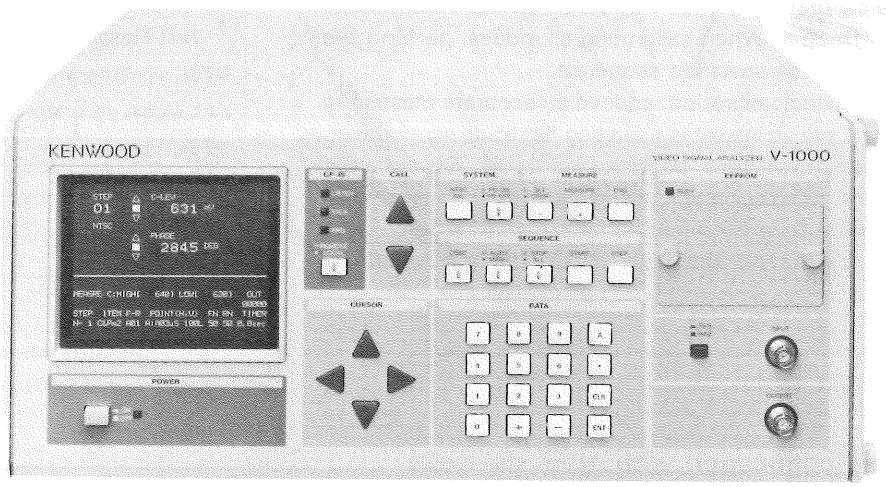
KENWOOD

VIDEO SIGNAL ANALYZER

V-1000

SERVICE MANUAL

KENWOOD CORPORATION



WARNING

The following instructions are for use by qualified personnel only. To avoid electric shock, do not perform any servicing other than contained in the operating instructions unless you are qualified to do so.

CONTENTS

ADJUSTMENT

To obtain the best performance, periodically calibrate the unit. Sometimes, only one mode need be calibrated, while at other times, all modes should be calibrated. When one mode is calibrated, it must be noted that the other modes may be affected. When calibrating all modes, perform the calibration in the specified sequence.

The following calibration required an accurate measuring instrument and an insulated adjusting flat blade screwdriver. If they are not available, contact your dealer. For optimum adjustment, turn the power on and warm up the scope sufficiently (more than 30 minutes) before starting.

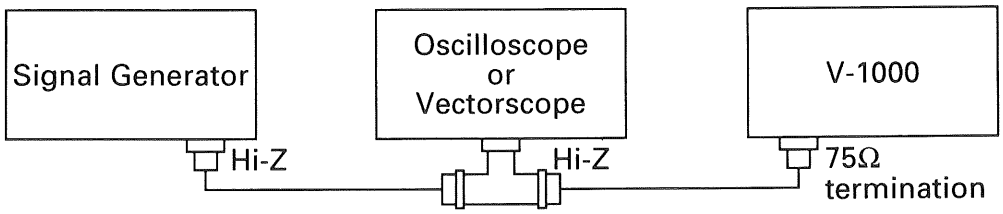
Before calibrating the unit, check the power supply voltage.

TEST EQUIPMENT REQUIRED

The following instrument or their equivalent should be used for making adjustment.

Test Equipment	Model	Maker
NTSC signal generator	1410	Tektronix
PAL signal generator	1411	Tektronix
NTSC Vectorscope	R520A	Tektronix
PAL Vectorscope	R521A	Tektronix
Oscilloscope	CS-5170	KENWOOD
GP-IB Controller	PC-9801	NEC

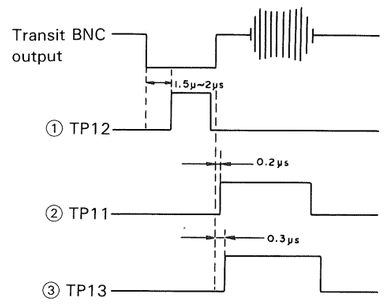
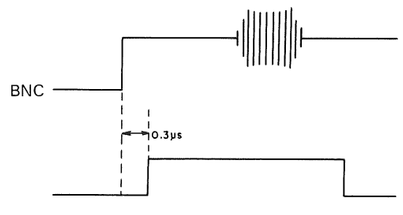
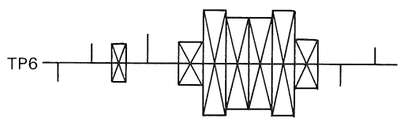
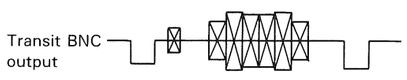
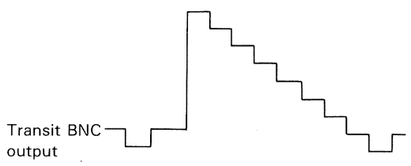
«Sample connection with other devices»



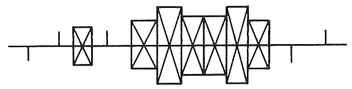
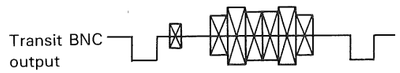
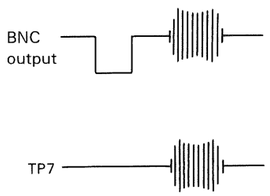
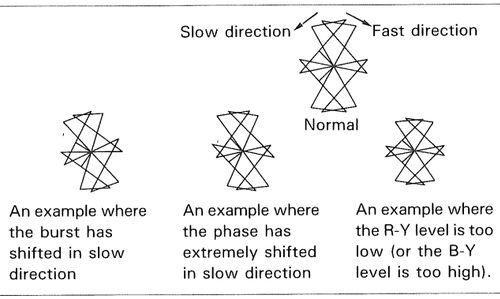
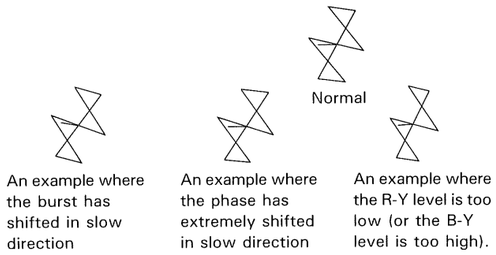
Restrictions

1. Make sure to connect devices in series.
2. Do not terminate the cable doubly nor on the way. Make sure to terminate it in the last device.

ADJUSTMENT

Item	Measuring point	Adjustment	Signal Waveform Diagram	Procedure
Burst timing (NTSC)	TP12 Signal generator TP11 Transit BNC output TP13 Output	VR12 VR13		Set V-1000 to NTSC measurement status. ① If the period from the trailing edge of the sink to the leading edge of the signal at TP12 is 1.5 to 2 μs, no adjustment is needed. ② Adjust VR12 so that the period from the leading edge midpoint of the sink to the leading edge of the signal at TP11 is 0.2 μs. ③ Adjust VR13 so that the period from the leading edge midpoint of the sink to the leading edge of the signal at TP13 is 0.3 μs.
Burst timing (PAL)	Signal generator Transit BNC output TP10	VR14		Set V-1000 to PAL measurement status. ① Adjust VR14 so that the period from the leading edge midpoint of the sink to the leading edge of the signal at TP10 is 0.3 μs.
FQ Level (PAL)		VR9		Set V-1000 to PAL measurement status. ① After setting FQm to each point number shown below, adjust VR9 so that the values at each point are between 690 and 714 mV. 50L 690 to 714 mV 60L 690 to 714 mV 110L 690 to 714 mV 170L 690 to 714 mV 230L 690 to 714 mV 290L 690 to 714 mV
Video signal input level (PAL)	TP6	VC7		Set V-1000 to PAL measurement status. ① Adjust VC7 so that the input signal chroma amplitudes at TP6 are in the maximum level.
Chroma amplitude (PAL)	Signal generator Transit BNC output	VR16 VR20		① Set V-1000 to measurement status for Cm levels for each point of color bar. ② With the chroma level of the signal generator off, adjust VR16 so that the value measured by V-1000 is 20 mV. ③ Turn the chroma level of the signal generator on, and adjust VR20 so that the value measured by V-1000 is within 10 mV of the read-out from the oscilloscope. ④ After adjusting the levels for each chart (and burst), vary the chroma level of cyanogen in the range from 100 mVp-p to 1000 mVp-p. If the measured value is within 10 mV of the target, the adjustment operation is successfully completed. If the measurement error is over 10 mV, adjust the level again. ⑤ Adjust the FQ level within the standard. ⑥ After completing the FQ level adjustment, adjust the chroma amplitude. Perform only the step ③.
Intensity level	Signal generator Transit BNC output	VR11		① Set V-1000 to measurement status for the intensity level in white. ② Measure the intensity level and vary the intensity level of the signal generator. ③ Adjust VR11 so that the read-out from the oscilloscope is the same as the value measured with V-1000. ④ Adjust to reduce the error within 3 mV varying the intensity level of the signal generator in the range from 0 mV to 1000 mV.

ADJUSTMENT

Item	Measuring point	Adjustment	Signal Waveform Diagram	Procedure
Video signal input level (NTSC)	TP6	VC8		Set V-1000 to NTSC measurement status. ① Adjust VC8 so that the input signal chroma amplitudes at TP6 are in the maximum level.
Chroma amplitude (NTSC)	Signal generator Transit BNC output	VR21		① Set V-1000 to measurement status for Cm levels for each point of color bar. ② Turn the chroma level of the signal generator on, and adjust VR21 so that the value measured by V-1000 is within 10 mV of the read-out from the oscilloscope. ③ After adjusting the levels for each chart (and burst), vary the chroma level of cyanogen in the range from 100 mVp-p to 1000 mVp-p. If the measured value is within 10 mV of the target, the adjustment operation is successfully completed. If the measurement error is over 10 mV, adjust the level again. ④ After completing the adjustment operation, set V-1000 to PAL measurement status and confirm the PAL chroma amplitude. If the value is out of the standard, adjust the PAL chroma amplitude. Perform only the step ③. ⑤ After completing the step ④, set V-1000 to NTSC measurement status and confirm the NTSC chroma amplitude. If the value is out of the standard, adjust the NTSC chroma amplitude. Perform only the step ②. ⑥ Adjust the amplitudes by performing the steps ④ and ⑤ repeatedly. Whole the operation is completed when the following steps are reached: step ④ in the PAL chroma amplitude adjustment and the step ③ in the NTSC chroma amplitude adjustment.
AGC	BNC output TP7	VR8		① Set the signal generator to NTSC, and adjust VR8 so that the burst amplitude of the TP7 output is 250 mV. ② Varying the burst amplitude with the signal generator, check to make sure the following with respect to the burst amplitude of the signal generator transit BNC output: 1. The burst amplitude of the TP7 output is constant even when the amplitude is increased over 250 mV. 2. When the amplitude is reduced under 250 mV, the burst amplitude of the TP7 output is reduced simultaneously in the same manner.
Color difference signal (PAL)		VR3 VR5		① Set V-1000 to R & B1 measurement for red. ② Start measuring, and adjust VR3 f or the R-Y gain and VR5 for B-Y gain. Perform the adjustment operation according to the attached flowchart in figure 1.
Phase (PAL)	TP3 (CH1) TP4 (CH2)	VR7 DLD VC5 DLF VC6		① Adjust so that the X-Y waveform in the oscilloscope is the same as the waveform in the vector scope comparing them. ② Measure the 6 colors of the signal generator, and adjust so that the displayed values are within 2 degrees of the standard phase. Perform the adjustment operation according to the attached flowchart in figure 1.
Color difference signal (NTSC)		VR1 VR5 VC2 VC4		① Set V-1000 to R & B1 measurement for red. ② Start measuring, and adjust VR1 for the R-Y gain and VR5 for B-Y gain. Perform the adjustment operation according to the attached flowchart in figure 2.
Phase (NTSC)	TP3 (CH1) TP4 (CH2)	VR5 VC2 VC4 DLC		① Adjust so that the X-Y waveform in the oscilloscope is the same as the waveform in the vector scope comparing them. ② Measure the 6 colors of the signal generator, and adjust so that the displayed values are within 2 degrees of the standard phase. Perform the adjustment operation according to the attached flowchart in figure 2.

