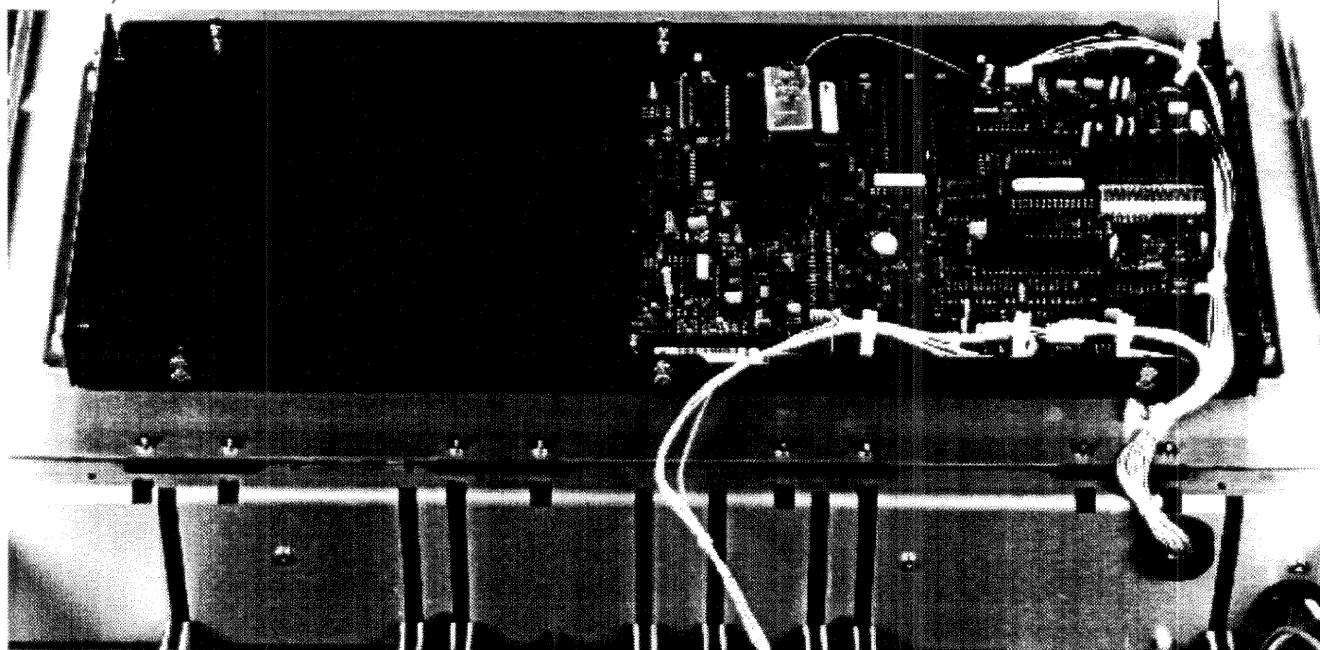
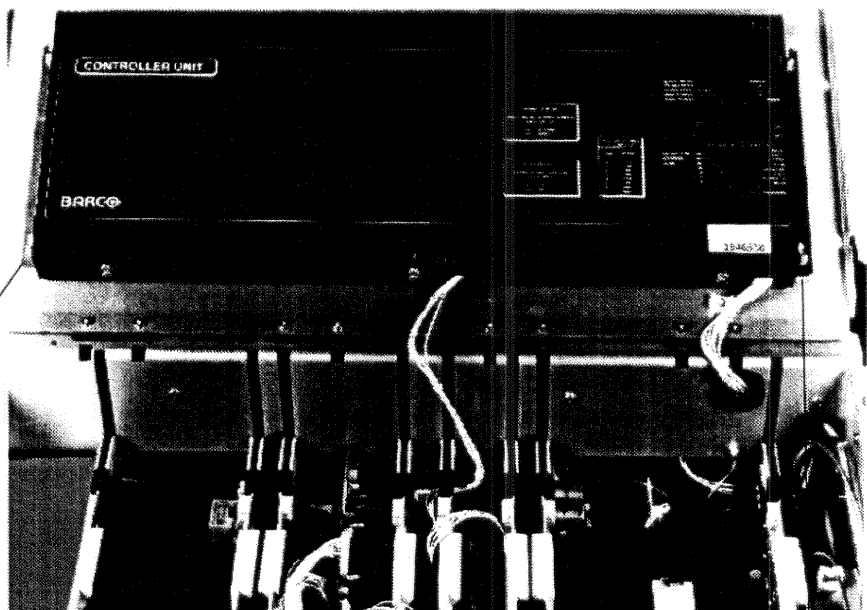


