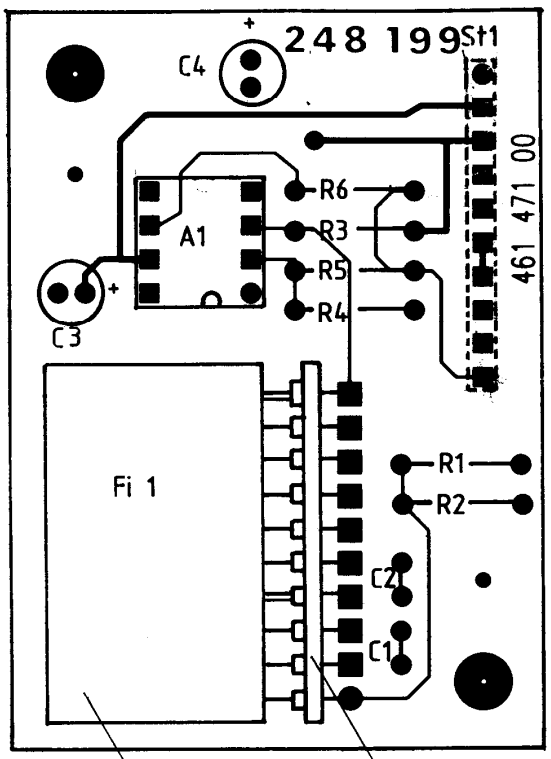
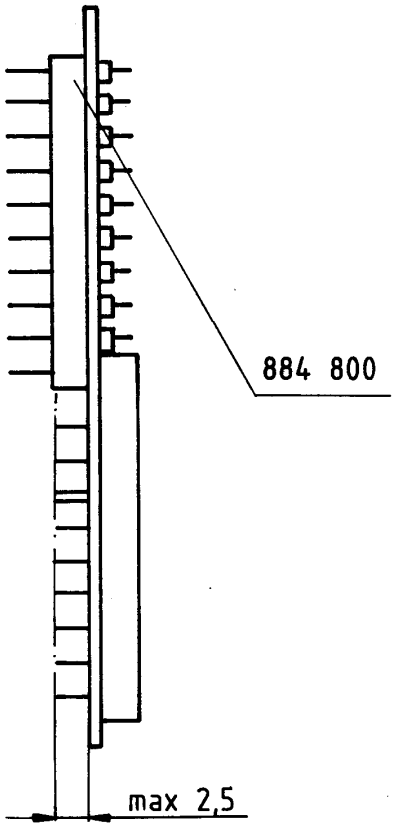
weich gelötet
einschließlich Fi 1





Pin 4 u. Pin 10
auf gleiche Länge
wie die restlichen
Pins gekürzt.

884 792

= Kontrollmaß

Ausgabe	Änderung-Mitteilung	Datum	Name
02	8088,106	18.7.88	Kg
01	8088.20	22.2.88	Mo.
—	8088.21	12.2.88	Mo.

Rohteil

Werkstoff

Oberfläche

Freimaß-toleranzen: ±0,2

Maßstab: 2:1

	Datum	Name
1988		
gez	12.2.	Morasch
bearb		
gepr		

Schlumberger Meßgeräte GmbH
Ingolstädter Straße 67 a
8000 München 46

High Pass
Typ: 300 Hz

248 199

Gerät: 4031

Diese Zeichnung ist unser Eigentum. Vervielfältigung, unbefugte Verwertung, Mitteilung an andere ist strafbar und schadenersatzpflichtig.

1 Pos. REF. NO.	2 Wert VALUE	3 Bezeichnung Schlumberger PART. NO.	4 Hersteller MANUFACT	5 Pos. REF. NO.	6 Wert VALUE	7 Bezeichnung Schlumberger PART. NO.	8 Hersteller MANUFACT
A 1	LF 356 N	834 059	NAT	R 1	10 kΩ ± 1 %	802 049	RÖD
				R 2	10 kΩ ± 1 %	802 049	RÖD
				R 3	100 kΩ ± 1 %	802 061	RÖD
				R 4	10 kΩ ± 1 %	802 049	RÖD
				R 5	10 kΩ ± 1 %	802 049	RÖD
				R 6	100 Ω ± 1 %	802 025	RÖD
C 1	10 nF ± 10 % 50 V-	813 115	VIT				
C 2	10 nF ± 10 % 50 V-	813 115	VIT				
C 3	10 µF ± 20 % 16 V-	814 076	RÖD				
C 4	10 µF ± 20 % 16 V-	814 076	RÖD				
				St 1	010.08.20030	884 800	POLY
Fi 1	DZ 111	872 058	AUTOP				

Ausgabe ISSUE	Änd.-Mittlg. Nr. MODIFIC. NO.	Tag DATE	Name NAME
07			
06			
05			
04			
03			
02			
01			
–	8088.15	2.2.88	Le

Schlumberger Meßgeräte GmbH
Ingolstädter Straße 67 a
8000 München 46

1987	Tag DATE	Name NAME
geschr.	28.9.87	Dietrich
bearb.		
gepr.		

Schaltteilliste
EL. PARTS LIST

Benennung DESCRIPTION: High Pass Filter
Typ: fg = 300 Hz

Bezeichnung Schlumberger PART. NO.: 248 199 Sa.

Hierzu Schaltplan SEE CIRCUIT DIAGRAM: 248 199 S

Gerät: 4031

Liste besteht LIST CONSISTS aus OF 1 Blatt SHEETS

Blatt Nr. SHEET NO. 1

Diese Zeichnung ist unser Eigentum. Vervielfältigung, unbefugte Verwertung, Mitteilung an andere ist strafbar und schadenersatzpflichtig.

The ON key activates the RS flipflop (D1). The LED (G11) is turned on by the driver (D1) and the clock oscillator (D2) is then operative.

Because of the enabled gate (D2) the 6-stage binary counter (D5) constantly alters its count with the positive edge of the clock. The three (least significant) bits drive the decoder (D3), whose outputs go active Low one after the other (1-out-of-8). The inputs of the data selector (D4) are read out one after the other (1-out-of-8) by the three (most significant) bits.

An activated key closes the associated matrix point of decoder output and data-selector input. The count continues to alter until this matrix point conducts current. With the negative edge of the clock the Z output of the data selector goes Low and the retrigger/bare monoflop (D7) starts up. If the key remains activated, the following edges of the clock prevent the monoflop from dropping out. If the key is released, the monoflop remains active because of the timing network (R8/C11) (key debouncing). The output signals of the active monoflop close the gate and the frozen count is read into the latch (D6). The "Key active" signal is High. The 7-bit-wide output signal of the latch calls up an address in the character generator (P0). With this address a bit pattern appears on the data outputs of the character generator. The bit pattern is allocated to the key and is ASCII standard (positive logic).

- 8088.48

Ref. No. 248 181 F	Sub Stabitexter	Date 21.3.88
Type 4031	Unit	Sheet 1/1

Schlumberger

Functional Description

Schlumberger

Adjustment and Test Procedure

Necessary Equipment	Measuring Procedure	Measuring Point	Frequency	Adjust-ment	Set Value	Actual Value
5-V power supply TTL probe	Connect 5 V to St22 Pin 10 = GND Pin 12 = +5 V Key OFF Measure current drain Key ON Measure current drain Actuate <u>all</u> keys, check bit patterns on St22 pin 1 = D0 pin 2 = D1 pin 3 = D2 pin 4 = D3 pin 5 = D4 pin 6 = D5 pin 7 = D6 Corresponding to ASCII standard, only upper case END key = $ CLEAR key = @ START key = @ On St22/pins 9 and 11, no key pressed Key active = Low Press key Key active = High Mechanical damage?	 LED off LED on				

Issue	Alteration No.	Date	Name	Issue	Alteration No.	Date	Name
–	8088.48	21.3.88					

Ref. No. 248 181 A

Type STABILOCK 4031

Sub Unit Stabitexter

Sheet 1/2

Schlumberger

Adjustment and Test Procedure

Necessary Equipment	Measuring Procedure	Measuring Point	Frequency	Adjust-ment	Set Value	Actual Value

D3 D2 D1 D0 / b4 b3 b2 b1	D6 b7 / D5 b6 / D4 b5 = 0	0 0 1	0 1 0	0 1 1	1 0 0	1 0 1
0 0 0 0			SPACE	@	P	p
0 0 0 1			!	1	A	Q	a	q
0 0 1 0			"	2	B	R	b	r
0 0 1 1			#	3	C	S	c	s
0 1 0 0			$	4	D	T	d	t
0 1 0 1			%	5	E	U	e	u
0 1 1 0			&	6	F	V	f	v
0 1 1 1			'	7	G	W	g	w
1 0 0 0			(	8	H	X	h	x
1 0 0 1			)	9	I	Y	i	y
1 0 1 0			*	:	J	Z	j	z
1 0 1 1		ESC	+	;	K	[	k	{
1 1 0 0			,	<	L	\	l	|
1 1 0 1	CR		-	=	M	]	m	}
1 1 1 0			.	>	N	^	n	~
1 1 1 1			/	?	O	_	o	

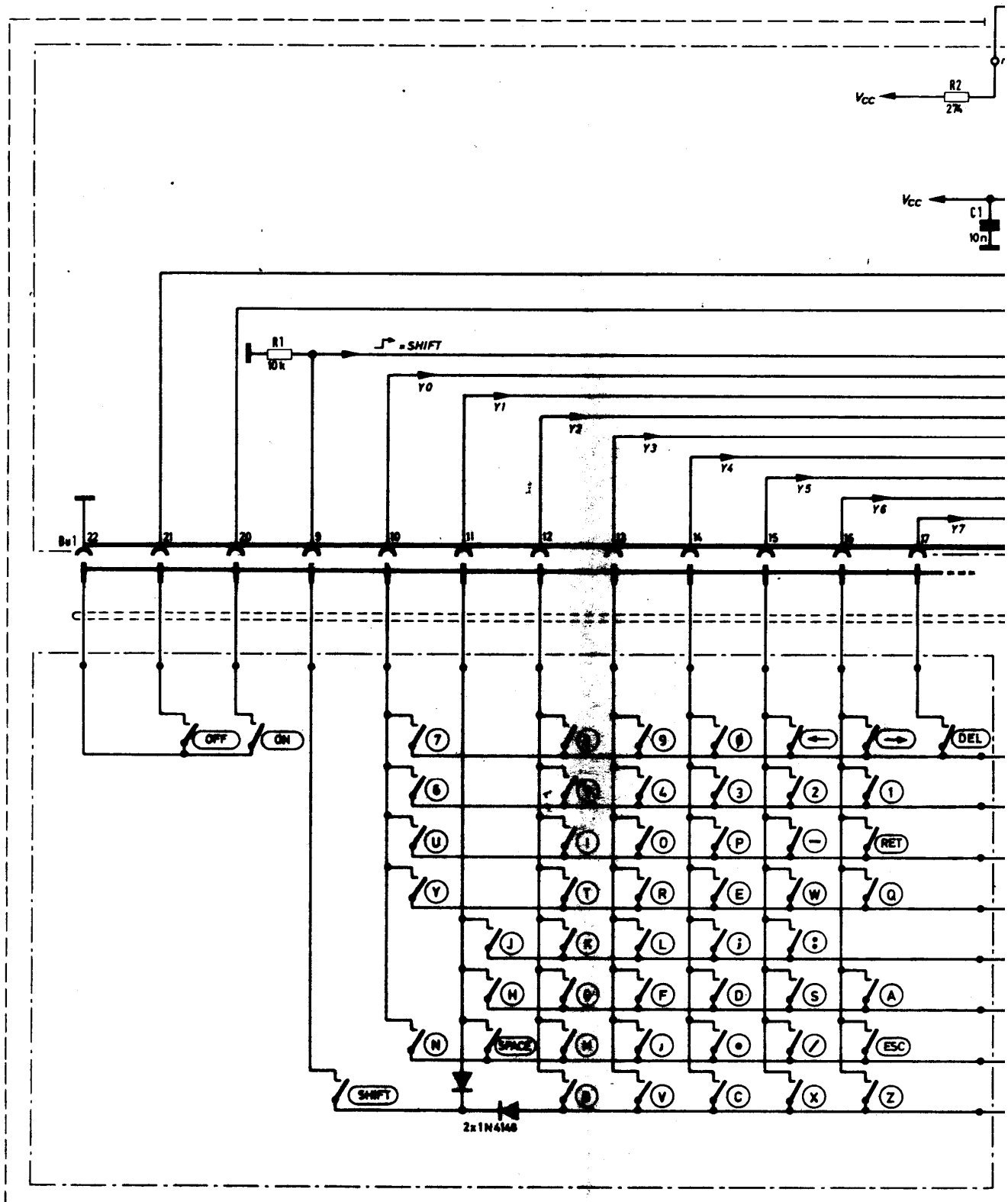
Issue	Alteration No.	Date	Name	Issue	Alteration No.	Date	Name
–	8088.48	21.3.88					

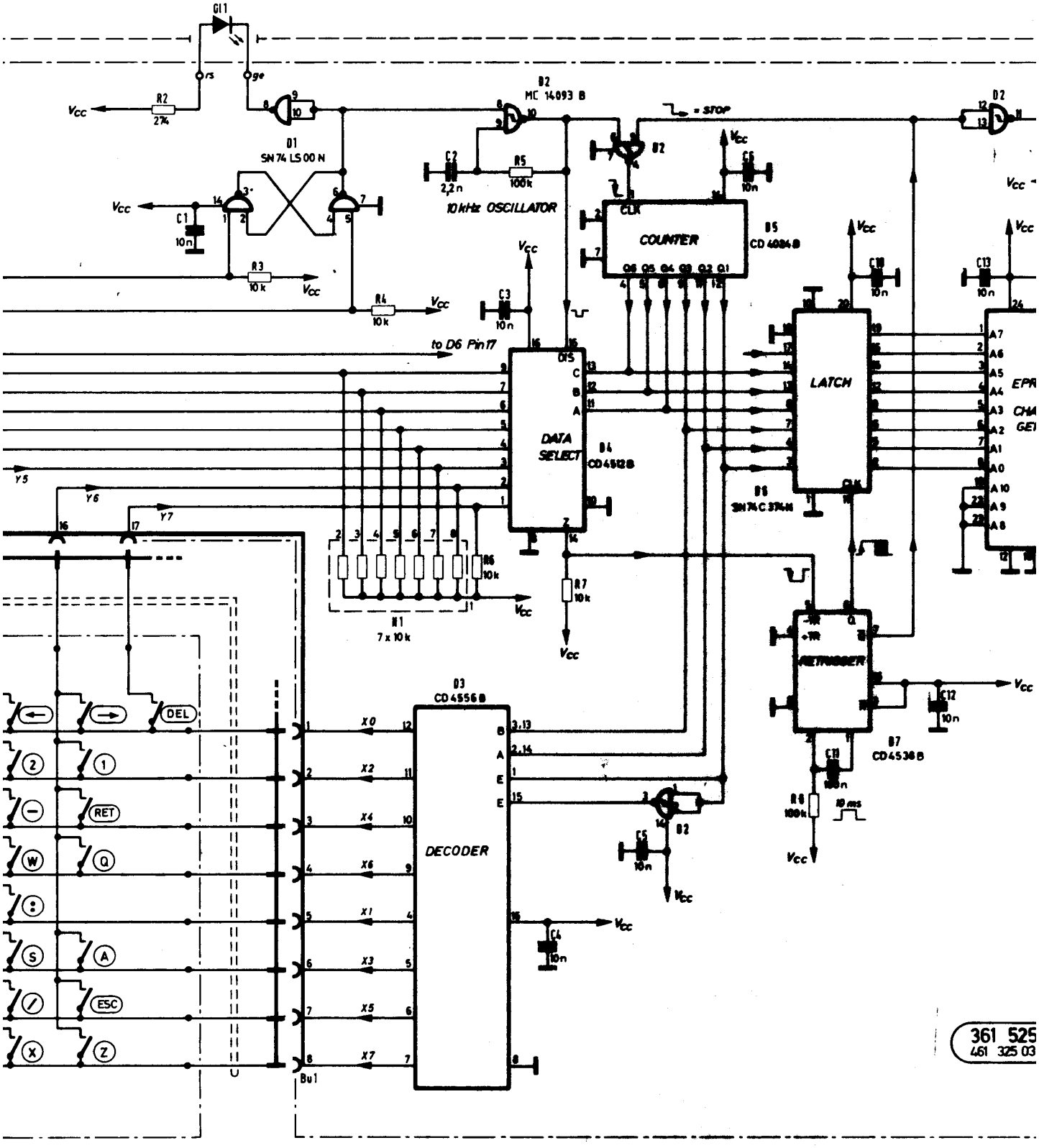
Ref. No. 248 181 A

Type STABILOCK 4031

Sub Unit Stabitexter

Sheet 2/2


Vcc
R2
2.7k
Vcc
C1
10n
R1
10k
= SHIFT
Y0
Y1
Y2
Y3
Y4
Y5
Y6
Y7
Bu1
22
21
20
9
10
11
12
13
14
15
16
17
OFF
ON
7
8
9
0
←
→
DEL
6
5
4
3
2
1
U
I
O
P
-
RET
Y
T
R
E
W
Q
J
K
L
;
:
H
G
F
D
S
A
N
SPACE
M
,
.
/
ESC
SHIFT
B
V
C
X
Z
2x1N4148