ADJUSTMENT

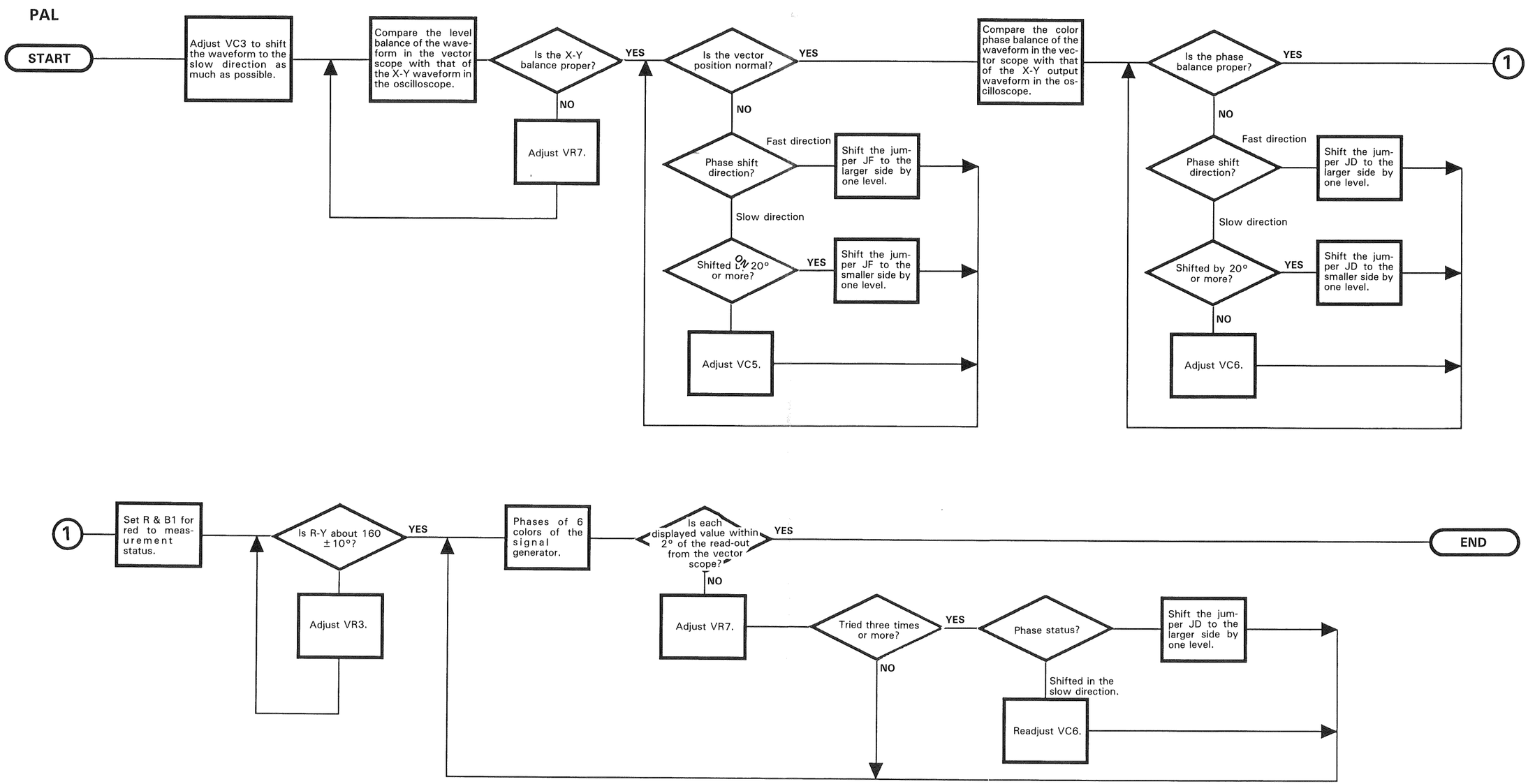


Fig. 1

ADJUSTMENT

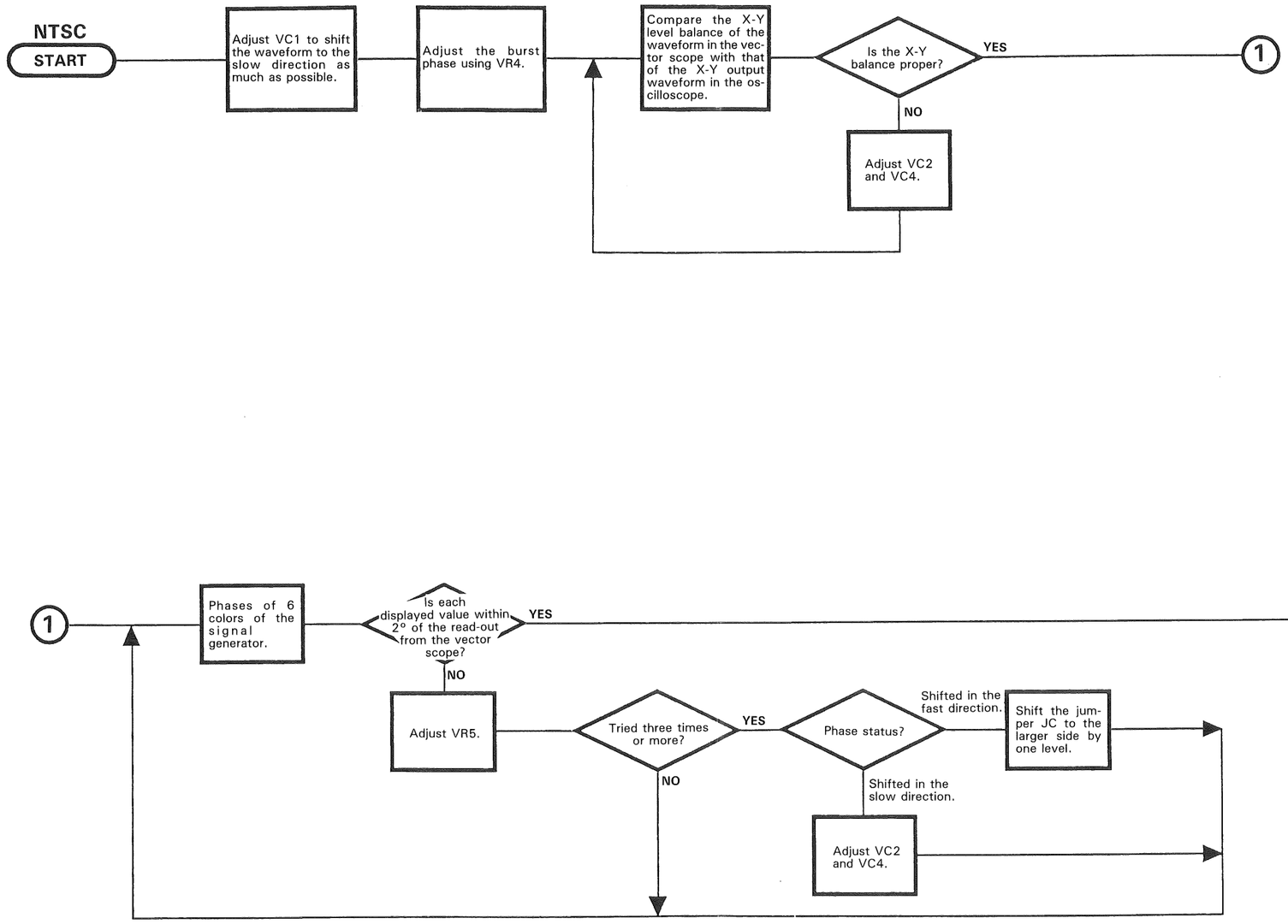
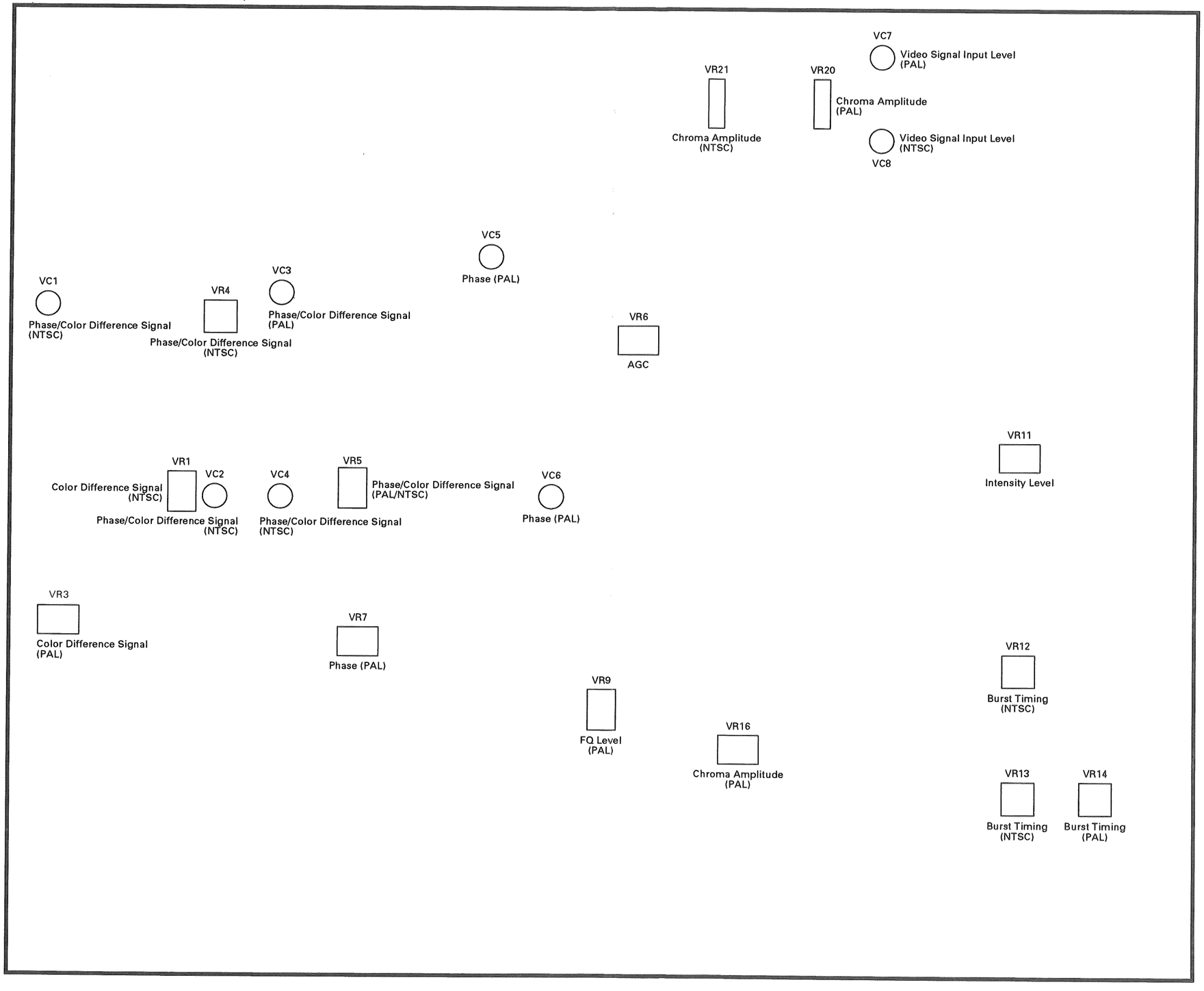


Fig. 2

ADJUSTMENT

ANALOG UNIT (W02-2030-08)



PARTS LIST

V-1000 UNIT

Y88-1480-00

REF.NO	PARTS NO	NAME & DESCRIPTION
	A01-1254-02	CASE;TOP
	A01-1255-12	CASE;BOTTOM
	A13-0957-02	REAR FRAME
	A50-0514-02	SIDE PANEL
	A63-0013-02	FRONT PANEL
	A63-0014-04	FRONT PANEL;FOR EEPROM COVER
	B11-0510-05	EL DISPLAY UNIT
	B11-0520-14	FILTER
	B42-1933-04	LABEL,MODEL NO.,FOR CARTON BOX
	E03-0211-08	AC INLET WITH NOISE FILTER
	E04-0259-05	BNC RECEPTACLE
	E30-1644-15	BS POWER CORD
	E30-1645-05	CEE POWER CORD SET
	E30-1647-05	SAA POWER CORD SET
	E30-1920-08	UL/CSA POWER CORD(WITH ADAPTER
	E38-0220-08	FLAT CABLE ASS'Y;BUS TO EX1BUS
	E38-0221-08	FLAT CABLE ASS'Y;SYNC TO CN6
	E38-0222-08	FLAT CABLE ASS'Y;ROM TO F-PANE
	E38-0223-08	FLAT CABLE ASS'Y;KDC TO F-PANE
	E38-0224-08	FLAT CABLE ASS'Y;EL TO F-PANEL
	E38-0225-08	WIRE ASS'Y;S1 TO POWER SUPPLY
	E38-0226-08	WIRE ASS'Y;S2 TO POWER TRANS.
	E38-0227-08	WIRE ASS'Y;S3 TO POWER SUPPLY
	E38-0228-08	WIRE ASS'Y;S5 TO POWER SUPPLY
	E38-0229-08	WIRE ASS'Y;S14 TO POW2
	E38-0230-08	WIRE ASS'Y;S4 TO CN7
	E38-0231-08	WIRE ASS'Y;S6 TO AD POW
	E38-0232-08	WIRE ASS'Y;S7 TO F-PANEL/POWER
	E38-0233-08	WIRE ASS'Y;S7 TO CPU POW
	E38-0234-08	WIRE ASS'Y;S10 TO POWER SUPPLY
	E38-0235-08	WIRE ASS'Y;S11,12 TO AC INLET
	E38-0236-08	WIRE ASS'Y;S3 TO POWER SUPPLY
	E38-0237-08	WIRE ASS'Y;AD CN1 TO ANALOG
	E38-0238-08	WIRE ASS'Y;AD CN2 TO ANALOG
	E38-0239-08	WIRE ASS'Y;AD CN3 TO ANALOG
	E38-0240-08	WIRE ASS'Y;AD CN4 TO ANALOG
	E38-0241-08	WIRE ASS'Y;AD CN5 TO R-PANEL
	E38-0242-08	WIRE ASS'Y;AD CN6 TO F-PANEL
	E38-0243-08	WIRE ASS'Y;YIN TO R-PANEL
	E38-0244-08	WIRE ASS'Y;VIDEOIN2 TO R-PANEL
	E38-0245-08	WIRE ASS'Y;CHROMA IN TO REAR P
	E38-0246-08	WIRE ASS'Y;VIDEOIN TO F-PANEL
	E38-0247-08	WIRE ASS'Y;VIDEOOUT TO F-PANEL
	E38-0248-08	WIRE ASS'Y;CN5 TO R-PANEL
	F07-0956-02	SIDE COVER;FRONT
	F07-0957-02	SIDE COVER;REAR
	F07-0958-04	LED COVER
	H01-5815-14	CARTON BOX
	H10-2858-12	FOAMED STYRENE PAD(PAIR)
	H10-2859-12	FOAMED STYRENE PAD(PAIR)
	H20-1721-04	POLYETHYLENE COVER
	J02-0525-23	RUBBER FOOT;BOTTOM
	J02-0526-04	RUBBER FOOT;SIDE
	J10-0429-02	BEZEL
	J21-4706-05	BRACKET;FRONT
	J21-4707-05	BRACKET;REAR
	J21-4708-05	BRACKET;FOR HANDLE
	K01-0533-03	HANDLE
	K27-0550-04	BUTTON;GRAY
	L01-9957-08	POWER TRANSFORMER
	N08-0618-05	SCREW M3X8
	N19-2018-04	WASHER M3,POLYSLIDER
	N24-3030-41	RETAINING RING 3MM
	S40-2524-05	PUSH SWITCH;POWER
	S62-0604-08	SLIDE SWITCH
	S68-0601-08	PUSH SWITCH;75 OHM/1M OHM
	T40-0416-08	FAN MOTOR
	W02-2028-08	A/D CONVERTER UNIT
	W02-2029-08	CPU UNIT
	W02-2030-08	ANALOG UNIT
	W02-2031-08	FRONT PANEL/EEPROM UNIT
	W02-2032-08	REAR PANEL UNIT
	W02-2033-08	CONNECTION UNIT
	W02-2035-08	POWER SUPPLY UNIT
	W02-2036-08	SWITCHING GENERATOR UNIT
	W02-2037-08	SWITCHING GENERATOR UNIT
	W03-2354-08	BNC-BNC CABLE 2M
	W03-2355-08	BNC-RCA CABLE 2M

