknod r${name}${unit}a		c $chr `expr $UNIT '*' 100 + 20`
		mknod r${name}${unit}b		c $chr `expr $UNIT '*' 100 + 21`
		mknod r${name}${unit}c		c $chr `expr $UNIT '*' 100 + 22`
		mknod r${name}${unit}d		c $chr `expr $UNIT '*' 100 + 23`
		mknod r${name}${unit}e		c $chr `expr $UNIT '*' 100 + 24`
		mknod r${name}${unit}f		c $chr `expr $UNIT '*' 100 + 25`
		mknod r${name}${unit}g		c $chr `expr $UNIT '*' 100 + 26`
		for j in a b c d e f g; do
			chgrp daemon ${name}${unit}$j
			chmod 666 ${name}${unit}$j
			chgrp daemon r${name}${unit}$j
			chmod 666 r${name}${unit}$j
		done
		ln  ${name}${unit}a	fl`expr $unit '*' 10 + 0`
		ln  ${name}${unit}b	fl`expr $unit '*' 10 + 1`
		ln  ${name}${unit}c	fl`expr $unit '*' 10 + 2`
		ln  ${name}${unit}d	fl`expr $unit '*' 10 + 3`
		ln  ${name}${unit}e	fl`expr $unit '*' 10 + 4`
		ln  ${name}${unit}f	fl`expr $unit '*' 10 + 5`
		ln  ${name}${unit}g	fl`expr $unit '*' 10 + 6`
		ln  r${name}${unit}a	rfl`expr $unit '*' 10 + 0`
		ln  r${name}${unit}b	rfl`expr $unit '*' 10 + 1`
		ln  r${name}${unit}c	rfl`expr $unit '*' 10 + 2`
		ln  r${name}${unit}d	rfl`expr $unit '*' 10 + 3`
		ln  r${name}${unit}e	rfl`expr $unit '*' 10 + 4`
		ln  r${name}${unit}f	rfl`expr $unit '*' 10 + 5`
		ln  r${name}${unit}g	rfl`expr $unit '*' 10 + 6`

		rm -f sctfdl${unit} sctfdm${unit} rsctfdl${unit} rsctfdm${unit}
		rm -f sctfdl`expr $unit '+' 128` sctfdm`expr $unit '+' 128`
		rm -f rsctfdl`expr $unit '+' 128` rsctfdm`expr $unit '+' 128`

		mknod ${name}`expr $unit '+' 128`d b $blk `expr $unit '*' 10 '+' 128 '+' 123`
		chmod 666 ${name}`expr $unit '+' 128`d
		chgrp daemon ${name}`expr $unit '+' 128`d
		mknod ${name}`expr $unit '+' 128`f b $blk `expr $unit '*' 10 '+' 128 '+' 125`
		chmod 666 ${name}`expr $unit '+' 128`f
		chgrp daemon ${name}`expr $unit '+' 128`f
		mknod r${name}`expr $unit '+' 128`d c $chr `expr $unit '*' 10 '+' 128 '+' 123`

		chmod 666 r${name}`expr $unit '+' 128`d
		chgrp daemon r${name}`expr $unit '+' 128`d
		mknod r${name}`expr $unit '+' 128`f c $chr `expr $unit '*' 10 '+' 128 '+' 125`
		chmod 666 r${name}`expr $unit '+' 128`f
		chgrp daemon r${name}`expr $unit '+' 128`f

		ln ${name}`expr $unit '+' 128`d sctfdm`expr $unit '+' 128`
		ln r${name}`expr $unit '+' 128`d	rsctfdm`expr $unit '+' 128`
		ln ${name}`expr $unit '+' 128`f sctfdl`expr $unit '+' 128`
		ln r${name}`expr $unit '+' 128`f	rsctfdl`expr $unit '+' 128`

		ln  df0d	sctfdm0
		ln  rdf0d	rsctfdm0
		ln  df0f	sctfdl0
		ln  rdf0f	rsctfdl0
		;;
	*)
		echo bad unit for floppy in: $i
		;;
	esac
	;;
sr*)
	case $i in
	sr*) name=sr; major=5;;
	esac
	unit=`expr $i : "$name\(.*\)"`
	case $unit in
	0|1|2|3)
		eval `echo $unit $major |
		  awk ' { u = 6 * $1; m = $2 } END {
		    for (i = 0; i < 6; i++)
			printf("mknod tty%02d c %d %d; ",u+i,m,u+i); }'`
		;;
```

```
# #####                                          Mattenklott, den 8.8.86
#
# Erweiterungsvorschlag zum MAKEDEV zur spezifischen Konfigurierung
# von Terminals und Druckern an SERAD/G - Boards
#
# Das target  srx  erzeugt special files  sr0,...,sr7, mit denen der Typ
# der Boards erfragt werden soll (ioctl von Herrn Roach)
# Es sollte in die Standard-Initialisierung mit hineingenommen werden.
#
# Die Parametrisierung der srn - targets  n=0,..,3 sieht so aus:
#
#     srn:u0:u1:u2:u3:u4:u5
#
#    wobei  n  die Nummer des Boards ist und
#
#    ui  i=0,...,5  die Werte 0, 1, 2 annehmen kann mit folgender Bedeutung:
#
#        ui = 0    special file fuer tty (d.h. minor device number < 100)
#        ui = 1    special file fuer "Drucker" (d.h. minor device > 100)
#        ui = 2    kein special file erzeugen, da kein Geraet angeschlossen.
# #####

        x)
                eval `echo $major |
                  awk ' { m = $1 } END {
                    for (i = 0; i < 4; i++) {
                        printf("mknod sr%d c %d %d; ",i+100,m,i*6+100);
                        printf("mknod sr%d c %d %d; ",i,m,i*6); }}'`
                ;;
        [0-7]:[0-2]:[0-2]:[0-2]:[0-2]:[0-2]:[0-2])
                eval `echo $unit:$major |
                  awk -F: ' { m = $8; uu = $1 * 6;
                   for (i = 2; i < 8; i++) if ($i != 2) u[i-2]=$i; } END {
                   for (i in u )
                        printf("mknod tty%02d c %d %d; ",uu+i,m,uu+i+ u[i] * 100); }'`
                ;;
        *) echo bad unit for sr in: $unit ;;
        esac
        ;;

ttyp*)
        class=`expr $i : 'ttyp\(.*\)'`
        case $class in
        0) offset=0  name=p;; 1) offset=16 name=q;;
        2) offset=32 name=r;; 3) offset=48 name=s;;
        4) offset=64 name=t;; 5) offset=80 name=u;;
        *) echo bad unit for ttyp in: $i;;
        esac
        case $class in
        0|1|2|3|4|5)
                umask 0
                eval `echo $offset $name | awk ' { b=$1; n=$2 } END {
                        for (i = 0; i < 16; i++)
                                printf("mknod tty%s%x c 3 %d; ", \
                                        n, i, b+i, n, i, b+i); }'`
                umask 77
                ;;
        esac
        case $class in
        0)
                umask 0
                mknod ptygen c 4 255
                umask 77
                ;;
        esac
        ;;

local)
        MAKEDEV.local
        ;;
esac
done
```

```
#!/bin/sh
# '$Header: rc.sh 1.28 88/05/31 $'

# We are allowed to open the console here, because we set the process group
# in /etc/init.
exec >/dev/console 2>&1

HOME=/; export HOME
PATH=/bin:/usr/bin; export PATH

case ` /etc/sysname -l`  in
        deutsch)        LANG=De_DE.646;;
        daen)           LANG=Da_DK.646;;
        nederlands)     LANG=Nl_NL.646;;
        francais)       LANG=Fr_FR.646;;
        italiano)       LANG=It_IT.646;;
        Norsk)          LANG=No_NO.646;;
        espa\|ol)       LANG=Es_SP.646;;
        svenska)        LANG=Sv_SE.646;;
        *)              LANG=En_US.ASCII;;
esac
export LANG

if [ -r /fastboot ]
then
        /bin/rm -f /fastboot
        echo Fast boot ... skipping disk checks
elif [ "$1" = autoboot ]
then
        echo Automatic reboot in progress...
        date
        /etc/fsck -p
        case $? in
        0)
                date
                ;;
        4)
                /etc/reboot -n
                ;;
        8)
                echo "Automatic reboot failed... help!"
                exit 1
                ;;
        12)
                echo "Reboot interrupted"
                exit 1
                ;;
        *)
                echo "Unknown error in reboot"
                exit 1
                ;;
        esac
else
        date
fi

/bin/rm -f /etc/nologin

# attempt to rationally recover the passwd file if needed
if [ -s /etc/ptmp ]
then
        if [ -s /etc/passwd ]
        then
                ls -l /etc/passwd /etc/ptmp
                /bin/rm -f /etc/ptmp            # should really remove the shorter
        else
                echo 'passwd file recovered from ptmp'
                mv /etc/ptmp /etc/passwd
        fi
elif [ -r /etc/ptmp ]
then
        echo 'removing passwd lock file'
        /bin/rm -f /etc/ptmp
fi
```