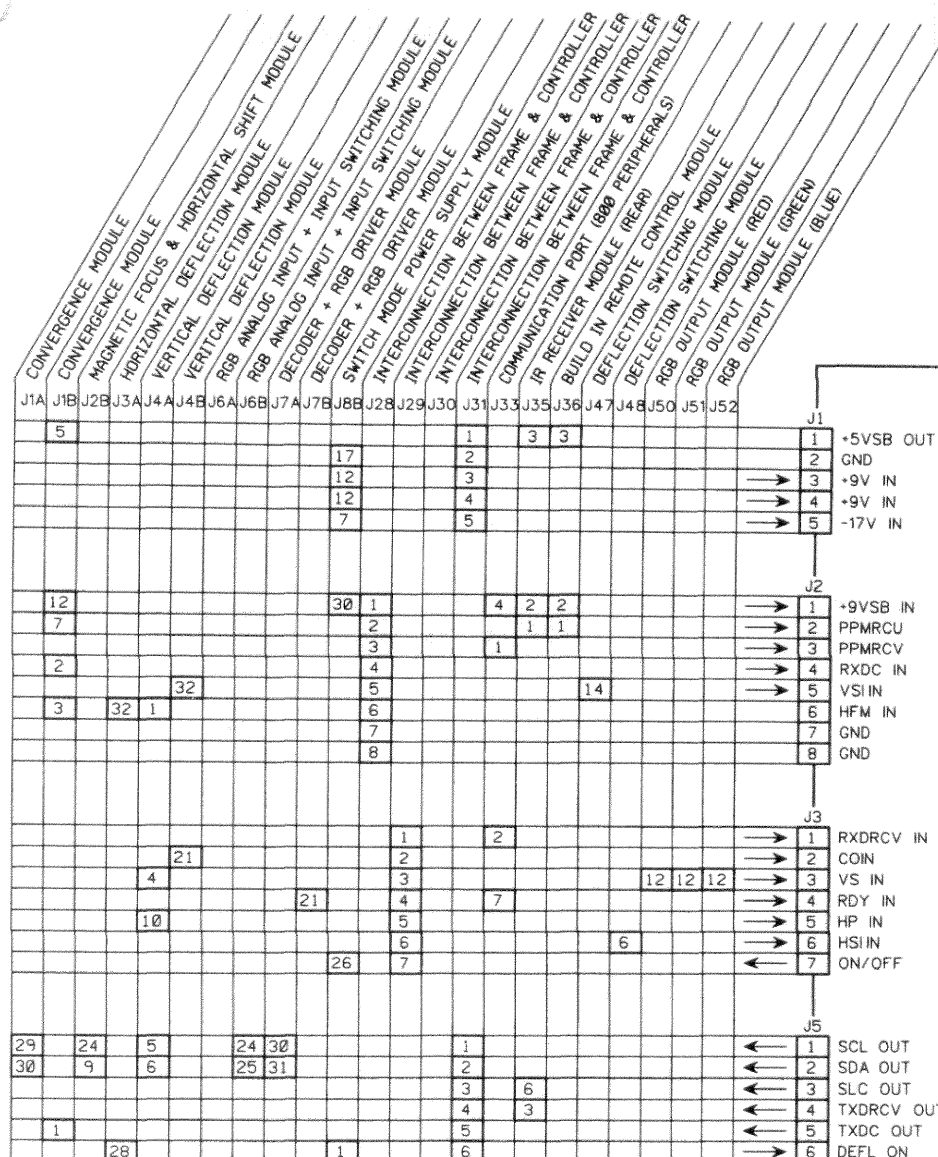


BARCO Projection Systems

SECTION **Q**

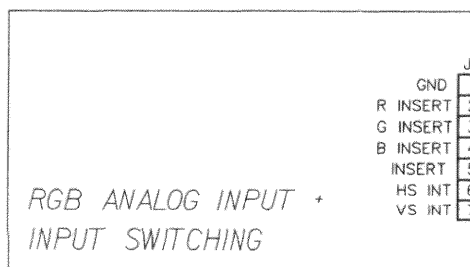
service sheet





FUTURE EXPANSION I/O

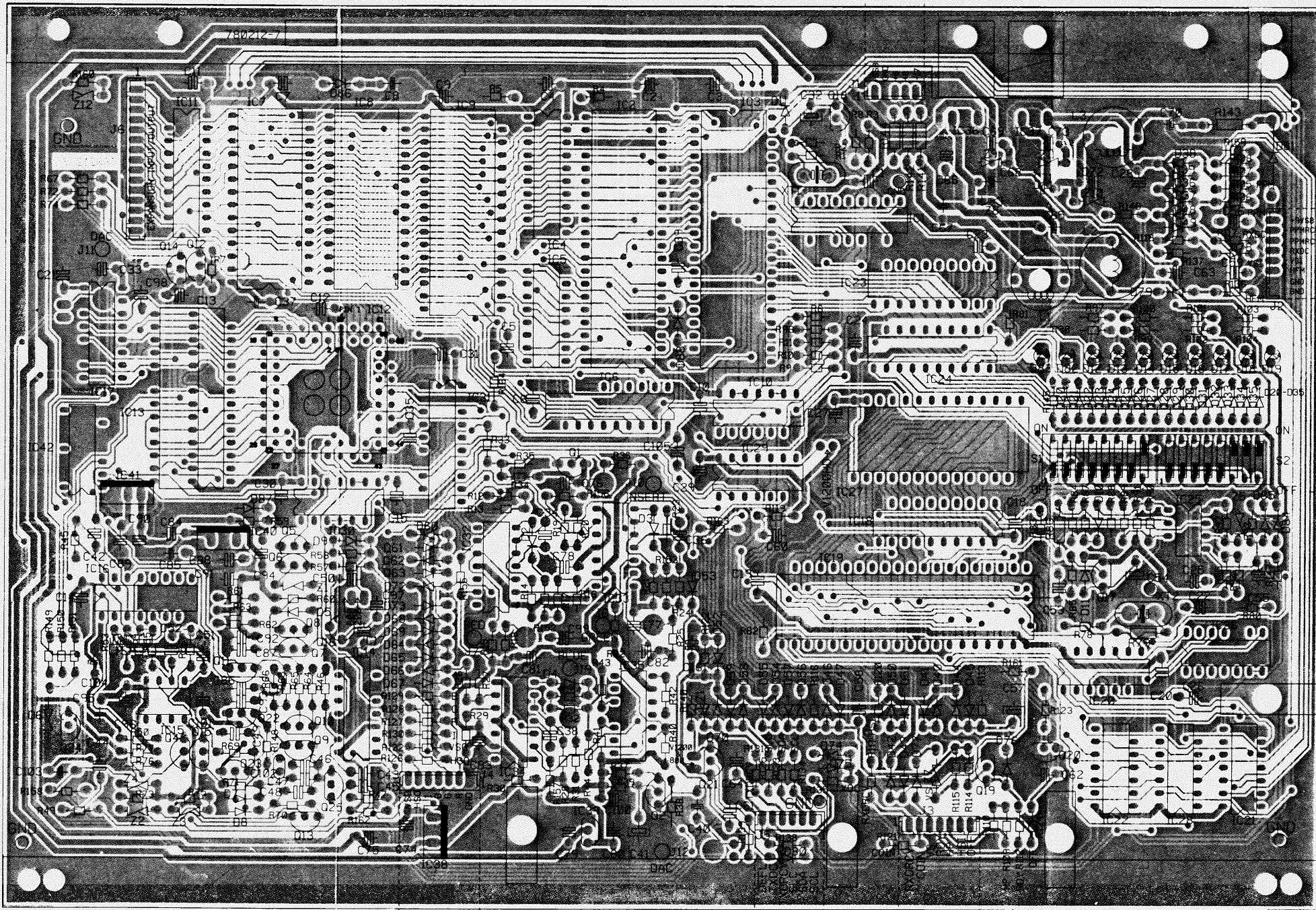
CONTROLLER



*		Article nr.
Controller	G1200	76 21095
Controller	G1208	76 2166
Controller	V1200	76 2167
Name		Article nr. (See *)
CONTROLLER		
Date	Drawn	Checked
17-11-1993	JVDY	GT

BARCO PROJECTION SYSTEMS

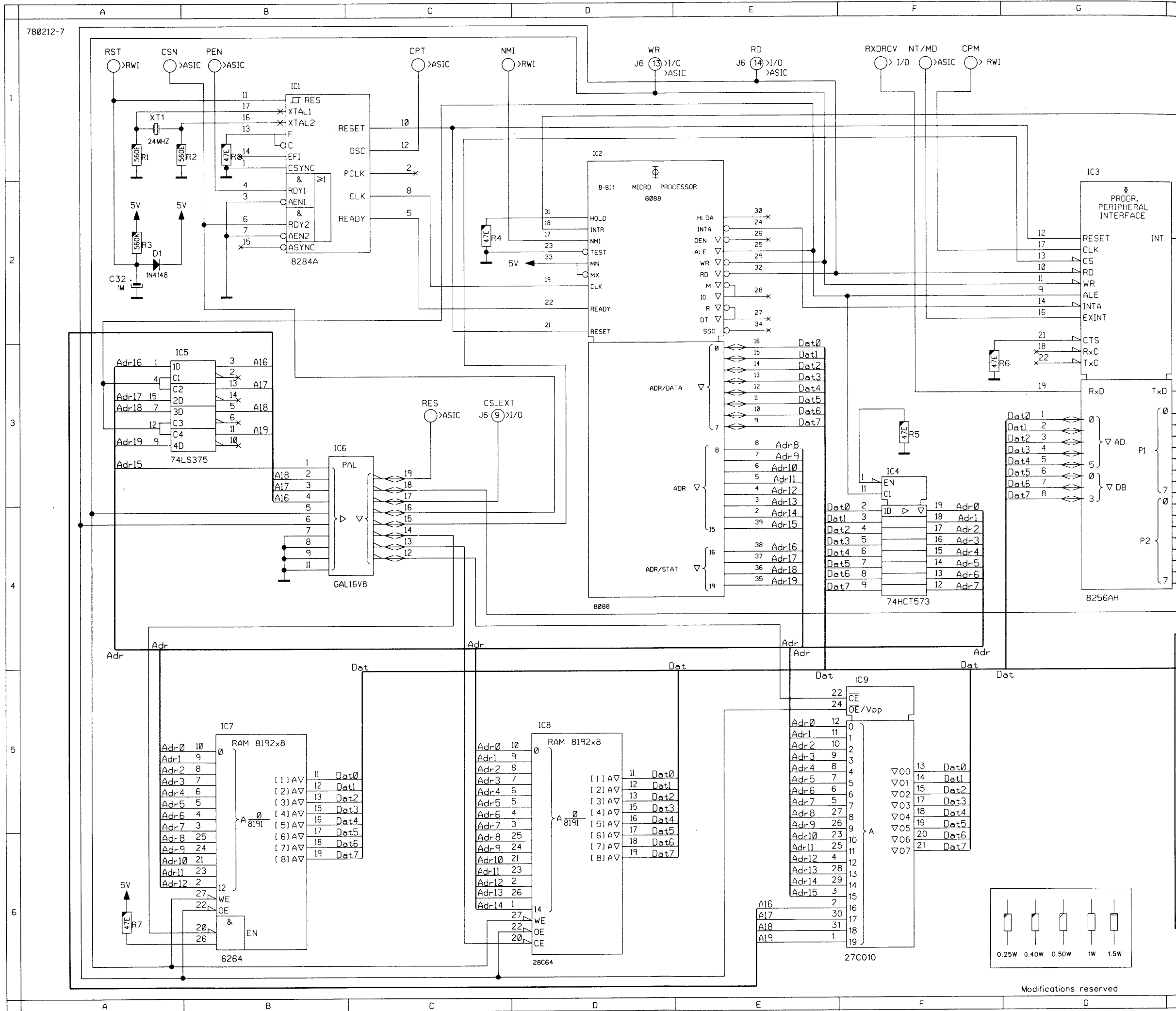
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C2	H 2	sheet	4	D22	G 2	sheet	3	IC20	F 6	sheet	3	Q21	D 5	sheet	4	R123	D 2	sheet	4
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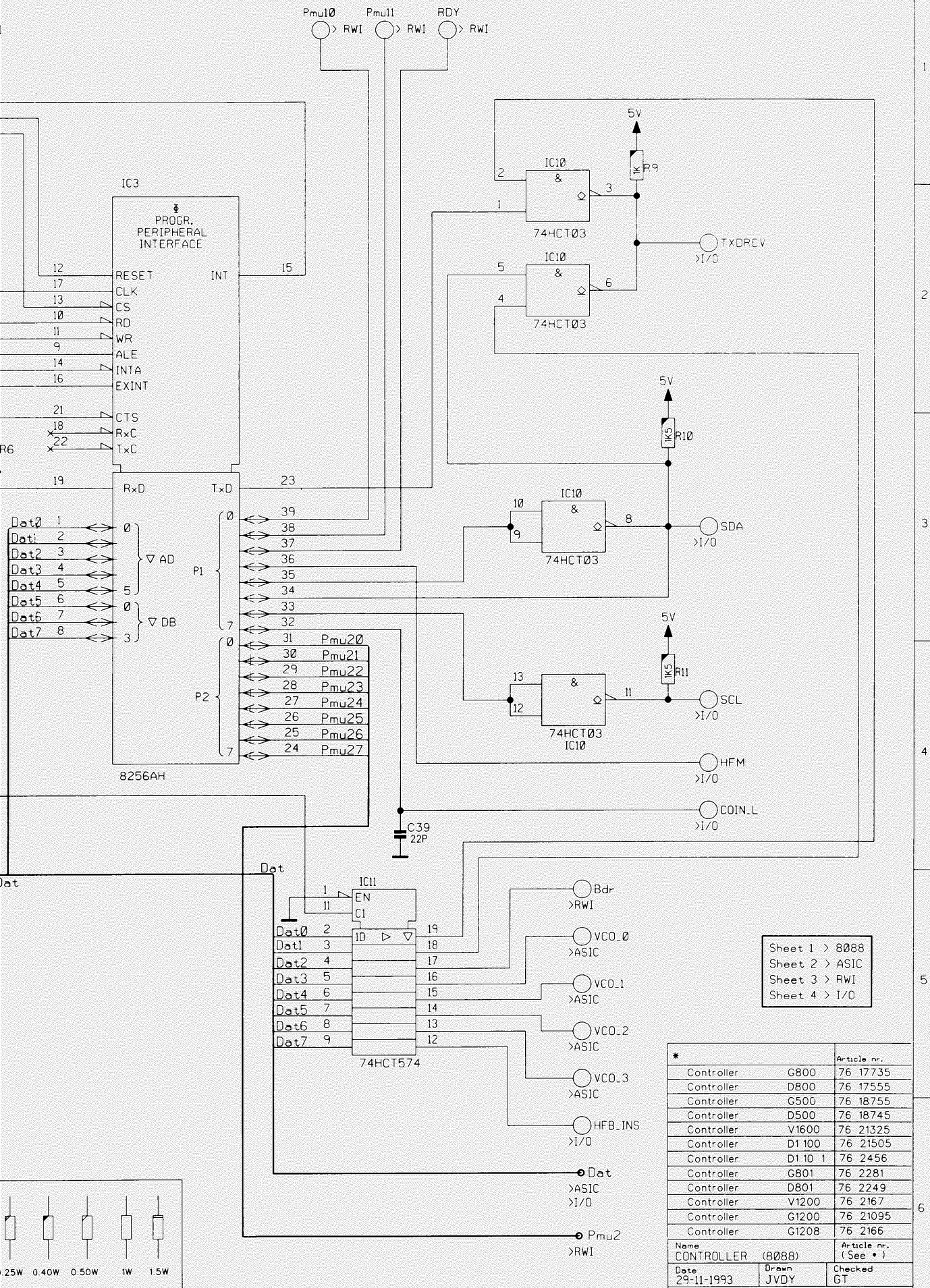