AD UNIT

W02-2028-08

REF.NO	PARTS NO	NAME & DESCRIPTION			
	E40-7143-08	PIN CONNECTOR 6P			
	E40-7144-08	PIN CONNECTOR 40P;EXTBUS			
	E40-7145-08	PIN CONNECTOR 20P			
	J73-0049-08	PCB (UNMOUNTED)			
C1	CK45F1H103J	CAP. CERAMIC	0.01	5%	50V
C2	CE04EW1E100M	CAP. ELECTRO	10	20%	25V
C3	CK45F1H103J	CAP. CERAMIC	0.01	5%	50V
C4	CK45F1H103J	CAP. CERAMIC	0.01	5%	50V
C5	CK45F1H103J	CAP. CERAMIC	0.01	5%	50V
C6	CK45F1H103J	CAP. CERAMIC	0.01	5%	50V
C7	CK45F1H104J	CAP. CERAMIC	0.1	5%	50V
C8	CK45F1H103J	CAP. CERAMIC	0.01	5%	50V
C9	CK45F1H103J	CAP. CERAMIC	0.01	5%	50V
C10	CE04EW1E101M	CAP. ELECTRO	100	20%	25V
C11	CE04EW1H470M	CAP. ELECTRO	47	20%	50V
C12	CE04EW1H470M	CAP. ELECTRO	47	20%	50V
C13	CK45F1H104J	CAP. CERAMIC	0.1	5%	50V
C14	CK45F1H104J	CAP. CERAMIC	0.1	5%	50V
C15	CK45F1H104J	CAP. CERAMIC	0.1	5%	50V
C16	CK45F1H104J	CAP. CERAMIC	0.1	5%	50V
C17	CK45F1H104J	CAP. CERAMIC	0.1	5%	50V
C18	CK45F1H104J	CAP. CERAMIC	0.1	5%	50V
C19	CK45F1H104J	CAP. CERAMIC	0.1	5%	50V
C20	CK45F1H104J	CAP. CERAMIC	0.1	5%	50V
C21	CK45F1H104J	CAP. CERAMIC	0.1	5%	50V
C22	CK45F1H104J	CAP. CERAMIC	0.1	5%	50V
C23	CK45F1H104J	CAP. CERAMIC	0.1	5%	50V
C24	CK45F1H104J	CAP. CERAMIC	0.1	5%	50V
C25	CK45F1H104J	CAP. CERAMIC	0.1	5%	50V
C26	CK45F1H104J	CAP. CERAMIC	0.1	5%	50V
C27	CK45F1H104J	CAP. CERAMIC	0.1	5%	50V
C28	CK45F1H104J	CAP. CERAMIC	0.1	5%	50V
C29	CK45F1H103J	CAP. CERAMIC	0.01	5%	50V
C30	CK45F1H103J	CAP. CERAMIC	0.01	5%	50V
C31	CK45F1H103J	CAP. CERAMIC	0.01	5%	50V
C32	CK45F1H103J	CAP. CERAMIC	0.01	5%	50V
C33	CK45F1H103J	CAP. CERAMIC	0.01	5%	50V
C34	CK45F1H103J	CAP. CERAMIC	0.01	5%	50V
C35	CK45F1H103J	CAP. CERAMIC	0.01	5%	50V
C36	CK45F1H103J	CAP. CERAMIC	0.01	5%	50V
C37	CK45F1H103J	CAP. CERAMIC	0.01	5%	50V
C38	CK45F1H103J	CAP. CERAMIC	0.01	5%	50V
C39	CK45F1H103J	CAP. CERAMIC	0.01	5%	50V
C40	CK45F1H103J	CAP. CERAMIC	0.01	5%	50V
C49	CK45F1H101J	CAP. CERAMIC	100P	5%	50V
C50	CK45F1H101J	CAP. CERAMIC	100P	5%	50V
C51	CE04EW1E100M	CAP. ELECTRO	10	20%	25V
C52	C91-1315-05	CAP. CERAMIC	0.1	80/-10%	50V
C53	C91-1315-05	CAP. CERAMIC	0.1	80/-10%	50V
C54	C91-1315-05	CAP. CERAMIC	0.1	80/-10%	50V
C55	C91-1315-05	CAP. CERAMIC	0.1	80/-10%	50V
C56	C91-1315-05	CAP. CERAMIC	0.1	80/-10%	50V
C57	C91-1315-05	CAP. CERAMIC	0.1	80/-10%	50V
C58	C91-1315-05	CAP. CERAMIC	0.1	80/-10%	50V
C59	C91-1315-05	CAP. CERAMIC	0.1	80/-10%	50V
C60	C91-1315-05	CAP. CERAMIC	0.1	80/-10%	50V
C61	C91-1315-05	CAP. CERAMIC	0.1	80/-10%	50V
C62	C91-1315-05	CAP. CERAMIC	0.1	80/-10%	50V
C63	C91-1315-05	CAP. CERAMIC	0.1	80/-10%	50V
C64	C91-1315-05	CAP. CERAMIC	0.1	80/-10%	50V
C65	C91-1315-05	CAP. CERAMIC	0.1	80/-10%	50V
C66	C91-1315-05	CAP. CERAMIC	0.1	80/-10%	50V
C67	C91-1315-05	CAP. CERAMIC	0.1	80/-10%	50V
C68	C91-1315-05	CAP. CERAMIC	0.1	80/-10%	50V
C69	C91-1315-05	CAP. CERAMIC	0.1	80/-10%	50V
C70	C91-1315-05	CAP. CERAMIC	0.1	80/-10%	50V
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C72	C91-1315-05	CAP. CERAMIC	0.1	80/-10%	50V
C73	C91-1315-05	CAP. CERAMIC	0.1	80/-10%	50V
C74	C91-1315-05	CAP. CERAMIC	0.1	80/-10%	50V
C75	C91-1315-05	CAP. CERAMIC	0.1	80/-10%	50V
C76	C91-1315-05	CAP. CERAMIC	0.1	80/-10%	50V
C77	C91-1315-05	CAP. CERAMIC	0.1	80/-10%	50V
C78	C91-1315-05	CAP. CERAMIC	0.1	80/-10%	50V
C79	C91-1315-05	CAP. CERAMIC	0.1	80/-10%	50V
C80	C91-1315-05	CAP. CERAMIC	0.1	80/-10%	50V
C81	C91-1315-05	CAP. CERAMIC	0.1	80/-10%	50V
C82	C91-1315-05	CAP. CERAMIC	0.1	80/-10%	50V
C83	C91-1315-05	CAP. CERAMIC	0.1	80/-10%	50V
C84	C91-1315-05	CAP. CERAMIC	0.1	80/-10%	50V
C85	C91-1315-05	CAP. CERAMIC	0.1	80/-10%	50V
C86	C91-1315-05	CAP. CERAMIC	0.1	80/-10%	50V
C87	C91-1315-05	CAP. CERAMIC	0.1	80/-10%	50V
C88	C91-1315-05	CAP. CERAMIC	0.1	80/-10%	50V
C89	C91-1315-05	CAP. CERAMIC	0.1	80/-10%	50V
C90	C91-1315-05	CAP. CERAMIC	0.1	80/-10%	50V
C91	C91-1315-05	CAP. CERAMIC	0.1	80/-10%	50V
C92	C91-1315-05	CAP. CERAMIC	0.1	80/-10%	50V
C93	C91-1315-05	CAP. CERAMIC	0.1	80/-10%	50V
C94	C91-1315-05	CAP. CERAMIC	0.1	80/-10%	50V
C95	C91-1315-05	CAP. CERAMIC	0.1	80/-10%	50V
C96	C91-1315-05	CAP. CERAMIC	0.1	80/-10%	50V
C97	C91-1315-05	CAP. CERAMIC	0.1	80/-10%	50V
C98	C91-1315-05	CAP. CERAMIC	0.1	80/-10%	50V
C99	C91-1315-05	CAP. CERAMIC	0.1	80/-10%	50V
C100	C91-1315-05	CAP. CERAMIC	0.1	80/-10%	50V
C101	C91-1315-05	CAP. CERAMIC	0.1	80/-10%	50V
C102	C91-1315-05	CAP. CERAMIC	0.1	80/-10%	50V
C103	C91-1315-05	CAP. CERAMIC	0.1	80/-10%	50V
C111	CE04EW1E101M	CAP. ELECTRO	100	20%	25V
C112	CE04EW0J102M	CAP. ELECTRO	1000	20%	6.3V
C113	CE04BW1E100M	CAP. ELECTRO	10	20%	25V
C114	CE04BW1E100M	CAP. ELECTRO	10	20%	25V
C115	CK45F1H103J	CAP. CERAMIC	0.01	5%	50V
C116	CK45F1H103J	CAP. CERAMIC	0.01	5%	50V
C117	CQ93M1H683J	CAP. MYLAR	0.068	5%	50V
C118	CK45F1H101J	CAP. CERAMIC	100P	5%	50V
C119	CK45F1H101J	CAP. CERAMIC	100P	5%	50V
C120	CK45F1H103J	CAP. CERAMIC	0.01	5%	50V
C121	CK45F1H103J	CAP. CERAMIC	0.01	5%	50V
C122	CK45F1H104J	CAP. CERAMIC	0.1	5%	50V
CN1	E40-7146-08	PIN CONNECTOR	2P		
CN2	E40-7146-08	PIN CONNECTOR	2P		
CN3	E40-7146-08	PIN CONNECTOR	2P		
CN4	E40-7146-08	PIN CONNECTOR	2P		
CN5	E40-7146-08	PIN CONNECTOR	2P		
CN6	E40-7146-08	PIN CONNECTOR	2P		
DSW1	S62-0602-08	DIP SWITCH			
DSW2	S62-0602-08	DIP SWITCH			
DSW3	S62-0601-08	DIP SWITCH			
DSW4	S62-0601-08	DIP SWITCH			
IC1	SN74LS393N	IC,DUAL 4-BIT BINARY COUNTER			
IC2	SN74LS161N	IC,SYNC.4-BIT BINARY COUNTER			
IC3	SN74LS00N	IC,QUAD 2-INPUT NAND GATE			
IC4	SN74LS32N	IC,QUAD 2-INPUT OR GATE			
IC5	SN74LS04N	IC,HEX INVERTER			
IC6	SN74LS74N	IC,DUAL D-FLIP-FLOP			
IC7	SN74LS74N	IC,DUAL D-FLIP-FLOP			
IC8	SN7406N	IC,HEX INVERTER			
IC9	SN74LS138N	IC,3-8 DECORD./DE-MPX			
IC10	SN74LS273N	IC,OCTAL D-TYPE FLIP-FLOP			
IC11	SN74LS645-1N	IC,OCTAL BUS TRANSCEIVER			
IC12	SN74LS645-1N	IC,OCTAL BUS TRANSCEIVER			
IC13	SN74LS164N	IC,8-BIT PARA-OUT SERI.-IN S.R			
IC14	SN74LS32N	IC,QUAD 2-INPUT OR GATE			
IC15	SN74LS32N	IC,QUAD 2-INPUT OR GATE			
IC16	SN74LS164N	IC,8-BIT PARA-OUT SERI.-IN S.R			
IC17	SN74LS161N	IC,SYNC.4-BIT BINARY COUNTER			
IC18	SN74LS74N	IC,DUAL D-FLIP-FLOP			
IC19	SN74LS00N	IC,QUAD 2-INPUT NAND GATE			
IC20	SN74LS08N	IC,QUAD 2-INPUT AND GATE			
IC21	SN74LS161N	IC,SYNC.4-BIT BINARY COUNTER			
IC22	SN74LS74N	IC,DUAL D-FLIP-FLOP			
IC23	SN74LS157N	IC,QUAD 2-1 DATA SELECTOR/MPX			
IC24	SN74LS157N	IC,QUAD 2-1 DATA SELECTOR/MPX			
IC25	SN74LS157N	IC,QUAD 2-1 DATA SELECTOR/MPX			
IC26	SN74LS157N	IC,QUAD 2-1 DATA SELECTOR/MPX			
IC27	SN74LS157N	IC,QUAD 2-1 DATA SELECTOR/MPX			
IC28	SN74LS74N	IC,DUAL D-FLIP-FLOP			
IC29	SN74LS04N	IC,HEX INVERTER			
IC30	SN74LS04N	IC,HEX INVERTER			
IC31	SN74LS32N	IC,QUAD 2-INPUT OR GATE			
IC32	SN74LS163N	IC,SYNC.4-BIT BINARY COUNTER			
IC33	SN74LS14N	IC,HEX SCHMITT-TRIG INVERTER			
IC34	SN74LS163N	IC,SYNC.4-BIT BINARY COUNTER			
IC35	SN74LS161N	IC,SYNC.4-BIT BINARY COUNTER			
IC36	SN74LS163N	IC,SYNC.4-BIT BINARY COUNTER			
IC37	SN74LS157N	IC,QUAD 2-1 DATA SELECTOR/MPX			
IC38	SN74LS157N	IC,QUAD 2-1 DATA SELECTOR/MPX			
IC39	SN74LS157N	IC,QUAD 2-1 DATA SELECTOR/MPX			
IC40	SN74LS157N	IC,QUAD 2-1 DATA SELECTOR/MPX			
IC41	T93-0731-08	IC,PROGRAMMED ROM			
IC42	T93-0732-08	IC,PROGRAMMED ROM			
IC43	HM62256LP-12	IC,32768X8 STATIC RAM			
IC44	HM62256LP-12	IC,32768X8 STATIC RAM			
IC45	HM62256LP-12	IC,32768X8 STATIC RAM			
IC46	HM62256LP-12	IC,32768X8 STATIC RAM			
IC47	HM62256LP-12	IC,32768X8 STATIC RAM			
IC48	HM62256LP-12	IC,32768X8 STATIC RAM			
IC49	HM62256LP-12	IC,32768X8 STATIC RAM			
IC50	HM62256LP-12	IC,32768X8 STATIC RAM			
IC51	HM62256LP-12	IC,32768X8 STATIC RAM			
IC52	HM62256LP-12	IC,32768X8 STATIC RAM			
IC53	HM62256LP-12	IC,32768X8 STATIC RAM			
IC54	HM62256LP-12	IC,32768X8 STATIC RAM			
IC55	HM62256LP-12	IC,32768X8 STATIC RAM			
IC56	HM62256LP-12	IC,32768X8 STATIC RAM			
IC57	HM62256LP-12	IC,32768X8 STATIC RAM			
IC58	HM62256LP-12	IC,32768X8 STATIC RAM			
IC59	SN74LS138N	IC,3-8 DECORD./DE-MPX			
IC60	SN74LS374N	IC,OCTAL 3S D-FFS			
IC61	SN74LS374N	IC,OCTAL 3S D-FFS			
IC62	SN74LS645-1N	IC,OCTAL BUS TRANSCEIVER			
IC63	SN74LS374N	IC,OCTAL 3S D-FFS			
IC64	SN74LS374N	IC,OCTAL 3S D-FFS			
IC65	SN74LS645-1N	IC,OCTAL BUS TRANSCEIVER			
IC66	SN74LS374N	IC,OCTAL 3S D-FFS			
IC67	SN74LS374N	IC,OCTAL 3S D-FFS			
IC68	SN74LS645-1N	IC,OCTAL BUS TRANSCEIVER			
IC69	SN74LS374N	IC,OCTAL 3S D-FFS			
IC70	SN74LS374N	IC,OCTAL 3S D-FFS			
IC71	SN74LS645-1N	IC,OCTAL BUS TRANSCEIVER			
IC72	SN74LS374N	IC,OCTAL 3S D-FFS			
IC73	SN74LS374N	IC,OCTAL 3S D-FFS			
IC74	SN74LS645-1N	IC,OCTAL BUS TRANSCEIVER			
IC75	SN74LS374N	IC,OCTAL 3S D-FFS			
IC76	SN74LS374N	IC,OCTAL 3S D-FFS			
IC77	SN74LS645-1N	IC,OCTAL BUS TRANSCEIVER			
IC78	SN74LS374N	IC,OCTAL 3S D-FFS			
IC79	SN74LS374N	IC,OCTAL 3S D-FFS			
IC80	SN74LS645-1N	IC,OCTAL BUS TRANSCEIVER			
IC81	SN74LS374N	IC,OCTAL 3S D-FFS			
IC82	SN74LS374N	IC,OCTAL 3S D-FFS			
IC83	SN74LS645-1N	IC,OCTAL BUS TRANSCEIVER			
IC84	ADC-505MC	IC,A/D CONVERTER			
IC85	ADC-816MC	IC,A/D CONVERTER			
IC86	ADC-816MC	IC,A/D CONVERTER			
IC87	ADC-816MC	IC,A/D CONVERTER			
IC88	LF356N	IC,JFET INPUT OP-AMP			
IC89	LF356N	IC,JFET INPUT OP-AMP			
IC90	LF356N	IC,JFET INPUT OP-AMP			
IC91	LF356N	IC,JFET INPUT OP-AMP			
IC92	UPC7905H	IC,3-TERMINAL REGURATOR			
IC100	SN74LS123N	IC,DUAL MONOSTABLE MULTIVIBRAT			
IC101	SN74LS374N	IC,OCTAL 3S D-FFS			
IC102	SN74LS273N	IC,OCTAL D-TYPE FLIP-FLOP			
IC103	SN74LS32N	IC,QUAD 2-INPUT OR GATE			
IC104	NJM2207D	IC,VIDEO SUPERIMPOSER			
IC105	HM62256LP-12	IC,32768X8 STATIC RAM			
IC106	SN74LS157N	IC,QUAD 2-1 DATA SELECTOR/MPX			
IC107	SN74LS157N	IC,QUAD 2-1 DATA SELECTOR/MPX			
IC108	SN74LS157N	IC,QUAD 2-1 DATA SELECTOR/MPX			
IC109	SN74LS684N	IC,8-BIT MAGNITUDE COMPARATOR			
IC110	SN74LS684N	IC,8-BIT MAGNITUDE COMPARATOR			
IC111	SN74LS11N	IC,TRIPPLE 3-INPUT AND GATE			
IC112	SN74LS04N	IC,HEX INVERTER			
IC113	SN74LS684N	IC,8-BIT MAGNITUDE COMPARATOR			
IC114	SN74LS684N	IC,8-BIT MAGNITUDE COMPARATOR			
IC115	SN74LS645-1N	IC,OCTAL BUS TRANSCEIVER			
IC120	SHM-45MC	IC,SAMPLING HOLD ANALOG MPX			
IC121	SN74LS645-1N	IC,OCTAL BUS TRANSCEIVER			
IC122	SN74LS74N	IC,DUAL D-FLIP-FLOP			
Q1	2SC1815(Y)	TR. SI, NPN			
Q2	2SC2655(Y)	TR. SI, NPN			
Q3	2SA1015(Y)	TR. SI, PNP			
Q4	2SC1815(Y)	TR. SI, NPN			
R1	RD14BB2E101J	RES. CARBON	100	5%	1/4W
R2	RD14BB2E472J	RES. CARBON	4.7K	5%	1/4W
R3	RD14BB2E101J	RES. CARBON	100	5%	1/4W
R4	RD14BB2E472J	RES. CARBON	4.7K	5%	1/4W
R5	RD14DB2H390J	RES. CARBON	39	5%	1/2W
R6	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R7	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W

PARTS LIST

REF.NO	PARTS NO	NAME & DESCRIPTION			
R10	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R11	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R12	RN14BK2E1003F	RES. METAL FILM	100K	1%	1/4W
R13	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R14	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R15	RN14BK2E1003F	RES. METAL FILM	100K	1%	1/4W
R16	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R17	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R18	RN14BK2E1003F	RES. METAL FILM	100K	1%	1/4W
R19	RN14BK2E1000F	RES. METAL FILM	100	1%	1/4W
R20	RN14BK2E1000F	RES. METAL FILM	100	1%	1/4W
R21	RN14BK2E1000F	RES. METAL FILM	100	1%	1/4W
R51	RD14BB2E750J	RES. CARBON	75	5%	1/4W
R52	RD14BB2E471J	RES. CARBON	470	5%	1/4W
R53	RD14BB2E333J	RES. CARBON	33K	5%	1/4W
R54	RD14BB2E103J	RES. CARBON	10K	5%	1/4W
R55	RD14BB2E105J	RES. CARBON	1M	5%	1/4W
R56	RD14BB2E102J	RES. CARBON	1K	5%	1/4W
R57	RD14BB2E101J	RES. CARBON	100	5%	1/4W
R58	RD14BB2E183J	RES. CARBON	18K	5%	1/4W
R59	RD14BB2E102J	RES. CARBON	1K	5%	1/4W
R60	RD14BB2E821J	RES. CARBON	820	5%	1/4W
R61	RD14BB2E821J	RES. CARBON	820	5%	1/4W
R62	RD14BB2E822J	RES. CARBON	8.2K	5%	1/4W
R63	RD14BB2E334J	RES. CARBON	330K	5%	1/4W
R64	RD14BB2E512J	RES. CARBON	5.1K	5%	1/4W
R65	RD14BB2E472J	RES. CARBON	4.7K	5%	1/4W
R66	RD14BB2E241J	RES. CARBON	240	5%	1/4W
R100	RD14BB2E104J	RES. CARBON	100K	5%	1/4W
R101	RD14BB2E102J	RES. CARBON	1K	5%	1/4W
R102	RD14BB2E101J	RES. CARBON	100	5%	1/4W
R103	RD14BB2E102J	RES. CARBON	1K	5%	1/4W
RM1	R90-1103-08	RES. NETWORK			
RM2	R90-1103-08	RES. NETWORK			
RM3	R90-1103-08	RES. NETWORK			
RM4	R90-1103-08	RES. NETWORK			
X1	L77-1062-08	CRYSTAL RESONATOR			
ZD1	MA1120	DIODE, ZENER	12V		