```
>>/etc/mtab
/etc/umount -at 4.2    >/dev/null 2>&1
/etc/mount -f /        >/dev/null 2>&1
/etc/mount -at 4.2

case `uname -m` in
MX2)
        if [ ! -f /dev/rts255 ]
                then
                /etc/mknod /dev/rts255 c 12 255
                fi
    /bin/mt -f /dev/rts255 bufsize 200    # release some streamer buffer
    /etc/mknod /dev/rsd0c c 7 2; chmod 640 /dev/rsd0c
    case ` /etc/disktype /dev/rsd0c` in
         MC1323)
            /etc/bootflags -zo -b 'sa(0,0)' -d 'sa(1,1)' -s 2048 -u sd1b ;;
         MC1325)
            /etc/bootflags -zo -b 'sa(0,0)' -d 'sa(0,1)' -s 2048 -u sd0b ;;
         *)
            echo "/dev/sd0: Unknown disktype ` /etc/disktype /dev/rsd0c` "; exit 1;;
    esac
    rm -f /dev/rsd0c;;
MX2+)
    /etc/mknod /dev/rsd0c c 7 2; chmod 640 /dev/rsd0c
    case ` /etc/disktype /dev/rsd0c` in
         MC1323)
            /etc/bootflags -zo -b 'sa(0,0)' -d 'sa(1,1)' -s 2048 -u sd1b ;;
         MC1325)
            /etc/bootflags -zo -b 'sa(0,0)' -d 'sa(0,1)' -s 2048 -u sd0b ;;
         *)
            echo "/dev/sd0: Unknown disktype ` /etc/disktype /dev/rsd0c` "; exit 1;;
    esac
    rm -f /dev/rsd0c;;
MX300)
    /etc/bootflags -zo -b 'in(0,0)' -d 'in(0,1)' -s 8192 -u is0b ;;
esac

/etc/savecore /usr/crash
/usr/etc/swapon -a | grep -v busy

/bin/sh /etc/rc.local
                                echo preserving editor files
(cd /tmp; /usr/lib/ex3.7preserve -a)
                                echo clearing /tmp
/bin/rm -rf /tmp/rexd* /tmp/under*
/bin/rm -f /tmp/* /usr/tmp/* /usr/rtmp/*    2>/dev/null

test -r /etc/rc.sys5 && att sh /etc/rc.sys5
test -r /etc/rc.sie  && sie sh /etc/rc.sie

                                echo -n standard daemons:
/etc/update &                   echo -n ' update'
/etc/cron &                     echo -n ' cron'
#/etc/accton /usr/adm/acct &     echo -n ' accounting'

cd /usr/spool/uucp && /bin/rm -f LCK.*

# if [ -f /usr/lib/lpd ]; then
#       /bin/rm -f /dev/printer
#       /usr/lib/lpd &          echo -n ' printer'
# fi
echo -n ' spooler'
/usr/spool/spooler/startup rc
                                echo '.'
exit 0
```

```
#!/bin/sh
# '$Header: rc.local.sh 1.10 88/03/18 $'

/bin/hostname   ""
/bin/domainname ""

echo -n "local daemons:"

/etc/portmap        && echo -n " portmap"
# old style locking (sun)
# /usr/etc/rpc.statd  && echo -n " statd"
# /usr/etc/rpc.statd  && echo -n " statd"

if [ -f /etc/syslog ]; then
        /etc/syslog & echo -n ' syslog'
fi
echo -n ' pseudos'
cd /dev
for name in pty tty; do
        /etc/chown root ${name}[pqrs]?   >/dev/null 2>&1
        /bin/chmod 666  ${name}[pqrs]?   >/dev/null 2>&1
done
cd /
echo '.'

#
# start lan
#
if [ -f /etc/rc.lan -a -n "` hostname` " -a -n "` domainname` " ] ;
then
        /bin/sh /etc/rc.lan
fi

echo -n "more locals:"
/etc/lockd  && echo -n " lockd"
if [ -f /usr/lib/sendmail ]; then
        (cd /usr/spool/mqueue && /bin/rm -f [lnx]f*
        /usr/lib/sendmail -bd -q30m) &
        echo -n ' sendmail'
fi
echo '.'
exit 0
```

/etc/rc.sie

```
echo -n "SINIX 2.1: clear tmp"          >/dev/console
/bin/rm -f /usr/tmp/* 2>/dev/null
echo -n " cron"                                   >/dev/console
/etc/cron
echo -n " remind"                                 >/dev/console
# start remind service:
rm -f /usr/spool/remind/rmdlock /usr/spool/remind/rmdproc
/usr/lib/termin/remind </dev/console >/dev/console 2>&1
echo "."                                          >/dev/console
```

/etc/rc.sys5

```
# '$Header: rc.sys5.sh 1.1 87/07/15 $'

echo 'System V: shmem\c'                                          >/dev/console
/bin/rm -rf /usr/tmp/SysVshmem
/bin/mkdir /usr/tmp/SysVshmem
/bin/chmod 777 /usr/tmp/SysVshmem
echo ' editor files\c'                  >/dev/console
(cd /tmp; /usr/lib/expreserve -)
/etc/cron
echo ' cron\c'                          >/dev/console
echo '.'          >/dev/console
```

/etc/ttys

```
1Stty00
0Sttyc0
0Sttyc1
0Sttyp0
0Sttyp1
0Sttyp2
0Sttyp3
0Sttyp4
0Sttyp5
0Sttyp6
0Sttyp7
0Sttyp8
0Sttyp9
0Sttypa
0Sttypb
0Sttypc
0Sttypd
0Sttype
0Sttypf
```

/etc/ttytype

```
97801    console
97801    tty00
97801    tty01
97801    tty02
97801    tty03
97801    tty04
97801    tty05
97801    tty06
97801    tty07
97801    tty08
97801    tty09
97801    tty10
97801    tty11
97801    tty12
97801    tty13
97801    tty14
97801    tty15
97801    tty16
97801    tty17
97801    tty18
97801    tty19
97801    tty20
97801    tty21
97801    tty22
97801    tty23
97801    tty24
97801    tty25
97801    tty26
97801    tty27
97801    tty28
97801    tty29
97801    tty30
97801    tty31
97801    tty32
97801    tty33
97801    tty34
97801    tty35
97801    tty36
97801    tty37
97801    tty38
97801    tty39
97801    tty40
97801    tty41
97801    tty42
97801    tty43
97801    tty44
97801    tty45
97801    tty46
97801    tty47
97801    ttyc0
97801    ttyc1
97801    ttyp0
97801    ttyp1
97801    ttyp2
97801    ttyp3
97801    ttyp4
97801    ttyp5
97801    ttyp6
97801    ttyp7
97801    ttyp8
97801    ttyp9
97801    ttypa
97801    ttypb
97801    ttypc
97801    ttypd
97801    ttype
97801    ttypf
```

```
# $Copyright:   $
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# be provided or otherwise made available to, or used by, any
# other person.  No title to or ownership of the software is
# hereby transferred.

# $Header: gettytab 2.5 88/02/10 $

#
# Most of the table entries here are just copies of the
# old getty table, it is by no means certain, or even likely,
# then any of them are optimal for any purpose whatever.
# Nor is it likely that more than a couple are even correct
#

#
# The default gettytab entry, used to set defaults for all other
# entries, and in cases where getty is called with no table name
#
default:\
        :er=\043:kl=\100:in=\177:\
        :ap:fd#1000:im=\r\n\r\n%s (TM)  (%h)\r\n\r\r\n\r:sp#1200:

#
# Fixed speed entries
#
#       the "std.NNN" names are known to the special case
#       portselector code in getty, however they can
#       be assigned to any table desired.
#
a|std.110|110-baud:\
        :nd#1:cd#1:uc:sp#110:
b|std.134|134.5-baud:\
        :ep:nd#1:cd#2:ff#1:td#1:sp#134:ht:nl:
1|std.150|150-baud:\
        :ep:nd#1:cd#2:td#1:fd#1:sp#150:ht:nl:lm=\E\72\6\6\17login\72 :
c|std.300|300-baud:\
        :ap!:rw:lc:ht:ce:ck:cl=\E[H\EJ:in=\177:er=\010:\
        :hc:kl=\030:op:sp#300:tt=97801:
d|std.600|600-baud:\
        :nd#1:cd#1:sp#600:
f|std.1200|1200-baud:\
        :ap!:rw:lc:ht:ce:ck:cl=\E[H\EJ:in=\177:er=\010:\
        :hc:kl=\030:op:sp#1200:tt=97801:
6|std.2400|2400-baud:\
        :ap!:rw:lc:ht:ce:ck:cl=\E[H\EJ:in=\177:er=\010:\
        :hc:kl=\030:op:sp#2400:tt=97801:
7|std.4800|4800-baud:\
        :sp#4800:ht:
2|std.9600|9600-baud:\
        :sp#9600:
W|std.19200|19200-baud:\
        :sp#19200:
S|std.38400|38400-baud:\
        :ap!:op:rw:lc:ht:ce:ck:cb:cl=\E[H\EJ:in=\177:er=\010:\
        :kl=\030:fd#0:sp#38400:tt=97801:
B:\
        :ap!:op:rw:lc:ht:ce:ck:cb:cl=\E[H\EJ:in=\177:er=\010:\
        :kl=\030:fd#0:sp#38400:tt=97808:

#
# Dial in rotary tables, speed selection via 'break'
#
0|d300|Dial-300:\
        :nx=d1200:cd#2:sp#300:
d1200|Dial-1200:\
        :nx=d150:fd#1:sp#1200:
d150|Dial-150:\
        :nx=d110:lm@:tc=150-baud:
d110|Dial-110:\
        :nx=d300:tc=300-baud:
```

```
#
# Odd special case terminals
#
-|tty33|asr33|Pity the poor user of this beast:\
        :tc=110-baud:

4|Console|Console Decwriter II:\
        :nd@:cd@:rw:tc=300-baud:
i|Interdata console:\
        :uc:sp#0:

l|lsi chess terminal:\
        :sp#300:

#
# Fast dialup terminals, 1200/300 rotary (can start either way)
#
3|D1200|Fast-Dial-1200:\
        :nx=D300:tc=1200-baud:
5|D300|Fast-Dial-300:\
        :nx=D1200:tc=300-baud:

#
# Wierdo special case for fast crt's with hardcopy devices
#
8|T9600|CRT with hardcopy:\
        :nx=T300:tc=9600-baud:
9|T300|CRT with hardcopy (300):\
        :nx=T9600:tc=300-baud:

#
# Plugboard, and misc other terminals
#
p|P9600|Plugboard-9600:\
        :nx=P300:tc=9600-baud:
q|P300|Plugboard-300:\
        :nx=P1200:tc=300-baud:
r|P1200|Plugboard-1200:\
        :nx=P9600:tc=1200-baud:

#
# XXXX Port selector
#
s|Port Selector:\
        :ps:sp#1200:
```

/etc/passwd

```
nobody:*:-2:-2:::
root:FK2TEKEWllxMA:0:0:Superuser:/:/bin/sh
admin:HlvlZgGPW5sS.:0:3:Admin,,,,universe(sie):/usr/admin:/usr/menus/sabin/ums
shutdown:cHUkyKx8z6QP.:0:0:Shutdown:/:/etc/poweroff
daemon:*:1:1:Admin:/:
sys:x:2:2:,,,,universe(sie):/usr:/bin/sh
usrlimit:*:2:2:(XX user system) DO NOT REMOVE THIS LINE:/:/dev/null
bin:x:3:3:,,,,universe(sie):/usr:/bin/sh
uucp::66:10:UNIX-to-UNIX Copy,,,,universe(sie):/usr/spool/uucppublic:/usr/lib/uucp/uucico
gast::100:10:,,,,universe(sie):/usr/gast:/bin/sh
mgast::101:10:,,,,universe(sie):/usr/mgast:/usr/menus/sabin/ums
tele:cHUkyKx8z6QP.:102:10:,,,,universe(ucb):/usr/tele:/bin/sh
```

/etc/group

```
root::0:root
daemon::1:daemon
sys::2:sys:
bin::3:bin,admin
uucp::4:
ces::5:
other::10:gast,mgast,tele
news:*:11:root
```

```
#
# disktab for SINIX V5.2 MX2 and MX300
#
# micropolis 1325 SCSI, 9 sec, 8 heads, 73728 Kb
#
1325|MC1325|micropolis1325:\
	:ty=winchester:rm#3600:se#512:nc#1024:nt#8:ns#18:\
	:pl#1024:ps#9:ls#9:il#1:sw#4:sp#1:sm#0:wc#0:\
	:rd#4:dc#13:\
	:oa#144:pa#12240:ba#8192:fa#1024:\
	:ob#12384:pb#18576:bb#8192:fb#1024:\
	:oc#0:pc#147456:\
	:od#30960:pd#12240:bd#8192:fd#1024:\
	:oe#43200:pe#28800:be#8192:fe#1024:\
	:of#72000:pf#73584:bf#8192:ff#1024:\
	:og#30960:pg#114624:bg#8192:fg#1024:\
	:oh#0:ph#0:
# part	name	offset	secs	trks	cyls	Kb	cylinders
# pa	ROOT	144	12240	680	85	6120	1 -   85
# pb	PAGING	12384	18576	1032	129	9288	86 -  214
# pc	WHOLE	0	147456	8192	1024	73728	0 - 1023
# pd		30960	12240	680	85	6120	215 -  299
# pe		43200	28800	1600	200	14400	300 -  499
# pf		72000	73584	4088	511	36792	500 - 1010
# pg	d+e+f	30960	114624	6368	796	57312	215 - 1010
# ph		0	0	0	0	0
#	alt tracks					1011 - 1023

#
# micropolis 1323 SCSI, 9 sec, 4 heads, 36864 Kb
#
1323|MC1323|micropolis1323:\
	:ty=winchester:rm#3600:se#512:nc#1024:nt#4:ns#18:\
	:pl#1024:ps#9:ls#9:il#1:sw#4:sp#1:sm#0:wc#0:\
	:rd#4:dc#13:\
	:oa#72:pa#12240:ba#8192:fa#1024:\
	:ob#12312:pb#8208:bb#8192:fb#1024:\
	:oc#0:pc#73728:\
	:od#20520:pd#8208:bd#8192:fd#1024:\
	:oe#28728:pe#16416:be#8192:fe#1024:\
	:of#45144:pf#27648:bf#8192:ff#1024:\
	:og#20520:pg#52272:bg#8192:fg#1024:\
	:oh#0:ph#0:
# part	name	offset	secs	trks	cyls	Kb	cylinders
# pa	ROOT	72	12240	680	170	6120	1 -  170
# pb	PAGING	12312	8208	456	114	4104	115 -  228
# pc	WHOLE	0	73728	4096	1024	36864	0 - 1023
# pd		20520	8208	456	114	4104	229 -  342
# pe		28728	16416	912	228	8208	343 -  570
# pf		45144	27648	1760	440	13824	571 - 1010
# pg	d+e+f	20520	52272	3128	782	26136	229 - 1010
# ph		0	0	0	0	0
#	alt tracks					1011 - 1023

#
# rodime 202E SCSI, 9 sec, 4 heads, 23040 Kb
#
202E|RO202E|rodime202E:\
	:ty=winchester:rm#3600:se#512:nc#640:nt#4:ns#18:\
	:pl#1024:ps#9:ls#9:il#1:sw#4:sp#1:sm#0:wc#0:\
	:rd#4:dc#6:\
	:oa#72:pa#8208:ba#8192:fa#1024:\
	:ob#8280:pb#8208:bb#8192:fb#1024:\
	:oc#0:pc#46080:\
	:od#16488:pd#8208:bd#8192:fd#1024:\
	:oe#24696:pe#16416:be#8192:fe#1024:\
	:of#41112:pf#4536:bf#8192:ff#1024:\
	:og#16488:pg#29160:bg#8192:fg#1024:\
	:oh#0:ph#0:
# part	name	offset	secs	trks	cyls	Kb	cylinders
# pa	ROOT	72	8208	456	114	4104	1 -  114
# pb	PAGING	8280	8208	456	114	4104	115 -  228
# pc	WHOLE	0	46080	2560	640	23040	0 -  639
# pd		16488	8208	456	114	4104	229 -  342
# pe		24696	16416	912	228	8208	343 -  570
# pf		41112	4536	252	63	2268	571 -  633
# pg	d+e+f	16488	29160	1620	405	14580	229 -  633
```

```
# ph                   0        0       0      0       0
#       alt tracks                                          634 -  639
#
#  CDC WRENIII 94166 - 182 ESDI, 34 sec, 34 log sec, 9 heads, 148257 Kb
#
WRENIII|wren3:\
        :ty=winchester:rm#3600:se#512:nc#969:nt#9:ns#34:\
        :pl#512:ps#34:ls#34:il#1:sw#4:sp#1:sm#0:wc#0:\
        :rd#4:dc#5:\
        :oa#306:pa#15912:ba#8192:fa#1024:\
        :ob#16218:pb#41004:bb#8192:fb#1024:\
        :oc#0:pc#296514:\
        :od#57222:pd#15912:bd#8192:fd#1024:\
        :oe#73134:pe#55998:be#8192:fe#1024:\
        :of#129132:pf#165852:bf#8192:ff#1024:\
        :og#57222:pg#237762:bg#8192:fg#1024:\
        :oh#0:ph#0:
# part  name     offset    secs    trks  cyls      Kb    cylinders
# pa    ROOT        306   15912     468    52    7956      1 -   52
# pb    PAGING    16218   41004    1206   134   20502     53 -  186
# pc    WHOLE         0  296514    8721   969  148257      0 -  968
# pd              57222   15912     468    52    7956    187 -  238
# pe              73134   55998    1647   183   27999    239 -  421
# pf             129132  165852    4878   542   82926    422 -  963
# pg    d+e+f     57222  237762    6993   777  118881    187 -  963
# ph                  0       0       0     0       0
#       alt tracks                                         964 -  968

#
# Micropolis 1355 ESDI, 34 sec, 34 log sec, 8 heads, 139264 Kb
#
1355|MC1355|micropolis1355:\
        :ty=winchester:rm#3600:se#512:nc#1024:nt#8:ns#34:\
        :pl#512:ps#34:ls#34:il#1:sw#4:sp#1:sm#0:wc#0:\
        :rd#4:dc#5:\
        :oa#272:pa#16048:ba#8192:fa#1024:\
        :ob#16320:pb#41072:bb#8192:fb#1024:\
        :oc#0:pc#278528:\
        :od#57392:pd#16048:bd#8192:fd#1024:\
        :oe#73440:pe#56032:be#8192:fe#1024:\
        :of#129472:pf#147696:bf#8192:ff#1024:\
        :og#57392:pg#219776:bg#8192:fg#1024:\
        :oh#0:ph#0:
# part  name     offset    secs    trks  cyls      Kb    cylinders
# pa    ROOT        272   16048     472    59    8024      1 -   59
# pb    PAGING    16320   41072    1208   151   20536     60 -  210
# pc    WHOLE         0  278528    8192  1024  139264      0 - 1023
# pd              57392   16048     472    59    8024    211 -  269
# pe              73440   56032    1648   206   28016    270 -  475
# pf             129472  147696    4344   543   73848    476 - 1018
# pg    d+e+f     57392  219776    6464   808  109888    211 - 1018
# ph                  0       0       0     0       0
#       alt tracks                                        1019 - 1023

#
# Micropolis 1558 ESDI, 34 sec, 34 log sec, 15 heads, 312120 Kb
#
1558|MC1558|micropolis1558:\
        :ty=winchester:rm#3600:se#512:nc#1224:nt#15:ns#34:\
        :pl#512:ps#34:ls#34:il#1:sw#4:sp#1:sm#0:wc#0:\
        :rd#4:dc#5:\
        :oa#510:pa#16320:ba#8192:fa#1024:\
        :ob#16830:pb#43350:bb#8192:fb#1024:\
        :oc#0:pc#624240:\
        :od#463590:pd#16320:bd#8192:fd#1024:\
        :oe#479910:pe#56100:be#8192:fe#1024:\
        :of#536010:pf#85680:bf#8192:ff#1024:\
        :og#463590:pg#158100:bg#8192:fg#1024:\
        :oh#60180:ph#403410:bh#8192:fh#1024:
# part  name     offset    secs    trks  cyls      Kb    cylinders
# pa    ROOT        510   16320     480    32    8160      1 -   32
# pb    PAGING    16830   43350    1275    85   21675     33 -  117
# pc    WHOLE         0  624240   18360  1224  312120      0 - 1223
# pd             463590   16320     480    32    8160    909 -  940
# pe             479910   56100    1650   110   28050    941 - 1050
# pf             536010   85680    2520   168   42840   1051 - 1218
```