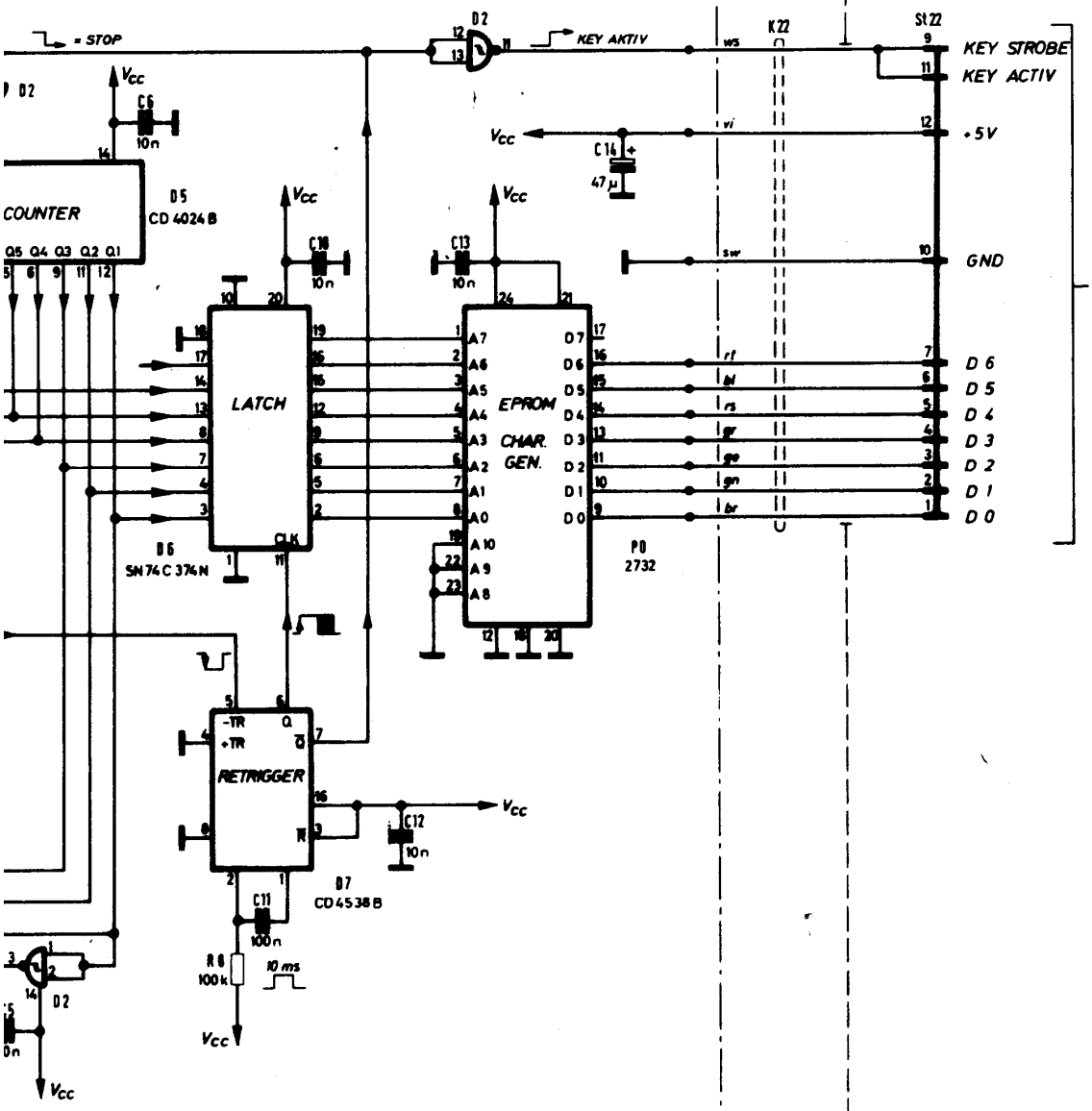


sw BLACK	bl BLUE							
br BROWN	vi VIOLET	01	8088.106	12.7.88	Kr.			
rt RED	gr GREY	—	8088.48	23.3.88	Kr.			
rs ROSE	ws WHITE	Ausg.	Ä.-Mitt.					
ge YELLOW	tr TRANSPARENT	ISS.						
gn GREEN								

Schlumberger Meßgeräte GmbH
Ingolstädter Straße 67 a
8500 München 46

Diese Zeichnung ist unser Eigentum. Vervielfältigung, unbefugte Verwertung [illegible]

5

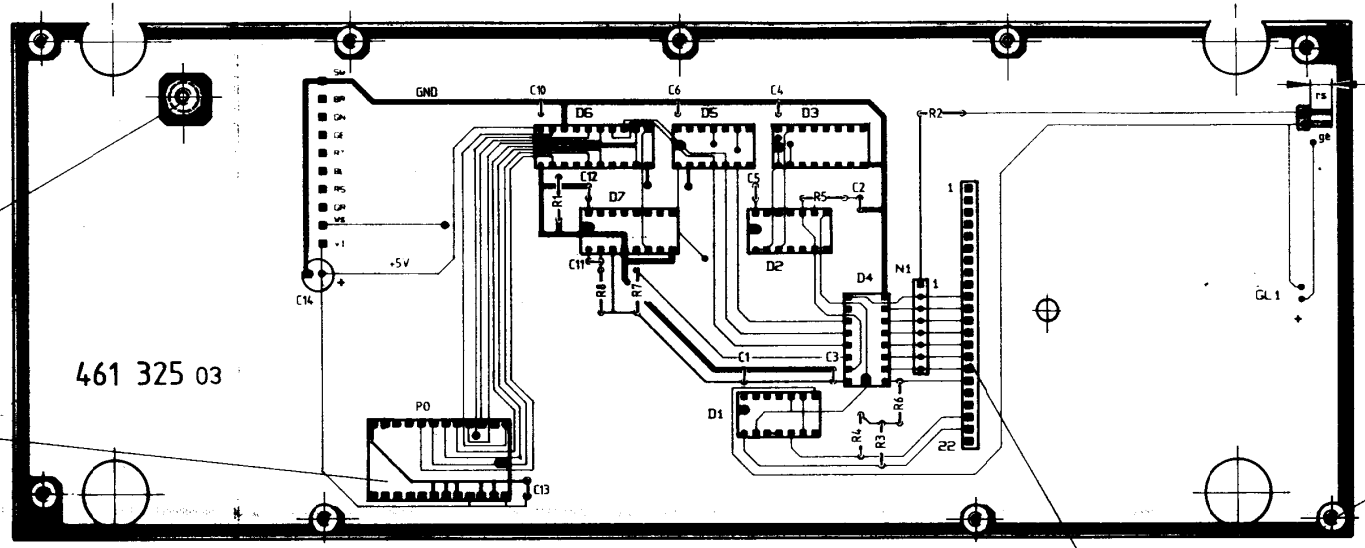


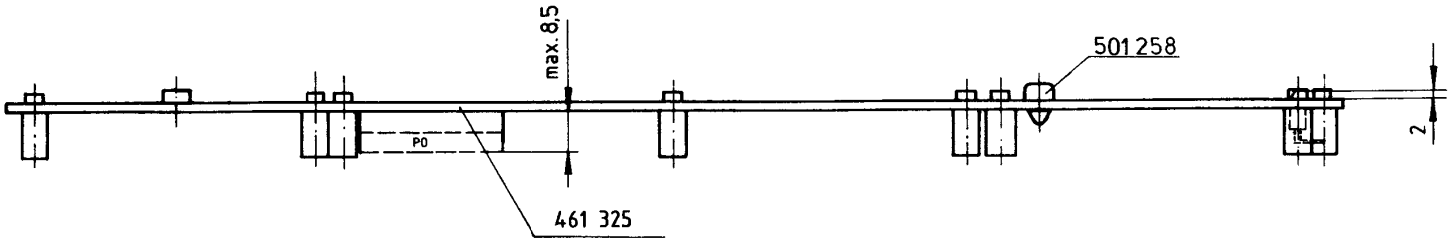
361 525
461 325 03

			Schlumberger Meßgeräte GmbH Ingolstädter Straße 67 a 8000 München 46	EXT. KEYBOARD	248 181 S
	23.3.88	Kr			Gerät: 4031
	Datum DATE	Name NAME			

ist strafbar und schadenersatzpflichtig.

weich gelötet





⬭ = Kontrollmaß

					±0.2	1:1	Schlumberger Meßgeräte GmbH Ingolstadter Straße 67 a 8000 München 46
							Bestückte Leiterplatte
–	8086/06	12.7.88	Kr.	1988	Datum	Name	361 525
Aus-gabe	Änd.-Mitteg.	Datum	Name	gez.	12.7.88	Kr.	Gerät: 4031 / 248 181

Schaltplanpositionierung ≙ 248 181 S / 361 525 Sa

Diese Zeichnung ist unser Eigentum. Vervielfältigung, unbefugte Verwertung, Mitteilung an andere ist strafbar, zur Schadenersatzpflicht.

1	2	3	4	5	6	7	8
Pos. REF. NO.	Wert VALUE	Bezeichnung Schlumberger PART. NO.	Hersteller MANUFACT	Pos. REF. NO.	Wert VALUE	Bezeichnung Schlumberger PART. NO.	Hersteller MANUFACT
				D 6	SN 74 C 374 N	834 330	TEX
				D 7	CD 4538 B	834 322	RCA
Bu 1	5210 Au	893 911	COU				
C 1	10 nF -20+100 % 63 V=	810 593	STET	N 1	7 x 10 kΩ	804 504	DALE
C 2	2,2 nF ± 10 % 50 V=	813 070	STET				
C 3	10 nF -20+100 % 63 V=	810 593	STET				
C 4	10 nF -20+100 % 63 V=	810 593	STET				
C 5	10 nF -20+100 % 63 V=	810 593	STET	R 1	10 kΩ ± 1 %	802 049	RÖD
C 6	10 nF -20+100 % 63 V=	810 593	STET	R 2	274 Ω ± 1 %	802 030	RÖD
				R 3	10 kΩ ± 1 %	802 049	RÖD
				R 4	10 kΩ ± 1 %	802 049	RÖD
				R 5	100 kΩ ± 1 %	802 061	RÖD
C 10	10 nF -20+100 % 63 V=	810 593	STET	R 6	10 kΩ ± 1 %	802 049	RÖD
C 11	100 nF ± 10 % 50 V=	813 121	STET	R 7	10 kΩ ± 1 %	802 049	RÖD
C 12	10 nF -20+100 % 63 V=	810 593	STET	R 8	100 kΩ ± 1 %	802 061	RÖD
C 13	10 nF -20+100 % 63 V=	810 593	STET				
C 14	47 µF ± 20 % 16 V=	814 078	MATSU				
				P 0	EPROM 2732	893 314	SCHL
D 1	SN 74 LS 00 N	834 595	TEX				
D 2	MC 14 093 B	834 323	MOTO				
D 3	CD 4556 B	834 398	RCA				
D 4	CD 4512 B	834 397	RCA				
D 5	CD 4024 B	834 395	RCA				

Ausgabe ISSUE	Änd.-Mittlg. Nr. MODIFIC. NO.	Tag DATE	Name NAME
07			
06			
05			
04			
03			
02			
01			
-	8088.106	12.7.88	Kr.

Schlumberger Meßgeräte GmbH
Ingolstädter Straße 67 a
8000 München 46

	Tag DATE	Name NAME
1988		
geschr.	12.7.88	Kr.
bearb.		
gepr.		

Schaltteilliste
EL. PARTS LIST

Benennung DESCRIPTION: Bestückte Leiterplatte
PRINTED CIRCUIT BOARD

Bezeichnung Schlumberger PART. NO.: 361 525 Sa

Hierzu Schaltplan SEE CIRCUIT DIAGRAM: 248 181 S

Gerät: 4031

Liste besteht LIST CONSISTS aus OF 1 Blatt SHEETS

Blatt Nr. SHEET NO. 1

Diese Zeichnung ist unser Eigentum. Vervielfältigung, unbefugte Verwertung, Mitteilung an andere ist strafbar und schadenersatzpflichtig.

1. Summary

The host computer consists of four elements: IEEE interface, SD interface, MS interface and MCU configuration. The MS (master/slave) interface forms the link between the host computer and the slave computer; communication is on the serial MS bus (eight lines).

The SD (slave device) interface is the link between the host computer and the keyboard; communication is on the parallel SD bus (20 lines).

The IEEE interface permits computer-aided control of the host computer on the IEEE-488 bus.

2. MCU configuration

The nucleus of the MCU configuration is the CPU (D11), the program and data memory, a timer/counter (D21) and the control logic (D4, D5, D6, D7, D10, D13, D14, D15). For the program memory (HP0-HP3) EPROMs of the type MBM27C256-30DC or MBM27C512-25Z (or equivalents) can be used; jumper Br1 has to be wired accordingly (see table 2.1). For HP4 either a RAM or an EPROM of the type HM62256P or MBM27C256-30DC can be used (see table 2.1).

RAMs of the type MB84256-15P (or equivalents) are used for data memory (D1-D2). For each of the two program-memory configurations an appropriate PAL P2 is to be selected (see table 1). EEPROM D3 serves as a constant memory. Write protection is produced by the wiring of D6. A fast-mode algorithm is used to optimize the write time. The address area of the memory can be determined with reference to table 2.1 or the details in the circuit diagram.

The timer/counter D21 produces interrupts of highest priority at defined times. Device D10 serves for buffering the data lines D0-D7. A system clock of 8 MHz is obtained from the sinusoidal small signal 8 MHz by the digital PLL D15 and by division in D13.

The signals VMA and E are implemented with the two flipflops of D14 for controlling the synchronous peripheral devices of the 6800 family. The handshake signals VPA and DTACK of the asynchronous CPU are derived with D6 and D7. Device D12 and the PAL P2 serve for address decoding and for generating the chip-select signals for memory and peripheral devices.

Device D4 is used for supervising the supply voltage and ensuring the required reset times. The RESET and HALT signals are buffered by tristate driver D5 for bidirectionality.

On the hardware side two interrupt levels are implemented, the timer/counter being the highest. All peripheral devices with the exception of IEC-bus controller D24 can trigger interrupts; at the moment they are suppressed by software however. The slave computer is at the lower interrupt level, while the interrupts of the CRT slave are scanned by the PIA D22 on a sensing line.

For further information, refer to the description of the slave computer (RF/AF-MCU, 250 032 F).

3. IEEE interface

The IEEE-488 interface is the link between the host computer and the IEEE bus. It consists of the two driver devices D25 and D26 and the device D24.

4. MS interface

Communication between the host computer and the slave computer is on ACIA D20. The serial transfer clock SCLK (0.5 MHz) is derived from the system timing of 8 MHz by frequency division in D13. The interrupt to the selected CPU is enabled by the RTS (Ready To Send) signal. RD (Read Data) is the line for reading the host, Write Data the line for writing the host. The address SA0-SA2 of the slave computer is generated by the PIA D22; A0-A2 corresponds to this of the MS interface on the slave computer. There is an input on the PIA D22 for reading an interrupt CRTIRQ from the CRT slave.

5. SD interface

The reading and control of the keyboard by the MCU are by means of a PIA (D23) on the control interface I bus (SD bus). This consists of eight bidirectional data lines PB0-PB7, eight unidirectional address lines PA0-PA7 and a strobe signal CB2. The remaining three signals CB1, CA1 and CA2 are optionally available.