CPU UNIT

W02-2029-08

REF.NO	PARTS NO	NAME & DESCRIPTION			
	E08-1484-05	MODULE CONNECTOR;EXTPR			
	E40-7144-08	PIN CONNECTOR	40P;EXTBUS		
	E40-7147-08	PIN CONNECTOR	16P;EL		
	E40-7148-08	PIN CONNECTOR	34P;ROM		
	E40-7149-08	PIN CONNECTOR	50P;KDL		
	E58-0601-08	MODULE CONNECTOR;PORT			
	E58-0602-08	MODULE CONNECTOR;GPIB			
	E58-0603-08	MODULE CONNECTOR;RS232C			
	E58-0604-08	MODULE CONNECTOR;CRT			
	J73-0050-08	PCB (UNMOUNTED)			
BT1	W09-0412-08	BATTERY			
C1	CE04EW1E101M	CAP. ELECTRO	100	20%	25V
C2	CK45B1H104J	CAP. CERAMIC	0.1	5%	50V
C3	CK45B1H331J	CAP. CERAMIC	330P	5%	50V
C4	CK45B1H331J	CAP. CERAMIC	330P	5%	50V
C5	CK45B1H331J	CAP. CERAMIC	330P	5%	50V
C6	CK45B1H102J	CAP. CERAMIC	1000P	5%	50V
C7	CK45B1H331J	CAP. CERAMIC	330P	5%	50V
C8	CK45B1H331J	CAP. CERAMIC	330P	5%	50V
C9	CK45B1H331J	CAP. CERAMIC	330P	5%	50V
C10	CK45B1H103J	CAP. CERAMIC	0.01	5%	50V
C11	CK45B1H103J	CAP. CERAMIC	0.01	5%	50V
C12	CE04EW1E100M	CAP. ELECTRO	10	20%	25V
C13	CE04EW1E101M	CAP. ELECTRO	100	20%	25V
C14	CK45B1H104J	CAP. CERAMIC	0.1	5%	50V
C15	CE04EW1E100M	CAP. ELECTRO	10	20%	25V
C16	CE04EW1E101M	CAP. ELECTRO	100	20%	25V
C17	CK45B1H104J	CAP. CERAMIC	0.1	5%	50V
C18	CE04EW1E100M	CAP. ELECTRO	10	20%	25V
D1	10D1	DIODE			
D2	1S1588	DIODE			
D3	1S1588	DIODE			
D4	1S1588	DIODE			
D5	1S1588	DIODE			
D6	1S1588	DIODE			
D7	1S1588	DIODE			
D8	1S1588	DIODE			
D9	1S1588	DIODE			
IC1	SN74LS640-1N	IC,OCTAL BUS TRANSCEIVER			
IC2	SN75160AN	IC,INTERFACE BUS TRANSCEIVER			
IC3	SN75161AN	IC,INTERFACE BUS TRANSCEIVER			
IC4	SN75189AN	IC,QUAD LINE RECEIVER			
IC5	SN75188N	IC,QUAD LINE DRIVER			
IC6	SN74LS14N	IC,HEX SCHMITT-TRIG INVERTER			
IC7	TLP521-1	IC,PHOTO COUPLER			
IC8	SN74LS645-1N	IC,OCTAL BUS TRANSCEIVER			
IC9	M54522P	IC,TRANSISTOR ARRAY			
IC10	TMS9914ANL	IC,GP-IB ADAPTOR			
IC11	74F32PC	IC,QUAD 2-INPUT OR GATE			
IC12	SN74LS245N	IC,OCTAL BUS TRANSCEIVER(3-S)			
IC13	TLP521-4	IC,PHOTO COUPLER			
IC14	TLP521-4	IC,PHOTO COUPLER			
IC15	SN7406N	IC,HEX INVERTER			
IC16	AM9511A-4	IC,ARITHMETIC PROCESSOR			
IC17	SN74LS245N	IC,OCTAL BUS TRANSCEIVER(3-S)			
IC18	HD64180R1-6	IC,8-BIT HIGH-END MPU			
IC19	SN74LS245N	IC,OCTAL BUS TRANSCEIVER(3-S)			
IC20	SN74LS245N	IC,OCTAL BUS TRANSCEIVER(3-S)			
IC21	MC14490P	IC,HEX CONTACT BOUNCE ELIMINAT			
IC22	MC14490P	IC,HEX CONTACT BOUNCE ELIMINAT			
IC23	SN74LS00N	IC,QUAD 2-INPUT NAND GATE			
IC24	SN74LS245N	IC,OCTAL BUS TRANSCEIVER(3-S)			
IC25	74F163APC	IC,SYNC. BINARY COUNTER			
IC26	SN7406N	IC,HEX INVERTER			
IC27	SN74LS04N	IC,HEX INVERTER			
IC28	T93-0733-08	IC,PROGRAMMED ROM			
IC29	T93-0735-08	IC,PROGRAMMED ROM			
IC30	74F163APC	IC,SYNC. BINARY COUNTER			
IC31	SN74LS245N	IC,OCTAL BUS TRANSCEIVER(3-S)			
IC32	SN74LS245N	IC,OCTAL BUS TRANSCEIVER(3-S)			
IC33	LH0081B	IC,FET-INPUT OP-AMP			
IC34	SN74LS86N	IC,QUAD 2-EXCLUSIVE-OR			
IC35	HM62256LP-12	IC,32768X8 STATIC RAM			
IC36	SN74LS32N	IC,QUAD 2-INPUT OR GATE			
IC37	TC4049BP	IC,HEX BUFFER/CONVERTER			
IC38	T93-0736-08	IC,PROGRAMMED ROM			
IC39	SN74LS04N	IC,HEX INVERTER			
IC40	SN74LS273N	IC,OCTAL D-TYPE FLIP-FLOP			

REF.NO	PARTS NO	NAME & DESCRIPTION			
IC41	TLP521-4	IC,PHOTO COUPLER			
IC42	TLP521-4	IC,PHOTO COUPLER			
IC43	TC74HC00AP	IC,2-INPUT NAND GATE			
IC44	SN74LS32N	IC,QUAD 2-INPUT OR GATE			
IC45	SN74LS04N	IC,HEX INVERTER			
IC46	T93-0737-08	IC,PROGRAMMED ROM			
IC47	SN74LS08N	IC,QUAD 2-INPUT AND GATE			
IC48	SN74LS273N	IC,OCTAL D-TYPE FLIP-FLOP			
IC49	SN74LS640-1N	IC,OCTAL BUS TRANSCEIVER			
IC50	SN74LS74AN	IC,D-FLIP FLOP			
IC51	74F74PC	IC,DUAL D-TYPE FLIP-FLOP			
IC52	SN74LS32N	IC,QUAD 2-INPUT OR GATE			
IC53	SN74LS74AN	IC,D-FLIP FLOP			
IC54	SN74LS74AN	IC,D-FLIP FLOP			
IC55	SN74LS74AN	IC,D-FLIP FLOP			
IC56	74F163APC	IC,SYNC. BINARY COUNTER			
IC57	SN74LS373N	IC,OCTAL D-LATCHES			
IC58	SN74LS08N	IC,QUAD 2-INPUT AND GATE			
IC59	SN74LS10N	IC,TRIPLE 3-INPUT NAND GATE			
IC60	MB3771P-G	IC,POWER SUPPLY UNDER OBSERVAT			
IC61	SN74LS164N	IC,8-BIT PARA-OUT SERI.-IN S.R			
IC62	HD6445P-4	IC,CPU			
IC63	SN74LS245N	IC,OCTAL BUS TRANSCEIVER(3-S)			
IC64	SN74LS32N	IC,QUAD 2-INPUT OR GATE			
IC65	SN74LS245N	IC,OCTAL BUS TRANSCEIVER(3-S)			
IC66	M5M8279P-5	IC,KEYBOARD CONTROLLER			
IC67	SN74LS157N	IC,QUAD 2-1 DATA SELECTOR/MPX			
IC68	SN74LS157N	IC,QUAD 2-1 DATA SELECTOR/MPX			
IC69	SN74LS157N	IC,QUAD 2-1 DATA SELECTOR/MPX			
IC70	SN74LS157N	IC,QUAD 2-1 DATA SELECTOR/MPX			
IC71	HM62256LP-12	IC,32768X8 STATIC RAM			
IC72	SN74LS166N	IC,8-BIT SHIFT REGISTER			
IC73	SN7406N	IC,HEX INVERTER			
IC74	SN7406N	IC,HEX INVERTER			
IC75	SN74LS645-1N	IC,OCTAL BUS TRANSCEIVER			
IC76	SN74LS645-1N	IC,OCTAL BUS TRANSCEIVER			
IC77	SN74LS645-1N	IC,OCTAL BUS TRANSCEIVER			
IC78	SN74LS138N	IC,3-8 DECORD./DE-MPX			
IC79	SN74LS645-1N	IC,OCTAL BUS TRANSCEIVER			
IC80	SN74LS645-1N	IC,OCTAL BUS TRANSCEIVER			
IC81	SN74LS645-1N	IC,OCTAL BUS TRANSCEIVER			
IC82	LH0081B	IC,FET-INPUT OP-AMP			
IC83	M54580P	IC,TRANSISTOR ARRAY			
IC84	SN74LS138N	IC,3-8 DECORD./DE-MPX			
IC85	SN74LS645-1N	IC,OCTAL BUS TRANSCEIVER			
IC91	SN7406N	IC,HEX INVERTER			
IC92	T93-0734-08	IC,PROGRAMMED ROM			
IC93	SN74LS273N	IC,OCTAL D-TYPE FLIP-FLOP			
IC94	SN74LS393N	IC,DUAL 4-BIT BINARY COUNTER			
IC95	SN74LS393N	IC,DUAL 4-BIT BINARY COUNTER			
POW1	E40-4299-05	PIN CONNECTOR	8P		
POW2	E40-3911-05	PIN CONNECTOR	3P		
Q1	2SC828A(Y)	TR. SI, NPN			
Q2	2SA684(R)	TR. SI, PNP			
Q3	2SC1815(Y)	TR. SI, NPN			
Q4	2SC1815(Y)	TR. SI, NPN			
Q5	2SA684(R)	TR. SI, PNP			
R1	RD14BB2E750J	RES. CARBON	75	5%	1/4W
R2	RD14BB2E101J	RES. CARBON	100	5%	1/4W
R3	RD14BB2E820J	RES. CARBON	82	5%	1/4W
R4	RD14BB2E331J	RES. CARBON	330	5%	1/4W
R5	RD14BB2E241J	RES. CARBON	240	5%	1/4W
R6	RD14BB2E102J	RES. CARBON	1K	5%	1/4W
R7	RD14BB2E101J	RES. CARBON	100	5%	1/4W
R8	RD14BB2E472J	RES. CARBON	4.7K	5%	1/4W
R9	RD14BB2E472J	RES. CARBON	4.7K	5%	1/4W
R10	RD14BB2E102J	RES. CARBON	1K	5%	1/4W
R11	RD14BB2E102J	RES. CARBON	1K	5%	1/4W
R12	RD14BB2E102J	RES. CARBON	1K	5%	1/4W
R13	RD14BB2E102J	RES. CARBON	1K	5%	1/4W
R14	RD14BB2E102J	RES. CARBON	1K	5%	1/4W
R15	RD14BB2E102J	RES. CARBON	1K	5%	1/4W
R16	RD14BB2E102J	RES. CARBON	1K	5%	1/4W
R17	RD14BB2E102J	RES. CARBON	1K	5%	1/4W
R18	RD14BB2E102J	RES. CARBON	1K	5%	1/4W
R19	RD14BB2E472J	RES. CARBON	4.7K	5%	1/4W
R20	RD14BB2E472J	RES. CARBON	4.7K	5%	1/4W
R21	RD14BB2E472J	RES. CARBON	4.7K	5%	1/4W
R22	RD14BB2E511J	RES. CARBON	510	5%	1/4W
R23	RD14BB2E472J	RES. CARBON	4.7K	5%	1/4W
R24	RD14BB2E182J	RES. CARBON	1.8K	5%	1/4W
R25	RD14BB2E102J	RES. CARBON	1K	5%	1/4W

REF.NO	PARTS NO	NAME & DESCRIPTION			
R26	RD14BB2E390J	RES. CARBON	39	5%	1/4W
R27	RD14BB2E620J	RES. CARBON	62	5%	1/4W
R28	RD14BB2E472J	RES. CARBON	4.7K	5%	1/4W
R29	RD14BB2E472J	RES. CARBON	4.7K	5%	1/4W
R30	RD14BB2E271J	RES. CARBON	270	5%	1/4W
R31	RD14BB2E271J	RES. CARBON	270	5%	1/4W
R32	RD14BB2E271J	RES. CARBON	270	5%	1/4W
R33	RD14BB2E330J	RES. CARBON	33	5%	1/4W
R34	RD14BB2E330J	RES. CARBON	33	5%	1/4W
R35	RD14BB2E330J	RES. CARBON	33	5%	1/4W
R36	RD14BB2E330J	RES. CARBON	33	5%	1/4W
R37	RD14BB2E330J	RES. CARBON	33	5%	1/4W
R38	RD14BB2E330J	RES. CARBON	33	5%	1/4W
R39	RD14BB2E330J	RES. CARBON	33	5%	1/4W
R40	RD14BB2E330J	RES. CARBON	33	5%	1/4W
R41	RD14BB2E182J	RES. CARBON	1.8K	5%	1/4W
R42	RD14BB2E271J	RES. CARBON	270	5%	1/4W
R43	RD14BB2E472J	RES. CARBON	4.7K	5%	1/4W
RM1	R90-1105-08	RES. NETWORK			
RM2	R90-1105-08	RES. NETWORK			
RM3	R90-1105-08	RES. NETWORK			
RM4	R90-1105-08	RES. NETWORK			
RM5	R90-1104-08	RES. NETWORK			
RM6	R90-1105-08	RES. NETWORK			
RM7	R90-1106-08	RES. NETWORK			
RM8	R90-1106-08	RES. NETWORK			
RM9	R90-1106-08	RES. NETWORK			
RM10	R90-1105-08	RES. NETWORK			
SWD1	S62-0603-08	DIP SWITCH			
X1	L77-1065-08	CRYSTAL RESONATOR			
X2	L77-1064-08	CRYSTAL RESONATOR			
X3	L77-1063-08	CRYSTAL RESONATOR			
ZD1	MA1033	DIODE, ZENER	3.3V		