```
# pg     d+e+f    463590  158100   4650   310    79050     909 - 1218
# ph               60180  403410  11865   791   201705     118 -  908
#        alt tracks                                       1219 - 1223
#
# MegaFile1300 ESDI, 34 sec, 34 log sec, 12 heads, 248064 Kb
#
1300|MEGA|ME1300|MegaFile1300:\
        :ty=winchester:rm#3534:se#512:nc#1216:nt#12:ns#34:\
        :pl#512:ps#34:ls#34:il#1:sw#4:sp#1:sm#0:wc#0:\
        :rd#4:dc#5:\
        :oa#408:pa#15912:ba#8192:fa#1024:\
        :ob#16320:pb#42024:bb#8192:fb#1024:\
        :oc#0:pc#496128:\
        :od#341496:pd#15912:bd#8192:fd#1024:\
        :oe#357408:pe#56304:be#8192:fe#1024:\
        :of#413712:pf#80376:bf#8192:ff#1024:\
        :og#341496:pg#152592:bg#8192:fg#1024:\
        :oh#58344:ph#283152:bh#8192:fh#1024:
# part   name     offset    secs   trks  cyls       Kb     cylinders
# pa     ROOT        408   15912    468    39     7956       1 -   39
# pb     PAGING    16320   42024   1236   103    21012      40 -  142
# pc     WHOLE         0  496128  14592  1216   248064       0 - 1215
# pd              341496   15912    468    39     7956     837 -  875
# pe              357408   56304   1656   138    28152     876 - 1013
# pf              413712   80376   2364   197    40188    1014 - 1210
# pg     d+e+f    341496  152592   4488   374    76296     837 - 1210
# ph               58344  283152   8328   694   141576     143 -  836
#        alt tracks                                       1211 - 1215

#
# MegaFile1200 ESDI, 34 sec, 34 log sec, 8 heads, 165376 Kb
#
1200|MEGA12|ME1200|MegaFile1200:\
        :ty=winchester:rm#3534:se#512:nc#1216:nt#8:ns#34:\
        :pl#512:ps#34:ls#34:il#1:sw#4:sp#1:sm#0:wc#0:\
        :rd#4:dc#5:\
        :oa#272:pa#16048:ba#8192:fa#1024:\
        :ob#16320:pb#41072:bb#8192:fb#1024:\
        :oc#0:pc#330752:\
        :od#176800:pd#16048:bd#8192:fd#1024:\
        :oe#192848:pe#56304:be#8192:fe#1024:\
        :of#249152:pf#80240:bf#8192:ff#1024:\
        :og#176800:pg#152592:bg#8192:fg#1024:\
        :oh#57392:ph#119408:bh#8192:fh#1024:
# part   name     offset    secs   trks  cyls       Kb     cylinders
# pa     ROOT        272   16048    472    59     8024       1 -   59
# pb     PAGING    16320   41072   1208   151    20536      60 -  210
# pc     WHOLE         0  330752   9728  1216   165376       0 - 1215
# pd              176800   16048    472    59     8024     650 -  708
# pe              192848   56304   1656   207    28152     709 -  915
# pf              249152   80240   2360   295    40120     916 - 1210
# pg     d+e+f    176800  152592   4488   561    76296     650 - 1210
# ph               57392  119408   3512   439    59704     211 -  649
#        alt tracks                                       1211 - 1215

#
# teac fd-55 5 1/4 floppy, partition less 8 sectors:\
#
floppy|TEAC|FD-55A:\
        :ty=floppydisk:ns#8:nt#2:nc#77:rm#300:\
        :rd#4:\
        :pa#4:\
        :pb#48:\
        :pc#1168:bc#8192:fc#1024:
floppy_nfs:\
        :ty=floppydisk:ns#8:nt#2:nc#77:rm#300:\
        :rd#4:\
        :pa#4:\
        :pb#48:\
        :pc#1168:bc#4096:fc#512:
#
#       80 Meg disk for X20
#

5090|RO5090|rodime5090:\
        :ty=winchester:rm#3600:se#512:nc#1224:nt#7:ns#18:\
```

```
        :pl#1024:ps#9:ls#9:il#1:sw#5:sp#1:sm#0:wc#0:\
        :rd#4:\
        :oa#126:pa#12348:ba#8192:fa#1024:\
        :ob#12474:pb#24570:bb#8192:fb#1024:\
        :oc#0:pc#154224:\
        :od#37044:pd#12600:bd#8192:fd#1024:\
        :oe#49644:pe#25830:be#8192:fe#1024:\
        :of#75474:pf#77490:bf#8192:ff#1024:\
        :og#37044:pg#115920:bg#8192:fg#1024:\
        :oh#0:ph#0:

#
#       40 Meg Disk for X20
#

WRENII|cdc|X20CDC:\
        :ty=winchester:rm#3600:se#512:nc#989:nt#5:ns#18:\
        :pl#1024:ps#9:ls#9:il#1:sw#5:sp#0:sm#0:wc#1:\
        :oa#90:pa#12240:ba#8192:fa#1024:\
        :ob#12330:pb#16380:bb#8192:fb#1024:\
        :oc#0:pc#89010:\
        :od#28710:pd#12240:bd#8192:fd#1024:\
        :oe#40950:pe#28764:be#8192:fe#1024:\
        :of#69714:pf#19260:bf#8192:ff#1024:\
        :og#28710:pg#60264:bg#8192:fg#1024:\
        :oh#0:ph#0:
```

```
:
# Diese shell prozedur ermoeglicht das Einlesen eines neuen Anwendungspaketes
# wobei die einzige Vorausetzung ist, dass die erste eingelegte Floppy oder
# die eingelegte Magnetbandkassette eine Prozedur mit dem Namen install
# enthaelt.
# Die Prozedur prueft, ob die Installation auf das rc-file zugreifen wollte
# und legt das veraenderte rc-file unter 'rc.new', die Differenz zum Original
# rc-file unter 'rc.diff' ab. Das urspruengliche rc-file bleibt unveraendert
# erhalten.
# Falls die eingelegte Floppy bzw. Band eine Prozedur mit dem Namen
# install.conf enthaelt, wird diese ausgefuehrt. Es wird dazu kein
# neuer Prozess erzeugt, daher duerfen in dieser Prozedur nur
# Shellvariablen gesetzt und exportiert werden.
# Existiert diese Prozedur nicht, so wird angenommen, dass es sich
# um einen alten Installationssatz handelt, bei dem die Gruppen
# daemon und other vertauscht sind (ALT: daemon=10, other=1
#                                   NEU: daemon=1,  other=10)
# Deshalb wird die Variable TARMAPGID gesetzt, damit tar die
# Gruppennummern richtig umwandelt.
#
cd /
umask 022

UNIVERSE= PRODUCT= VERSION= RELEASE= UPDATE=
TARMAPGID= TARMAPUID=
exitstat=1

TAPE= TAPE0=
while [ -z "$TAPE" ]
do
    echo -n "Is the software to be installed from a streamer tape ? (y/n) -> "
    read answ
    if [ "$answ" = y ]
    then
        echo "Please insert the software tape into the drive "
        TAPE="/dev/rts8"
        TAPE1="/dev/rts8"
        TAPE0="/dev/rts0"
    else
        echo -n "Is the software to be installed from diskette ? (y/n) -> "
        read answ
        if [ "$answ" = y ]
        then
            echo "Please insert the first diskette into the drive"
            TAPE="/dev/fl1"
            TAPE1="/dev/fl2"
        fi
    fi
done
echo
echo -n "Can the installation commence ? (y/n) -> "
read answ
if [ "$answ" = y ]
then
    /bin/rm -f /install /install.conf
    echo "Reading the installation procedure..."
    if [ "$TAPE0" ]
    then
            <$TAPE0
    fi
    tar xof $TAPE install install.conf
    if [ ! -f /install ]
    then
        tar xof $TAPE1 install install.conf
    fi
    if [ -f /install ]
    then
        if [ -f /install.conf ]
        then
            . /install.conf
        else
            TARMAPGID="10=daemon,1=other"
        fi
        export TARMAPGID TARMAPUID
        while [ -z "$UNIVERSE" ]
        do
            echo -n "In which universe should the installation occur ? (att,sie,ucb) > "
            read UNIVERSE
```

```
            case $UNIVERSE in
               att|sie|ucb) ;;
               *)    echo "$UNIVERSE is no universe !!"; UNIVERSE= ;;
            esac
        done
        echo "Running the install procedure:"
        chmod 700 /install
        cp /etc/rc /etc/rc.save
        if $UNIVERSE /install $TAPE1
        then
            if [ "$PRODUCT" ]
            then
                echo "`date`  - $PRODUCT        $VERSION        $RELEASE $UPDATE" >>/etc/versionlog
            fi
            echo "Installation successfully completed."
            exitstat=0
        else
            echo "Installation could not be successfully completed."
        fi
        diff /etc/rc /etc/rc.save >/etc/rc.diff
        if [ -s /etc/rc.diff ]
        then
            mv /etc/rc /etc/rc.new
            mv /etc/rc.save /etc/rc
            echo "
This software product requires changes to the '/etc/rc' file.
Due to the system dependencies within the '/etc/rc' file, this
process can no longer be automatic. The original file is unchanged.
The changed 'rc' file is called '/etc/rc.new' and a file showing
the changes is called '/etc/rc.diff'.
Please examine these files and make the neccessary changes manually.
BEWARE:  '/etc/rc.new' and '/etc/rc.diff' files will be lost if
another product is installed which attempts to change the 'rc' file.
"
        else
            rm -f /etc/rc.save /etc/rc.diff
        fi
    else
        echo "Installation procedure not found!"
    fi
fi
rm -f /install /install.conf
exit $exitstat
```

/usr/sie_root/etc/waitfl