Table 1: PAL P2

HNK no.	Program desig.	EEPROM	RAM	
834 764	P 32 R 32	32	32	Kbytes
834 765	P 64 R 32	64	32	Kbytes

Table 2.1: Memory options

Using jumper Br1 it is possible to choose between

a	b	c	xxx = connection made
xxx			.....4 x 27C512 (= 256 Kbytes)
	xxx		.....4 x 27C256 (= 128 Kbytes)

In the same way jumper Br2 is used to specify whether an EPROM or a RAM is inserted at HP4

a	b	c	xxx = connection made
xxx			.....1 x 27C256 (= 32-Kbyte EPROM)
	xxx		.....1 x 43256C (= 32-Kbyte RAM)

Jumpers Br3 and Br4 are then to be wired as follows:

Br2			Br3			Br4			
a	b	c	a	b	c	a	b	c	
xxx			xxx			xxx			1 x 27C256 (=32-Kbyte EPROM)
	xxx			xxx			xxx		1 x 43256C12L (=32-Kbyte RAM)

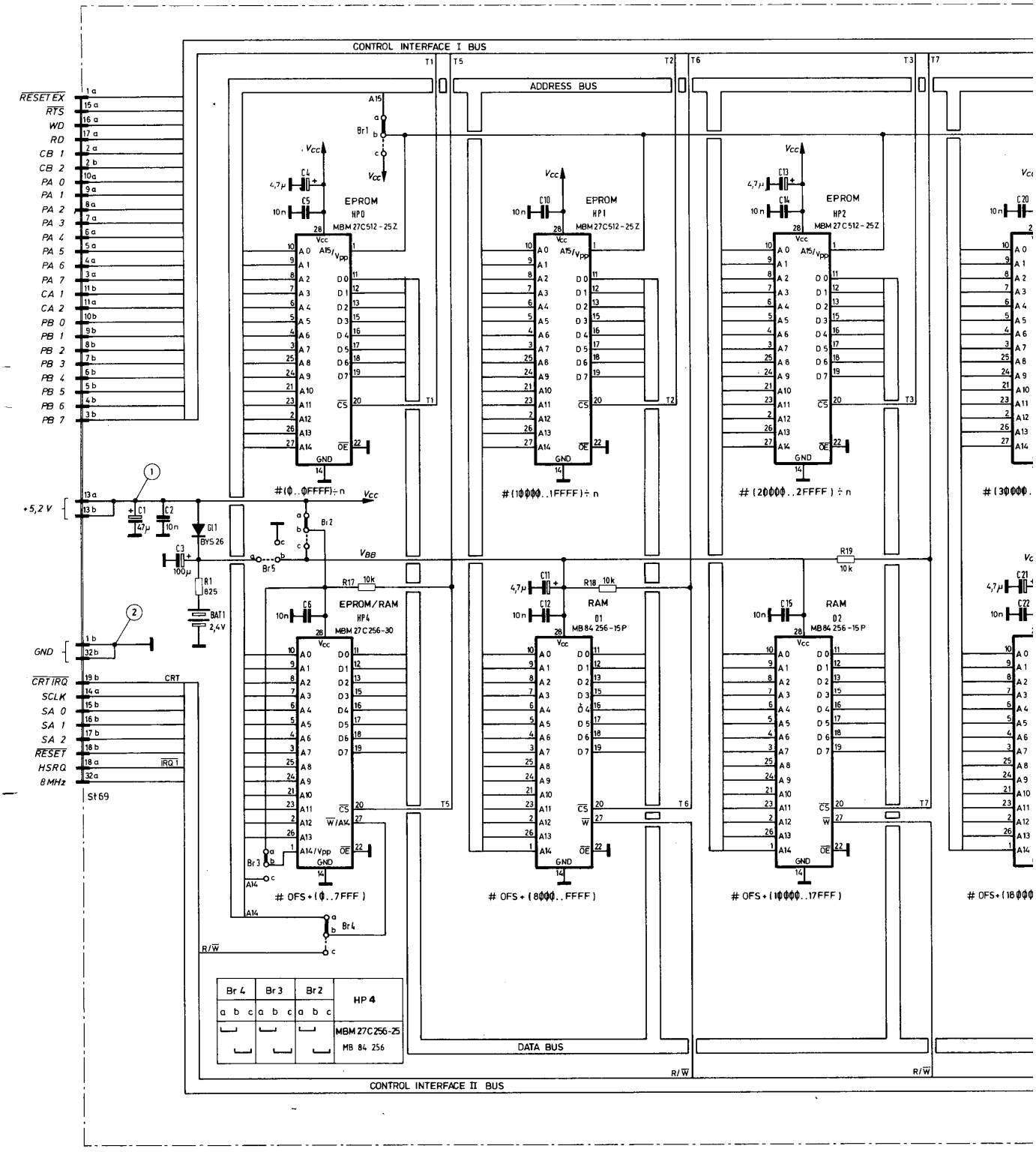
- 7088.128

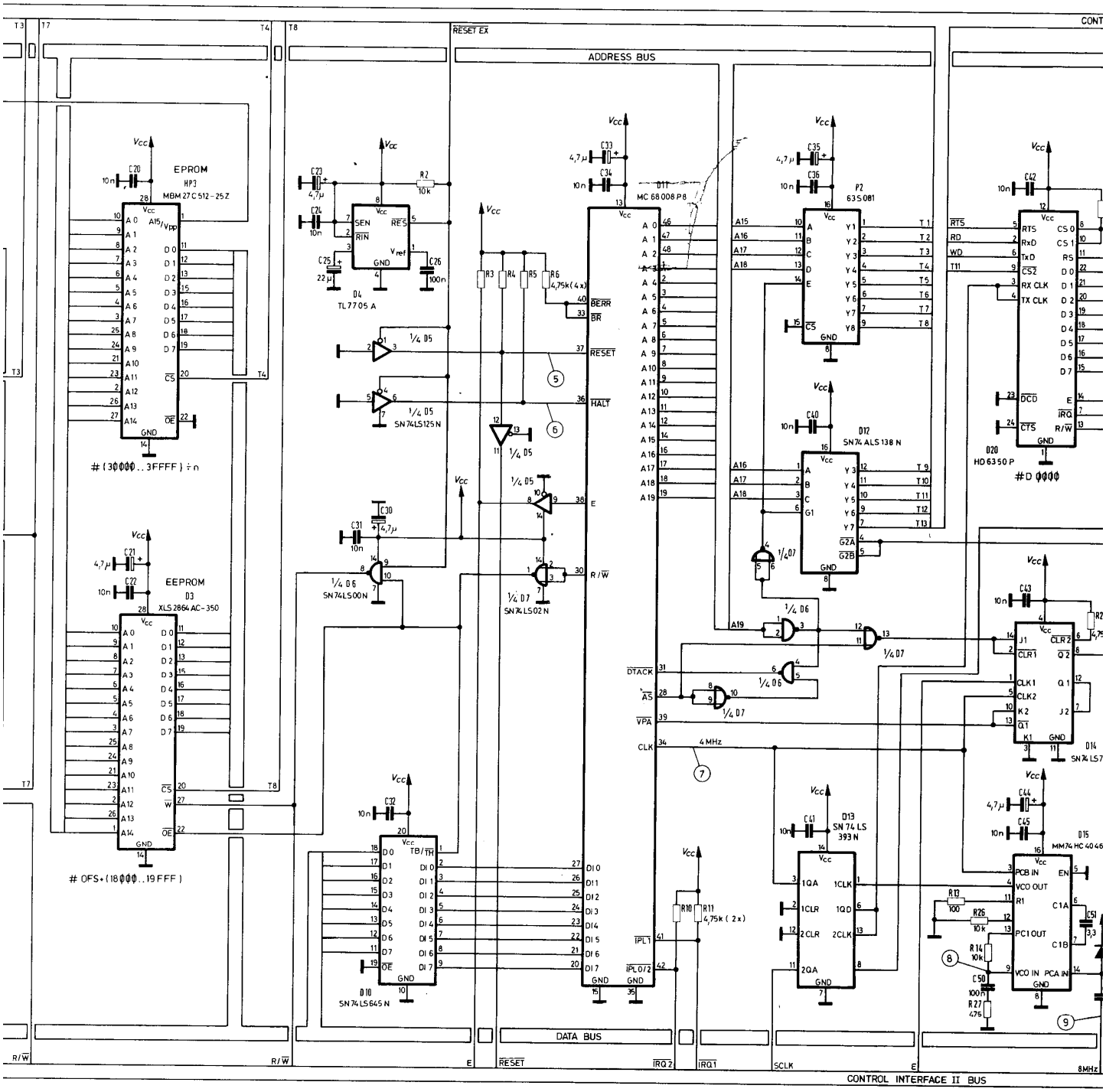
Table 2.2: Address plan

Device	Hex addresses
HP0-HP3 (EPROM)	0-0FS-1
HP4 (EEPROM)	0FS-0FS+7FFF
D1-D2 (RAM)	0FS+8000-0FS+FFFF
D3 (EEPROM)	0FS+10000-0FS+17FFF
D23 (PIA)	80000-80003
D22 (PIA)	C0000-C0003
D20 (ACIA)	D0000-D0001
D21 (timer)	E0000-E0007
D24 (GPIA)	F0000-F0003

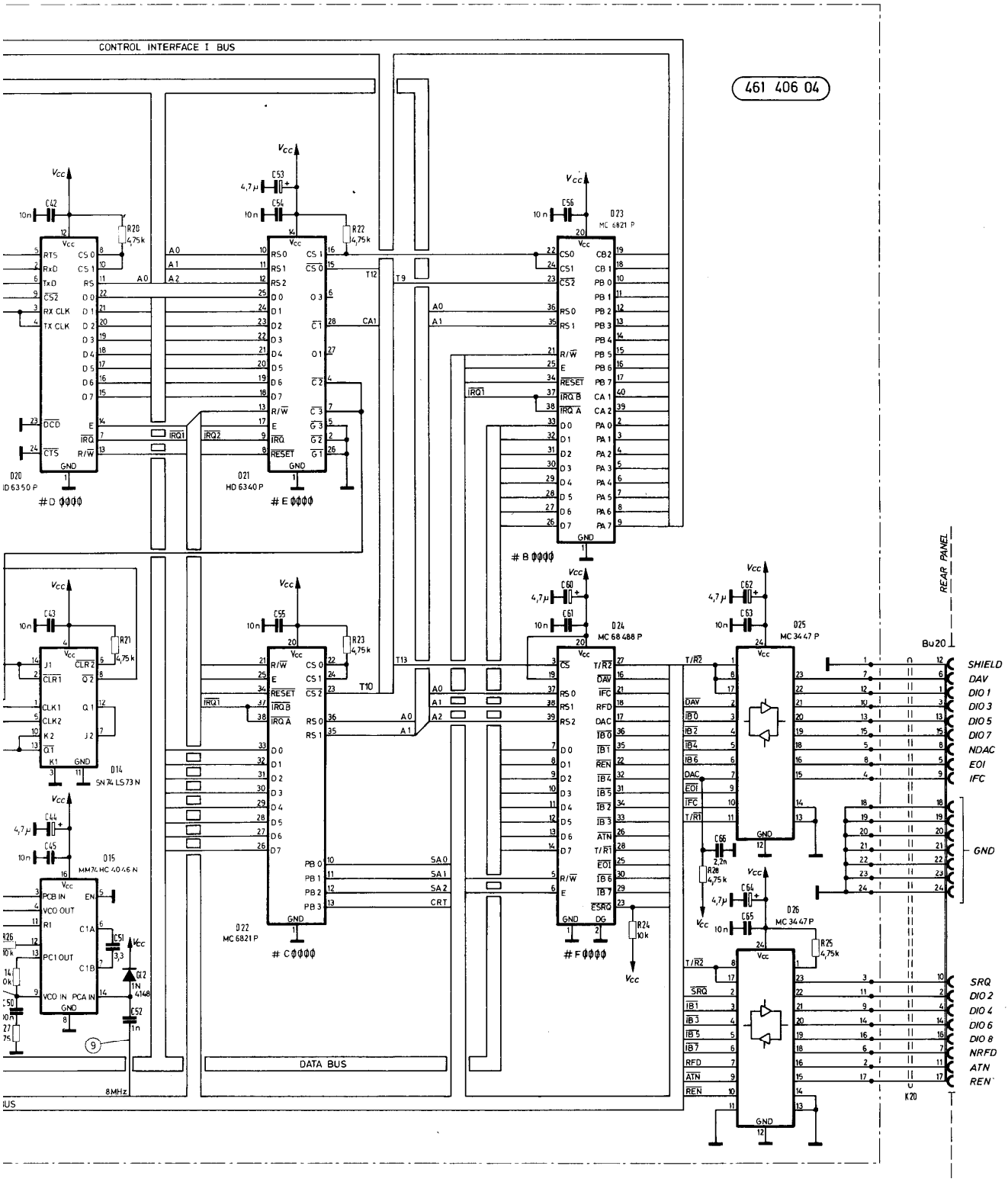
MBM27C512: 0FS = 40000
MBM27C256: 0FS = 20000