PARTS LIST

ANALOG UNIT

W02-2030-08

REF.NO	PARTS NO	NAME & DESCRIPTION			
	J73-0051-08	PCB (UNMOUNTED)			
C1	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C2	CQ93M1H103J	CAP. MYLAR	0.01	5%	50V
C3	CQ93M1H102J	CAP. MYLAR	1000P	5%	50V
C4	CQ93M1H103J	CAP. MYLAR	0.01	5%	50V
C5	CQ93M1H103J	CAP. MYLAR	0.01	5%	50V
C6	CE04BW1E010M	CAP. ELECTRO	1	20%	25V
C7	CC45SL1H470J	CAP. CERAMIC	47P	5%	50V
C8	CC45SL1H100D	CAP. CERAMIC	10P	0.5P	50V
C9	CE04EW1ER47M	CAP. ELECTRO	0.47	20%	25V
C10	CE04EW1E100M	CAP. ELECTRO	10	20%	25V
C11	CE04EW1E100M	CAP. ELECTRO	10	20%	25V
C12	CE04EW1E100M	CAP. ELECTRO	10	20%	25V
C13	CE04EW1E100M	CAP. ELECTRO	10	20%	25V
C14	CE04EW1E100M	CAP. ELECTRO	10	20%	25V
C15	CE04EW1E100M	CAP. ELECTRO	10	20%	25V
C16	CE04EW1E100M	CAP. ELECTRO	10	20%	25V
C17	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C18	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C19	CE04EW1ER47M	CAP. ELECTRO	0.47	20%	25V
C20	CE04EW1ER47M	CAP. ELECTRO	0.47	20%	25V
C23	CK45F1H104Z	CAP. CERAMIC	0.1		50V
C24	CK45F1H104Z	CAP. CERAMIC	0.1		50V
C25	NO USE				
C26	CK45F1H104Z	CAP. CERAMIC	0.1		50V
C27	CK45F1H104Z	CAP. CERAMIC	0.1		50V
C28	CC45SL1H101J	CAP. CERAMIC	100P	5%	50V
C29	CC45SL1H101J	CAP. CERAMIC	100P	5%	50V
C30	CC45SL1H101J	CAP. CERAMIC	100P	5%	50V
C31	CE04EW1E100M	CAP. ELECTRO	10	20%	25V
C32	CC45SL1H390J	CAP. CERAMIC	39P	5%	50V
C33	CC45SL1H150J	CAP. CERAMIC	15P	5%	50V
C34	NO USE				
C35	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C36	CQ93M1H103J	CAP. MYLAR	0.01	5%	50V
C37	CQ93M1H103J	CAP. MYLAR	0.01	5%	50V
C38	CE04BW1E010M	CAP. ELECTRO	1	20%	25V
C39	CC45SL1H680J	CAP. CERAMIC	68P	5%	50V
C40	CC45SL1H470J	CAP. CERAMIC	47P	5%	50V
C41	CC45SL1H150J	CAP. CERAMIC	15P	5%	50V
C42	CQ93M1H102J	CAP. MYLAR	1000P	5%	50V
C43	CQ93M1H103J	CAP. MYLAR	0.01	5%	50V
C44	CK45F1H104Z	CAP. CERAMIC	0.1		50V
C45	CK45F1H104Z	CAP. CERAMIC	0.1		50V
C46	CK45F1H104Z	CAP. CERAMIC	0.1		50V
C47	CC45SL1H050C	CAP. CERAMIC	5P	0.25P	50V
C48	CC45SL1H050C	CAP. CERAMIC	5P	0.25P	50V
C49	CE04EW1ER47M	CAP. ELECTRO	0.47	20%	25V
C50	CE04EW1E100M	CAP. ELECTRO	10	20%	25V
C51	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C52	NO USE				
C53	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C56	CK45F1H104Z	CAP. CERAMIC	0.1		50V
C57	CK45F1H104Z	CAP. CERAMIC	0.1		50V
C58	CE04BW1E100M	CAP. ELECTRO	10	20%	25V
C59	CC45SL1H150J	CAP. CERAMIC	15P	5%	50V
C60	CC45SL1H390J	CAP. CERAMIC	39P	5%	50V
C61	CK45F1H104Z	CAP. CERAMIC	0.1		50V
C62	CK45F1H104Z	CAP. CERAMIC	0.1		50V
C63	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C64	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C65	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C66	NO USE				
C67	CC45SL1H101J	CAP. CERAMIC	100P	5%	50V
C68	CC45SL1H101J	CAP. CERAMIC	100P	5%	50V
C69	CK45F1H104Z	CAP. CERAMIC	0.1		50V
C70	CK45F1H104Z	CAP. CERAMIC	0.1		50V
C71	CK45F1H104Z	CAP. CERAMIC	0.1		50V
C72	CK45F1H104Z	CAP. CERAMIC	0.1		50V
C73	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C74	CK45F1H104Z	CAP. CERAMIC	0.1		50V
C75	CK45F1H104Z	CAP. CERAMIC	0.1		50V
C76	CK45F1H104Z	CAP. CERAMIC	0.1		50V
C77	CK45F1H104Z	CAP. CERAMIC	0.1		50V
C78	CC45SL1H101J	CAP. CERAMIC	100P	5%	50V
C79	CC45SL1H101J	CAP. CERAMIC	100P	5%	50V
C80	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C81	CC45SL1H101J	CAP. CERAMIC	100P	5%	50V
C82	CE04BW1H100M	CAP. ELECTRO	10	20%	50V
C83	CQ08S1H220J	CAP. MYLAR	22P	5%	50V
C84	CQ08S1H390J	CAP. MYLAR	39P	5%	50V
C85	CC45SL1H101J	CAP. CERAMIC	100P	5%	50V
C86	CC45SL1H100D	CAP. CERAMIC	10P	0.5P	50V
C87	CC45SL1H101J	CAP. CERAMIC	100P	5%	50V
C88	CC45SL1H101J	CAP. CERAMIC	100P	5%	50V
C89	CE04BW1E010M	CAP. ELECTRO	1	20%	25V
C90	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C91	CK45F1H104Z	CAP. CERAMIC	0.1		50V
C92	CC45SL1H100D	CAP. CERAMIC	10P	0.5P	50V
C93	CC45SL1H101J	CAP. CERAMIC	100P	5%	50V
C94	NO USE				
C95	CC45SL1H101J	CAP. CERAMIC	100P	5%	50V
C96	CC45SL1H101J	CAP. CERAMIC	100P	5%	50V
C97	NO USE				
C98	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C99	CE04BW1E010M	CAP. ELECTRO	1	20%	25V
C100	CE04BW1E100M	CAP. ELECTRO	10	20%	25V
C101	CQ93M1H104J	CAP. MYLAR	0.1	5%	50V
C102	CE04BW1E100M	CAP. ELECTRO	10	20%	25V
C103	CQ93M1H102J	CAP. MYLAR	1000P	5%	50V
C104	CQ93M1H102J	CAP. MYLAR	1000P	5%	50V
C105	CQ93M1H102J	CAP. MYLAR	1000P	5%	50V
C106	CQ93M1H102J	CAP. MYLAR	1000P	5%	50V
C107	CQ93M1H102J	CAP. MYLAR	1000P	5%	50V
C108	CQ93M1H102J	CAP. MYLAR	1000P	5%	50V
C109	CQ93M1H102J	CAP. MYLAR	1000P	5%	50V
C110	CQ93M1H102J	CAP. MYLAR	1000P	5%	50V
C111	CQ93M1H102J	CAP. MYLAR	1000P	5%	50V
C112	CQ93M1H102J	CAP. MYLAR	1000P	5%	50V
C113	NO USE				
C114	CE04EW1H101M	CAP. ELECTRO	100	20%	50V
C115	CE04EW1H101M	CAP. ELECTRO	100	20%	50V
C116	CE04EW1H101M	CAP. ELECTRO	100	20%	50V
C117	CE04EW1H101M	CAP. ELECTRO	100	20%	50V
C118	CC45SL1H101J	CAP. CERAMIC	100P	5%	50V
C119	CC45SL1H101J	CAP. CERAMIC	100P	5%	50V
C120	CC45SL1H101J	CAP. CERAMIC	100P	5%	50V
C121	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C122	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C123	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C124	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C125	CC45SL1H101J	CAP. CERAMIC	100P	5%	50V
C126	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C127	CE04EW1E100M	CAP. ELECTRO	10	20%	25V
C128	CC45SL1H101J	CAP. CERAMIC	100P	5%	50V
C129	NO USE				
C130	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C131	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C132	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C133	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C134	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C135	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C136	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C137	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C138	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C139	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C140	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C141	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C142	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C143	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C144	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C145	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C146	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C147	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C148	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C149	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C150	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C151	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C160	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C161	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C162	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C163	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C164	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C165	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C166	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C167	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C168	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C169	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C170	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C171	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C172	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C173	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C174	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C175	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C176	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C177	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C178	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C179	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C180	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C181	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C182	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C183	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C201	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C202	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C203	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C204	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C205	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C206	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C207	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C208	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C209	CK45F1H103Z	CAP. CERAMIC	0.01		50V
C222	CQ93M1H222J	CAP. MYLAR	2200P	5%	50V
C223	CQ93M1H223J	CAP. MYLAR	0.022	5%	50V
CIN	E40-7150-08	PIN CONNECTOR	2P		
CN1	E40-7151-08	PIN CONNECTOR	2P		
CN2	E40-7151-08	PIN CONNECTOR	2P		
CN3	E40-7151-08	PIN CONNECTOR	2P		
CN4	E40-7151-08	PIN CONNECTOR	2P		
CN5	E40-7152-08	PIN CONNECTOR	5P		
CN6	E40-7145-08	PIN CONNECTOR	20P		
CN7	E40-7143-08	PIN CONNECTOR	6P		
D1	1S1588	DIODE			
D2	1S1588	DIODE			
D3	1S1588	DIODE			
D4	1S1588	DIODE			
D5	1S1588	DIODE			
D6	1S1588	DIODE			
D7	1S1588	DIODE			
D8	1S1588	DIODE			
D9	1S1588	DIODE			
D10	1S1588	DIODE			
D11	1S1588	DIODE			
D12	1S1588	DIODE			
D17	1S1588	DIODE			
D18	1S1588	DIODE			
D19	1S1588	DIODE			
D20	1S1588	DIODE			
D21	1S1588	DIODE			
D22	1S1588	DIODE			
D23	1S1588	DIODE			
D24	1S1588	DIODE			
D25	1S1588	DIODE			
D26	1S1588	DIODE			
D31	1S1588	DIODE			
D32	1S1588	DIODE			
D33	1S1588	DIODE			
DLA	ZT35-30	DELAY LINE			
DLB	ZT35-30	DELAY LINE			
DLC	ZT35-30	DELAY LINE			
DLD	ZT35-30	DELAY LINE			
DLE	ZT35-30	DELAY LINE			
DLF	ZT35-30	DELAY LINE			
IC1	M5193P	IC,NTSC CHROMA SIGNAL PROCESSO			
IC2	NO USE				
IC3	MC1496G	IC,QUAD 2-INPUT OR GATE			
IC4	LF353N	IC,DUAL JFET INPUT OP-AMP			
IC5	LF353N	IC,DUAL JFET INPUT OP-AMP			
IC6	M5194P	IC,PAL CHROMA SIGNAL PROCESSOR			
IC7	NO USE				
IC8	MC1496G	IC,QUAD 2-INPUT OR GATE			
IC9	LF353N	IC,DUAL JFET INPUT OP-AMP			
IC10	LF353N	IC,DUAL JFET INPUT OP-AMP			
IC11	LH0032CG	IC,FET-INPUT OP-AMP			
IC12	LH0033CG	IC,BUFFER AMPLIFIERS			
IC13	AD539JN	IC,OP-AMP			
IC14	LH0033CG	IC,BUFFER AMPLIFIERS			
IC15	LH0032CG	IC,FET-INPUT OP-AMP			
IC16	LH0033CG	IC,BUFFER AMPLIFIERS			
IC17	LF353N	IC,DUAL JFET INPUT OP-AMP			
IC18	LF398N	IC,MONOLITHIC SAMPLE AND HOLD			
IC19	LF353N	IC,DUAL JFET INPUT OP-AMP			
IC20	MC1496G	IC,QUAD 2-INPUT OR GATE			
IC21	MC1496G	IC,QUAD 2-INPUT OR GATE			
IC22	LF353N	IC,DUAL JFET INPUT OP-AMP			
IC23	LH0032CG	IC,FET-INPUT OP-AMP			
IC24	LH0033CG	IC,BUFFER AMPLIFIERS			
IC25	LF353N	IC,DUAL JFET INPUT OP-AMP			
IC26	LF353N	IC,DUAL JFET INPUT OP-AMP			
IC27	LF353N	IC,DUAL JFET INPUT OP-AMP			
IC28	LM319H	IC,DUAL COMPARATOR			
IC29	SN7407N	IC,HEX BUFFER			
IC30	SN7407N	IC,HEX BUFFER			
IC31	SN7406N	IC,HEX INVERTER			
IC32	SN74LS221N	IC,DUAL MONOSTABLE MULTI.			
IC33	SN74LS221N	IC,DUAL MONOSTABLE MULTI.			
IC34	SN7407N	IC,HEX BUFFER			
IC35	SN74LS32N	IC,QUAD 2-INPUT OR GATE			
IC36	SN74LS221N	IC,DUAL MONOSTABLE MULTI.			
IC37	SN74LS221N	IC,DUAL MONOSTABLE MULTI.			
IC38	SN74LS221N	IC,DUAL MONOSTABLE MULTI.			
IC39	NO USE				
IC40	LH0033CG	IC,BUFFER AMPLIFIERS			
L8	L40-5601-14	FERRI INDUCTOR	56UH	10%	
L9	L40-5601-14	FERRI INDUCTOR	56UH	10%	
Q1	2SC828A(R)	TR. SI, NPN			
Q2	2SC828A(R)	TR. SI, NPN			
Q3	2SC828A(R)	TR. SI, NPN			
Q4	2SC828A(R)	TR. SI, NPN			
Q5	2SC828A(R)	TR. SI, NPN			
Q6	2SC828A(R)	TR. SI, NPN			
Q7	2SC828A(R)	TR. SI, NPN			
Q8	NO USE				
Q9	2SC828A(R)	TR. SI, NPN			
Q10	2SC828A(R)	TR. SI, NPN			
Q14	2SC1583(F)	TR. SI, NPN			
Q15	2SC828A(R)	TR. SI, NPN			
Q16	2SC828A(R)	TR. SI, NPN			
Q17	2SC1583(F)	TR. SI, NPN			
R1	RN14BK2E1502F	RES. METAL FILM	15K	1%	1/4W
R2	RN14BK2E1502F	RES. METAL FILM	15K	1%	1/4W
R3	RN14BK2E1001F	RES. METAL FILM	1K	1%	1/4W
R4	RD14BB2E221J	RES. CARBON	220	5%	1/4W
R5	RN14BK2E2201F	RES. METAL FILM	2.2K	1%	1/4W
R6	RN14BK2E4700F	RES. METAL FILM	470	1%	1/4W
R7	RD14BB2E103J	RES. CARBON	10K	5%	1/4W
R8	RD14BB2E103J	RES. CARBON	10K	5%	1/4W
R9	RD14BB2E103J	RES. CARBON	10K	5%	1/4W
R10	RN14BK2E1204F	RES. METAL FILM	1.2M	1%	1/4W
R11	RN14BK2E3300F	RES. METAL FILM	330	1%	1/4W
R12	RN14BK2E3303F	RES. METAL FILM	330K	1%	1/4W
R13	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R14	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R15	RN14BK2E1502F	RES. METAL FILM	15K	1%	1/4W
R16	RN14BK2E1502F	RES. METAL FILM	15K	1%	1/4W
R17	RN14BK2E1001F	RES. METAL FILM	1K	1%	1/4W
R18	RD14BB2E221J	RES. CARBON	220	5%	1/4W
R19	RN14BK2E2201F	RES. METAL FILM	2.2K	1%	1/4W
R20	RN14BK2E1201F	RES. METAL FILM	1.2K	1%	1/4W
R21	RN14BK2E2200F	RES. METAL FILM	220	1%	1/4W
R22	RD14BB2E102J	RES. CARBON	1K	5%	1/4W
R23	RD14BB2E103J	RES. CARBON	10K	5%	1/4W
R24	RD14BB2E103J	RES. CARBON	10K	5%	1/4W
R25	RD14BB2E103J	RES. CARBON	10K	5%	1/4W
R26	RN14BK2E3303F	RES. METAL FILM	330K	1%	1/4W
R27	RD14BB2E102J	RES. CARBON	1K	5%	1/4W
R28	RN14BK2E1001F	RES. METAL FILM	1K	1%	1/4W
R29	RN14BK2E1001F	RES. METAL FILM	1K	1%	1/4W
R30	RN14BK2E3300F	RES. METAL FILM	330	1%	1/4W
R31	RN14BK2E2201F	RES. METAL FILM	2.2K	1%	1/4W
R32	RD14BB2E103J	RES. CARBON	10K	5%	1/4W
R33	RN14BK2E1001F	RES. METAL FILM	1K	1%	1/4W
R34	RN14BK2E1001F	RES. METAL FILM	1K	1%	1/4W
R35	RN14BK2E1001F	RES. METAL FILM	1K	1%	1/4W
R36	RN14BK2E2201F	RES. METAL FILM	2.2K	1%	1/4W
R37	RN14BK2E3300F	RES. METAL FILM	330	1%	1/4W
R38	RD14BB2E103J	RES. CARBON	10K	5%	1/4W
R39	RD14BB2E103J	RES. CARBON	10K	5%	1/4W
R40	RD14BB2E103J	RES. CARBON	10K	5%	1/4W