```
# @(#)waitfl     1.1 85/08/08
x=n
while [ 1 ]
do
        display -n "Bitte die Diskette $1 einlegen und mit 'j' bestaetigen -> "
        read x
        if [ "$x" = j ]
        then
                if /etc/flchk -i -v "$1" >/dev/null 2>/dev/null
                then
                        display "$1 Diskette wird gelesen..."
                        exit 0
                else
                        display "Falsche Diskette eingelegt!"
                fi
        fi
done
```

Das Dateiverzeichnis /dev sieht z.B. so aus:

CIOÈ ACCESSO A BLOCCO

DIMENZ. BYTE

PROCEDURA CHE CREA FILE SPECIALI

CREA DEVICE IN GRUPPI

DEV

DISCHI

N. STAND. 1 DISCO

PARTIZIONI

2 DISCO

```
insgesamt 11 KB
-r-xr-xr-x 1 root      9228 Jun 14 18:45 MAKEDEV
-r-xr-xr-x 1 root         0 Jun 14 18:45 MAKEDEV.local

crw-r--r-- 1 root     11,  0 Jun 22 14:20 clock          .        Systemuhr
crw--w--w- 1 root     10,  0 Jun 22 14:01 console        .         Console
crw-rw-rw- 1 root     15,  0 Jun 21 08:44 crts           .          = rts0
                                                         .
brw-rw-rw- 2 root      4,120 Jun 21 08:44 df0a           .
brw-rw-rw- 2 root      4,121 Jun 21 08:44 df0b           .
brw-rw-rw- 2 root      4,122 Jun 21 08:44 df0c           .
brw-rw-rw- 3 root      4,123 Jun 21 08:44 df0d           .          Bereiche
brw-rw-rw- 2 root      4,124 Jun 21 08:44 df0e           .         der Floppy
brw-rw-rw- 3 root      4,125 Jun 21 08:44 df0f           .       (block device)
brw-rw-rw- 2 root      4,126 Jun 21 08:44 df0g           .
brw-rw-rw- 2 root      4,251 Jun 21 08:44 df128d         .
brw-rw-rw- 2 root      4,253 Jun 21 08:44 df128f         .
                                                         .
crw-rw---- 1 root      6,  0 Jun 21 08:44 drum           .
brw-r----- 2 root      4,  1 Jun 22 09:55 dump           .        Dump-Bereich
                                                         .
brw-rw-rw- 2 root      4,120 Jun 21 08:44 f10            .
brw-rw-rw- 2 root      4,121 Jun 21 08:44 f11            .
brw-rw-rw- 2 root      4,122 Jun 21 08:44 f12            .         entspricht
brw-rw-rw- 3 root      4,123 Jun 21 08:44 f13            .
brw-rw-rw- 2 root      4,124 Jun 21 08:44 f14            .        df0a bis df0g
brw-rw-rw- 3 root      4,125 Jun 21 08:44 f15            .
brw-rw-rw- 2 root      4,126 Jun 21 08:44 f16            .
                                                         .
brw-r----- 1 root      4,  0 Jun 21 08:43 is0a           .
brw-r----- 2 root      4,  1 Jun 22 09:55 is0b           .
brw-r----- 1 root      4,  3 Jun 21 08:43 is0d           .          Bereiche
brw-r----- 1 root      4,  4 Jun 21 08:43 is0e           .        der 1. Platte
brw-r----- 1 root      4,  5 Jun 21 08:43 is0f           .       (block device)
brw-r----- 1 root      4,  6 Jun 21 08:43 is0g           .
brw-r----- 1 root      4,  7 Jun 21 10:28 is0h           .
                                                         .
brw-r----- 1 root      4,  8 Jun 21 08:43 is1a           .
brw-r----- 1 root      4,  9 Jun 21 08:43 is1b           .
brw-r----- 1 root      4, 11 Jun 21 08:43 is1d           .          Bereiche
brw-r----- 1 root      4, 12 Jun 21 08:43 is1e           .        der 2. Platte
brw-r----- 1 root      4, 13 Jun 21 08:43 is1f           .       (block device)
brw-r----- 1 root      4, 14 Jun 21 08:43 is1g           .
brw-r----- 1 root      4, 15 Jun 21 08:43 is1h           .
                                                         .
crw-r----- 1 root      2,  1 Jun 21 08:44 kmem           .        Hauptspeicher
                                                         .
crw------- 1 root      5,101 Jun 23 13:04 lp9001-D01     .
crw------- 1 root      5,104 Jun 23 13:04 lp9013-D04     .     konfigurierte Drucker
crw------- 1 root      5,115 Jun 23 13:05 lp9022-D15     .
                                                         .
crw-r----- 1 root      2,  0 Jun 21 08:44 mem            .        Hauptspeicher
                                                         .
brw-rw-rw- 2 root      6,  0 Jun 21 08:44 mt0            .
brw-rw-rw- 1 root      6, 12 Jun 21 08:44 mt12           .
brw-rw-rw- 1 root      6, 32 Jun 21 08:44 mt32           .   Magnetbandbenutzerbereiche
brw-rw-rw- 1 root      6, 36 Jun 21 08:44 mt36           .        (block device)
brw-rw-rw- 2 root      6,  4 Jun 21 08:44 mt4            .
brw-rw-rw- 1 root      6,  8 Jun 21 08:44 mt8            .
                                                         .
brw-rw-rw- 1 root      6,  4 Jun 21 08:44 nmt0           .          = mt4
brw-rw-rw- 1 root      6, 36 Jun 21 08:44 nmt32          .          = mt36
brw-rw-rw- 1 root      6, 12 Jun 21 08:44 nmt8           .          = mt12
                                                         .
crw-rw-rw- 1 root     13,  4 Jun 21 08:44 nrmt0          .          = rmt4
crw-rw-rw- 1 root     13, 36 Jun 21 08:44 nrmt32         .          = rmt36
crw-rw-rw- 1 root     13, 12 Jun 21 08:44 nrmt8          .          = rmt12
                                                         .
crw-rw-rw- 1 root     15,  8 Jun 21 08:44 nrts           .          = rts8
crw-rw-rw- 1 root      2,  2 Jun 22 14:20 null           .         Papierkorb
crw-rw-rw- 1 root     15,  0 Jun 21 08:44 orts           .          = rts0
crw-rw-rw- 1 root      4,255 Jun 21 08:44 ptygen         .     Koordinationsdevices
                                                         .       der Pseudo-tty
```

```
crw-rw-rw- 2 root    8,120 Jun 21 08:44 rdf0a
crw-rw-rw- 2 root    8,121 Jun 21 08:44 rdf0b
crw-rw-rw- 2 root    8,122 Jun 21 08:44 rdf0c
crw-rw-rw- 3 root    8,123 Jun 21 08:44 rdf0d           Bereiche
crw-rw-rw- 2 root    8,124 Jun 21 08:44 rdf0e          der Floppy
crw-rw-rw- 3 root    8,125 Jun 21 08:44 rdf0f         (raw device)
crw-rw-rw- 2 root    8,126 Jun 21 08:44 rdf0g
crw-rw-rw- 2 root    8,251 Jun 21 08:44 rdf128d
crw-rw-rw- 2 root    8,253 Jun 21 08:44 rdf128f

crw-rw-rw- 2 root    8,120 Jun 21 08:44 rfl0
crw-rw-rw- 2 root    8,121 Jun 21 08:44 rfl1
crw-rw-rw- 2 root    8,122 Jun 21 08:44 rfl2
crw-rw-rw- 3 root    8,123 Jun 21 08:44 rfl3       = rdf0a bis rdf0g
crw-rw-rw- 2 root    8,124 Jun 21 08:44 rfl4
crw-rw-rw- 3 root    8,125 Jun 21 08:44 rfl5
crw-rw-rw- 2 root    8,126 Jun 21 08:44 rfl6

crw-r----- 1 root    8,  0 Jun 21 08:43 ris0a
crw-r----- 1 root    8,  1 Jun 21 08:43 ris0b
crw-r----- 1 root    8,  3 Jun 21 08:43 ris0d           Bereiche
crw-r----- 1 root    8,  4 Jun 21 08:43 ris0e        der 1. Platte
crw-r----- 1 root    8,  5 Jun 21 08:43 ris0f        (raw device)
crw-r----- 1 root    8,  6 Jun 21 08:43 ris0g
crw-r----- 1 root    8,  7 Jun 21 08:43 ris0h

crw-r----- 1 root    8,  8 Jun 21 08:43 ris1a
crw-r----- 1 root    8,  9 Jun 21 08:43 ris1b
crw-r----- 1 root    8, 11 Jun 21 08:43 ris1d           Bereiche
crw-r----- 1 root    8, 12 Jun 21 08:43 ris1e        der 2. Platte
crw-r----- 1 root    8, 13 Jun 21 08:43 ris1f        (raw device)
crw-r----- 1 root    8, 14 Jun 21 08:43 ris1g
crw-r----- 1 root    8, 15 Jun 21 08:43 ris1h

crw-rw-rw- 2 root   13,  0 Jun 21 08:44 rmt0
crw-rw-rw- 1 root   13, 12 Jun 21 08:44 rmt12
crw-rw-rw- 1 root   13, 32 Jun 21 08:44 rmt32     Magnetbandbenutzerbereiche
crw-rw-rw- 1 root   13, 36 Jun 21 08:44 rmt36           (raw device)
crw-rw-rw- 2 root   13,  4 Jun 21 08:44 rmt4
crw-rw-rw- 1 root   13,  8 Jun 21 08:44 rmt8

crw-rw-rw- 3 root    8,125 Jun 21 08:44 rsctfdl0          = rdf0f
crw-rw-rw- 2 root    8,253 Jun 21 08:44 rsctfdl128        = rdf128f
crw-rw-rw- 3 root    8,123 Jun 21 08:44 rsctfdm0          = rdf0d
crw-rw-rw- 2 root    8,251 Jun 21 08:44 rsctfdm128        = rdf128d

crw-rw-rw- 2 root   13,  0 Jun 21 08:44 rsctmtm0          = rmt0
crw-rw-rw- 2 root   13,  4 Jun 21 08:44 rsctmtm128        = rmt4

crw-rw-rw- 1 root   15,  0 Jun 21 08:44 rts               = rts0
crw-rw-rw- 1 root   15,  0 Jun 21 08:44 rts0      Streamer  spult zurueck
crw-rw-rw- 1 root   15,  8 Jun 21 08:44 rts8      Streamer  spult nicht zur.