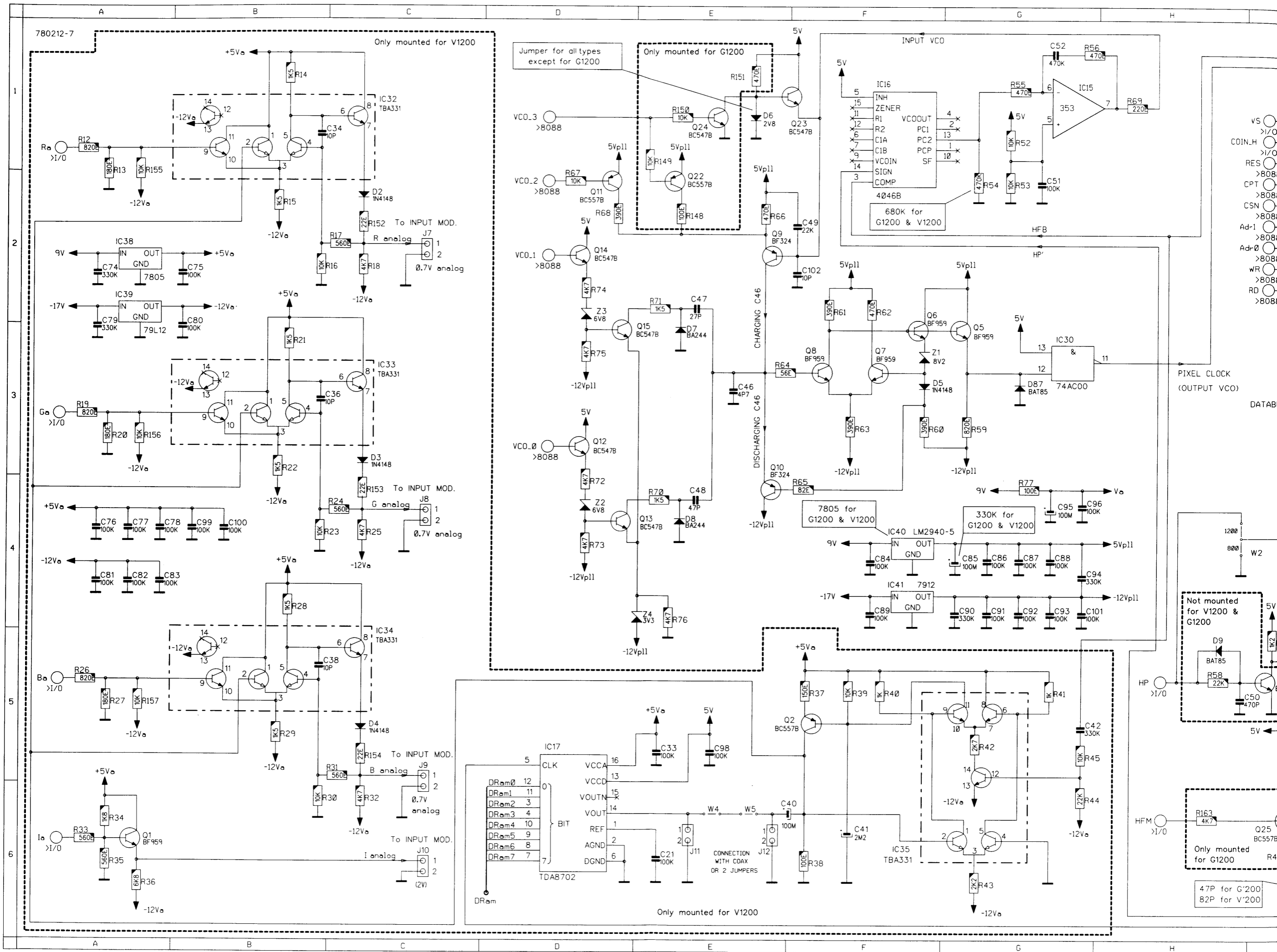
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CONTROLLER (ASIC) D500		76 18745
CONTROLLER (ASIC) V1600		76 21235
CONTROLLER (ASIC) D1100		76 21505
CONTROLLER (ASIC) D1101		76 2456
CONTROLLER (ASIC) G801		76 2281
CONTROLLER (ASIC) D801		76 2249
CONTROLLER (ASIC) V1200		76 2167
CONTROLLER (ASIC) G1200		76 21095
CONTROLLER (ASIC) G1208		76 2166
Name CONTROLLER (ASIC)		Article nr. (See *)
Date 14-09-1993	Drawn JVDY	Checked GT
BARCO PROJECTION SYSTEMS		