Br1 a b c	HP0 ... HP3	n	OFS
⌴	MBM 27C512-25	1	40000 H
⌴	MBM 27C256-25	2	20000 H



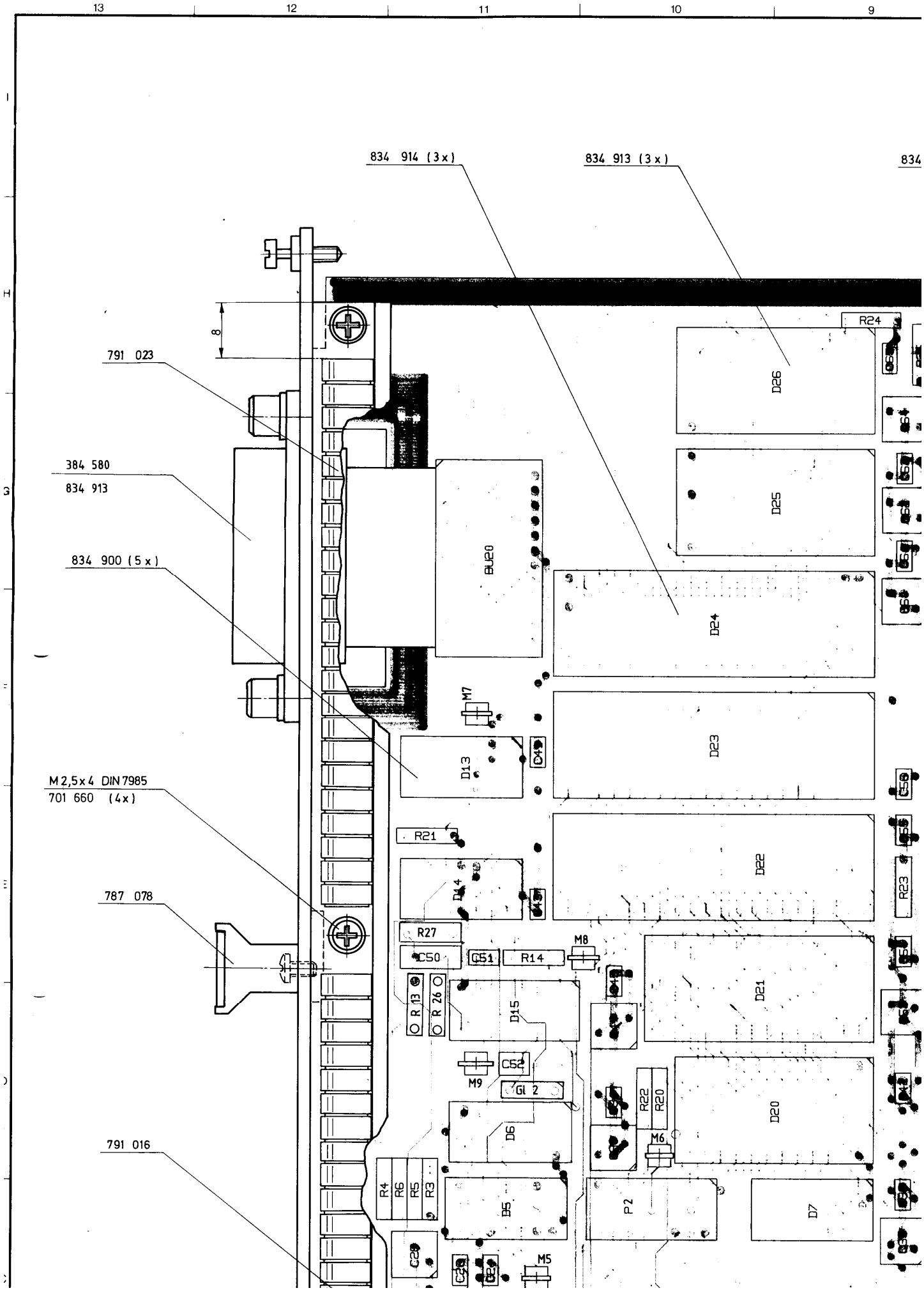


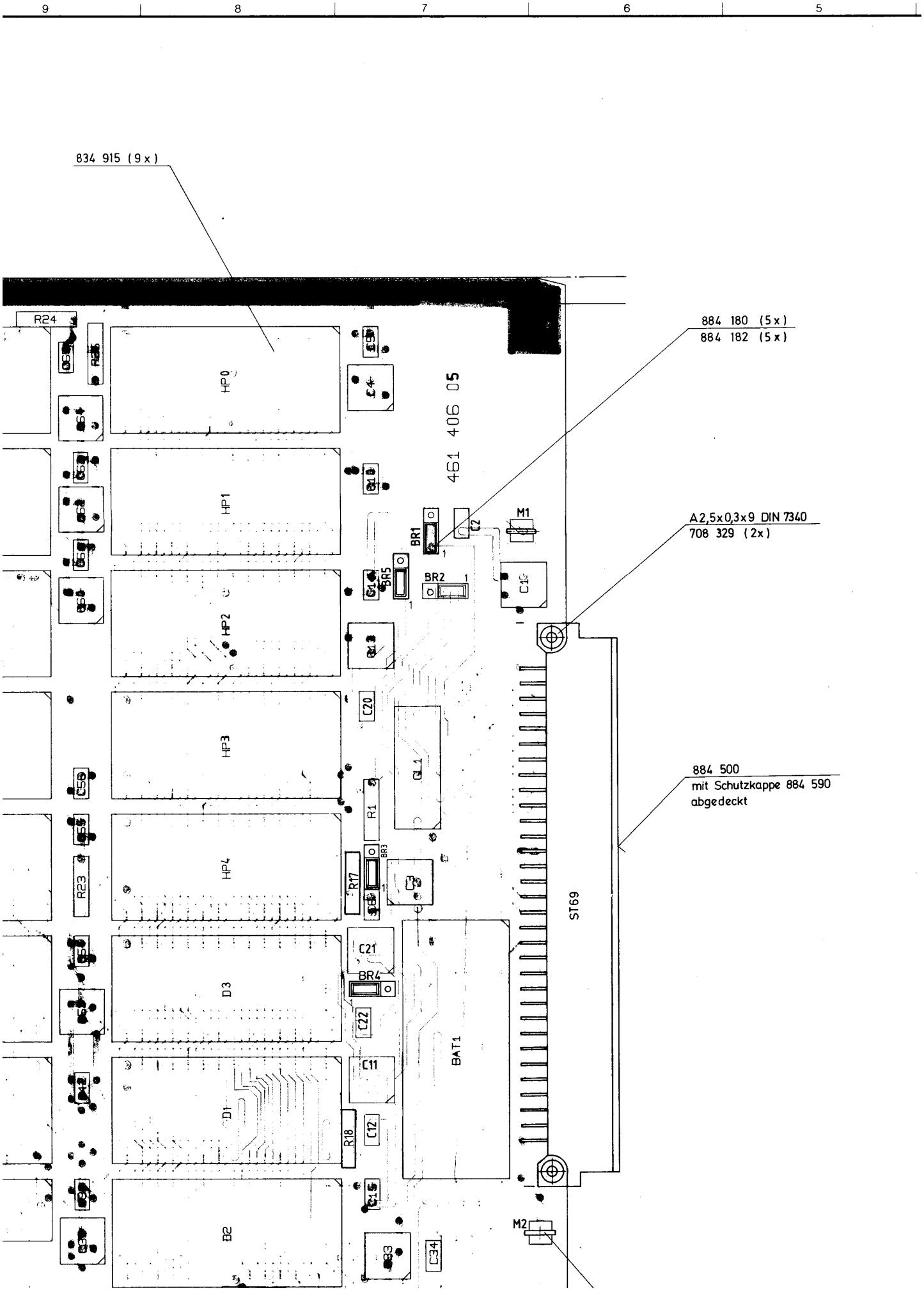
sw BLACK	bl BLUE
br BROWN	vi VIOLET
rt RED	gr GREY
rs ROSE	ws WHITE
ge YELLOW	tr TRANSPARENT
gn GREEN	



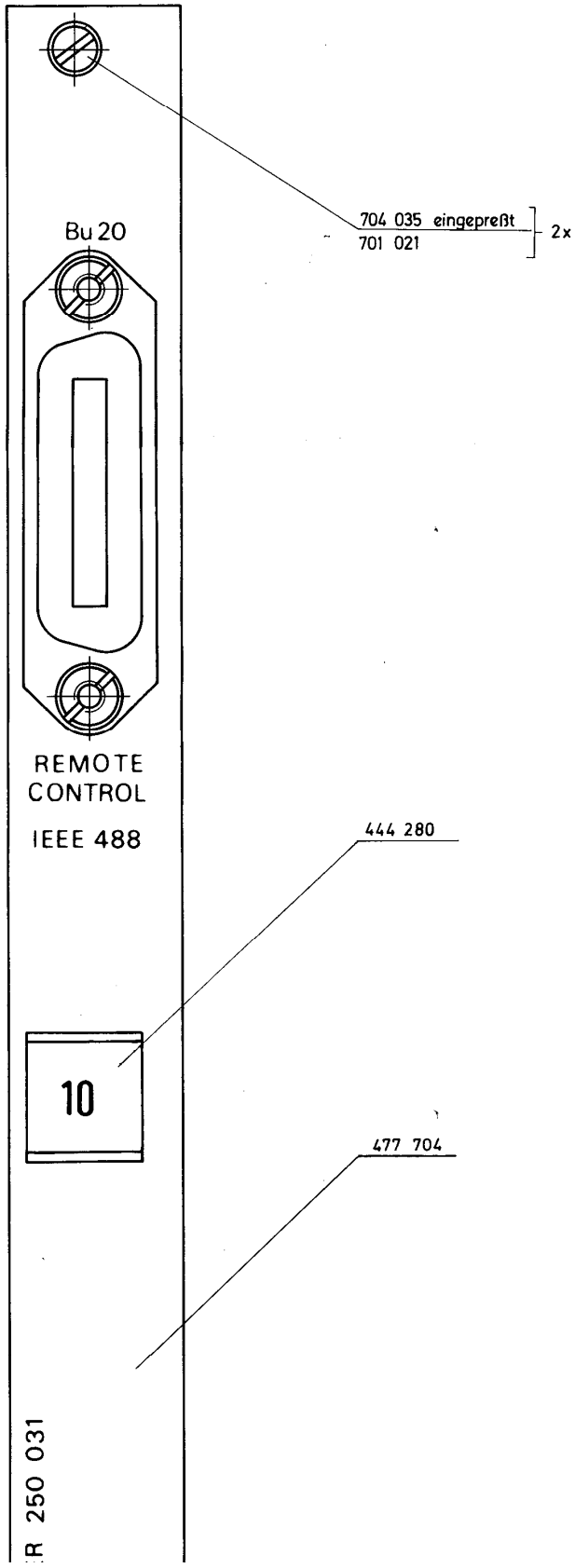
ACK	bl BLUE	11	8088.54	25.3.88	Mo.	norm		Schlumberger o/s	HOST COMPUTER	250 031 S
DWN	vi VIOLET	10	8088.24	17.2.88	Kr.	gepr		Meßgeratebau u Vertrieb GmbH		
D	gr GREY	09	7088.128	30.8.87	Kr.	bearb	23.10.86 Kr.	8 München 46		Typ : 4031
SE	ws WHITE	Ausg	A-Mittlg	Datum	Name		Datum Name			
LLOW	tr TRANSPARENT	ISS	MODIF	DATE	NAME	1986	DATE NAME			
EEN										

Diese Zeichnung ist unser Eigentum Vervielfältigung unbefugte Verwertung Mitteilung an andere ist strafbar und schadenersatzpflichtig


834 914 (3x)
834 913 (3x)
791 023
384 580
834 913
834 900 (5x)
M2,5x4 DIN7985
701 660 (4x)
787 078
791 016
8
R24
D26
D25
BU20
D24
M7
D23
D13
D4
R21
D22
D14
R23
R27
C50
C51
R14
M8
D21
R13
R26
D15
C52
M9
G1 2
R22
R20
D20
D6
M6
R4
R6
R5
R3
B5
P2
D7
C29
C28
C3
M5

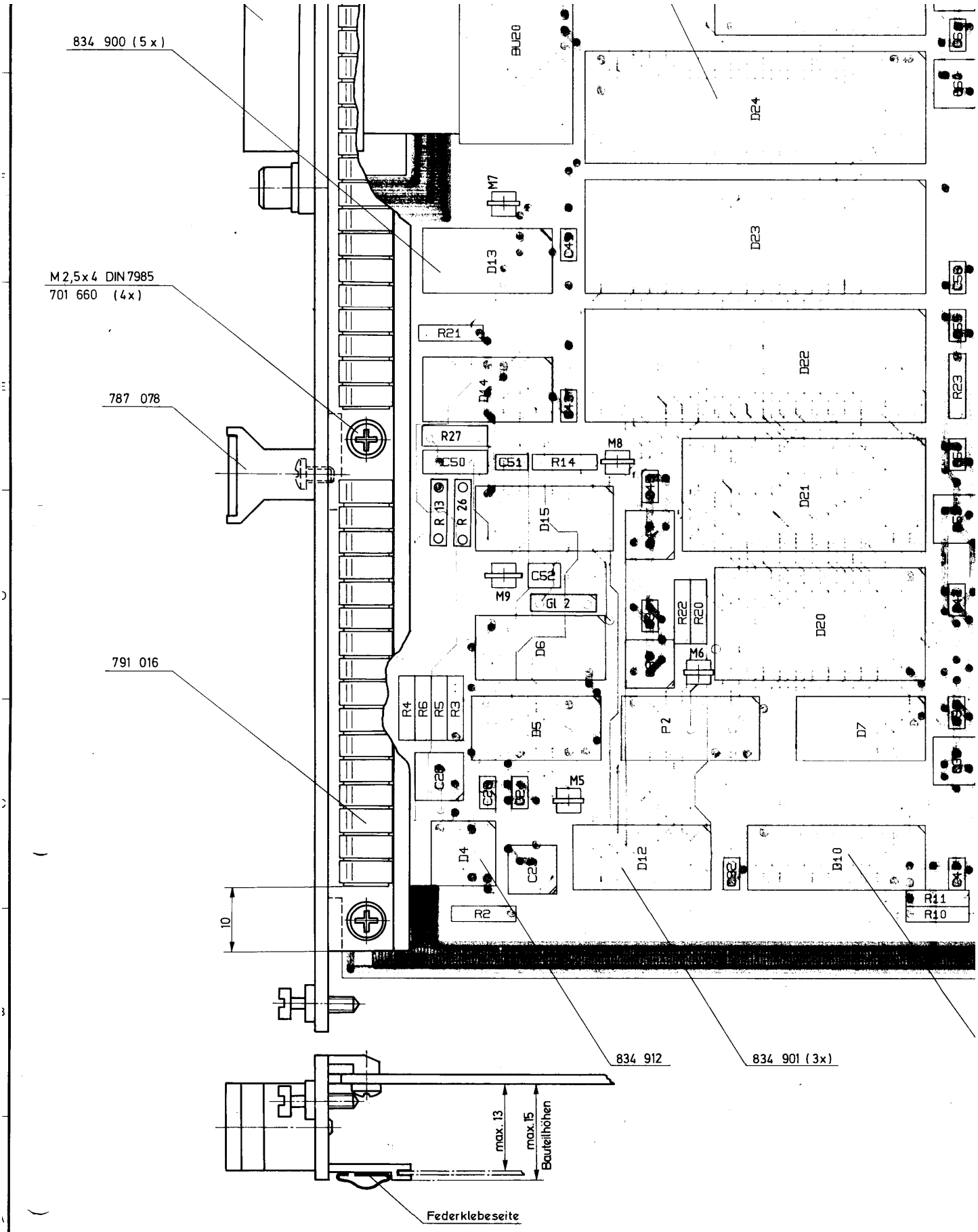

9
8
7
6
5
834 915 (9x)
884 180 (5x)
884 182 (5x)
A2,5x0,3x9 DIN 7340
708 329 (2x)
884 500
mit Schutzkappe 884 590
abgedeckt
461 406 05
R24
HP0
HP1
HP2
HP3
HP4
D3
D1
B2
BR1
BR2
BR3
BR4
BR5
C2
C4
C10
C20
C21
C22
C11
C12
C34
R1
R17
R18
R23
GL1
BAT1
ST69
M1
M2