PARTS LIST

REF.NO	PARTS NO	NAME & DESCRIPTION			
R41	RD14BB2E102J	RES. CARBON	1K	5%	1/4W
R42	RN14BK2E3300F	RES. METAL FILM	330	1%	1/4W
R43	RD14BB2E103J	RES. CARBON	10K	5%	1/4W
R44	RD14BB2E103J	RES. CARBON	10K	5%	1/4W
R45	RD14BB2E102J	RES. CARBON	1K	5%	1/4W
R46	RD14BB2E103J	RES. CARBON	10K	5%	1/4W
R47	RD14BB2E103J	RES. CARBON	10K	5%	1/4W
R48	RD14BB2E102J	RES. CARBON	1K	5%	1/4W
R49	RN14BK2E3300F	RES. METAL FILM	330	1%	1/4W
R50	RD14BB2E103J	RES. CARBON	10K	5%	1/4W
R51	RD14BB2E103J	RES. CARBON	10K	5%	1/4W
R52	RD14BB2E102J	RES. CARBON	1K	5%	1/4W
R53	RD14BB2E103J	RES. CARBON	10K	5%	1/4W
R54	RD14BB2E103J	RES. CARBON	10K	5%	1/4W
R55	RD14BB2E102J	RES. CARBON	1K	5%	1/4W
R72	RN14BK2E1001F	RES. METAL FILM	1K	1%	1/4W
R73	RN14BK2E1000F	RES. METAL FILM	100	1%	1/4W
R74	RN14BK2E1001F	RES. METAL FILM	1K	1%	1/4W
R75	RN14BK2E1001F	RES. METAL FILM	1K	1%	1/4W
R76	RN14BK2E1000F	RES. METAL FILM	100	1%	1/4W
R77	RN14BK2E8201F	RES. METAL FILM	8.2K	1%	1/4W
R78	RN14BK2E1001F	RES. METAL FILM	1K	1%	1/4W
R79	RN14BK2E1000F	RES. METAL FILM	100	1%	1/4W
R80	RN14BK2E1000F	RES. METAL FILM	100	1%	1/4W
R81	RN14BK2E1001F	RES. METAL FILM	1K	1%	1/4W
R82	RN14BK2E1801F	RES. METAL FILM	1.8K	1%	1/4W
R83	RN14BK2E1801F	RES. METAL FILM	1.8K	1%	1/4W
R84	RN14BK2E1001F	RES. METAL FILM	1K	1%	1/4W
R85	RN14BK2E1000F	RES. METAL FILM	100	1%	1/4W
R86	RN14BK2E2401F	RES. METAL FILM	2.4K	1%	1/4W
R87	RD14BB2E104J	RES. CARBON	100K	5%	1/4W
R88	RN14BK2E1501F	RES. METAL FILM	1.5K	1%	1/4W
R89	RN14BK2E2202F	RES. METAL FILM	22K	1%	1/4W
R90	RN14BK2E2202F	RES. METAL FILM	22K	1%	1/4W
R91	RN14BK2E1501F	RES. METAL FILM	1.5K	1%	1/4W
R92	RN14BK2E2202F	RES. METAL FILM	22K	1%	1/4W
R93	RN14BK2E2202F	RES. METAL FILM	22K	1%	1/4W
R94	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R95	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R96	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R97	RN14BK2E1001F	RES. METAL FILM	1K	1%	1/4W
R98	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R99	RN14BK2E5101F	RES. METAL FILM	5.1K	1%	1/4W
R100	RN14BK2E1202F	RES. METAL FILM	12K	1%	1/4W
R101	RN14BK2E2401F	RES. METAL FILM	2.4K	1%	1/4W
R102	RN14BK2E3000F	RES. METAL FILM	300	1%	1/4W
R103	RN14BK2E4701F	RES. METAL FILM	4.7K	1%	1/4W
R104	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R114	RN14BK2E1001F	RES. METAL FILM	1K	1%	1/4W
R115	RN14BK2E1001F	RES. METAL FILM	1K	1%	1/4W
R116	RN14BK2E1001F	RES. METAL FILM	1K	1%	1/4W
R117	RN14BK2E1001F	RES. METAL FILM	1K	1%	1/4W
R118	RN14BK2E1000F	RES. METAL FILM	100	1%	1/4W
R119	NO USE				
R120	RN14BK2E1001F	RES. METAL FILM	1K	1%	1/4W
R121	RN14BK2E1000F	RES. METAL FILM	100	1%	1/4W
R122	RN14BK2E1000F	RES. METAL FILM	100	1%	1/4W
R123	RN14BK2E8201F	RES. METAL FILM	8.2K	1%	1/4W
R124	RN14BK2E1001F	RES. METAL FILM	1K	1%	1/4W
R125	RN14BK2E1801F	RES. METAL FILM	1.8K	1%	1/4W
R126	RN14BK2E1801F	RES. METAL FILM	1.8K	1%	1/4W
R127	RD14BB2E104J	RES. CARBON	100K	5%	1/4W
R128	RN14BK2E1501F	RES. METAL FILM	1.5K	1%	1/4W
R129	RN14BK2E1501F	RES. METAL FILM	1.5K	1%	1/4W
R130	RN14BK2E2202F	RES. METAL FILM	22K	1%	1/4W
R131	RN14BK2E2202F	RES. METAL FILM	22K	1%	1/4W
R132	RN14BK2E2202F	RES. METAL FILM	22K	1%	1/4W
R133	RN14BK2E2202F	RES. METAL FILM	22K	1%	1/4W
R134	RN14BK2E1000F	RES. METAL FILM	100	1%	1/4W
R135	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R136	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R137	RN14BK2E3000F	RES. METAL FILM	300	1%	1/4W
R138	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R139	RN14BK2E4701F	RES. METAL FILM	4.7K	1%	1/4W
R140	RN14BK2E2401F	RES. METAL FILM	2.4K	1%	1/4W
R141	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R142	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R143	RN14BK2E1001F	RES. METAL FILM	1K	1%	1/4W
R144	RN14BK2E5101F	RES. METAL FILM	5.1K	1%	1/4W
R145	RN14BK2E2401F	RES. METAL FILM	2.4K	1%	1/4W
R146	RN14BK2E1202F	RES. METAL FILM	12K	1%	1/4W
R147	RN14BK2E8200F	RES. METAL FILM	820	1%	1/4W
R148	RN14BK2E5603F	RES. METAL FILM	560K	1%	1/4W
R149	RN14BK2E5603F	RES. METAL FILM	560K	1%	1/4W

REF.NO	PARTS NO	NAME & DESCRIPTION			
R150	RN14BK2E1001F	RES. METAL FILM	1K	1%	1/4W
R151	RN14BK2E1001F	RES. METAL FILM	1K	1%	1/4W
R152	RD14BB2E222J	RES. CARBON	2.2K	5%	1/4W
R153	RD14BB2E103J	RES. CARBON	10K	5%	1/4W
R154	RN14BK2E5101F	RES. METAL FILM	5.1K	1%	1/4W
R155	RN14BK2E5101F	RES. METAL FILM	5.1K	1%	1/4W
R156	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R157	RN14BK2E1003F	RES. METAL FILM	100K	1%	1/4W
R158	RN14BK2E5101F	RES. METAL FILM	5.1K	1%	1/4W
R159	RN14BK2E8201F	RES. METAL FILM	8.2K	1%	1/4W
R160	RN14BK2E1001F	RES. METAL FILM	1K	1%	1/4W
R161	RN14BK2E2402F	RES. METAL FILM	24K	1%	1/4W
R162	RN14BK2E5100F	RES. METAL FILM	510	1%	1/4W
R163	RN14BK2E1001F	RES. METAL FILM	1K	1%	1/4W
R164	RN14BK2E1501F	RES. METAL FILM	1.5K	1%	1/4W
R165	RN14BK2E1501F	RES. METAL FILM	1.5K	1%	1/4W
R166	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R167	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R168	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R169	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R170	RN14BK2E1801F	RES. METAL FILM	1.8K	1%	1/4W
R171	RN14BK2E1000F	RES. METAL FILM	100	1%	1/4W
R172	RN14BK2E7500F	RES. METAL FILM	750	1%	1/4W
R173	RN14BK2E1000F	RES. METAL FILM	100	1%	1/4W
R174	RN14BK2E1001F	RES. METAL FILM	1K	1%	1/4W
R175	RN14BK2E1001F	RES. METAL FILM	1K	1%	1/4W
R176	RN14BK2E1000F	RES. METAL FILM	100	1%	1/4W
R177	RN14BK2E1000F	RES. METAL FILM	100	1%	1/4W
R178	RN14BK2E1801F	RES. METAL FILM	1.8K	1%	1/4W
R179	RN14BK2E8201F	RES. METAL FILM	8.2K	1%	1/4W
R180	RN14BK2E1001F	RES. METAL FILM	1K	1%	1/4W
R181	RN14BK2E1001F	RES. METAL FILM	1K	1%	1/4W
R182	RN14BK2E1001F	RES. METAL FILM	1K	1%	1/4W
R183	RN14BK2E1001F	RES. METAL FILM	1K	1%	1/4W
R184	RD14BB2E103J	RES. CARBON	10K	5%	1/4W
R185	RN14BK2E1001F	RES. METAL FILM	1K	1%	1/4W
R186	RD14BB2E103J	RES. CARBON	10K	5%	1/4W
R187	RN14BK2E5603F	RES. METAL FILM	560K	1%	1/4W
R188	RN14BK2E1001F	RES. METAL FILM	1K	1%	1/4W
R189	RN14BK2E2700F	RES. METAL FILM	270	1%	1/4W
R190	RD14BB2E102J	RES. CARBON	1K	5%	1/4W
R191	RN14BK2E5603F	RES. METAL FILM	560K	1%	1/4W
R192	RN14BK2E1001F	RES. METAL FILM	1K	1%	1/4W
R193	RN14BK2E1001F	RES. METAL FILM	1K	1%	1/4W
R194	RN14BK2E1001F	RES. METAL FILM	1K	1%	1/4W
R195	RN14BK2E1001F	RES. METAL FILM	1K	1%	1/4W
R196	RN14BK2E1001F	RES. METAL FILM	1K	1%	1/4W
R197	RN14BK2E1001F	RES. METAL FILM	1K	1%	1/4W
R198	RN14BK2E1000F	RES. METAL FILM	100	1%	1/4W
R199	RN14BK2E1000F	RES. METAL FILM	100	1%	1/4W
R200	RN14BK2E8201F	RES. METAL FILM	8.2K	1%	1/4W
R201	RN14BK2E1000F	RES. METAL FILM	100	1%	1/4W
R202	RN14BK2E1000F	RES. METAL FILM	100	1%	1/4W
R203	RN14BK2E1801F	RES. METAL FILM	1.8K	1%	1/4W
R204	RN14BK2E1801F	RES. METAL FILM	1.8K	1%	1/4W
R205	RN14BK2E1501F	RES. METAL FILM	1.5K	1%	1/4W
R206	RN14BK2E1501F	RES. METAL FILM	1.5K	1%	1/4W
R207	RN14BK2E1202F	RES. METAL FILM	12K	1%	1/4W
R208	RN14BK2E2402F	RES. METAL FILM	24K	1%	1/4W
R209	RN14BK2E1202F	RES. METAL FILM	12K	1%	1/4W
R210	RN14BK2E2402F	RES. METAL FILM	24K	1%	1/4W
R213	RD14BB2E105J	RES. CARBON	1M	5%	1/4W
R214	RD14BB2E105J	RES. CARBON	1M	5%	1/4W
R215	RN14BK2E1501F	RES. METAL FILM	1.5K	1%	1/4W
R216	RN14BK2E1501F	RES. METAL FILM	1.5K	1%	1/4W
R217	NO USE				
R218	RN14BK2E1501F	RES. METAL FILM	1.5K	1%	1/4W
R219	RN14BK2E1501F	RES. METAL FILM	1.5K	1%	1/4W
R220	RD14BB2E105J	RES. CARBON	1M	5%	1/4W
R221	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R222	RD14BB2E242J	RES. CARBON	2.4K	5%	1/4W
R223	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R224	RD14BB2E512J	RES. CARBON	5.1K	5%	1/4W
R225	RD14BB2E123J	RES. CARBON	12K	5%	1/4W
R226	RD14BB2E102J	RES. CARBON	1K	5%	1/4W
R227	RD14BB2E512J	RES. CARBON	5.1K	5%	1/4W
R228	RN14BK2E1802F	RES. METAL FILM	18K	1%	1/4W
R229	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R230	RD14BB2E101J	RES. CARBON	100	5%	1/4W
R231	RD14BB2E515J	RES. CARBON.	5.1M	5%	1/4W
R232	RD14BB2E104J	RES. CARBON	100K	5%	1/4W
R233	RD14BB2E105J	RES. CARBON	1M	5%	1/4W
R234	RN14BK2E1501F	RES. METAL FILM	1.5K	1%	1/4W
R235	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R236	RD14BB2E103J	RES. CARBON	10K	5%	1/4W

PARTS LIST

REF.NO	PARTS NO	NAME & DESCRIPTION			
R237	RD14BB2E102J	RES. CARBON	1K	5%	1/4W
R238	RD14BB2E123J	RES. CARBON	12K	5%	1/4W
R239	RD14BB2E242J	RES. CARBON	2.4K	5%	1/4W
R240	RD14BB2E102J	RES. CARBON	1K	5%	1/4W
R241	RD14BB2E103J	RES. CARBON	10K	5%	1/4W
R242	RD14BB2E103J	RES. CARBON	10K	5%	1/4W
R243	RD14BB2E102J	RES. CARBON	1K	5%	1/4W
R244	RD14BB2E104J	RES. CARBON	100K	5%	1/4W
R245	RD14BB2E102J	RES. CARBON	1K	5%	1/4W
R246	RD14BB2E102J	RES. CARBON	1K	5%	1/4W
R247	RD14BB2E104J	RES. CARBON	100K	5%	1/4W
R248	RD14BB2E102J	RES. CARBON	1K	5%	1/4W
R249	RD14BB2E102J	RES. CARBON	1K	5%	1/4W
R250	RD14BB2E102J	RES. CARBON	1K	5%	1/4W
R251	RD14BB2E472J	RES. CARBON	4.7K	5%	1/4W
R252	RD14BB2E472J	RES. CARBON	4.7K	5%	1/4W
R253	RD14BB2E472J	RES. CARBON	4.7K	5%	1/4W
R254	RN14BK2E5101F	RES. METAL FILM	5.1K	1%	1/4W
R255	RN14BK2E5101F	RES. METAL FILM	5.1K	1%	1/4W
R256	RN14BK2E1501F	RES. METAL FILM	1.5K	1%	1/4W
R257	RN14BK2E3901F	RES. METAL FILM	3.9K	1%	1/4W
R258	RN14BK2E5101F	RES. METAL FILM	5.1K	1%	1/4W
R259	RN14BK2E5601F	RES. METAL FILM	5.6K	1%	1/4W
R260	RN14BK2E5101F	RES. METAL FILM	5.1K	1%	1/4W
R261	RN14BK2E5101F	RES. METAL FILM	5.1K	1%	1/4W
R262	RD14BB2E102J	RES. CARBON	1K	5%	1/4W
R263	RD14BB2E102J	RES. CARBON	1K	5%	1/4W
R264	RD14BB2E102J	RES. CARBON	1K	5%	1/4W
R265	RD14BB2E102J	RES. CARBON	1K	5%	1/4W
R266	RD14BB2E102J	RES. CARBON	1K	5%	1/4W
R267	RN14BK2E1000F	RES. METAL FILM	100	1%	1/4W
R268	RN14BK2E1001F	RES. METAL FILM	1K	1%	1/4W
R269	RN14BK2E1002F	RES. METAL FILM	10K	1%	1/4W
R272	RD14BB2E472J	RES. CARBON	4.7K	5%	1/4W
R273	RD14BB2E182J	RES. CARBON	1.8K	5%	1/4W
R274	RN14BK2E1801F	RES. METAL FILM	1.8K	1%	1/4W
R300	RD14BB2E101J	RES. CARBON	100	5%	1/4W
R301	RD14BB2E750J	RES. CARBON	75	5%	1/4W
R302	RN14BK2E6800F	RES. METAL FILM	680	1%	1/4W
R303	RN14BK2E1800F	RES. METAL FILM	180	1%	1/4W
R304	RN14BK2E1000F	RES. METAL FILM	100	1%	1/4W
R305	RN14BK2E1000F	RES. METAL FILM	100	1%	1/4W
R306	RD14BB2E181J	RES. CARBON	180	5%	1/4W
RY1	S76-0602-08	RELAY			
RY2	S76-0602-08	RELAY			
RY3	S76-0603-08	RELAY			
RY4	S76-0603-08	RELAY			
RY5	S76-0603-08	RELAY			
RY6	S76-0602-08	RELAY			
RY7	S76-0602-08	RELAY			
RY8	NO USE				
RY9	S76-0602-08	RELAY			
RY10	S76-0602-08	RELAY			
RY11	S76-0602-08	RELAY			
RY12	S76-0602-08	RELAY			
RY15	S76-0602-08	RELAY			
RY20	S76-0602-08	RELAY			
SF1	L72-0402-05	CERAMIC FILTER			
SF2	L72-0403-05	CERAMIC FILTER			
V1	NJM7812FA	IC,3-TERMINAL REGULATOR			
V2	UPC7908H	IC,3-TERMINAL REGULATOR			
V3	NJM7805FA	IC,3-TERMINAL REGULATOR			
VC1	C05-0480-08	CAP. TRIMMER	20P		
VC2	C05-0481-08	CAP. TRIMMER	30P		
VC3	C05-0480-08	CAP. TRIMMER	20P		
VC4	C05-0481-08	CAP. TRIMMER	30P		
VC5	C05-0481-08	CAP. TRIMMER	30P		
VC6	C05-0481-08	CAP. TRIMMER	30P		
VC7	C05-0481-08	CAP. TRIMMER	30P		
VC8	C05-0481-08	CAP. TRIMMER	30P		
VIN1	E40-7150-08	PIN CONNECTOR	2P		
VIN2	E40-7150-08	PIN CONNECTOR	2P		
VOUT	E40-7150-08	PIN CONNECTOR	2P		
VR1	R12-1560-08	RES. SEMI FIXED	1K		
VR2	NO USE				