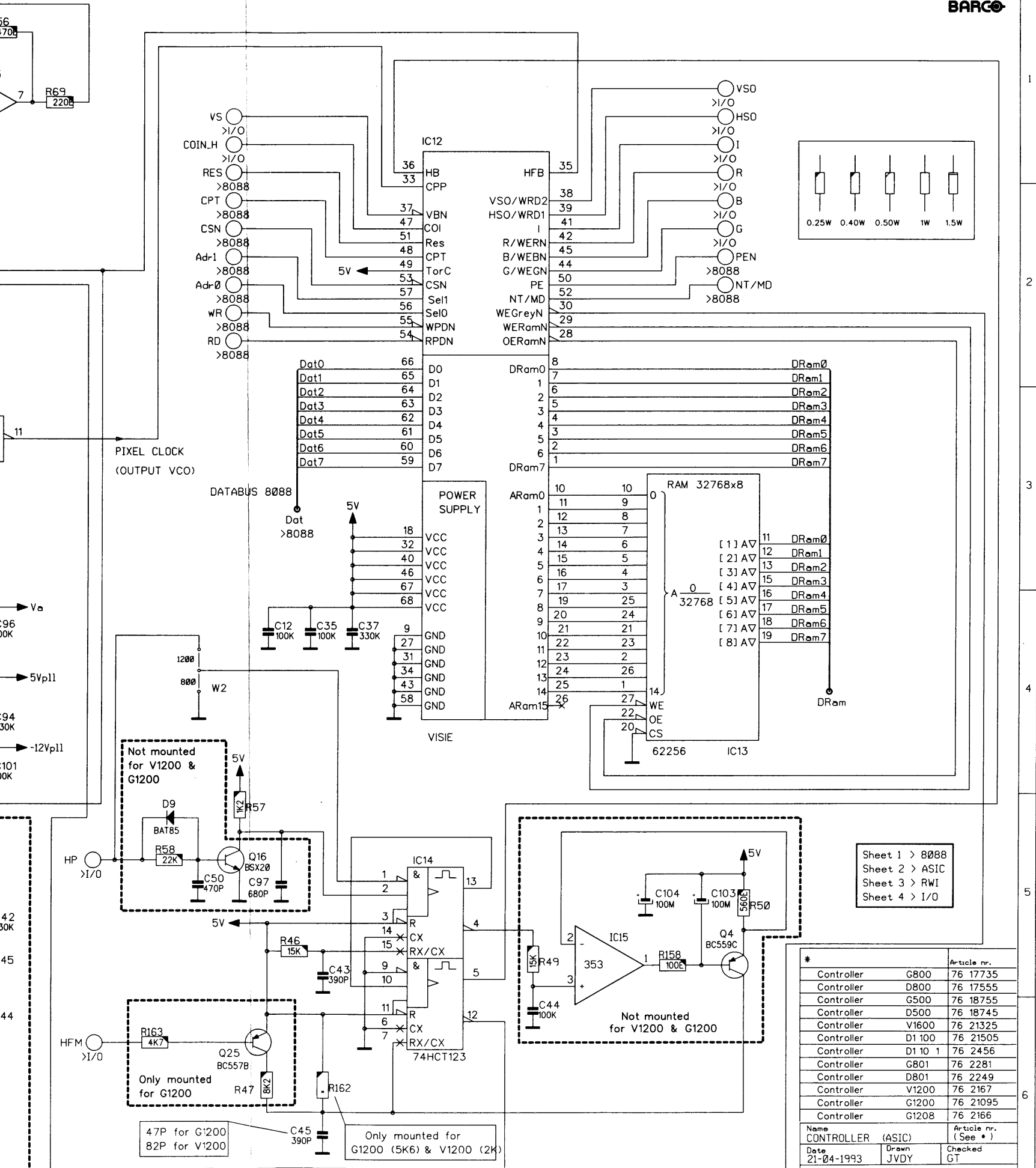


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D4	D 2	D30	G 3	D15	G 5	R24	F 5
D5	D 3	D31	G 2	D16	G 4	R25	E 5
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D15	G 4	D41	F 4			R35	E 5
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D104	B 4	IC41	B 3	R91	C 4		
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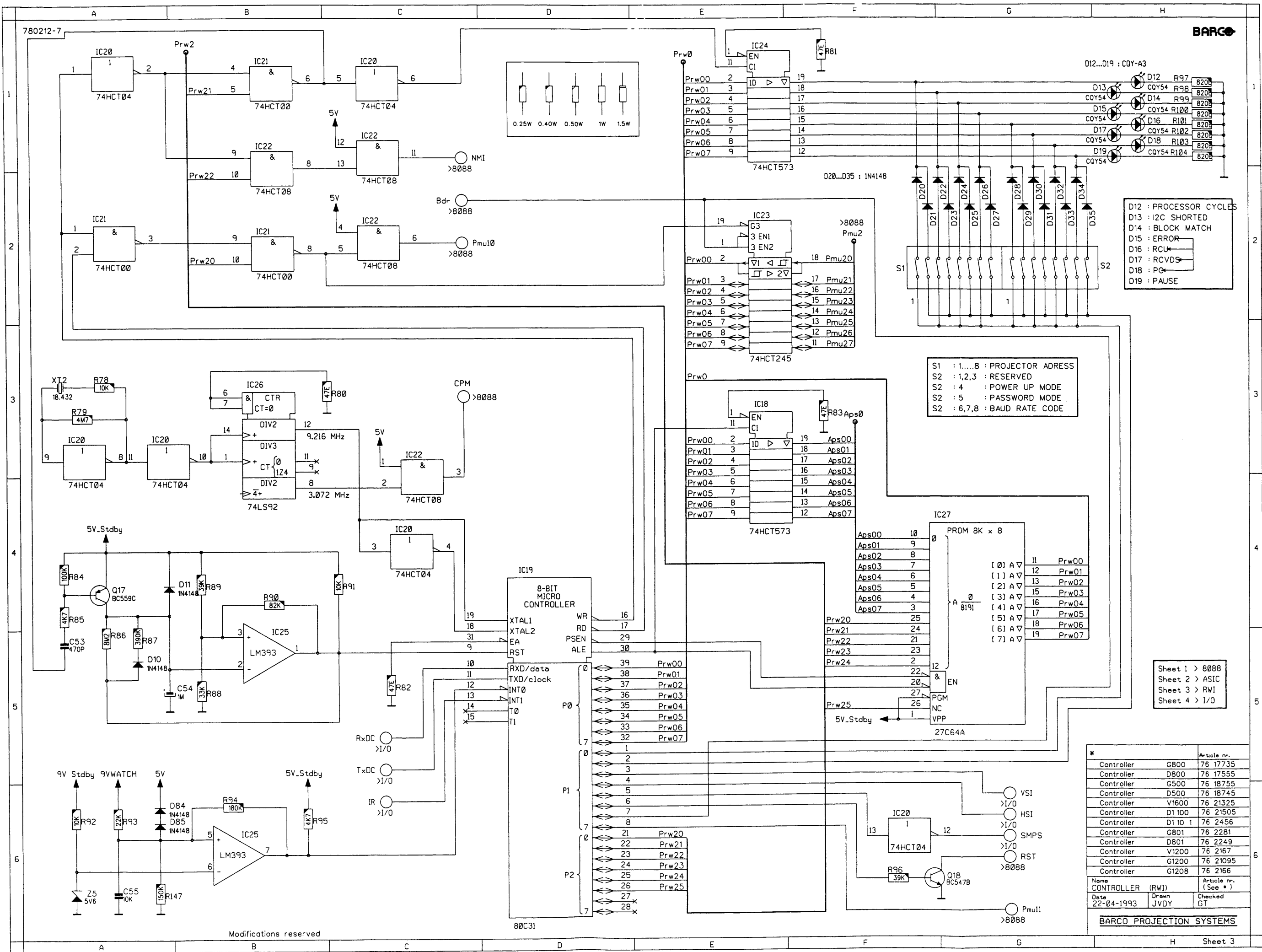


Modifications reserved

*		Article nr.
Controller	G800	76 17735
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Controller	G500	76 18755
Controller	D500	76 18745
Controller	V1600	76 21325
Controller	D1 100	76 21505
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Controller	G801	76 2281
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Controller	V1200	76 2167
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Controller	G1208	76 2166

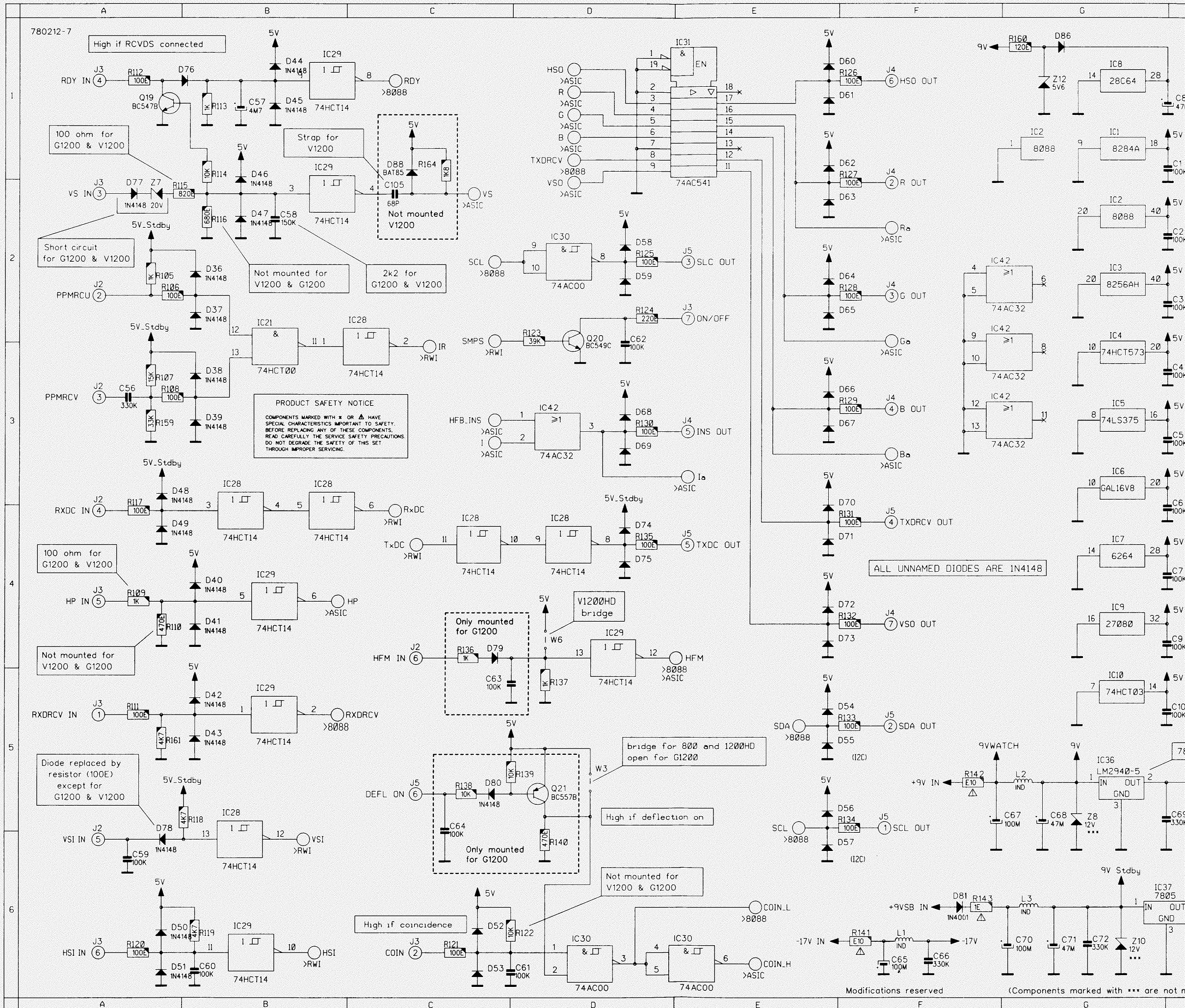
Name	CONTROLLER (ASIC)	Article nr.
Date	21-04-1993	(See *)
Drawn	JVDY	
Checked	GT	