weich gelötet



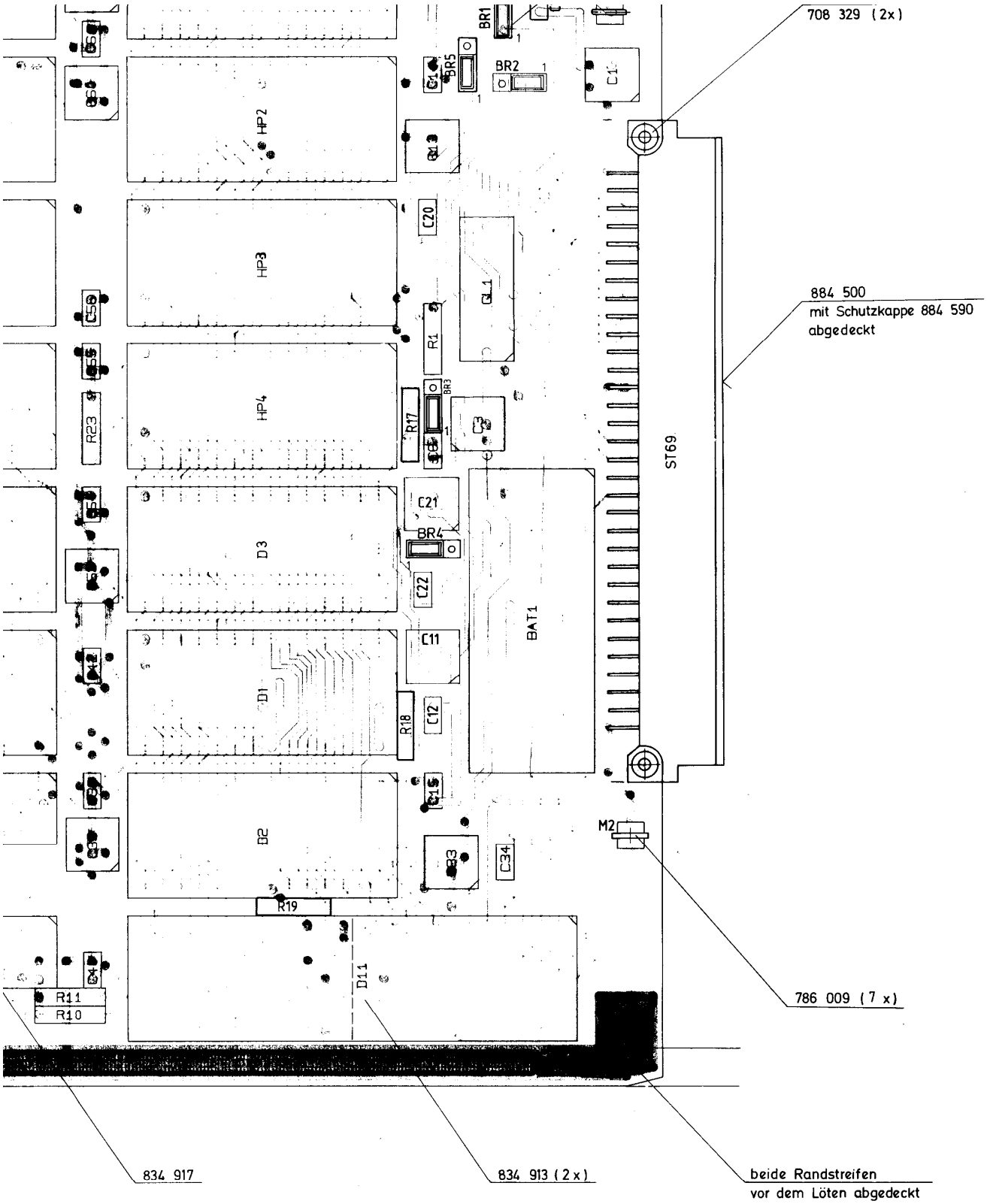
40

34 590



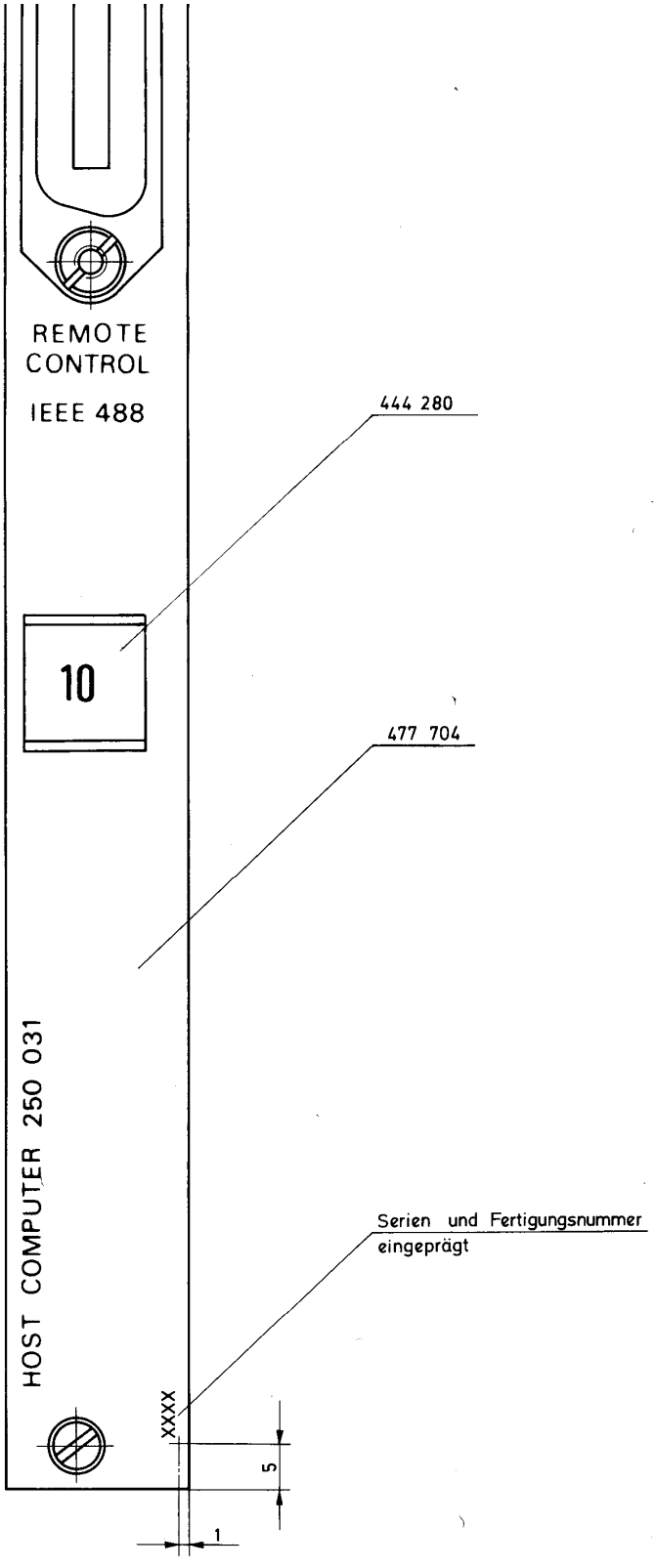
Schaltplanpositionierung ≙ 250 031 S / Sa

13 | 12 | 11 | 10 | 9



	verwendet in:	Gerät:
9	8 7 6	5

590



10				Rohteil	Freimaß-toleranzen	Maßstab	Schlumberger Meßgeräte GmbH
09							Ingolstädter Straße 67 a
08	8088.25	11.3.88	Mo.				8000 München 46
07	7088.176	1.12.87	Kr.				
06	7088.138	19.9.87	Kr.	Werkstoff	± 0,5	2 : 1	HOST COMPUTER
05	7088.110	6.8.87	Kr.				
04	7088.102	28.7.87	Mo.				
03	7088.43	31.3.87	Mo.				
02	7088.6	3.1.87	Kr.	Oberfläche			
01	6088.67	8.12.86	Kr.		1986 Datum Name		250 031
Ausgabe	Änderg.-Mittlg	Datum	Name		gez 5.12.86 Kr.		
					bearb 8.12.86 Kr.		Gerät : 4031 / 201 231
					gepr		

Diese Zeichnung ist unser Eigentum. Vervielfältigung, unbefugte Verwertung, Mitteilung an andere ist strafbar und schadenersatzpflichtig

1 Pos REF. NO	2 Wert VALUE	3 Bezeichnung Schlumberger PART. NO.	4 Hersteller MANUFACT	5 Pos. REF. NO.	6 Wert VALUE	7 Bezeichnung Schlumberger PART. NO.	8 Hersteller MANUFACT
				C 21	4,7 µF ± 20 % 35 V-	814 074	MATSU
				C 22	10 nF ± 10 % 50 V-	813 115	RÖD
BAT 1	DS 2 GT	859 003	GE	C 23	4,7 µF ± 20 % 35 V-	814 074	MATSU
				C 24	10 nF ± 10 % 50 V-	813 115	RÖD
Bu 20		in K 20		C 25	22 µF ± 20 % 25 V-	814 077	MATSU
				C 26	100 nF ± 10 % 50 V-	813 121	RÖD
C 1	47 µF ± 20 % 16 V-	814 078	MATSU				
C 2	10 nF ± 10 % 50 V-	813 115	RÖD				
C 3	100 µF ± 20 % 6,3 V-	814 079	MATSU	C 30	4,7 µF ± 20 % 35 V-	814 074	MATSU
C 4	4,7 µF ± 20 % 35 V-	814 074	MATSU	C 31	10 nF ± 10 % 50 V-	813 115	RÖD
C 5	10 nF ± 10 % 50 V-	813 115	RÖD	C 32	10 nF ± 10 % 50 V-	813 115	RÖD
C 6	10 nF ± 10 % 50 V-	813 115	RÖD	C 33	4,7 µF ± 20 % 50 V-	814 074	MATSU
				C 34	10 nF ± 10 % 50 V-	813 115	RÖD
				C 35	4,7 µF ± 20 % 50 V-	814 074	MATSU
				C 36	10 nF ± 10 % 50 V-	813 115	RÖD
C 10	10 nF ± 10 % 50 V-	813 115	RÖD				
C 11	4,7 µF ± 20 % 35 V-	814 074	MATSU				
C 12	10 nF ± 10 % 50 V-	813 115	RÖD				
C 13	4,7 µF ± 20 % 35 V	814 074	MATSU	C 40	10 nF ± 10 % 50 V-	813 115	RÖD
C 14	10 nF ± 10 % 50 V-	813 115	RÖD	C 41	10 nF ± 10 % 50 V-	813 115	RÖD
C 15	10 nF ± 10 % 50 V-	813 115	RÖD	C 42	10 nF ± 10 % 50 V-	813 115	RÖD
				C 43	10 nF ± 10 % 50 V-	813 115	RÖD
				C 44	4,7 µF ± 20 % 50 V-	814 074	MATSU
				C 45	10 nF ± 10 % 50 V-	813 115	RÖD
C 20	10 nF ± 10 % 50 V-	813 115	RÖD				

Ausgabe ISSUE	Änd.-Mittlg. Nr. MODIFIC. NO.	Tag DATE	Name NAME
07			
06			
05			
04			
03			
02			
01			
-	6088.45	30.10.86	Mo.

Schlumberger Meßgeräte GmbH
Ingolstädter Straße 67 a
8000 München 46

	Tag DATE	Name NAME
geschr.	30.10.86	Morasch
bearb.		
gepr.		

Schaltteilliste
EL. PARTS LIST

Benennung DESCRIPTION: HOST COMPUTER

Bezeichnung Schlumberger PART. NO.: 250 031 Sa

Hierzu Schaltplan SEE CIRCUIT DIAGRAM: 250 031 S

Gerät: 4031

Liste besteht LIST CONSISTS aus OF 3 Blatt SHEETS

Blatt Nr. SHEET NO. 1

Diese Zeichnung ist unser Eigentum. Vervielfältigung, unbefugte Verwertung, Mitteilung an andere ist strafbar und schadenersatzpflichtig.

1	2	3	4	5	6	7	8
Pos. REF. NO	Wert VALUE	Bezeichnung Schlumberger PART. NO.	Hersteller MANUFACT	Pos. REF. NO.	Wert VALUE	Bezeichnung Schlumberger PART. NO.	Hersteller MANUFACT
				D 7	SN 74 LS 02 N	834 664	TEX
C 50	100 nF ± 5 % 63 V-	812 370	VAL				
C 51	3,3 pF ± 0,25 pF 63 V-	810 554	STET	D 10	SN 74 LS 645 N	834 370	TEX
C 52	1 nF ± 10 % 100 V-	813 066	SIE	D 11	MC 68 008 P 8	835 004	MOTO
C53	4,7 µF ± 20 % 35 V-	814 074	MATSU	D 12	SN 74 ALS138 N	834 376	TEX
C 54	10 nF ± 10 % 50 V-	813 115	RÖD	D 13	SN 74 LS 393 N	834 698	TEX
C 55	10 nF ± 10 % 50 V-	813 115	RÖD	D 14	SN 74 LS 73 N	834 629	TEX
C 56	10 nF ± 10 % 50 V-	813 115	RÖD	D 15	SN 74 HC 4046 N	834 489	MS
C 60	4,7 µF ± 20 % 35 V-	814 074	MATSU				
C 61	10 nF ± 10 % 50 V-	813 115	RÖD	D 20	HD 6350 P	835 026	HIT
C 62	4,7 µF ± 20 %35 V-	814 074	MATSU	D 21	HD 6340 P	835 022	HIT
C 63	10 nF ± 10 % 50 V-	813 115	RÖD	D 22	MC 6821 P	835 002	MOT
C 64	4,7 µF ± 20 % 35 V-	814 074	MATSU	D 23	MC 6821 P	835 002	MOT
C 65	10 nF ± 10 % 50 V-	813 115	RÖD	D 24	MC 68 488 P	835 007	MOTO
C 66	2,2 nF ± 10 % 50 V-	813 070	SIE	D 25	MC 3447 P	834 499	MOTO
				D 26	MC 3447 P	834 499	MOTO
D 1	MB 84 256-15 P	834 784	FUJ				
D 2	MB 84 256-15 P	834 784	FUJ				
D 3	AT 28 C 64-30 DC	834 786	ATMEL	G1 1	BYS 26	830 027	SIE
D 4	TL 7705 A	834 280	TEX	G1 2	1 N 4148	830 240	ITT
D 5	SN 74 LS 125 N	834 697	TEX				
D 6	SN 74 LS 00 N	834 595	TEX				

Ausgabe ISSUE	Änd.-Mittlg. Nr. MODIFIC. NO.	Tag DATE	Name NAME
08	8088.54	25.3.88	Mo.

	Tag DATE	Name NAME
geschr.	30.10.86	Morasch
bearb.		
gepr.		

Schlumberger Meßgeräte GmbH
Ingolstädter Straße 67 a
8000 München 46

Schaltteilliste
EL. PARTS LIST

Benennung DESCRIPTION: HOST COMPUTER

Bezeichnung Schlumberger PART. NO.: 250 031 Sa

Hierzu Schaltplan SEE CIRCUIT DIAGRAM: 250 031 S

Gerät: 4031

Liste besteht LIST CONSISTS aus OF 3 Blatt SHEETS

Blatt Nr. SHEET NO. 2

Diese Zeichnung ist unser Eigentum. Vervielfältigung, unbefugte Verwertung, Mitteilung an andere ist strafbar und schadenersatzpflichtig.

1	2	3	4	5	6	7	8
Pos. REF. NO	Wert VALUE	Bezeichnung Schlumberger PART. NO.	Hersteller MANUFACT	Pos. REF. NO.	Wert VALUE	Bezeichnung Schlumberger PART. NO.	Hersteller MANUFACT
				R 18	10 kΩ ± 1 %	802 049	RÖD
				R 19	10 kΩ ± 1 %	802 049	RÖD
HP 0				R 20	4,75 kΩ ± 1 %	802 045	RÖD
HP 1	MBM 27 C 512 - 25	893 335	SCHL	R 21	4,75 kΩ ± 1 %	802 045	RÖD
HP 2				R 22	4,75 kΩ ± 1 %	802 045	RÖD
				R 23	4,75 kΩ ± 1 %	802 045	RÖD
				R 24	10 kΩ ± 1 %	802 049	RÖD
K 20	Kabelbaum	384 580	SCHL	R 25	4,75 kΩ ± 1 %	802 045	RÖD
P 2	27 S 19 A	834 765	AMD	R 26	[illegible]	802 049	RÖD
				R 27	475 Ω ± 1 %	802 033	RÖD
R 1	825 Ω ± 1 %	802 036	RÖD	R 28	4,75 kΩ ± 1 %	802 045	RÖD
R 2	10 kΩ ± 1 %	802 049	RÖD	St 69	Messerleiste 64pol.	884 500	SIE
R 3	4,75 kΩ ± 1 %	802 045	RÖD				
R 4	4,75 kΩ ± 1 %	802 045	RÖD				
R 5	4,75 kΩ ± 1 %	802 045	RÖD				
R 6	4,75 kΩ ± 1 %	802 045	RÖD				
R 10	4,75 kΩ ± 1 %	802 045	RÖD				
R 11	4,75 KΩ ± 1 %	802 045	RÖD				
R 13	100 Ω ± 1 %	802 025	RÖD				
R 14	10 kΩ ± 1 %	802 049	RÖD				
R 17	10 kΩ ± 1 %	802 049	RÖD				

Aus-gabe ISSUE	Änd.-Mittlg. Nr. MODIFIC. NO.	Tag DATE	Name NAME
07	7088.165	10.11.87	Mo.
08	8088.24	15.2.88	Di

Schlumberger Meßgeräte GmbH
Ingolstädter Straße 67 a
8000 München 46

	Tag DATE	Name NAME
geschr.	30.10.86	Morasch
bearb.		
gepr.		

Schaltteilliste
EL. PARTS LIST

Benennung DESCRIPTION: HOST COMPUTER

Bezeichnung Schlumberger PART. NO.: 250 031 Sa

Hierzu Schaltplan SEE CIRCUIT DIAGRAM: 250 031 S

Gerät: 4031

Liste besteht LIST CONSISTS aus OF 3 Blatt SHEETS

Blatt Nr. SHEET NO. 3

Diese Zeichnung ist unser Eigentum. Vervielfältigung, unbefugte Verwertung, Mitteilung an andere ist strafbar und schadenersatzpflichtig.

1. Summary

The slave computer consists of three elements: MS interface, SD interface and MPU configuration. The MS (master/slave) interface forms the link between the host computer and the slave computer; communication is on the serial MS bus (eight lines).

The SD (slave device) interface is the link between the slave computer and the board to be controlled; communication is on the parallel SD bus (20 lines).

2. MPU configuration

The nucleus of the MPU configuration is the CPU (D8), the program and data memory, a timer/counter (D15) with driving logic (D16), plus an ADU (D17) and two PIAs (D13, D14). For the program memory (SP0-SP1) EPROMs of the type MBM27C256-30DC (or equivalents) can be used. The linear address area is between 3000h and FFFFh. A RAM of the type HM6264P (or equivalent) with linear address area 1000h-2FFFh is used for data memory.

The timer/counter D15 can be driven by multiplexer D16 with signals P14-P17 so that the pulses AF COUNT and IF COUNT can be measured in the appropriate manner (see table 1).

The latches D9 and D10 serve for storing the addresses in multiplex mode and for noise-immune isolation. Multiplexer D3 impresses the operating mode of the CPU (mode 4 = multiplex) upon system reset (RESET). In the normal operating mode it produces the signals SCLK (serial transfer clock) for the CPU's internal ACIA, TCLK (timer clock) for the timer/counter and its TO (timeout).

Devices D2 and D4 serve for conditioning the externally applied sinusoidal clock (8 MHz) and converting it into the required squarewave clock of 4 MHz (testpoint 1).

The addresses are decoded and the individual chip-select signals (IO, RAM, EP1, EP2) generated with the PAL P0 (HNK no. 834 763). The control signals E, R/W for the periphery, like the RESET signal, are adequately buffered.

If the slave computer is to be operated independently of the host computer (when testing for instance), a reset possibility must be provided on St67/18b (button).

The ADU D17 measures the analog voltage AF SUM and supervises the supply voltages of +5.5 V, +15.0 V and -15.0 V. As a reference D18 applies a voltage of 5.12 V (testpoint 2).

All peripheral devices can send interrupts to the CPU; in the present configuration they are suppressed by software however.

3. MS interface

Communication between the host computer and the slave computer is on D1, D5, D6 and D7. The digital comparator D1 selects the individual slave computer on address lines A0, A1 and A2. The interrupt to the selected CPU is enabled by the RTS (Ready To Send) signal. The logic of D7 can distinguish between the interrupts sent by the host computer and those generated by the devices on the slave computer. A flipflop in D4 can register a host interrupt that has taken effect on the MPU; if the interrupts of the MPU have been disabled, it is therefore possible to read whether the host computer has issued a request. Read Data is the line for reading the host, Write Data the line for writing the host. The slave computer can trigger an interrupt on the host computer by means of the SRQ (Service Request) line.