brw-rw-rw- 3 root    4,125 Jun 21 08:44 sctfdl0           = df0f
brw-rw-rw- 2 root    4,253 Jun 21 08:44 sctfdl128         = df128f
brw-rw-rw- 3 root    4,123 Jun 21 08:44 sctfdm0           = df0d
brw-rw-rw- 2 root    4,251 Jun 21 08:44 sctfdm128         = df128d

brw-rw-rw- 2 root    6,  0 Jun 21 08:44 sctmtm0           = mt0
brw-rw-rw- 2 root    6,  4 Jun 21 08:44 sctmtm128         = mt4

crw------- 1 root    5,  0 Jun 21 08:44 sr0
crw------- 1 root    5,  6 Jun 21 08:44 sr1
crw------- 1 root    5,100 Jun 21 08:44 sr100       E/A-Prozessoren:
crw------- 1 root    5,106 Jun 21 08:44 sr101       Devices zur Abfrage
crw------- 1 root    5,112 Jun 21 08:44 sr102       von FW und Kennung,
crw------- 1 root    5,118 Jun 21 08:44 sr103       ob SERAD oder SERAG
crw------- 1 root    5, 12 Jun 21 08:44 sr2
crw------- 1 root    5, 18 Jun 21 08:44 sr3

brw-rw---- 1 root    1,  0 Jun 21 08:44 swap          Swap-Bereich
crw-rw-rw- 1 root    1,  0 Jun 21 08:44 tty        eigenes Sichtgeraet
```