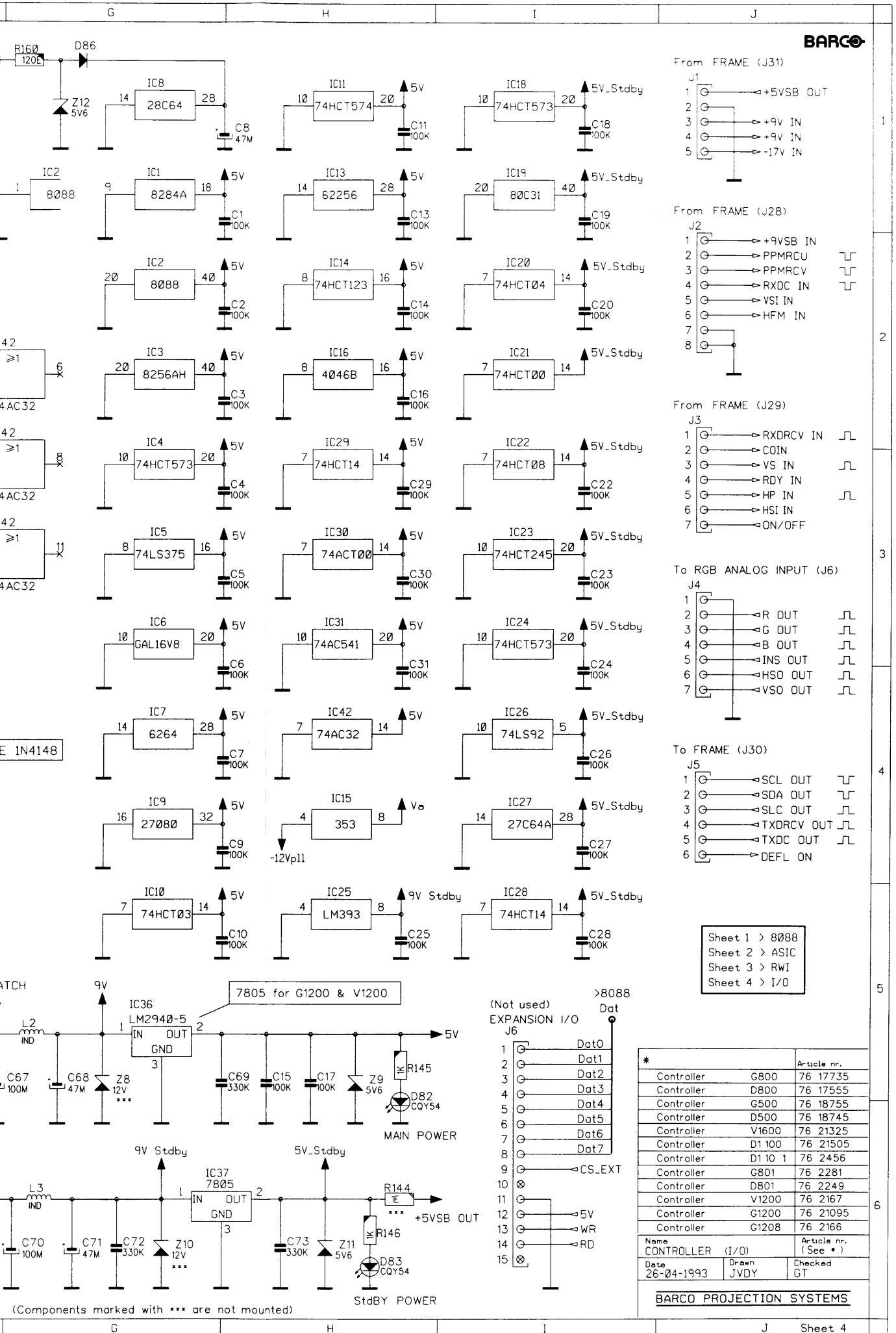
BARCO PROJECTION SYSTEMS



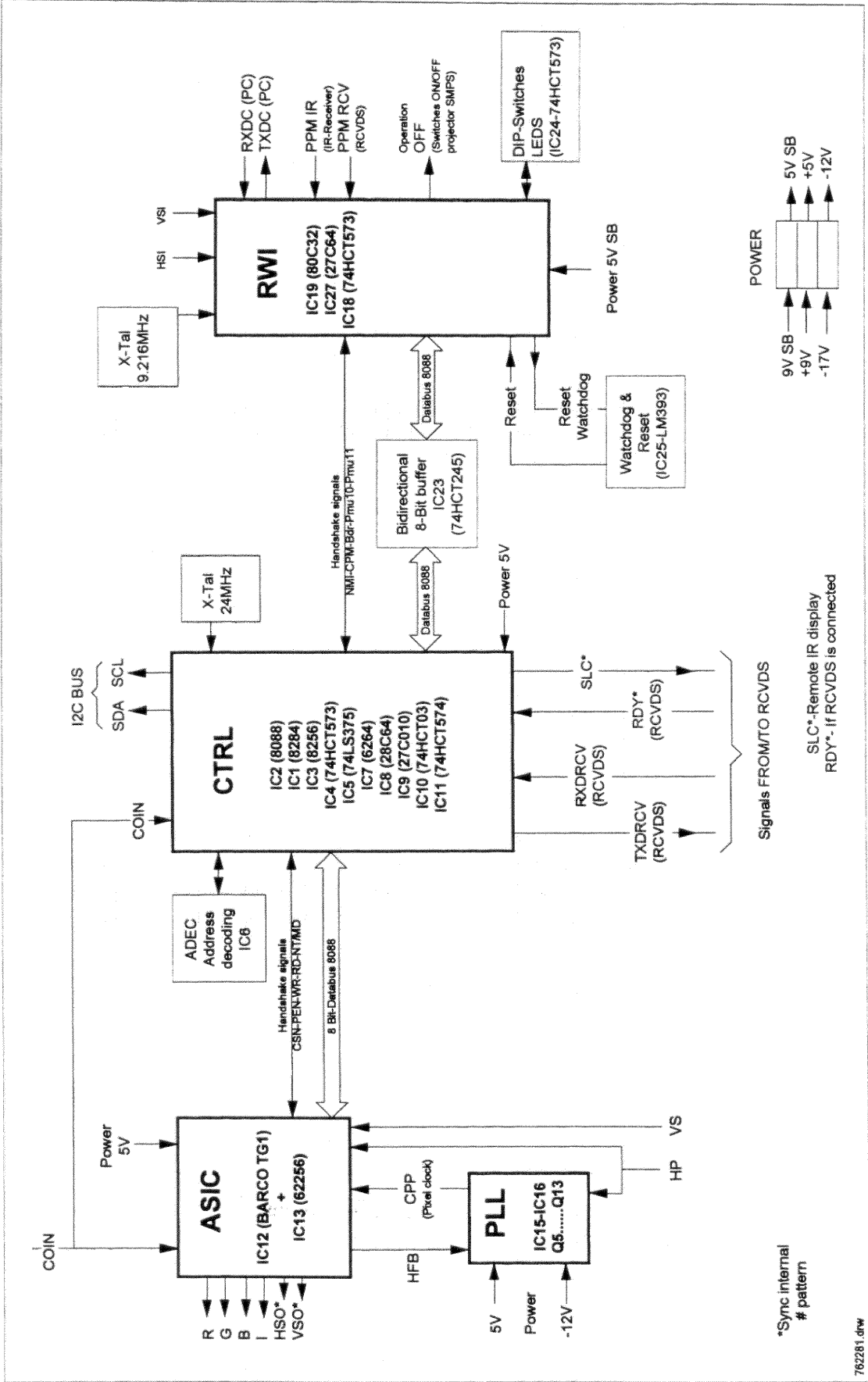
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Controller	G800 76 17735
Controller	D800 76 17555
Controller	G500 76 18755
Controller	D500 76 18745
Controller	V1600 76 21325
Controller	D1 100 76 21505
Controller	D1 10 1 76 2456
Controller	G801 76 2281
Controller	D801 76 2249
Controller	V1200 76 2167
Controller	G1200 76 21095
Controller	G1208 76 2166
Name CONTROLLER (RW1) Article nr. (See *)	
Date 22-04-1993	Drawn JVDY
Checked GT	

BARCO PROJECTION SYSTEMS





*		Article nr.
Controller	G800	76 17735
Controller	D800	76 17555
Controller	G500	76 18755
Controller	D500	76 18745
Controller	V1600	76 21325
Controller	D1 100	76 21505
Controller	D1 10 1	76 2456
Controller	G801	76 2281
Controller	D801	76 2249
Controller	V1200	76 2167
Controller	G1200	76 21095
Controller	G1208	76 2166
Name CONTROLLER (I/O)		Article nr. (See *)
Date	26-04-1993	Drawn JVDY
		Checked GT



TECHNICAL DESCRIPTION " CONTROLLER "

Introduction.