REF.NO	PARTS NO	NAME & DESCRIPTION
VR3	R12-1561-08	RES. SEMI FIXED 2K
VR4	R12-3566-08	RES. SEMI FIXED 10K
VR5	R12-1560-08	RES. SEMI FIXED 1K
VR6	NO USE	
VR7	R12-1561-08	RES. SEMI FIXED 2K
VR8	R12-1561-08	RES. SEMI FIXED 2K
VR9	R12-1561-08	RES. SEMI FIXED 2K
VR10	NO USE	
VR11	R12-2528-08	RES. SEMI FIXED 5K
VR12	R12-1562-08	RES. SEMI FIXED 2K
VR13	R12-1562-08	RES. SEMI FIXED 2K
VR14	R12-1562-08	RES. SEMI FIXED 2K
VR15	R12-3566-08	RES. SEMI FIXED 10K
VR16	R12-0595-08	RES. SEMI FIXED 100
VR20	R12-1567-08	RES. SEMI FIXED 2K
VR21	R12-1567-08	RES. SEMI FIXED 2K
X1	L77-1066-08	CRYSTAL RESONATOR
X2	L77-1067-08	CRYSTAL RESONATOR
YIN	E40-7150-08	PIN CONNECTOR 2P
ZD1	MA1062L	DIODE, ZENER

PARTS LIST

FRONT PANEL/EEPROM UNIT

W02-2031-08

REF.NO	PARTS NO	NAME & DESCRIPTION
	B30-0982-05	LED;RED
	HN58C65P-25	IC,EEPROM
	J73-0052-08	PCB (UNMOUNTED)
	K27-0561-04	BUTTON;WITH WINDOW,WHITE
	K27-0562-04	BUTTON;「1」
	K27-0563-04	BUTTON;TRIANGLE,BLUE
	K27-0567-04	BUTTON;WITHOUT WINDOW,WHITE
	K27-0568-04	BUTTON;「2」
	K27-0569-04	BUTTON;「3」
	K27-0570-04	BUTTON;「4」
	K27-0571-04	BUTTON;「5」
	K27-0572-04	BUTTON;「6」
	K27-0573-04	BUTTON;「7」
	K27-0574-04	BUTTON;「8」
	K27-0575-04	BUTTON;「9」
	K27-0576-04	BUTTON;「0」
	K27-0577-04	BUTTON;「A」
	K27-0578-04	BUTTON;「・」
	K27-0579-04	BUTTON;「CLR」
	K27-0580-04	BUTTON;「ENT」
	K27-0581-04	BUTTON;「+」
	K27-0582-04	BUTTON;「-」
BZ1	T99-0512-08	BUZZER
CN1	E40-7153-08	PIN CONNECTOR 50P
D1	1S1588	DIODE
IC1	SN7406N	IC,HEX INVERTER
LED1	B30-0982-05	LED;RED
LED2	B30-0982-05	LED;RED
LED3	B30-0982-05	LED;RED
LED4	B30-0982-05	LED;RED
LED5	E02-0150-05	IC SOCKET 28 PIN
R1	RD14BB2E271J	RES. CARBON 270 5% 1/4W
R2	RD14BB2E471J	RES. CARBON 470 5% 1/4W
R3	RD14BB2E472J	RES. CARBON 4.7K 5% 1/4W
SW1	S40-1537-05	TACT SW
SW2	S40-1536-05	TACT SW
SW3	S40-1536-05	TACT SW
SW4	S40-1536-05	TACT SW
SW5	S40-1537-05	TACT SW
SW6	S40-1536-05	TACT SW
SW7	S40-1536-05	TACT SW
SW8	S40-1536-05	TACT SW
SW9	S40-1537-05	TACT SW
SW10	S40-1536-05	TACT SW
SW11	S40-1536-05	TACT SW
SW12	S40-1536-05	TACT SW
SW13	S40-1536-05	TACT SW
SW14	S40-1537-05	TACT SW
SW15	S40-1536-05	TACT SW
SW16	S40-1536-05	TACT SW
SW17	S40-1536-05	TACT SW
SW18	S40-1536-05	TACT SW
SW19	S40-1536-05	TACT SW
SW20	S40-1537-05	TACT SW
SW21	S40-1537-05	TACT SW
SW22	S40-1536-05	TACT SW
SW23	S40-1536-05	TACT SW
SW24	S40-1536-05	TACT SW
SW25	S40-1536-05	TACT SW
SW26	S40-1537-05	TACT SW
SW27	S40-1536-05	TACT SW
SW28	S40-1536-05	TACT SW
SW29	S40-1536-05	TACT SW
SW30	S40-1536-05	TACT SW
SW31	S40-1536-05	TACT SW
SW32	S40-1536-05	TACT SW
SW33	S40-1536-05	TACT SW

REAR PANEL UNIT

W02-2032-08

REF.NO	PARTS NO	NAME & DESCRIPTION
	E40-7151-08	PIN CONNECTOR 2P
	E40-7152-08	PIN CONNECTOR 5P
	J73-0053-08	PCB (UNMOUNTED)
	RN14BK2H75R0F	RES. METAL FILM 75.0 1% 1/2W

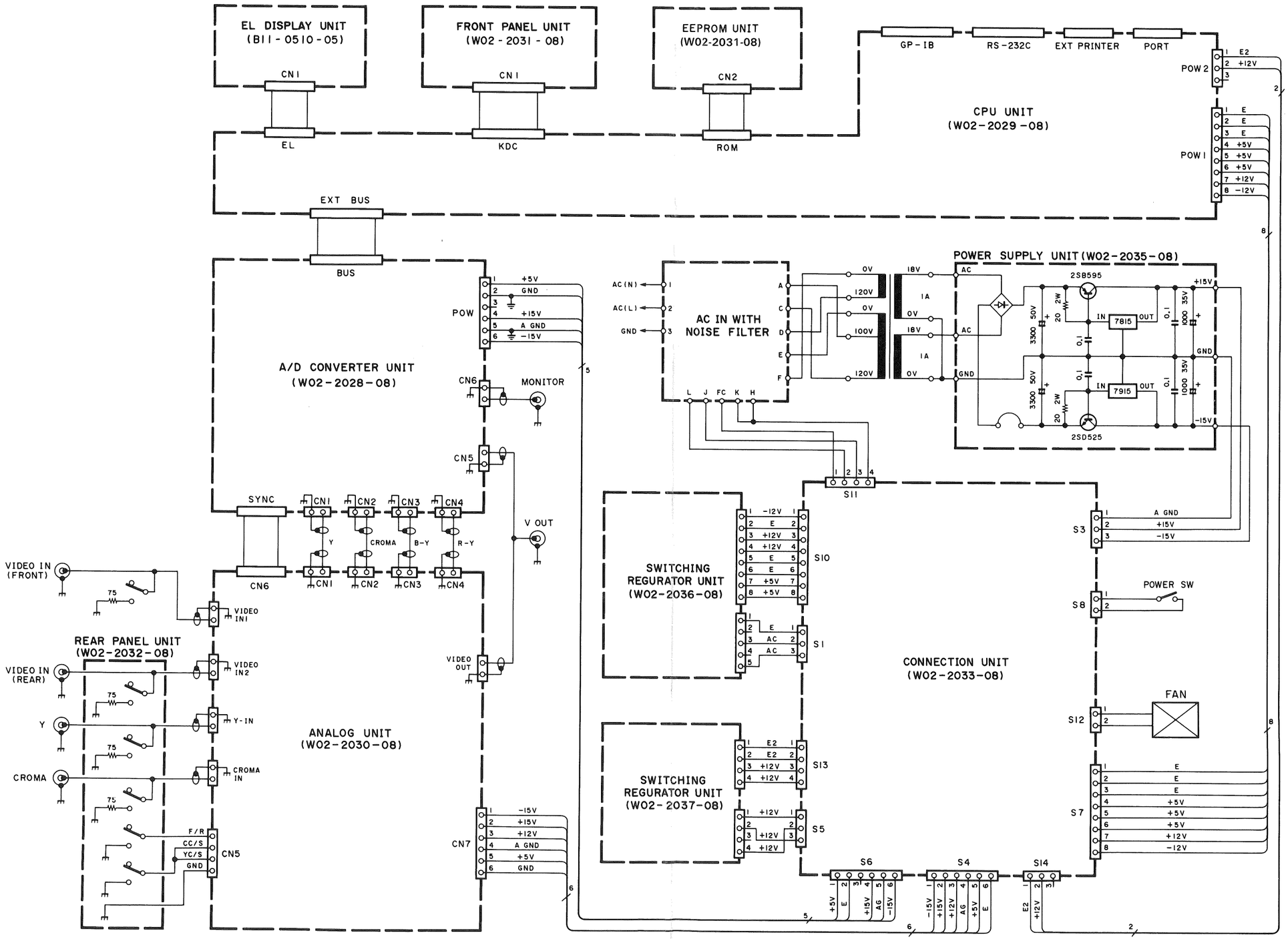
PARTS LIST

CONNECTION UNIT

W02-2033-08

REF.NO	PARTS NO	NAME & DESCRIPTION			
	J73-0054-08	PCB (UNMOUNTED)			
	RD14BB2E391J	RES. CARBON	390	5%	1/4W
S1	E40-3911-05	PIN CONNECTOR	3P		
S2	E40-3911-05	PIN CONNECTOR	3P		
S3	E40-3911-05	PIN CONNECTOR	3P		
S4	E40-4235-05	PIN CONNECTOR	6P		
S5	E40-3911-05	PIN CONNECTOR	3P		
S6	E40-4235-05	PIN CONNECTOR	6P		
S7	E40-4299-05	PIN CONNECTOR	8P		
S8	E40-4248-05	PIN CONNECTOR	2P		
S9	NO USE				
S10	E40-4299-05	PIN CONNECTOR	8P		
S11	E40-4101-05	PIN CONNECTOR	4P		
S12	E40-7150-08	PIN CONNECTOR	2P		
S13	E40-4101-05	PIN CONNECTOR	4P		
S14	E40-3911-05	PIN CONNECTOR	3P		
S15	E40-3911-05	PIN CONNECTOR	3P		

SCHEMATIC DIAGRAM

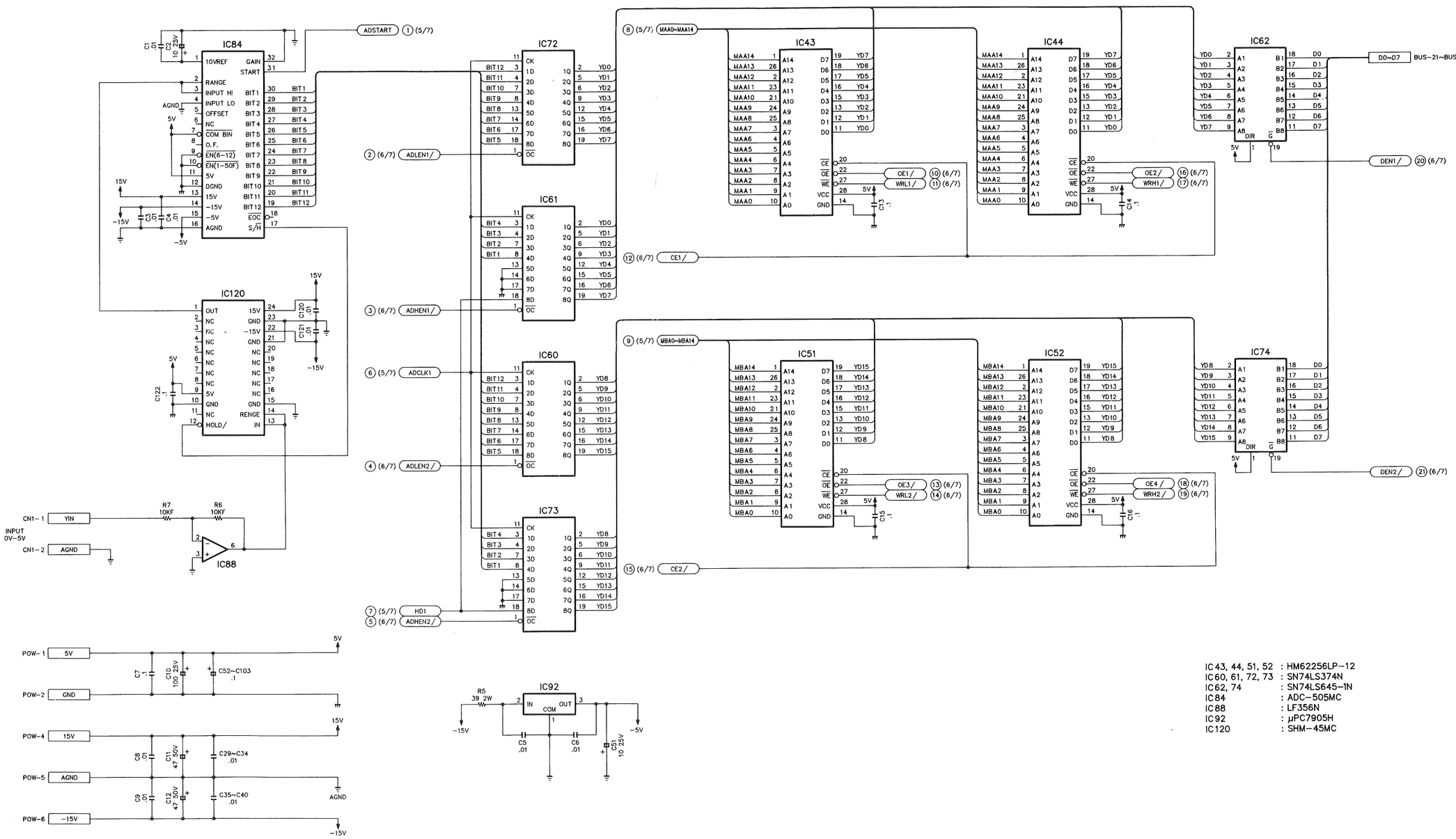


V-1000

SCHEMATIC DIAGRAM

A/D CONVERTER UNIT (W02-2028-08)

Y LEBEL

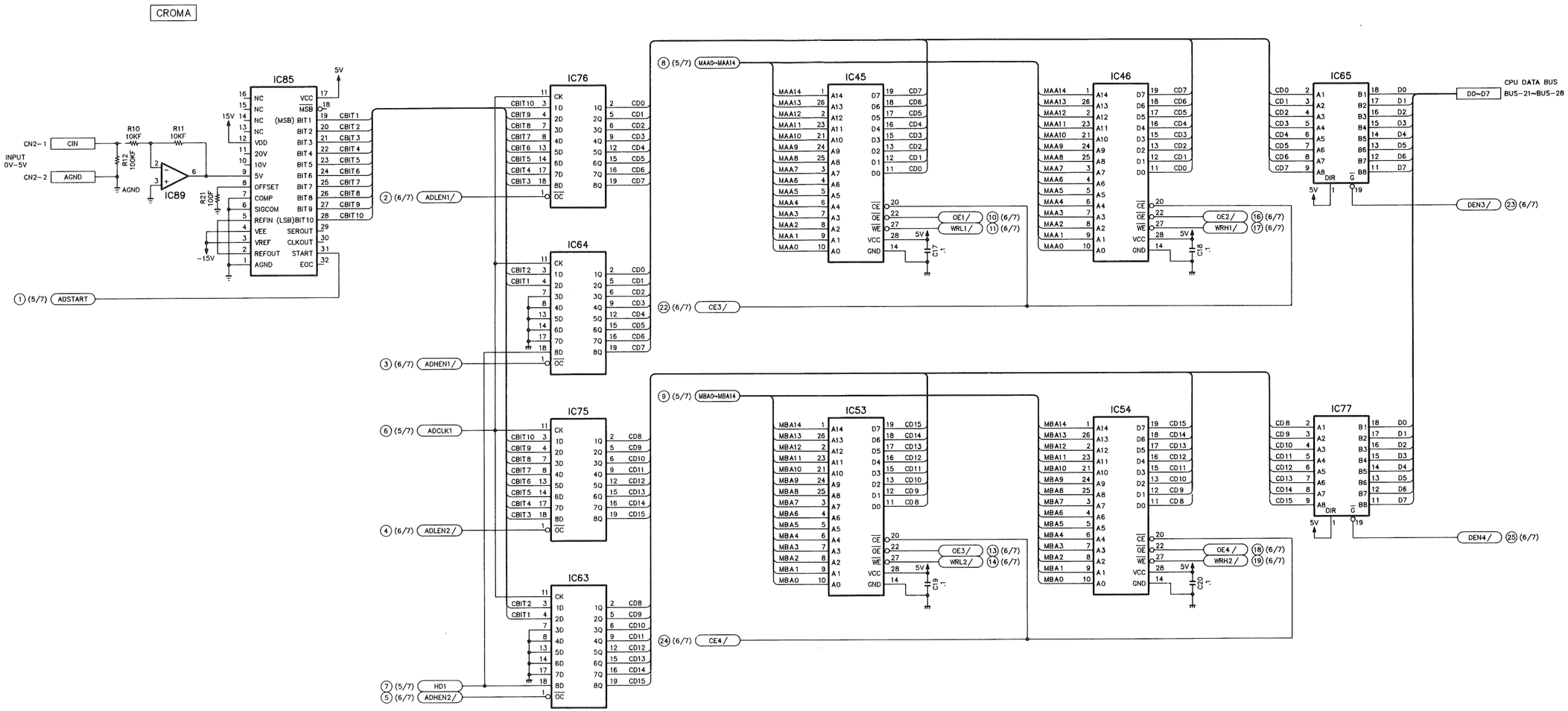


IC 43, 44, 51, 52 : HM62256LP-12
IC 60, 61, 72, 73 : SN74LS374N
IC 62, 74 : SN74LS645-1N
IC 84 : ADC-505MC
IC 88 : LF356N
IC 92 : μPC7905H
IC 120 : SHM-45MC