```
crw--w--w- 1 gast       5,  0 Jun 23 11:32 tty00       .
crw------- 1 root       5,  2 Jun 21 08:44 tty02       .
crw--w--w- 1 root       5,  3 Jun 22 14:21 tty03       .     konfigurierte Terminals
crw------- 1 root       5,  5 Jun 21 08:44 tty05       .
crw--w--w- 1 root       5,  6 Jun 22 14:21 tty06       .
crw--w--w- 1 uli        5,109 Jun 23 13:04 tty09       .     (Majornumber >= 100
crw--w--w- 1 root       5, 12 Jun 22 14:21 tty12       .       ===> Blitgraph 97808)
crw--w--w- 1 root       5, 13 Jun 22 14:21 tty13       .
crw--w--w- 1 root       5,114 Jun 22 14:21 tty14       .
                                                       .
crw-r--r-- 1 root       0,  0 Jun 21 08:44 ttyc0       .          nicht belegt
crw--w--w- 1 root       0,  1 Jun 23 10:37 ttyc1       .          Teleservice
                                                       .
crw-rw-rw- 1 root       3,  0 Jun 21 08:44 ttyp0       .
crw-rw-rw- 1 root       3,  1 Jun 21 08:44 ttyp1       .
crw-rw-rw- 1 root       3,  2 Jun 21 08:44 ttyp2       .
crw-rw-rw- 1 root       3,  3 Jun 21 08:44 ttyp3       .
crw-rw-rw- 1 root       3,  4 Jun 21 08:44 ttyp4       .
crw-rw-rw- 1 root       3,  5 Jun 21 08:44 ttyp5       .
crw-rw-rw- 1 root       3,  6 Jun 21 08:44 ttyp6       .
crw-rw-rw- 1 root       3,  7 Jun 21 08:44 ttyp7       .          Pseudo-
crw-rw-rw- 1 root       3,  8 Jun 21 08:44 ttyp8       .               tty
crw-rw-rw- 1 root       3,  9 Jun 21 08:44 ttyp9       .
crw-rw-rw- 1 root       3, 10 Jun 21 08:44 ttypa       .
crw-rw-rw- 1 root       3, 11 Jun 21 08:44 ttypb       .
crw-rw-rw- 1 root       3, 12 Jun 21 08:44 ttypc       .
crw-rw-rw- 1 root       3, 13 Jun 21 08:44 ttypd       .
crw-rw-rw- 1 root       3, 14 Jun 21 08:44 ttype       .
crw-rw-rw- 1 root       3, 15 Jun 21 08:44 ttypf       .
                                                       .
```

SIEMENS

Part XIII
Cables

Overview of the Applied Cables

Part XIII

Cables

Contents

1 Overview of the Applied Cables for MX300

(T26139-Y . . .)

Basic Unit

Cable specification	between	and
Y75 - V1	Power Supply	Power distributor UNV [1] (X1)
Y1296 - C50	UNV (X2) UNV (X3)	SV1 [2] (X1) SV2 (X1) **)
Y1303 - C30	UNV (X4)	SV1 (X7) **)
Y1305 - V1	SV1 (X10)	europe cards in extended cartidge
Y1133 - C70	Fan controller D336 S26113-D336 in SV1 Fan controller 2 S26113-D336 in/an SV2	fan in front fan in front
Y1455 - C30	SV1 (X4)	fan controller 2 *)
Y1460 - C30	SV1 (X4)	fan below HD2 **)
Y749 - C50	SV1 /X4) SV1 (X6) SV2 (X4) SV2 (X6) SV2 (X10)	FD (J2) *) HD1 (J3) **) FD (J2) **) HD1 (J3) **) HD2 (J3) **)
Y1014 - V4	SV1 (X5) SV2 (X5)	MT Streamer (J2) u. Contr. (J2) *) MT Streamer (J2) u. Contr. (J2) **)
Y742 - C40	SV1 (X3) SV2 (X3)	Platter (X200) Platter (X210) **)
Y607 - C65	SV1 (X2) SV2 (X2)	logic for operator panel (X1) logic for operator panel (X2) **)
Y1306 - M1	Logic for operator panel (X8)	AF R (2)
Y1322 - C50	CPU (X4)	logic for operator panel (X5)
Y581 - V1	CPU (X5)	logic for operator panel (X6)
Y1355 - C80	CPU (X6)	AF R (TS)
Y965 - V1	Battery	CPU (X8)
Y735 - C42	Storager (P6) Storager (P7)	HD1 (J2) HD2 (J2) **)

1) UNV: Sub power distributor
2) SV: Power supply

*) only MX300-10
**) only MX300-20

Cable specification	between	and
Y1122 - V4	Storager (P5) Storager (P5)	HD1 (J1) *) or at 2nd storager HD1 (J1) and HD2 (J1)
Y1183 - C27	2nd Storager (P5)	HD2 (J1)
Y1123 - C55	Storager (P4)	Streamer-Controller (J1)
Y1124 - C55	Storager (P3)	FD (J2)
Y579 - V3	SERAG (P3, P4) SEAAB -V1 (P3, P4)	AF D (1-6) AF D (1-6)
Y781 - V4	SERAD (P3, P4) SEAAB -V2 (P3, P4)	AF G (1-3, 1-3) AF G (1-3, 1-3)
Y1373 - V2	SEAAB -V3 (P3, P4)	AF T (1-3, 1-3)
Y873 - V*	AF D (1-6) external AF G (1,2) external	CRTs and printers (IF97) CRTs and printers (IF97)

EthernetProcessor

Cable specification	between	and
Y914 - C100	EXC	AF L (1)
Y927 - M5/10/20/35	AF E (1) external	LAN connector

AFP to SERAD

Cable specification	between	and
Y953 - V3	SERAD (P3) SERAD (P4)	AFPAD 1 (X2) and AF G (3) AFPAD 2 (X2) and AF G (3)
Y682 - C40	AFPAD 1 (X1) AFPAD 2 (X1)	Filter unit Filter unit
Y268 - V4	Filter unit external	Telephone distributor

*) only MX300-10
**) only MX300-20

AFP to SERAG

Cable specification	between	and
Y983 - V3	SERAG (P3) SERAG (P4)	AFPAD 1 (X2) u. AF D (3) AFPAD 2 (X2) u. AF D (6)
Y682 - C40	AFPAD 1 (X1) AFPAD 2 (X1)	Filter unit Filter unit
Y268 - V4	Filter unit external	Telephone distributor

Communications Processor (DFUE) with Stripe "L"

Cable specification	between	and
Y821 - C85	DUEAI (P4, P6)	AF L (3, 4)
Y642 - C85	DUEAI (P5, P7)	AF L (1, 2)
Y1387 - C85	DUEAK (X5, X7)	AF L (1, 2)
Y1385 - C85	DUEAK (X4, X6)	AF L (3, 4)
Y1013 - M3	AF L (1, 2) external	Telephone distributor X21
Y259 - V*	AF L (3, 4) external	Telephone distributor V24

or new : Y1517-V*

Communications Processor (DFUE) with HDLC/TRM (WTUE)

Cable specification	between	and
Y1166 - C85	DUEAI (P7)	WTUAB (X2)
Y1384 - C85	DUEAK (X7)	WTUAB (X2)
Y682 - C40	WTUAB (X1)	Filter unit
Y839 - M5	Filter unit external	AD08box

BAM/TRM Processor

Cable specification	between	and
Y682 - C85	BAMAH	Filter unit
Y874 - M4	Filter unit external	Telephone distributor

BTX Connector 8 channels

Cable specification	between	and
Y913 - V*	INE: ISBC188/56	AF N (1, 2, 3, 4)
Y968	AF N (1, 2, 3, 4) external	Telephone distributor

Magnet Tape Control

Cable specification	between	and
Y1056 - V1	Xylogics CJ1, J2)	MT device

Blitgraph Terminal

Cable specification	between	and
Y1338 - C36	AFPAL (XG)	inner lining IF97

Extension Cartridge

Cable specification	between	and
Y76 - V1	Power supply	power distributor UNV (X1)
Y1296 - C50	UNV (X2)	SV3 (X1)
Y1133 - C70	fan controller 3 S26113-D336 in SV3	fan front below
Y1457 - V1	SV2 (X7) *) and SV3 (X6)	HD3 CJ3) and HD4 (J3)
Y1456 - C150	SV3 (X2)	Logic for operator panel (X3) *) and display
Y1459 - C30	SV3 (X3)	power resistor S26361-E88-V10
Y735 - C150	Storager 2 (P6) *) Storager 2 (P7) *)	HD3 (J2) HD4 (J2)
Y1122 - V6	Storager 2 (P5) *)	HD3 (J1) and HD4 CJ1)

*) in main cartidge!

SIEMENS

Product Overview and List of Spare Parts

Part XIV
Appendix

Part XIV

Appendix

Contents

1 Product Overview and Spare Parts

Item	Description	Product No.	Part Number	Note	Quantity a	b	c	d	e	f	g
1	Basic Unit with 1 Power Supply		S26361K 178V 1		1	1					
KEL	Extension Kit MX300-10	97832- 610	S26361K 467V110		1						
KEL	Extension Kit MX300-20	97832- 620	S26361F 467V120			1					
	2nd Power Supply Extension Kit		S26361F 472V 1			1					
5	Processor CPU		S26361F 468V 1		1	1					
7	1st Drive Processor		S26361F 415V 31		1	1					
9	FD Drive 1Mbyte		TEA-FD-55GFR-EG		1	1					
11	MT Streamer 45 Mbyte		S26361F 418V 31		1	1					
501	Memory Modul 4 Mbyte	97832- 305	S26361F 496V 4		x						
502	Memory Modul 8 Mbyte	97832- 306	S26361F 496V 8		x	x					
503	Memory Extension	97832- 304	S26361F 497		x	x					
511	2nd Drive Processor	97832- 401	S26361F 415V 32			x					
516	1st HD Drive 170 Mbyte	97834- 170	S26361K 184		x	x					
517	1st HD Drive 200 Mbyte	97834- 120	S26361K 128		x	x					
518	1st HD Drive 300 Mbyte	97834- 130	S26361K 111		x	x					
520	2nd HD Drive 170 Mbyte	97834- 171	S26361F 417V 31			x					
522	2nd HD Drive 200 Mbyte	97834- 121	S26361F 453V 31			x					
524	1st Drive Processor 300 Mbyte	97834- 131	S26361F 470V 31		x	x					
551	I/O Processor 6xSS97	97832- 201	S26361F 129V 31		x	x					
552	I/O Processor IF97/2xV24	97832- 204	S26361F 320V 31		x	x					
553	4x AFP to - F 129	97831- 391	S26361F 339V 31		x	x					
554	2x AFP to - F 320	97831- 392	S26361F 339V 32		x	x					
556	DCE Processor 256 kbyte /V24/X.21	97832- 122	S26361F 315V 32		x	x					
557	DCE Processor 256 kbyte/ 2x X.21	97832- 125	S26361F 315V 34		x	x					
559	DCE Processor 256 kbyte	97832- 124	S26361F 315V332		x	x					
560	DCE Processor 1 Mbyte /V24/X.21	97832- 160	S26361F 471V 32		x	x					
561	DCE Processor 1 Mbyte	97832- 164	S26361F 471V332		x	x					
581	BAM/WTUE Processor	97832- 150	S26361F 380V 31		x	x					
584	Ethernet Processor 256 kbyte	97832- 140	S26361F 343V 32		x	x					
585	Ethernet Processor 512 kbyte	97832- 141	S26361F 543V 31		x	x					
591	MB Controller	97832- 430	S26361F 419V 31			x					
600	Extension Kit 10 20	97832- 730	S26361F 472V120		x	x					
d											
c											
b	System Unit MX300-20	9783- 20	S26361L 48V120			1					
a	System Unit MX300-10	9783- 10	S26361L 48V110		1						

Item	Description	Product No.	Part Number	Note	Quantity a	b	c	d	e	f	g
	DCE Cable for X.21 3 m	97001- 9	T26139Y 1013M 3	1)	x	x					
	DCE Cable for V.24 3 m	97001- 18	T26139Y 872M 3	1)	x	x					
	DCE Cable	97001- 10	T26139Y 1012C 50	1)	x	x					
	UUCP Cable for RS232C 3 m	97001- 11	T26139Y 396V 1	1)	x	x					
	UUCP Cable f. Party Line 5m	97001- 12	T26139Y 910M 5	1)	x	x					
	Drop Cable for Ether. 5 m	97001- 13	T26139Y 927M 5	1)	x	x					
	Drop Cable for Ether. 10 m	97001- 14	T26139Y 927M 10	1)	x	x					
	Drop Cable for Ether. 20 m	97001- 15	T26139Y 927M 20	1)	x	x					
	Drop Cable for Ether. 35 m	97001- 17	T26139Y 927M 35	1)	x	x					
	Monitor 12" Standard	97801- 302	S26361L 16V 1	1)	x	x					
	Monitor 12" Standard	97801- 302	S26361L 16V 3	1)	x	x					
	Monitor 12" with AFP	97801- 303	S26361L 16V 11	1)	x	x					