The controller module can be divided into four blocks : the RWI (Real World Interface), CTRL (Controller), ASIC and PLL.

Each block has a typical function, but, needs information from the other blocks. These connections are realised by the address / data bus or by "handshake" signals. Address and data are split by a GAL - ADEC (Address DECoder). The schematic diagram consists of 4 sheets : Controller , ASIC, RWI and I / O.

Real World Interface

The RWI is responsible for the communication with the peripheral circuitry of the projector, more in particular the PPM (Pulse Position Modulated) commands. These commands can come in via the IR receiver, coming straight from the attached keypad, via the PC communication (RS232) port or the RCVDS port.

This electronic part must be supplied from the +9VSB supply line, as it must be ready in stand-by to respond to an ON command. The state of the switching transistor Q20 is determined by the "SMPS" line. This is the output pin 12 of IC20, which is supplied from the micro-controller IC19. Whether this line is high or low at the moment the mains is supplied, depends on the DIP switch position "Power ON/OFF" (S2, switch 4).

The data bus of the RWI micro-controller IC19 is connected with the main controller IC2 via a bi-directional buffer IC23.

The multiplexed address/data bus P0 of the microcontroller drives the LEDs D12 - D19 and the DIP switches via the buffer IC24 (74HCT573).

Watchdog - 9 Volt Watch

The watchdog is built around IC25 pins 1 - 2 - 3 and Q17 transistor. At switching on the projector, the +5VSB is supplied to this circuit. As C54 is not charged at switching on, the output pin 1 is high for a moment in order to reset the microcontroller at pin 9 of IC19 (RST). Pin 3 is set at half the supply voltage. The microcontroller triggers the watchdog via C53 in order to keep charged the capacitor C52 by conduction of Q17.

If the processor gets blocked for any reason, the level detector output pin 1 comes high and resets the controller as described before. The watchdog has as task to restart the controller when it gets blocked for some reason.

When, during an arcing in a CRT the +5V supply is temporarily shorted, the microprocessor can get in trouble. For that reason, the other level detector in IC25 monitors the 9V (9VWATCH). The output of this detector is connected to the INT0 of the processor.

Controller (Main processor)

This is the multi task processor, its running program is stocked in the Eprom IC9. The digital potentiometers and other interfaces are loaded via the I²C bus which is buffered with a 74HCT03 (IC10). The information adjusted by the user regarding the settings of the different blocks (memory blocks) are stocked in the E²PROM IC8. The processor communicates with the ASIC to load the text generator RAM and to be informed of the results of the frequency measurements which are done by the ASIC. The buffered TXDRCV and RXDRCV are the communication lines with the switcher / selector RCVDS800 or RCVDS05. The RDY line (Ready line) informs the microprocessor on the status of the switcher (powered up or powered down).

ASIC

The ASIC integrates different functions and is custom made for this application. This chip is amongst others responsible for the generation and synchronisation of the text that must be projected on request. The text or pixel information is loaded by the controller into the RAM IC13. Eight bytes are loaded into the RAM via the ASIC during the HFB time. (For that reason, the controller cannot start up when there are no HFB pulses available from the ASIC).

When an external source is selected, the ASIC measures 'frequently' the line and vertical frequencies and informs the main processor if there are changes (change of resolution mode or change of source....).

The pixelclock, generated by the VCO of the PLL, is sent to the ASIC where it is divided down to *HFB* and returned to the phase comparator of the PLL.

When an internal pattern is selected, required by the user or automatically at starting up, the ASIC generates sync signals HSO and VSO.

The R, G and B together with the INSERT are buffered with IC31 and further proceed to the RGB INPUT + SW module.

PLL

The PLL consists of the digitally edge controlled phase comparator IC16, the low pass filter around IC15, the VCO (Q5 - Q15) and the internal divider in the ASIC. The VCO is a sawtooth generator. C46 is charged up via Q9, driven in the base with the low pass filter output. Note that 0 volts on the base means the maximum frequency. The VCO_0/1/2 lines can turn on transistors and then additional current is available for the generator.

Via the emitterfollower Q5 and the buffer in IC30, the pixelclock is applied to the CPP input of the ASIC. The PLL phase comparator has a double task. Tune the frequency of the VCO to a multiple of the line frequency and lock the position of the text to the deflection.

The active line period is divided into 256 pixels to position 32 characters on a line in the low frequency range and into 512 pixels (64 characters) in the high freq. range (see Hor defl module).

The *HFM* line informs the processor and thus the PLL on the flyback time, this information is needed to determine the pixel frequency of the PLL.

Coincidence .

The coincidence of the line oscillator is an important information for the controller. At starting up, the controller always generates first internal sync, which must lead to a coincidence situation.

If an external source is selected then, the controller waits for coincidence and the timings of the selected source. These timings are needed to choose the memory block corresponding with the source. If the coincidence is not active, the projector remains blanked (black screen).

Spare parts Controller module 76 2166

SIT.	ITEM NO.	DESCRIPTION	QUANTITY	SIT.	ITEM NO.	DESCRIPTION	QUANTITY
	R137183	U 27C010 -15DIP32 C	1	C 29	R112774	C CE MI 100N S 63E2	
	R137194	U 27C64A -20DIP28 C	1	C 30	R112774	C CE MI 100N S 63E2	
	R137530	U 16V8 GAL 25DIP20 P	1	C 31	R112774	C CE MI 100N S 63E2	
320	R312830	J UPLCC FBT P68 E1SN SPG	1	C 32	R111546	C EL RA 1M M 50E2 85	1
0 5	R313248	J U0.3 FBT P14 E1SN SPG	1	C 35	R112774	C CE MI 100N S 63E2	
300	R3132539	J U0.6 FBT P28 E1AU TLP	1	C 37	R113730	C POMERA 330N K 63E2	1
310	R313487	J U0.6 FBT P32 E1AU TLP	1	C 39	R112234	C NPO MI 22P G 63E2	1
60	R315302	J PIN PR D1.3L 5.5+3	4	C 43	R112386	C N152MI 390P J 63E2	1
	R34225405	WU UL1061 AWG26 ST YE 50	1	C 45	R1122395	C NPO MI 56P G 63E2	1
40	R348019	CBL ACC TIE B L100 W2.5	7	C 46	R112226	C NPO MI 4P7C 63E2	1
30	R348089	CBL ACC SLCSE D 5.6	5	C 47	R112235	C NPO MI 27P G 63E2	
	R3481042	WU JUMP 0.51 12.5 ISO	1	C 48	R112238	C NPO MI 47P G 63E2	
0 1	R361913	SCR D965 M 3 X 8 PS Z	2	C 49	R1137161	C POMERA 22N K100E2	
130	R3620226	SCR D84 M 3 X 8 SI	2	C 51	R112774	C CE MI 100N S 63E2	
120	R3626696	SCR D921 M 3 X 8 SI	6	C 52	R114087	C POMERA 470N M 63E2	1
220	R3626696	SCR D921 M 3 X 8 SI	6	C 54	R111546	C EL RA 1M M 50E2 85	
132	R366102	NUT D934 M 3 S Z	2	C 55	R1137121	C POMERA 10N K100E2	
0 2	R3661026	NUT D934 M 3 I	4	C 56	R113730	C POMERA 330N K 63E2	
110	R3674391	RVT POP D3.2 L 7.4 P ASW	3	C 57	R111550	C EL RA 4M7M 50E2 85	
1011	R3674391	RVT POP D3.2 L 7.4 P ASW	1	C 58	R112743	C CE MI 2N2K100E2	1
131	R367502	WSHR D6798 A 3.2 S Z	2	C 59	R113724	C POMERA 100N K 63E2	
0 3	R367502	WSHR D6798 A 3.2 S Z	2	C 60	R113724	C POMERA 100N K 63E2	
10	R722209	FRM PJ49 CTRL LED FIX	1	C 61	R113724	C POMERA 100N K 63E2	
1020	R722226	FRM PJ49 CTRL CBL FIX	2	C 62	R113724	C POMERA 100N K 63E2	
20	R801602	X ACC INSUL STRIP PCM5	2	C 63	R113724	C POMERA 100N K 63E2	
1000	R802613	FRM PJ49 CTRL DN	1	C 64	R113724	C POMERA 100N K 63E2	
200	R804530	FRM PJ51 CTRL FIX FR	1	C 65	R111477	C EL RA 100M Z 25E2 85	
100	R804531	FRM PJ51 CTRL FIX RR	1	C 66	R113730	C POMERA 330N K 63E2	
0 4	R805319	HTSNK PJ49 *801 CTRL MK2	1	C 67	R111477	C EL RA 100M Z 25E2 85	
0 6	R805319	HTSNK PJ49 *801 CTRL MK2	1	C 68	R111476	C EL RA 47M M 25E2 85	1
C 1	R112774	C CE MI 100N S 63E2		C 69	R113730	C POMERA 330N K 63E2	
C 2	R112774	C CE MI 100N S 63E2		C 70	R111477	C EL RA 100M Z 25E2 85	
C 3	R112774	C CE MI 100N S 63E2		C 71	R111476	C EL RA 47M M 25E2 85	
C 4	R112774	C CE MI 100N S 63E2		C 72	R113730	C POMERA 330N K 63E2	
C 5	R112774	C CE MI 100N S 63E2		C 73	R113730	C POMERA 330N K 63E2	
C 6	R112774	C CE MI 100N S 63E2		C 84	R112774	C CE MI 100N S 63E2	
C 7	R112774	C CE MI 100N S 63E2		C 85	R113730	C POMERA 330N K 63E2	
C 8	R111500	C EL RA 47M M 10E2 85		C 86	R112774	C CE MI 100N S 63E2	
C 9	R112774	C CE MI 100N S 63E2		C 87	R112774	C CE MI 100N S 63E2	
C A	R112430	C NPO MI 10P G 63E1	1	C 88	R112774	C CE MI 100N S 63E2	
C B	R112430	C NPO MI 10P G 63E1	1	C 89	R112774	C CE MI 100N S 63E2	
C 10	R112774	C CE MI 100N S 63E2		C 90	R113730	C POMERA 330N K 63E2	
C 11	R112774	C CE MI 100N S 63E2		C 91	R112774	C CE MI 100N S 63E2	
C 12	R112774	C CE MI 100N S 63E2		C 92	R112774	C CE MI 100N S 63E2	
C 13	R112774	C CE MI 100N S 63E2		C 93	R112774	C CE MI 100N S 63E2	
C 14	R112774	C CE MI 100N S 63E2		C 94	R113730	C POMERA 330N K 63E2	
C 15	R112774	C CE MI 100N S 63E2		C 95	R111477	C EL RA 100M Z 25E2 85	1
C 16	R112774	C CE MI 100N S 63E2		C 96	R112774	C CE MI 100N S 63E2	
C 17	R112774	C CE MI 100N S 63E2		C101	R112774	C CE MI 100N S 63E2	
C 18	R112774	C CE MI 100N S 63E2		C102	R112230	C NPO MI 10P G 63E2	1
C 19	R112774	C CE MI 100N S 63E2		D 1	R131621	D S 1N4148 075150 DO35	1
C 20	R112774	C CE MI 100N S 63E2	1	D 5	R131621	D S 1N4148 075150 DO35	
C 22	R112774	C CE MI 100N S 63E2		D 6	R131704	D STB 2V6 0W33 DO35	
C 23	R112774	C CE MI 100N S 63E2		D 7	R131629	D S BA244 020100 DO35	
C 24	R112774	C CE MI 100N S 63E2		D 8	R131629	D S BA244 020100 DO35	
C 25	R112774	C CE MI 100N S 63E2	1	D 10	R131621	D S 1N4148 075150 DO35	
C 26	R112774	C CE MI 100N S 63E2		D 11	R131621	D S 1N4148 075150 DO35	
C 27	R112774	C CE MI 100N S 63E2		D 12	R131662	D LED D3 T RED	1
C 28	R112774	C CE MI 100N S 63E2		D 13	R131662	D LED D3 T RED	1
				D 14	R131662	D LED D3 T RED	1
				D 15	R131662	D LED D3 T RED	1
				D 16	R131662	D LED D3 T RED	1
				D 17	R131662	D LED D3 T RED	1
				D 18	R131662	D LED D3 T RED	1