4. SD interface

Data are transferred to connected boards by the CPU using two PIAs (D13, D14) on the RF or AF bus (SN busses). Both consist of eight bidirectional data lines PB0-PB7, eight unidirectional address lines PA0-PA7 and a strobe signal CB2. The remaining three signals CB1, CA1 and CA2 are optionally available. CA1 of D13 is a sensor for the UP/DOWN signal.

Table 1: Counter mode

P17	P16	P15	P14	C1	C2
0	0	0	0	AF COUNT	AF COUNT
0	0	0	1	IF COUNT	IF COUNT
0	0	1	0	1	1
0	0	1	1	1	1
0	1	0	0	0	AF COUNT
0	1	0	1	0	AF COUNT
0	1	1	0	0	1
0	1	1	1	0	1
1	0	0	0	AF COUNT	0
1	0	0	1	IF COUNT	0
1	0	1	0	1	0
1	0	1	1	1	0
1	1	X	X	0	0

Table 2: Address plan

Device	Hex addresses
D13 (PIA)	100-103
D15 (timer)	200-207
D14 (PIA)	400-403
D17 (ADU)	800-803
D12 (RAM)	1000-2FFF
SP1 (EPROM)	3000-7FFF
SP0 (EPROM)	8000-FFFF

Schlumberger

Adjustment and Test Procedure

Necessary Equipment	Measuring Procedure	Measuring Point	Frequency	Adjust-ment	Set Value	Actual Value
Test PROM	Insert test PROM at SPO					
Test adapter	Insert adapter with LEDs on D14					
4031 or	Trigger reset					
adapter with	LEDs flash	LED0	≈ 1 s			
supply and		LED1	≈ 0.5 s			
xtal		LED2	≈ 0.2 s			
		LED3	≈ 0.1 s			
	Insert adapter with LEDs on D13					
	LEDs flash as before					
DVM	Set reference	Mp2	DC	R35	5.120 V ±2 mV	

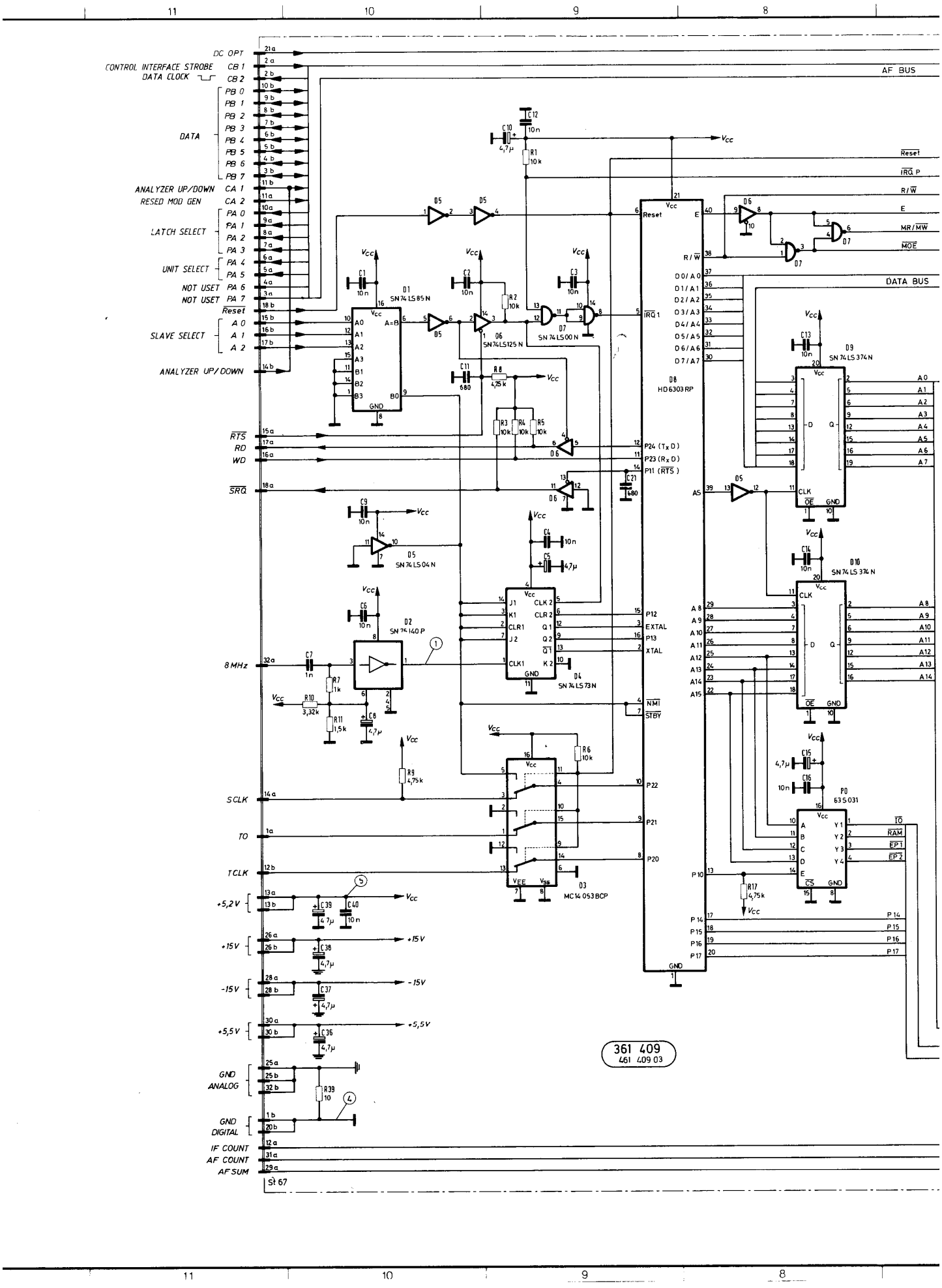
Issue	Alteration No.	Date	Name	Issue	Alteration No.	Date	Name
-	7088.36	17.3.87					

Ref. No. 250 032 A

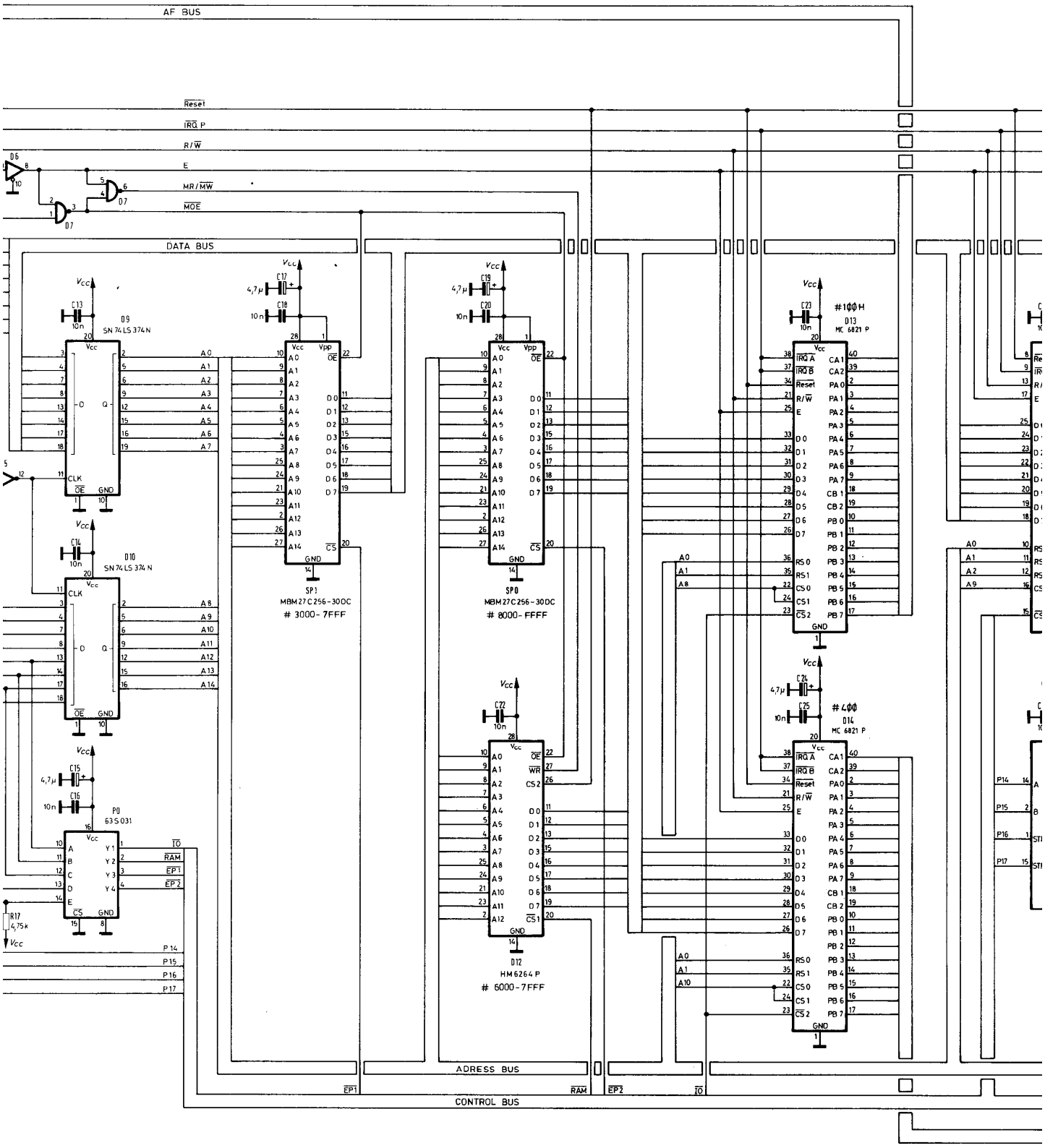
Type STABILOCK 4031

Sub Unit Slave Computer

Sheet 1/1

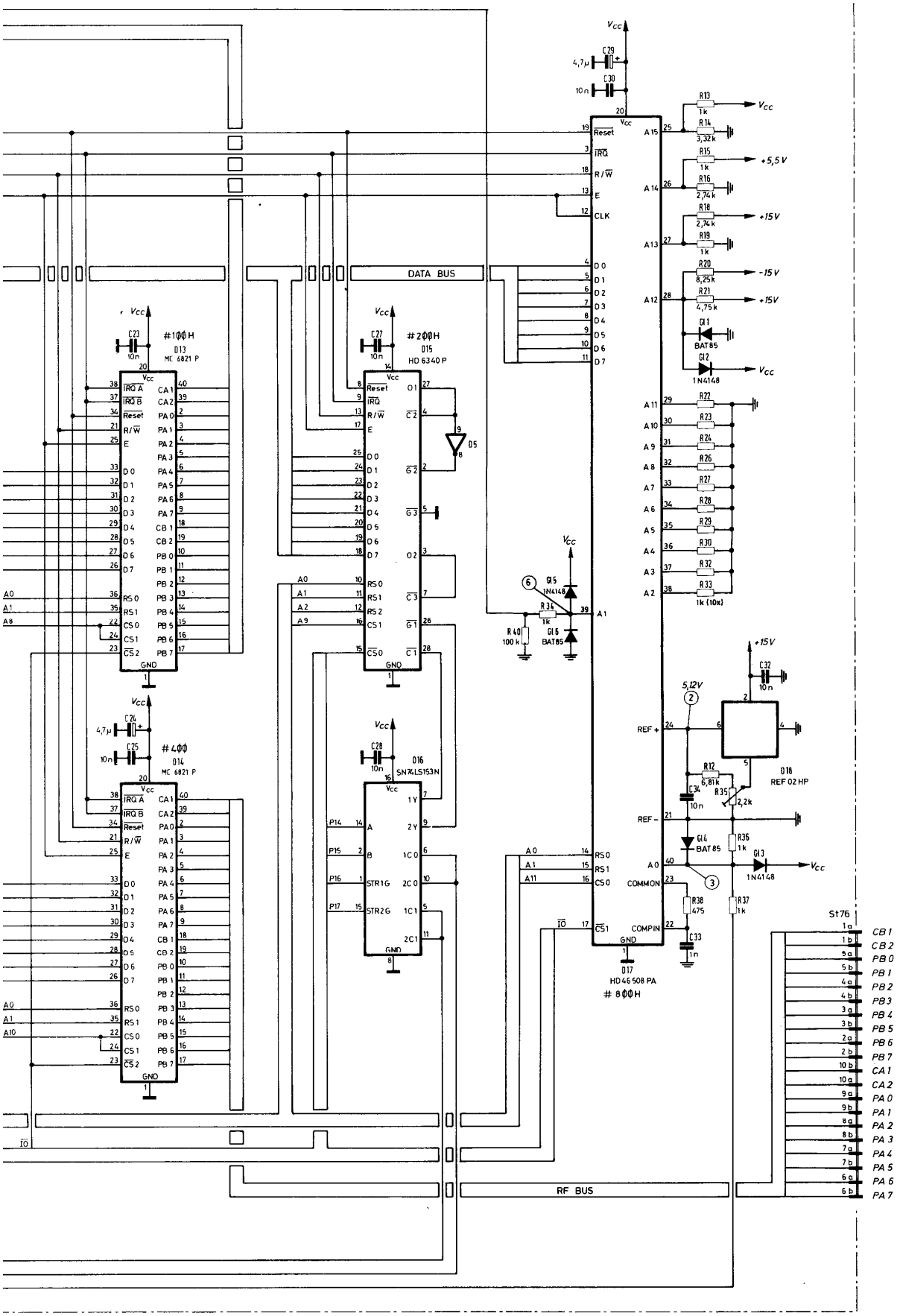


DC OPT
CONTROL INTERFACE STROBE
DATA CLOCK
CB 1
CB 2
DATA
PB 0
PB 1
PB 2
PB 3
PB 4
PB 5
PB 6
PB 7
ANALYZER UP/DOWN
RESED MOD GEN
CA 1
CA 2
LATCH SELECT
PA 0
PA 1
PA 2
PA 3
UNIT SELECT
PA 4
PA 5
NOT USET
PA 6
NOT USET
PA 7
Reset
SLAVE SELECT
A 0
A 1
A 2
ANALYZER UP/DOWN
RTS
RD
WD
SRQ
8 MHz
SCLK
TO
TCLK
+5,2V
+15V
-15V
+5,5V
GND ANALOG
GND DIGITAL
IF COUNT
AF COUNT
AF SUM
St 67
AF BUS
DATA BUS
Reset
IRQ P
R/W
E
MR/MW
MOE
D1 SN74LS85N
D2 SN75140P
D3 MC14053BCP
D4 SN74LS73N
D5 SN74LS04N
D6 SN74LS125N
D7 SN74LS00N
D8 HD6303RP
D9 SN74LS374N
D10 SN74LS374N
P0 63S031
P24 (TxD)
P23 (RxD)
P11 (RTS)
P12
EXTAL
P13
XTAL
NMI
STBY
P22
P21
P20
IRQ1
AS
IO
RAM
EP1
EP2
361 409
461 409 03