	Monitor 12" Standard	97801- 305	S26361L 35V 1	1)	x	x					
	Monitor 12" AWL/AFP	97801- 308	S26361L 35V 2	1)	x	x					
	Monitor 12" AWL	97801- 306	S26361L 35V 3	1)	x	x					
	Monitor 12" V24 / V20	97801-	S26361L 35V 5	1)	x	x					
	Monitor 12" Bilingual	97801- 309	S26361L 35V 6	1)	x	x					
	Monitor 14" with SS97	97801- 403	S26381L 13V 51	1)	x	x					
	Monitor 14" with AFP	97801- 408	S26381L 13V 61	1)	x	x					
	Monitor 14" with V24	97801- 404	S26381L 13V 71	1)	x	x					
	Keyboard International	97801- 131	S26381K 46V 310	1)	x	x					
	Keyboard Germany	97801- 132	S26381K 46V 320	1)	x	x					
	Keyboard International	97801- 401	S26381K 81V 310	1)	x	x					
	Keyboard Germany	97801- 402	S26381K 81V 320	1)	x	x					
	Kit Key Cap Swed.	97801- 144	S26328F 12V 340	1)	x	x					
	Kit Key Cap Daen.	97801- 145	S26382F 12V 350	1)	x	x					
	Kit Key Cap Fran.	97801- 146	S26382F 12V 360	1)	x	x					
	Kit Key Cap Spain	97801- 149	S26382F 12V 380	1)	x	x					
	Kit Key Cap Ital.	97801- 150	S26382F 12V 385	1)	x	x					
	Kit Key Cap GB	97801- 151	S26382F 12V 365	1)	x	x					
	Kit Key Cap Norw.	97801- 152	S26382F 12V 345	1)	x	x					
c											
b	System Unit MX300-20	9783- 20	S26361L 48V120			1					
a	System Unit MX300-10	9783- 10	S26361L 48V110		1						

1) See Particular Spare Part-List

D VS 1411 Design Department Spare List Date 10/04/88

SYS: SINIX Basic Unit M. 1. SV S26361-K 178-V 1 9783 P 1

Depot No.	Manuf.	Manufacturer / Design No.	Name	Pieces	DF	RL	Remark
SYS: SINIX Basic Unit With 1 Power Supply			S26361-K 178-V 1 9783 P 1				
1170228	SIE	C26123Z 7C 6	Cylinder Lock	1	7		
1126458	SIE	C26361K 101C 30	Cover	1	6		
1169530	SIE	C26361K 165B 6	Fan	4	5		
1169556	SIE	C26361K 165C 10	Rail Guide f. Drive	8	9		
1170287	SIE	C26361K 165C 98	Contact Spring	1	9		
1169548	SIE	C26361K 178B 21	Back Panel	1	9		
1170236	SIE	C26361K 178B 31	Front Door Assy	1	8		
1170210	SIE	C26361K 178C 50	Cover	1	9		
1169564	SIE	C26361K 178C116	Air Filter	1	8		*
1169475	SIE	S26113E 286V 3 - 1	Power Distr. Unv.	1	5		R
1185772	SIE	S26113E 288X - 5	Power Supply XSVDJ	1	4	1	R *
1169483	SIE	S26361D 446V 1 - 1	PCB BFAAB	1	3	1	R *
1169459	SIE	S26361E 86V 2 - 1	PLATTER XPLAI	1	8		
1053701	SIE	T26139Y 76V 1	Power Cord	1	4		

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* ⇒ Proposal for Spare Part Bag

D VS 1411 **Design Department** **Spare List** **Date 10/04/88**

Depot No.	Manuf.	Manufacturer / Design No.	Name	Pieces	DF	RL	Remark
SYS: SINIX FD-Drive		**1Mbyte**	**S26361-H 97-V 1**		**9783**		**P 9**
1170821	SIE	S26361H 97V 2- 1	FD-Drive 1 Mbyte	1	5		R *
1176668	SIE	TEA=FD-55GFR-EG	FD-Drive 1 Mbyte	1	5		R
SYS: SINIX HD-Drive		**170 Mbyte**	**S26361-K 184**	**97834-170**	**9783**		**P 516**
1176676	SIE	S26361K 184X - 1	HD-Drive 170 Mbyte	1	5		R
SYS: SINIX HD-Drive		**300 Mbyte**	**S26361-K 111**	**97834-130**	**9783**		**P 518**
1135309	SIE	S26261K 111X - 1	MegaFile 300 Mbyte	1	5		R
SYS: SINIX Drive-Processor			**S26361-F 415-V 31**		**9783**		**P 7**
1167430	SIE	ITP=STORAGER 2 -0060	Storage Controller	1	4	1	R *
SYS: SINIX Extension Kit			**S26361-F 472-V 120**	**97831-730**	**9783**		**P 600**
1169530	SIE	C26361K 165B 6	Fan	2	5		
1185772	SIE	S26113E 288X - 5	Power Supply XSVDJ	1	5		R

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* ⇒ Proposal for Spare Part Bag

Depot No.	Manuf.	Manufacturer / Design No.	Name	Pieces	DF	RL	Remark
SYS: SINIX Memory Modul			S26361-F 496-V 4	97832-305	9783		P 501
1169505	SIE	S26361D 409V 4- 5	PCB MEMAL 4Mbyte	1	4	1	R *
SYS: SINIX Memory Modul			S26361-F 496-V 8	97832-306	9783		P 502
1169513	SIE	S26361D 409V 8- 5	PCB MEMAL 8Mbyte	1	4	1	R *
SYS: SINIX Memory Extension			S26361-F 497	97832-304	9783		P 503
1169521	SIE	S26361D 449X - 2	PCB MEMAF 4Mbyte	1	4	1	R
SYS: SINIX Processor CPU			S26361-F 468-V 1		9783		P 5
1165593	SIE	C26111D 984A 1	Jumper	1	7		for MX300
1169491	SIE	S26361D 408V 5- 5	PCB CPUAS	1	4	1	R *
1119923	SIE	T26139Y 965V 1	Battery with Cable	1	4		*
1170244	SIE	C26111D 933A 1	Jumper				for MX2

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* → Proposal for Spare Part Bag

D VS 1411 **Design Department** **Spare List** **Date 10/04/88**

Depot No.	Manuf.	Manufacturer / Design No.			Name	Pieces	DF	RL	Remark
SYS: SINIX I/O-Processor			**4x SS97 / 2x V24**		S26361-F 320-V 31 97832-204			**9783**	**P 552**
1115685	SIE	C26111B	19C 99		Bracket	3	3		
817848	SIE	C26111B	19C102		Bolt	6	4		
1167820	SIE	S26361D	279X	-13	PCB SERAD	1	4	1	R *
1186060	SIE	T26139Y	781V	4	Cable	2	7		
SYS: SINIX I/O-Processor			**6x SS97**		S26361-F 129-V 31 97832-201			**9783**	**P 551**
1115685	SIE	C26111B	19C 99		Bracket	3	3		
817848	SIE	C26111B	19C102		Bolt	6	4		
1154923	SIE	S26361D	312V	1 -3	PCB SERAG	1	2	1	R *
1183010	SIE	T26139Y	579V	3	Cable 3xSS97	2	7		
SYS: SINIX I/O-Processor			**4x SS97 / 6x V24**		S26361-F 541-V 31 97832-202			**9783**	
1198653	SIE	S26361D	364V	3	PCB SEAAB-V3				
	SIE	T26139Y	1373V	2	Cable 3xV24	2			

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* ⇒ Proposal for Spare Part Bag

Depot No.	Manuf.	Manufacturer / Design No.	Name		Pieces	DF	RL		Remark
SYS: SINIX	**MB-Streamer**	**45/60 Mbyte**	S26361-F 418-V 31			9783		P 11	
1183095	SIE	C26111K 178C136	Ground.Spring Plate		1	4	1		
1179039	SIE	TAA=TDC3319-4-90-EG	Streamer E-GREY		1	4	1		R
1111051	TAN	:TDC 3309-48	Basic Drive		1	3	1		R
1111060	TAN	:TDC 3350-MK2	Formatter Board MK2		1	5			R
1195832	SIE	TAA=TDC3610	Streamer (Slim Line)		1				
SYS: SINIX	**MB-Streamer**	**155 Mbyte**	S26361-F 584-V 31			9783			
1209272	SIE	TAA=TDC3650	Streamer E-GREY		1				R
SYS: SINIX	**MB-Controller**		S26361-F 419-V 31	97831-430		9783		P 591	
1159283	SIE	XYL=900-472-911-REV.	Tape Controller		1	4	1		R

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* ⇒ Proposal for Spare-Part Bag

Depot No.	Manuf.	Manufacturer / Design No.	Name	Pieces	DF	RL	Remark
SYS: SINIX DFUE-Processor 256 kbyte			S26361-F 315-V 32 97832-122		9783		P 556
1115685	SIE	C26111B 19C 99	Bracket	2	6		
817848	SIE	C26111B 19C102	Bolt	4	4		
1170163	SIE	C26361K 101C115	Strip	1	8		
1154940	SIE	S26361D 277V 2 -8	PCB DUEAI 256kbyte	1	2	1	R *
SYS: SINIX DFUE-Processor 256 kbyte/ 2x X.21			S26361-F 315-V 34 97832-125		9783		P 557
1115685	SIE	C26111B 19C 99	Bracket	2	6		
817848	SIE	C26111B 19C102	Bolt	4	4		
1170163	SIE	C26361K 101C115	Strip	1	8		
1154940	SIE	S26361D 277V 2 -8	PCB DCEAI 256kbyte	1	2	1	R
SYS: SINIX DFUE-Processor 256 kbyte			S26361-F 315-V 332 97832-124		9783		P 559
1021150	SIE	S26261F 329V 1	Filter with Bael	1	5		
1154940	SIE	S26361D 277V 2- 8	PCB DUEAI 256kbyte	1	2	1	R
1135279	SIE	S26361D 336X - 2	PCB TRMAB	1	3	1	R *
1124366	SIE	T26139Y 682C 40	Cable, AFPAD to Filter	1	6		
1150987	SIE	T26139Y 839M 5	Cable-TRM / 5m1	7			

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* ⇒ Proposal for Spare Part Bag

Depot No.	Manuf.	Manufacturer / Design No.	Name	Pieces	DF	RL	Remark
SYS: SINIX DFUE-Processor 1 Mbyte			S26361-F 471-V 32	97832-160	9783	P 560	
1115685	SIE	C26111B 19C 99	Bracket	1	6		
817848	SIE	C26111B 19C102	Bolt	4	4		
1170163	SIE	C26361K 101C115	Strip	1	8		
1165500	SIE	S26361D 419X -2	PCB DUEAK	1	5		R *
SYS: SINIX DFUE-Processor 1 Mbyte			S26361-F 471-V 332	97832-164	9783	P 561	
1021150	SIE	S26261F 329V 1	Filter with Bael	1	7		
1135279	SIE	S26361D 336X -2	PCB TRMAB	1	3	1	R
1165500	SIE	S26361D 419X -2	PCB DUEAK	1	5		R
1124366	SIE	T26139Y 682C 40	Cable, AFPAD to Filter	1	6		
1150987	SIE	T26139Y 839M 5	Cable-TRM / 5m1	7			
SYS: SINIX BAM / WTUE-Processor			S26361-F 380-V 31	97832-150	9783	P 581	
1021150	SIE	S26261F 329V 1	Filter with Bael	1	5		
1179250	SIE	S26361D 367X -5	PCB BAMAH	1	3	1	R *
1101846	SIE	T26139Y 874M 4	Cable-DCE	1	4		

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* ⇒ Proposal for Spare-Part Bag

D VS 1411 **Design Department** **Spare List** Date 10/04/88

Depot No.	Manuf.	Manufacturer / Design No.	Name	Pieces	DF	RL	Remark
SYS: SINIX 4x AFP F.		**-F 129 (SERAG)**	**S26361-F 339-V 31 97831-391**		**9783**		**P 553**
1144421	SIE	C26361K 101C100	Plate	2	6		
1021150	SIE	S26261F 329V 1	Filter with Bael		1	5	
1143751	SIE	S26361D 335X -7	PCB AFPAD	1	2	1	R
1162314	SIE	T26139Y 268V 4 -10	Cable 10 m	1	4		
1124366	SIE	T26139Y 682C 40	Cable, AFPAD to Filter	1	6		
1184385	SIE	T26139Y 983V 3	Cable	1	7		
SYS: SINIX 2x AFP F.		**-F 320 (SERAD)**	**S26361-F 339-V 32 97831-392**		**9783**		**P 554**
1144421	SIE	C26361K 101C100	Plate	2	6		
1021150	SIE	S26261F 329V 1	Filter with Bael	1	5		
1143751	SIE	S26361D 335X -7	PCB AFPAD	1	2	1	R
1162314	SIE	T26139Y 268V 4 -10	Cable 10 m	1	4		
1124366	SIE	T26139Y 682C 40	Cable, AFPAD to Filter	1	6		

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* ⇒ Proposal for Spare-Part Bag

Depot No.	Manuf.	Manufacturer / Design No.	Name	Pieces	DF	RL	Remark
SYS: SINIX Ethernet-Processor		**256 kbyte**	S26361-F 343-V 32 97832-140		9783		P 584
1115685	SIE	C26111B 19C 99	Bracket	1	6		
817848	SIE	C26111B 19C102	Bolt	2	4		
1170163	SIE	C26361K 101C115	Strip	1	8		
1121243	SIE	EXC=9900007-96-G	PCB Ethernet-Proc.	1	2	1	R
SYS: SINIX Ethernet-Processor		**512 kbyte**	S26361-F 343-V 31 97832-141		9783		P 585
817848	SIE	C26111B 19C102	Bolt	2	4		
1170163	SIE	C26361K 101C115	Strip	1	8		
1182374	SIE	EXC=9900007-04-H	PCB Ethernet-Proc. 512 kbyte	1	4	1	R