D 19	R131662	D LED D3	T RED	1	I 2	R137191	U 8088	DIP40 P	1
D 20	R131621	D S 1N4148	075150 DO35		I 3	R137274	U 8256AH	DIP40 P	1
D 21	R131621	D S 1N4148	075150 DO35		I 4	R137002	U 74HCT573	DIP20 P	1
D 22	R131621	D S 1N4148	075150 DO35		I 5	R137518	U 74LS375	DIP16 P	1
D 23	R131621	D S 1N4148	075150 DO35		I 6	R328196	U_S G1200	ADEC V200	1
D 24	R131621	D S 1N4148	075150 DO35		I 7	R137271	U SRAM 8KX8 -12DIP28 P		1
D 25	R131621	D S 1N4148	075150 DO35		I 8	R137184	U 28C64	-20DIP28 C	1
D 26	R131621	D S 1N4148	075150 DO35		I 9	R328329	U_S G1208	CTRL V530 GB	1
D 27	R131621	D S 1N4148	075150 DO35		I 10	R137005	U 74HCT03	DIP14 P	1
D 28	R131621	D S 1N4148	075150 DO35		I 11	R137567	U 74HCT574	DIP20 P	1
D 29	R131621	D S 1N4148	075150 DO35		I 12	R132882	U#1 TG	PLCC68 P	1
D 30	R131621	D S 1N4148	075150 DO35		I 13	R137174	U SRAM 32KX8 70DIP28 P		1
D 31	R131621	D S 1N4148	075150 DO35		I 14	R137552	U 74HCT123	DIP16 P	1
D 32	R131621	D S 1N4148	075150 DO35		I 15	R134116	U 353 LF	DIP8 P	1
D 33	R131621	D S 1N4148	075150 DO35		I 16	R1376025	U 4046B	DIP16 P	1
D 34	R131621	D S 1N4148	075150 DO35		I 18	R137002	U 74HCT573	DIP20 P	1
D 35	R131621	D S 1N4148	075150 DO35		I 19	R137193	U 80C31	DIP40 P	1
D 36	R131621	D S 1N4148	075150 DO35		I 20	R137536	U 74HCT04	DIP14 P	1
D 37	R131621	D S 1N4148	075150 DO35		I 21	R137534	U 74HCT00	DIP14 P	1
D 38	R131621	D S 1N4148	075150 DO35		I 22	R137537	U 74HCT08	DIP14 P	1
D 39	R131621	D S 1N4148	075150 DO35		I 23	R137544	U 74HCT245	DIP20 P	1
D 40	R131621	D S 1N4148	075150 DO35		I 24	R137002	U 74HCT573	DIP20 P	1
D 41	R131621	D S 1N4148	075150 DO35		I 25	R134114	U 393 LM	DIP8 P	1
D 42	R131621	D S 1N4148	075150 DO35		I 26	R137495	U 74LS92	DIP14 P	1
D 43	R131621	D S 1N4148	075150 DO35		I 27	R32831306	U_S G1208	RWI V506	1
D 44	R131621	D S 1N4148	075150 DO35		I 28	R137551	U 74HCT14	DIP14 P	1
D 45	R131621	D S 1N4148	075150 DO35		I 29	R137551	U 74HCT14	DIP14 P	1
D 46	R131621	D S 1N4148	075150 DO35		I 30	R136702	U 74AC00	DIP14 P	1
D 47	R131621	D S 1N4148	075150 DO35		I 31	R136700	U 74AC541		1
D 48	R131621	D S 1N4148	075150 DO35		I 36	R134001	U 7805	TO220 P	1
D 49	R131621	D S 1N4148	075150 DO35		I 37	R134001	U 7805	TO220 P	1
D 50	R131621	D S 1N4148	075150 DO35		I 40	R134001	U 7805	TO220 P	1
D 51	R131621	D S 1N4148	075150 DO35		I 41	R134016	U 7912	TO220 P	1
D 52	R131621	D S 1N4148	075150 DO35		I 42	R136701	U 74AC32		1
D 53	R131621	D S 1N4148	075150 DO35		J 1	R313925	J C T H MBT P 5 M2SN		1
D 54	R131621	D S 1N4148	075150 DO35		J 2	R313928	J C T H MBT P 8 M2SN		1
D 55	R131621	D S 1N4148	075150 DO35		J 3	R313927	J C T H MBT P 7 M2SN		1
D 56	R131621	D S 1N4148	075150 DO35		J 5	R313926	J C T H MBT P 6 M2SN		1
D 57	R131621	D S 1N4148	075150 DO35		L 1	R773215	CH SMP PJ49		1
D 58	R131621	D S 1N4148	075150 DO35		L 2	R773028	CH SMP TV31		1
D 59	R131621	D S 1N4148	075150 DO35		L 3	R773215	CH SMP PJ49		1
D 60	R131621	D S 1N4148	075150 DO35		PC	R780212	PCD PJ49 800 CTRL ASIC		1
D 61	R131621	D S 1N4148	075150 DO35		Q 5	R132568	Q BF959	N SS TO92	1
D 62	R131621	D S 1N4148	075150 DO35		Q 6	R132568	Q BF959	N SS TO92	1
D 63	R131621	D S 1N4148	075150 DO35		Q 7	R132568	Q BF959	N SS TO92	1
D 64	R131621	D S 1N4148	075150 DO35		Q 8	R132568	Q BF959	N SS TO92	1
D 65	R131621	D S 1N4148	075150 DO35		Q 9	R132507	Q BF324	P SS TO92	1
D 66	R131621	D S 1N4148	075150 DO35		Q 10	R132507	Q BF324	P SS TO92	
D 67	R131621	D S 1N4148	075150 DO35		Q 11	R1314131	Q BC557B	P SS TO92	1
D 68	R131621	D S 1N4148	075150 DO35		Q 12	R1314071	Q BC547B	N SS TO92	
D 69	R131621	D S 1N4148	075150 DO35		Q 13	R1314071	Q BC547B	N SS TO92	1
D 70	R131621	D S 1N4148	075150 DO35		Q 14	R1314071	Q BC547B	N SS TO92	1
D 71	R131621	D S 1N4148	075150 DO35		Q 15	R1314071	Q BC547B	N SS TO92	
D 72	R131621	D S 1N4148	075150 DO35		Q 17	R1314182	Q BC559C	P SS TO92	
D 73	R131621	D S 1N4148	075150 DO35		Q 18	R1314071	Q BC547B	N SS TO92	
D 74	R131621	D S 1N4148	075150 DO35		Q 19	R1314071	Q BC547B	N SS TO92	
D 75	R131621	D S 1N4148	075150 DO35		Q 20	R131411	Q BC549C	N SS TO92	1
D 76	R131621	D S 1N4148	075150 DO35		Q 21	R1314131	Q BC557B	P SS TO92	1
D 77	R1316361	D Y BAT85	030200 DO35		Q 22	R1314131	Q BC557B	P SS TO92	1
D 78	R131621	D S 1N4148	075150 DO35		Q 23	R1314071	Q BC547B	N SS TO92	1
D 79	R131621	D S 1N4148	075150 DO35		Q 24	R1314071	Q BC547B	N SS TO92	
D 80	R131621	D S 1N4148	075150 DO35		Q 25	R1314131	Q BC557B	P SS TO92	
D 81	R131644	D R 1N4001	05001A DO41	1	R 3	R101569	R MF H560K F 0W4 E3		
D 82	R131662	D LED D3	T RED	1					
D 83	R131662	D LED D3	T RED	1					
D 84	R131621	D S 1N4148	075150 DO35						
D 85	R131621	D S 1N4148	075150 DO35						
D 86	R131621	D S 1N4148	075150 DO35						
D 87	R1316361	D Y BAT85	030200 DO35						