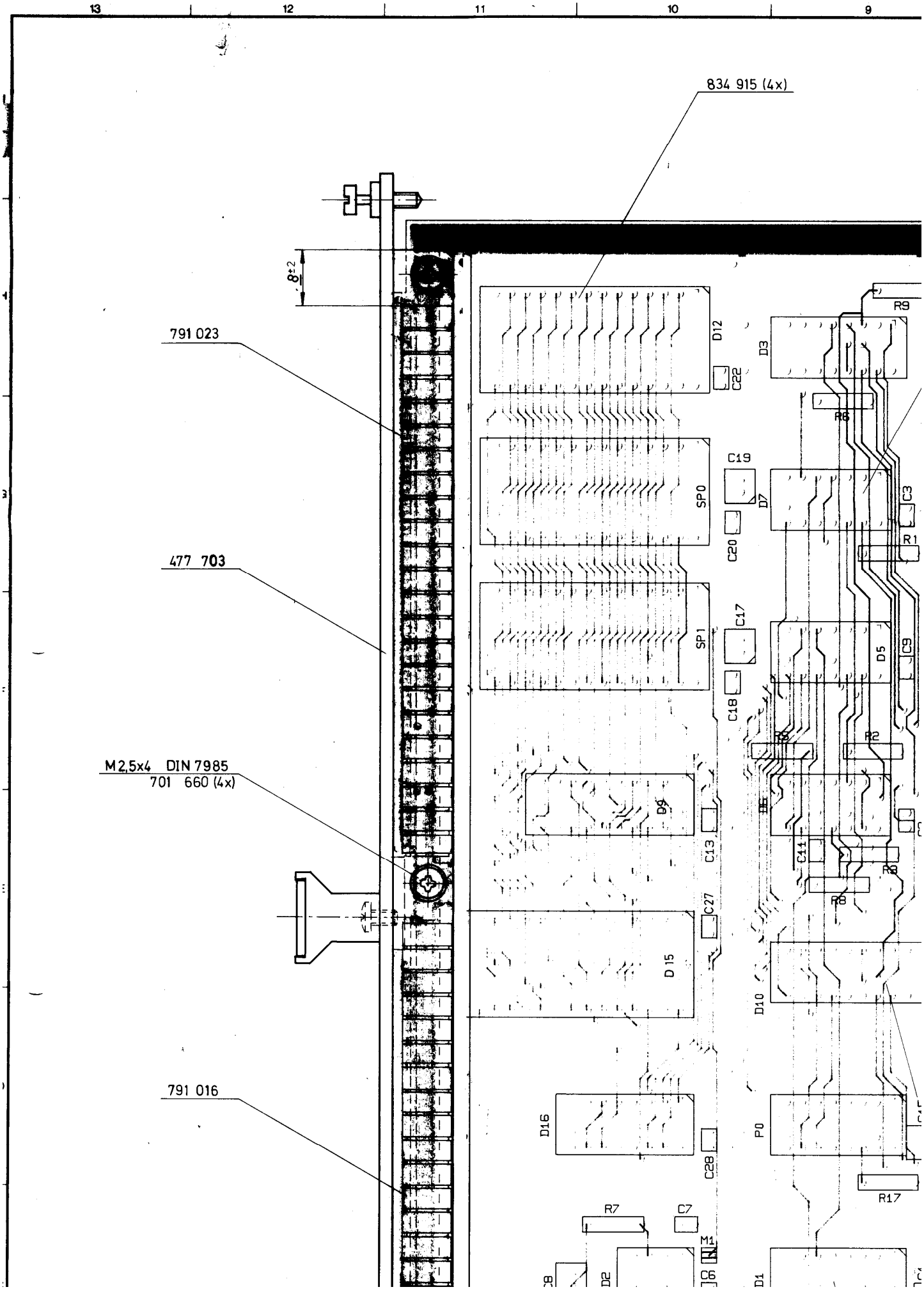
sw BLACK	bl BLUE		
br BROWN	vi VIOLET		
rt RED	gr GREY		
rs ROSE	ws WHITE		
ge YELLOW	tr TRANSPARENT		
gn GREEN			

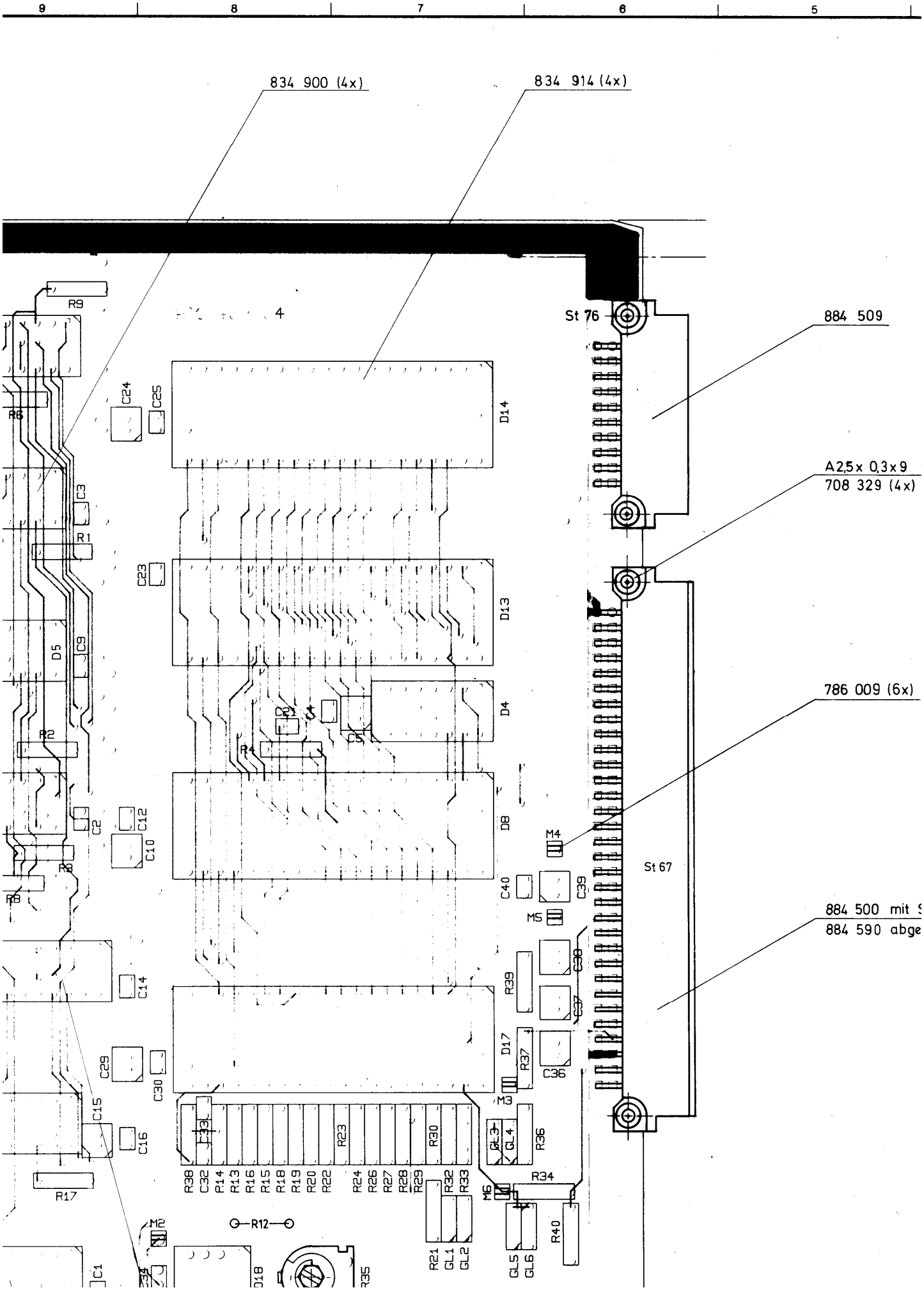
				norm	
				gepr	
06	7088.109	4.8.87	MO.	bearb	9.10.76 Kr.
Ausg	A-Mittlg	Datum	Name	1986	Datum Name
ISS	MODIF	DATE	NAME		DATE NAME



bl BLUE		norm		Schlumberger o/s	SLAVE COMPUTER	250 032 S
vi VIOLET		gepr		Meßgerätebau u. Vertrieb GmbH		
gr GREY	06 7088.109 4.8.87 MO.	bearb 9.10.75 Kr.		8 München 46		Typ: 4031
ws WHITE	Ausg A-Mittig Datum Name	1986 Datum Name				
"TRANSPAREN"	ISS MODIF DATE NAME	DATE NAME				

Diese Zeichnung ist unser Eigentum. Vervielfältigung, unbefugte Verwertung, Mitteilung an andere ist strafbar und schadenersatzpflichtig.

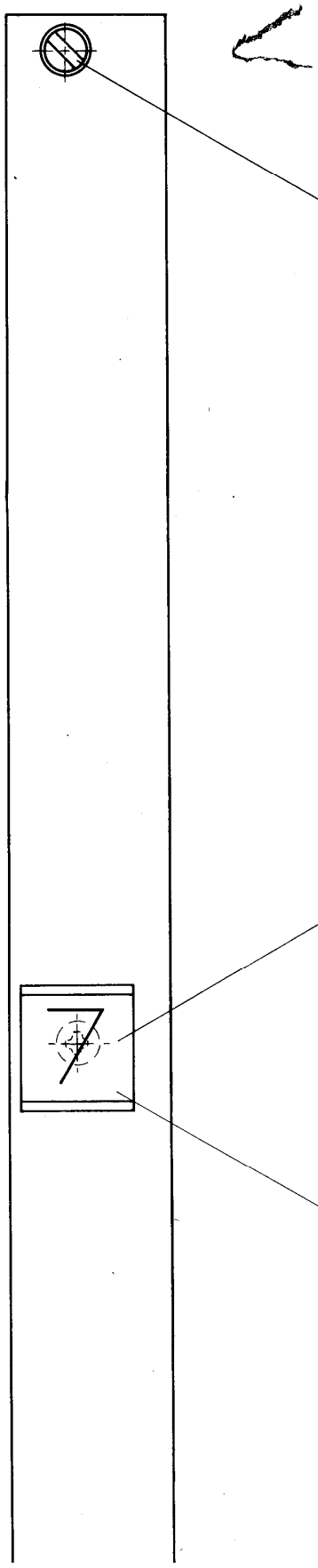

13
12
11
10
9
834 915 (4x)
8±2
791 023
477 703
M2,5x4 DIN 7985
701 660 (4x)
791 016
D12
C22
SP0
SP1
C19
C20
C17
C18
D9
C13
C27
D 15
D16
C28
R7
C7
M1
D2
D3
R9
R6
C3
D7
R1
D5
C9
R2
C11
R8
D10
P0
R17
D1



9
8
7
6
5
834 900 (4x)
834 914 (4x)
884 509
A2,5x 0,3x9
708 329 (4x)
786 009 (6x)
884 500 mit
884 590 abge
St 76
St 67
4
R9
R6
C24
C25
D14
C3
R1
C23
D13
D5
C9
D4
C21
C4
C5
R4
R2
C2
C12
C10
D8
M4
R3
R8
C40
C39
M5
C38
R39
C37
C14
D17
R37
C36
C29
C30
M3
C15
C16
C33
R23
R30
GL3
GL4
R36
R38
C32
R14
R13
R16
R15
R18
R19
R20
R22
R24
R26
R27
R28
R29
R32
R33
R34
M6
R17
M2
R12
R21
GL1
GL2
GL5
GL6
R40
C1
D18
R35

5 4 3 2 1

weich gelötet



884 509

704 035 eingepreßt (2x)
701 021 (2x)

A2,5x 0,3x9 DIN 7340
708 329 (4x)

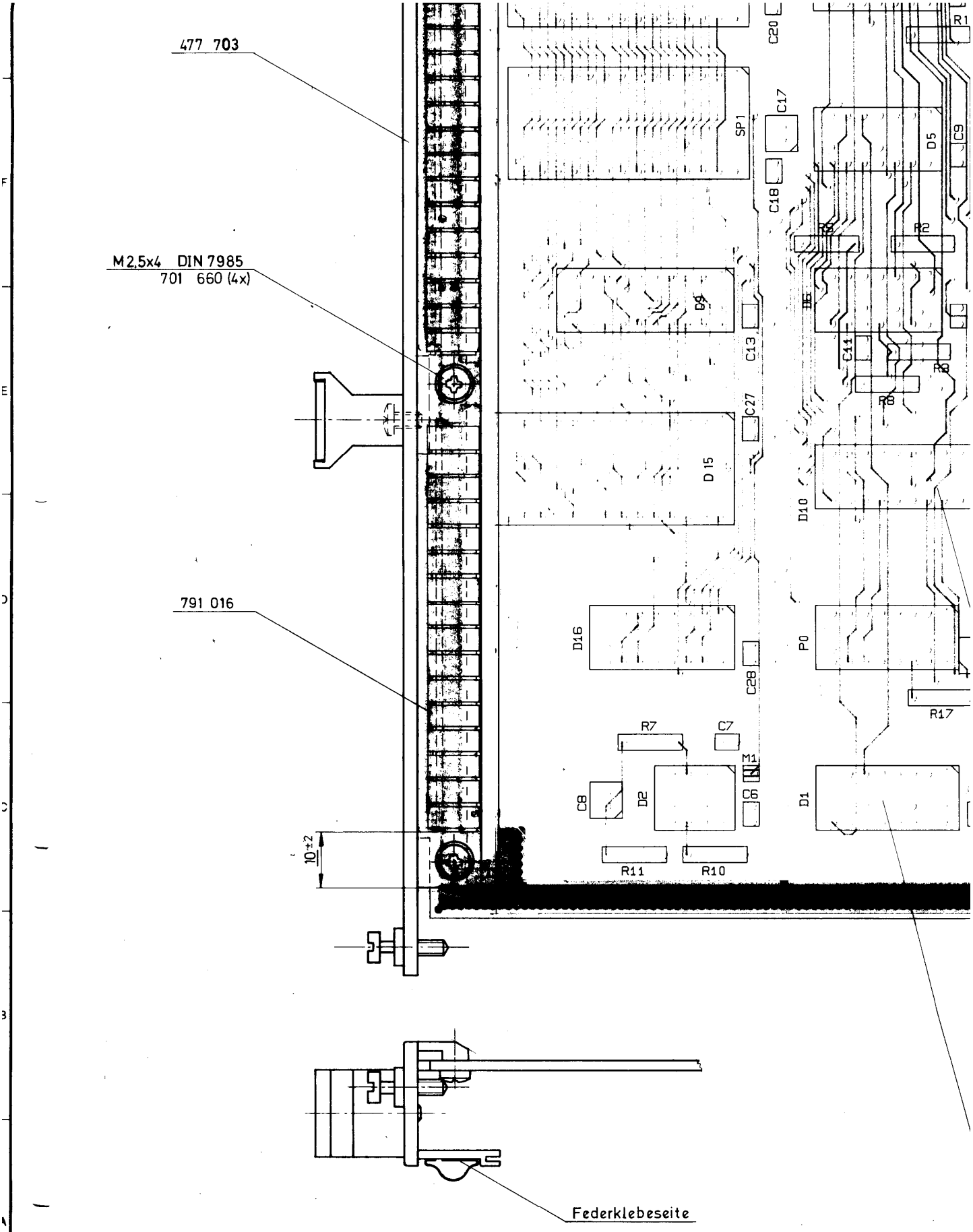
786 009 (6x)

787 078

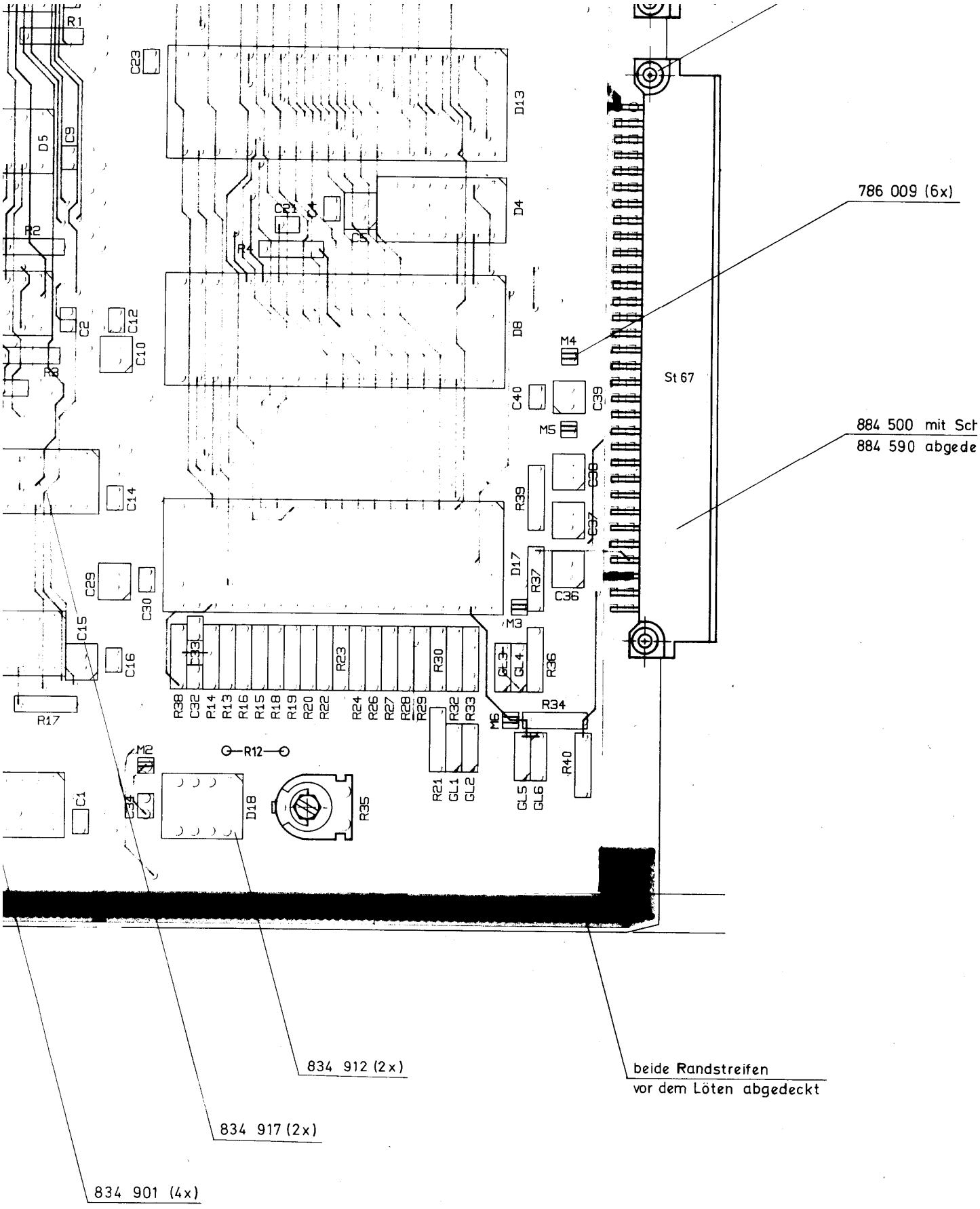
884 500 mit Schutzkappe
884 590 abgedeckt

444 277

I H G F E D C

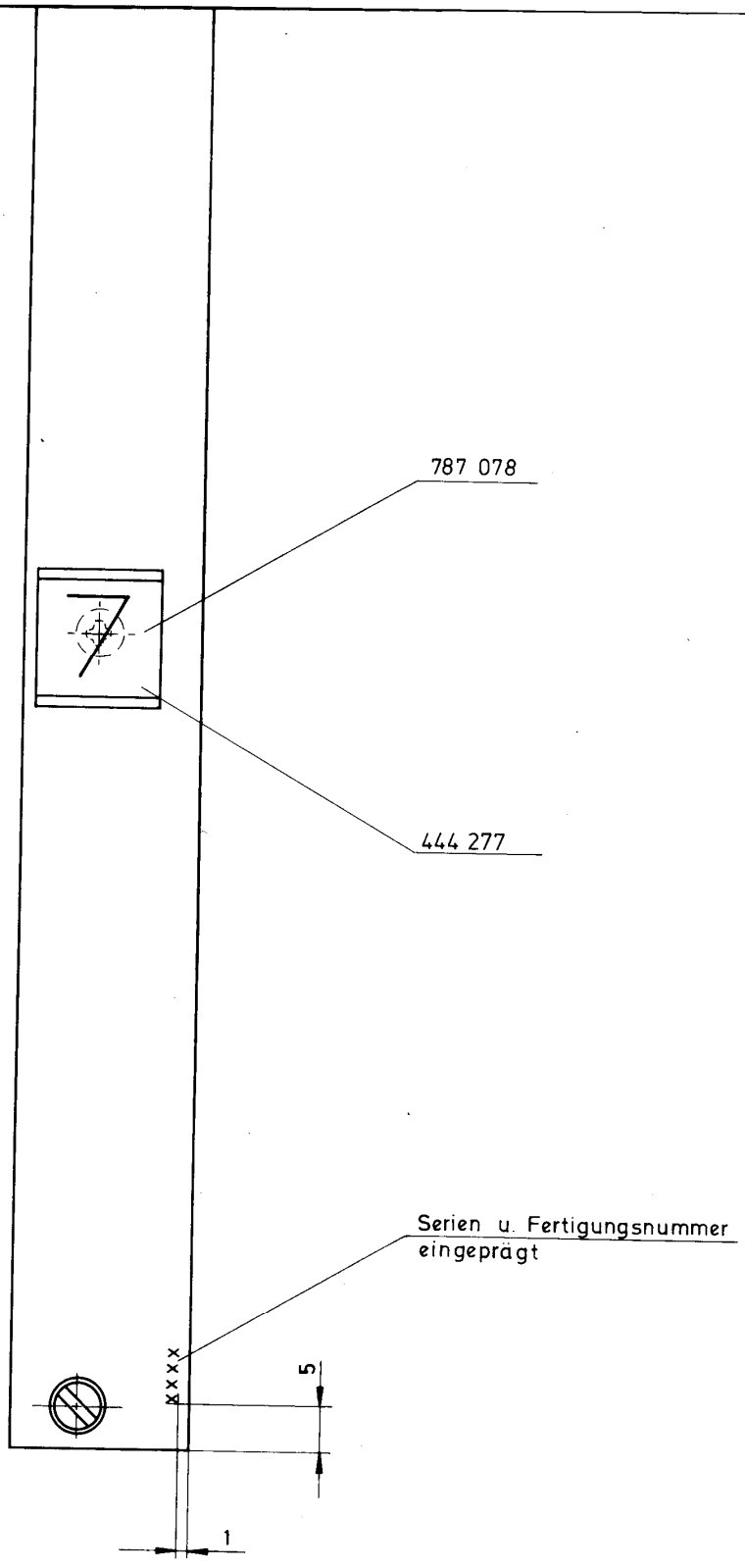


Schaltplanpositionierung ≙ 250 032 S/Sa


786 009 (6x)
884 500 mit Sch
884 590 abgede
St 67
834 912 (2x)
834 917 (2x)
834 901 (4x)
beide Randstreifen
vor dem Löten abgedeckt

786 009 (6x)

884 500 mit Schutzkappe
884 590 abgedeckt



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09				
08				
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04	7088.32	17.3.87	Mo.	
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01	6088.28		Ka	
Ausgabe	Änderg.-Mitteig.	Datum	Name	

Fremaßtoleranzen: ±0,5

Maßstab: 2:1

	Datum	Name
1986		
gez.	13.10	Marsball
beerb.		
gepr.		

Schlumberger Meßgeräte GmbH
Ingolstädter Straße 67 a
8000 München 46

Slave Computer

250 032

Gerät: 4031/201 231

1	2	3	4	5	6	7	8
Pos. REF. NO.	Wert VALUE	Bezeichnung Schlumberger PART. NO.	Hersteller MANUFACT	Pos. REF. NO.	Wert VALUE	Bezeichnung Schlumberger PART. NO.	Hersteller MANUFACT
C 1	10 nF ± 10 % 50 V-	813 115	RÖD	C 28	10 nF ± 10 % 50 V-	813 115	RÖD
C 2	10 nF ± 10 % 50 V-	813 115	RÖD	C 29	4,7 µF ± 20 % 35 V-	814 074	MATSU
C 3	10 nF ± 10 % 50 V-	813 115	RÖD	C 30	10 nF ± 10 % 50 V-	813 115	RÖD
C 4	10 nF ± 10 % 50 V-	813 115	RÖD	C 31			
C 5	4,7 µF ± 20 % 35 V-	814 074	MATSU	C 32	10 nF ± 10 % 50 V-	813 115	RÖD
C 6	10 nF ± 10 % 50 V-	813 115	RÖD	C 33	1 nF ± 10 % 50 V--	813 066	SIE
C 7	1 nF ± 10 % 50 V-	813 066	SIE	C 34	10 nF ± 10 % 50 V-	813 115	RÖD
C 8	4,7 µF ± 20 % 35 V-	814 074	MATSU				
C 9	10 nF ± 10 % 50 V-	813 115	RÖD	C 36	4,7 µF ± 20 % 35 V-	814 074	MATSU
C 10	4,7 µF ± 20 % 35 V-	814 074	MATSU	C 37	4,7 µF ± 20 % 35 V-	814 074	MATSU
C 11	680 pF ± 5 % 50 V-	813 064	VAL	C 38	4,7 µF ± 20 % 35 V-	814 074	MATSU
C 12	10 nF ± 10 % 50 V-	813 115	RÖD	C 39	4,7 µF ± 20 % 35 V-	814 074	MATSU
C 13	10 nF ± 10 % 50 V-	813 115	RÖD	C 40	10 nF ± 10 % 50 V-	813 115	RÖD
C 14	10 nF ± 10 % 50 V-	813 115	RÖD				
C 15	4,7 µF ± 20 % 35 V-	814 074	MATSU				
C 16	10 nF ± 10 % 50 V-	813 115	RÖD				
C 17	4,7 µF ± 20 % 35 V-	814 074	MATSU				
C 18	10 nF ± 10 % 50 V-	813 115	RÖD				
C 19	4,7 µF ± 20 % 35 V-	814 074	MATSU				
C 20	10 nF ± 10 % 50 V-	813 115	RÖD				
C 21	680 pF ± 5 % 50 V-	813 064	VAL				
C 22	10 nF ± 10 % 50 V-	813 115	RÖD	D 1	SN 74 LS 85 N	834 636	TEX
C 23	10 nF ± 10 % 50 V-	813 115	RÖD	D 2	SN 75 150 P	834 341	TEX
C 24	4,7 µF ± 20 % 35 V-	814 074	MATSU	D 3	MC 140 53 BCP	834 391	MOT
C 25	10 nF ± 10 % 50 V-	813 115	RÖD	D 4	SN 74 LS 73 N	834 629	TEX
				D 5	SN 74 LS 04 N	834 635	TEX
C 27	10 nF ± 10 % 50 V-	813 115	RÖD	D 6	SN 74 LS 125 N	834 697	TEX

Ausgabe ISSUE	Änd.-Mittlg. Nr. MODIFIC. NO.	Tag DATE	Name NAME
07			
06			
05			
04	6088.3	19.1.88	Di
03	7088.78	30.6.87	Di
02	6088.43	30.10.86	Fal.
01	6088.29	10.10.86	Kr.
-	6088.26	1.10.86	Lei

Schlumberger Meßgeräte GmbH
Ingolstädter Straße 67a
8000 München 46

	Tag DATE	Name NAME
1986		
geschr.	19.9.86	Dietrich
bearb.		
gepr.		

Schaltteilliste
EL. PARTS LIST

Benennung DESCRIPTION: Slave Computer

Bezeichnung Schlumberger PART. NO.: 250 032 Sa

Hierzu Schaltplan SEE CIRCUIT DIAGRAM: 250 032 S

Gerät: 4051

Liste besteht LIST CONSISTS aus OF 3 Blatt SHEETS

Blatt Nr. SHEET NO. 1

Diese Zeichnung ist unser Eigentum. Vervielfältigung, unbefugte Verwertung, Mitteilung an andere ist strafbar und schadenersatzpflichtig.

1	2	3	4	5	6	7	8
Pos. REF. NO.	Wert VALUE	Bezeichnung Schlumberger PART. NO.	Hersteller MANUFACT	Pos. REF. NO.	Wert VALUE	Bezeichnung Schlumberger PART. NO.	Hersteller MANUFACT
D 7	SN 74 LS 00 N	834 595	TEX				
D 8	HD 6303 RP	835 020	HIT				
D 9	SN 74 LS 374 N	834 607	TEX				
D 10	SN 74 LS 374 N	834 607	TEX				
D 11	[illegible]	834 763	[illegible]	R 1	10 kΩ ± 1 %	802 049	RÖD
D 12	HM 6264 P	[illegible]	HIT	R 2	10 kΩ ± 1 %	802 049	RÖD
D 13	MC 6821 P	835 002	[illegible]	R 3	10 kΩ ± 1 %	802 049	RÖD
D 14	MC 6821 P	835 002	[illegible]	R 4	10 kΩ ± 1 %	802 049	RÖD
D 15	HD 6340 P	[illegible]	HIT	R 5	10 kΩ ± 1 %	802 049	RÖD
D 16	SN 74 LS 153 N	834 662	TEX	R 6	10 kΩ ± 1 %	802 049	RÖD
D 17	HD 46 508 PA	834 130	HIT	R 7	1 kΩ ± 1 %	802 037	RÖD
D 18	REF 02 HP	834 237	[illegible]	R 8	4,75 kΩ ± 1 %	802 045	RÖD
				R 9	4,75 kΩ ± 1 %	802 045	RÖD
				R 10	3,32 kΩ ± 1 %	802 043	RÖD
				R 11	1,5 kΩ ± 1 %	802 039	RÖD
				[illegible]	[illegible] kΩ ± 1 %	[illegible]	[illegible]
				R 13	1 kΩ ± 1 %	802 037	RÖD
Gl 1	BAT 85	830 499	VAL	R 14	3,32 kΩ ± 1 %	802 043	RÖD
Gl 2	1 N 4148	830 240	ITT	R 15	1 kΩ ± 1 %	802 037	RÖD
Gl 3	1 N 4148	830 240	ITT	R 16	2,74 kΩ ± 1 %	802 042	RÖD
Gl 4	BAT 85	830 499	VAL	R 17	4,75 kΩ ± 1 %	802 045	RÖD
Gl 5	1 N 4148	830 240	ITT	R 18	2,74 kΩ ± 1 %	802 042	RÖD
Gl 6	BAT 85	830 499	VAL	R 19	1 kΩ ± 1 %	802 037	RÖD
				R 20	8,25 kΩ ± 1 %	802 048	RÖD
P 0	27 S 19 A	834 763	AMD	R 21	4,75 kΩ ± 1 %	802 045	RÖD
P 1	[illegible]	[illegible]	FUJ	R 22	1 kΩ ± 1 %	802 037	RÖD
P 2	[illegible]	[illegible]	FUJ	R 23	1 kΩ ± 1 %	802 037	RÖD

Ausgabe ISSUE	Änd.-Mittlg. Nr. MODIFIC. NO.	Tag DATE	Name NAME
07			
06	7088.165	10.11.87	Mo.
05	7088.78	30.6.87	Di
04	7088.32	17.3.87	Mo.
03	7088.13	23.1.87	Di
02	6088.69	9.12.86	Mo.
01	6088.29	10.10.86	Kr.
-	6088.26	1.10.86	Lei

Schlumberger Meßgeräte GmbH
Ingolstädter Straße 67 a
8000 München 46

1986	Tag DATE	Name NAME
geschr.	19.9.86	Dietrich
bearb.		
gepr.		

Schaltteilliste
EL. PARTS LIST

Benennung DESCRIPTION: Slave Computer

Bezeichnung Schlumberger PART. NO.: 250 032 Sa

Hierzu Schaltplan SEE CIRCUIT DIAGRAM: 250 032 S

Liste besteht LIST CONSISTS aus OF 3 Blatt SHEETS

Blatt Nr. SHEET NO. 2

Diese Zeichnung ist unser Eigentum. Vervielfältigung, unbefugte Verwertung, Mitteilung an andere ist strafbar und schadenersatzpflichtig.

1	2	3	4	5	6	7	8
Pos. REF. NO.	Wert VALUE	Bezeichnung Schlumberger PART. NO.	Hersteller MANUFACT	Pos. REF. NO.	Wert VALUE	Bezeichnung Schlumberger PART. NO.	Hersteller MANUFACT
R 24	1 kΩ ± 1 %	802 037	RÜD				
R 26	1 kΩ ± 1 %	802 037	RÜD				
R 27	1 kΩ ± 1 %	802 037	RÜD				
R 28	1 kΩ ± 1 %	802 037	RÜD				
R 29	1 kΩ ± 1 %	802 037	RÜD				
R 30	1 kΩ ± 1 %	802 037	RÜD				
R 32	1 kΩ ± 1 %	802 037	RÜD				
R 33	1 kΩ ± 1 %	802 037	RÜD				
R 34	1 kΩ ± 1 %	802 037	RÜD				
R 35	2,2 kΩ ± 10 %	802 504	[illegible]				
R 36	1 kΩ ± 1 %	802 037	RÜD				
R 37	1 kΩ ± 1 %	802 037	RÜD				
R 38	475 Ω ± 1 %	802 033	RÜD				
R 39	10 Ω ± 1 %	802 013	RÜD				
R 40	100 kΩ ± 1 %	802 061	RÜD				
SP 0	MBM 27 C 256-30 DC	893 336	[illegible]				
SP 1	MBM 27 C 256-30 DC	893 336	[illegible]				
St 65	Messerleiste 64 pol.	804 500	SIE				
St 76	Messerleiste 20 pol.	804 509	SIE				

Ausgabe ISSUE	Änd.-Mittlg. Nr. MODIFIC. NO.	Tag DATE	Name NAME
07			
06			
05			
04			
03	8088.3	19.1.88	Di
02	7088.78	30.6.87	Di
01	7088.32	17.3.87	Ho.
-	6088.26	1.10.86	Lei

Schlumberger Meßgeräte GmbH
Ingolstädter Straße 67 a
8000 München 46

1986	Tag DATE	Name NAME
geschr.	10.9.86	Dietrich
bearb.		
gepr.		

Schaltteilliste
EL. PARTS LIST

Benennung DESCRIPTION: Slave Computer

Bezeichnung Schlumberger PART. NO.: 250 002 3a

Hierzu Schaltplan SEE CIRCUIT DIAGRAM: 250 002 -3

Liste besteht LIST CONSISTS aus OF 3

Blatt SHEETS

Blatt Nr. SHEET NO. 3

Diese Zeichnung ist unser Eigentum. Vervielfältigung, unbefugte Verwertung, Mitteilung an andere ist strafbar und schadenersatzpflichtig.