R 4	R101520	R MF H 47E F 0W4 E3		R112	R101524	R MF H100E F 0W4 E3	
R 5	R101520	R MF H 47E F 0W4 E3		R113	R101536	R MF H 1K F 0W4 E3	
R 6	R101520	R MF H 47E F 0W4 E3		R114	R101548	R MF H 10K F 0W4 E3	
R 7	R101520	R MF H 47E F 0W4 E3		R115	R101524	R MF H100E F 0W4 E3	
R 8	R101520	R MF H 47E F 0W4 E3		R117	R101524	R MF H100E F 0W4 E3	1
R 9	R101536	R MF H 1K F 0W4 E3		R118	R101544	R MF H 4K7 F 0W4 E3	
R 10	R101538	R MF H 1K5 F 0W4 E3		R119	R101544	R MF H 4K7 F 0W4 E3	
R 11	R101538	R MF H 1K5 F 0W4 E3		R120	R101524	R MF H100E F 0W4 E3	
R 46	R101550	R MF H 15K F 0W4 E3		R121	R101524	R MF H100E F 0W4 E3	
R 47	R101547	R MF H 8K2 F 0W4 E3		R122	R101536	R MF H 1K F 0W4 E3	
R 52	R101548	R MF H 10K F 0W4 E3		R123	R101555	R MF H 39K F 0W4 E3	
R 53	R101548	R MF H 10K F 0W4 E3		R124	R101528	R MF H220E F 0W4 E3	
R 54	R101570	R MF H680K F 0W4 E3		R125	R101524	R MF H100E F 0W4 E3	
R 55	R101532	R MF H470E F 0W4 E3		R126	R101524	R MF H100E F 0W4 E3	
R 56	R101532	R MF H470E F 0W4 E3	1	R127	R101524	R MF H100E F 0W4 E3	
R 57	R101537	R MF H 1K2 F 0W4 E3		R128	R101524	R MF H100E F 0W4 E3	
R 59	R101535	R MF H820E F 0W4 E3		R129	R101524	R MF H100E F 0W4 E3	
R 60	R101531	R MF H390E F 0W4 E3		R130	R101524	R MF H100E F 0W4 E3	
R 61	R101531	R MF H390E F 0W4 E3		R131	R101524	R MF H100E F 0W4 E3	
R 62	R101532	R MF H470E F 0W4 E3		R132	R101524	R MF H100E F 0W4 E3	
R 63	R101531	R MF H390E F 0W4 E3		R133	R101524	R MF H100E F 0W4 E3	
R 64	R101521	R MF H 56E F 0W4 E3		R134	R101524	R MF H100E F 0W4 E3	
R 65	R101523	R MF H 82E F 0W4 E3		R135	R101524	R MF H100E F 0W4 E3	
R 66	R101532	R MF H470E F 0W4 E3		R136	R101536	R MF H 1K F 0W4 E3	
R 67	R101548	R MF H 10K F 0W4 E3		R137	R101536	R MF H 1K F 0W4 E3	
R 68	R101531	R MF H390E F 0W4 E3		R138	R101548	R MF H 10K F 0W4 E3	
R 69	R101528	R MF H220E F 0W4 E3		R139	R101548	R MF H 10K F 0W4 E3	
R 70	R101538	R MF H 1K5 F 0W4 E3		R140	R101532	R MF H470E F 0W4 E3	
R 71	R101538	R MF H 1K5 F 0W4 E3		R141	R1011907	R CFFH E1 J 0W4	
R 72	R101544	R MF H 4K7 F 0W4 E3		R142	R1011907	R CFFH E1 J 0W4	
R 73	R101544	R MF H 4K7 F 0W4 E3		R143	R1011008	R CFFH 1E J 0W25	
R 74	R101544	R MF H 4K7 F 0W4 E3		R145	R101536	R MF H 1K F 0W4 E3	
R 75	R101544	R MF H 4K7 F 0W4 E3		R146	R101536	R MF H 1K F 0W4 E3	
R 76	R101544	R MF H 4K7 F 0W4 E3		R147	R101562	R MF H150K F 0W4 E3	
R 77	R101524	R MF H100E F 0W4 E3		R148	R101524	R MF H100E F 0W4 E3	1
R 78	R101548	R MF H 10K F 0W4 E3		R149	R101548	R MF H 10K F 0W4 E3	
R 79	R101180	R CF H 4M7 J 0W25		R150	R101548	R MF H 10K F 0W4 E3	
R 80	R101520	R MF H 47E F 0W4 E3		R151	R101532	R MF H470E F 0W4 E3	
R 81	R101520	R MF H 47E F 0W4 E3		R159	R101554	R MF H 33K F 0W4 E3	
R 82	R101520	R MF H 47E F 0W4 E3		R160	R101125	R CF H120E J 0W25	1
R 83	R101520	R MF H 47E F 0W4 E3		R161	R101544	R MF H 4K7 F 0W4 E3	
R 84	R101560	R MF H100K F 0W4 E3		R162	R101545	R MF H 5K6 F 0W4 E3	
R 85	R101544	R MF H 4K7 F 0W4 E3		R163	R101544	R MF H 4K7 F 0W4 E3	
R 86	R101183	R CF H 8M2 J 0W25					
R 87	R101567	R MF H390K F 0W4 E3		S 1	R324184	SW DIP 1M P 8 BT SN	1
R 88	R101554	R MF H 33K F 0W4 E3		S 2	R324184	SW DIP 1M P 8 BT SN	1
R 89	R101555	R MF H 39K F 0W4 E3					
R 90	R101559	R MF H 82K F 0W4 E3		XT 1	R306858	X 24.000000 MHZ HC49	1
R 91	R101548	R MF H 10K F 0W4 E3		XT 2	R306857	X 18.432000 MHZ HC49	1
R 92	R101548	R MF H 10K F 0W4 E3					
R 93	R101552	R MF H 22K F 0W4 E3		Z 1	R131743	D ZEN 8V2 0W5 C DO35	1
R 94	R101563	R MF H180K F 0W4 E3		Z 2	R131742	D ZEN 6V8 0W5 C DO35	
R 95	R101544	R MF H 4K7 F 0W4 E3		Z 3	R131742	D ZEN 6V8 0W5 C DO35	
R 96	R101555	R MF H 39K F 0W4 E3		Z 4	R131754	D ZEN 3V3 0W5 C DO35	
R 97	R101535	R MF H820E F 0W4 E3		Z 5	R131744	D ZEN 5V6 0W5 C DO35	
R 98	R101535	R MF H820E F 0W4 E3		Z 9	R131744	D ZEN 5V6 0W5 C DO35	
R 99	R101535	R MF H820E F 0W4 E3		Z 11	R131744	D ZEN 5V6 0W5 C DO35	
R100	R101535	R MF H820E F 0W4 E3		Z 12	R131734	D ZEN 5V6 0W5 B DO35	1
R101	R101535	R MF H820E F 0W4 E3					
R102	R101535	R MF H820E F 0W4 E3					
R103	R101535	R MF H820E F 0W4 E3					
R104	R101535	R MF H820E F 0W4 E3					
R105	R101536	R MF H 1K F 0W4 E3					
R106	R101524	R MF H100E F 0W4 E3					
R107	R101550	R MF H 15K F 0W4 E3					
R108	R101524	R MF H100E F 0W4 E3					
R109	R101524	R MF H100E F 0W4 E3					
R111	R101524	R MF H100E F 0W4 E3					