V-1000 AD (1/7)

SCHEMATIC DIAGRAM

A/D CONVERTER UNIT (W02-2028-08)

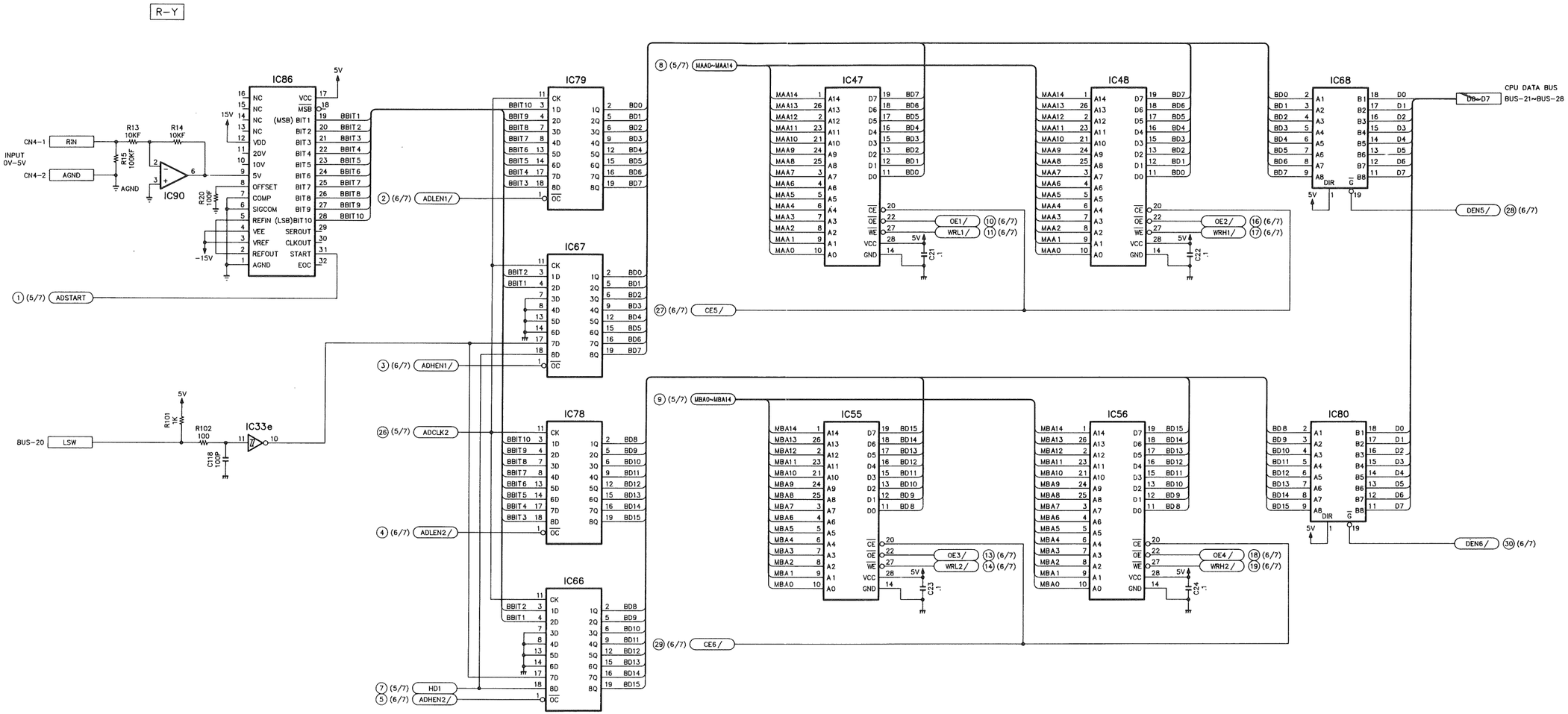


IC45, 46, 53, 54 : HM62256LP-12
IC63, 64, 75, 76 : SN74LS374N
IC65, 77 : SN74LS645-1N
IC85 : ADC-816MC
IC89 : LF356N

V-1000 AD (2/7)

SCHEMATIC DIAGRAM

A/D CONVERTER UNIT (W02-2028-08)

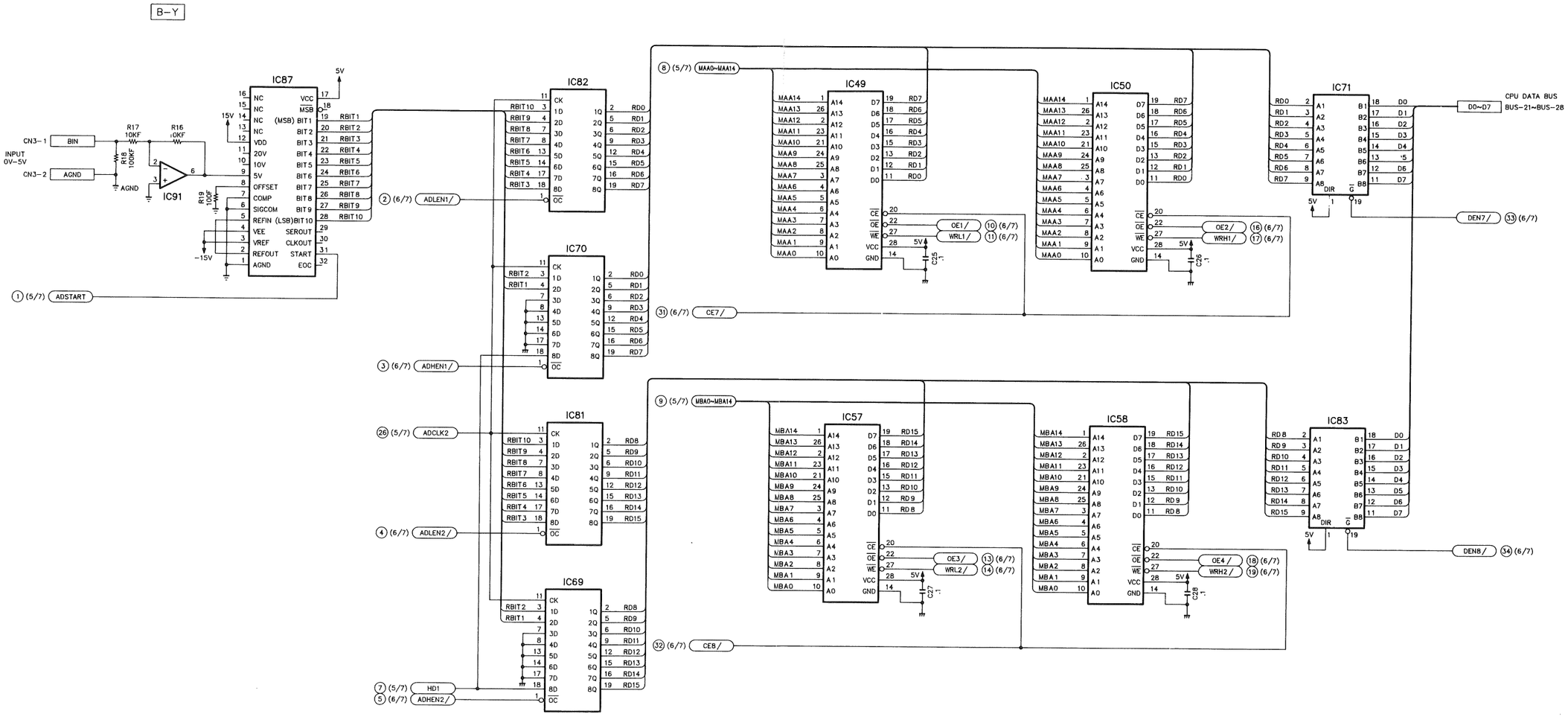


IC 33 : SN74LS14N
IC 47, 48, 55, 56 : HM62256LP-12
IC 66, 67, 78, 79 : SN74LS374N
IC 68, 80 : SN74LS645-1N
IC 86 : ADC-816MC
IC 90 : LF356N

V-1000 AD (3/7)

SCHEMATIC DIAGRAM

A/D CONVERTER UNIT (W02-2028-08)



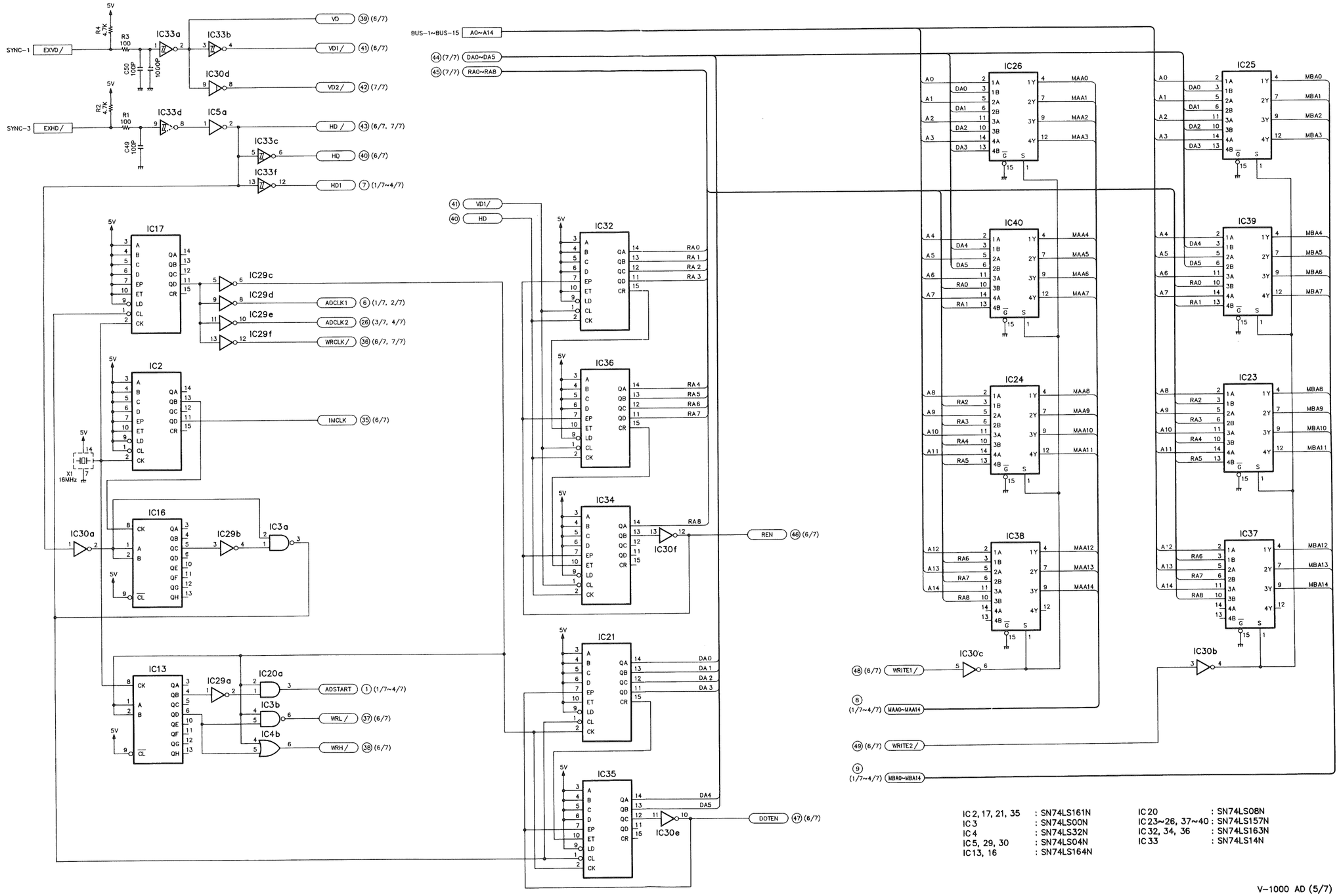
IC 49, 50, 57, 58 : HM62256LP-12
IC 69, 70, 81, 82 : SN74LS374N
IC 71, 83 : SN74LS645-1N
IC 87 : ADC-816MC
IC 91 : LF356N

V-1000 AD (4/7)

SCHEMATIC DIAGRAM

A/D CONVERTER UNIT (W02-2028-08)

ADDRESS COUNTER



IC 2, 17, 21, 35	: SN74LS161N	IC 20	: SN74LS08N
IC 3	: SN74LS00N	IC 23~26, 37~40	: SN74LS157N
IC 4	: SN74LS32N	IC 32, 34, 36	: SN74LS163N
IC 5, 29, 30	: SN74LS04N	IC 33	: SN74LS14N
IC 13, 16	: SN74LS164N		

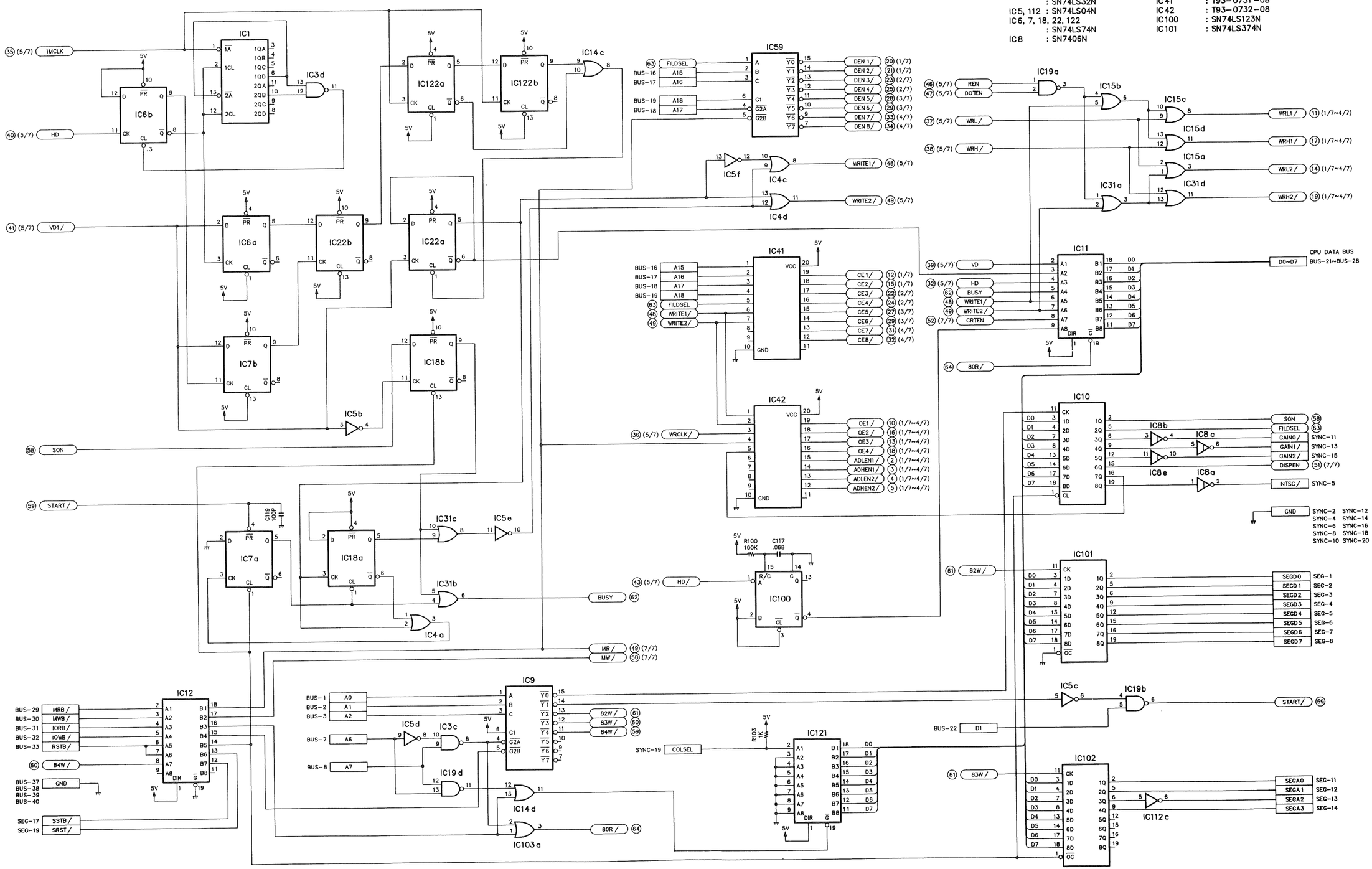
V-1000 AD (5/7)

SCHEMATIC DIAGRAM

A/D CONVERTER UNIT (W02-2028-08)

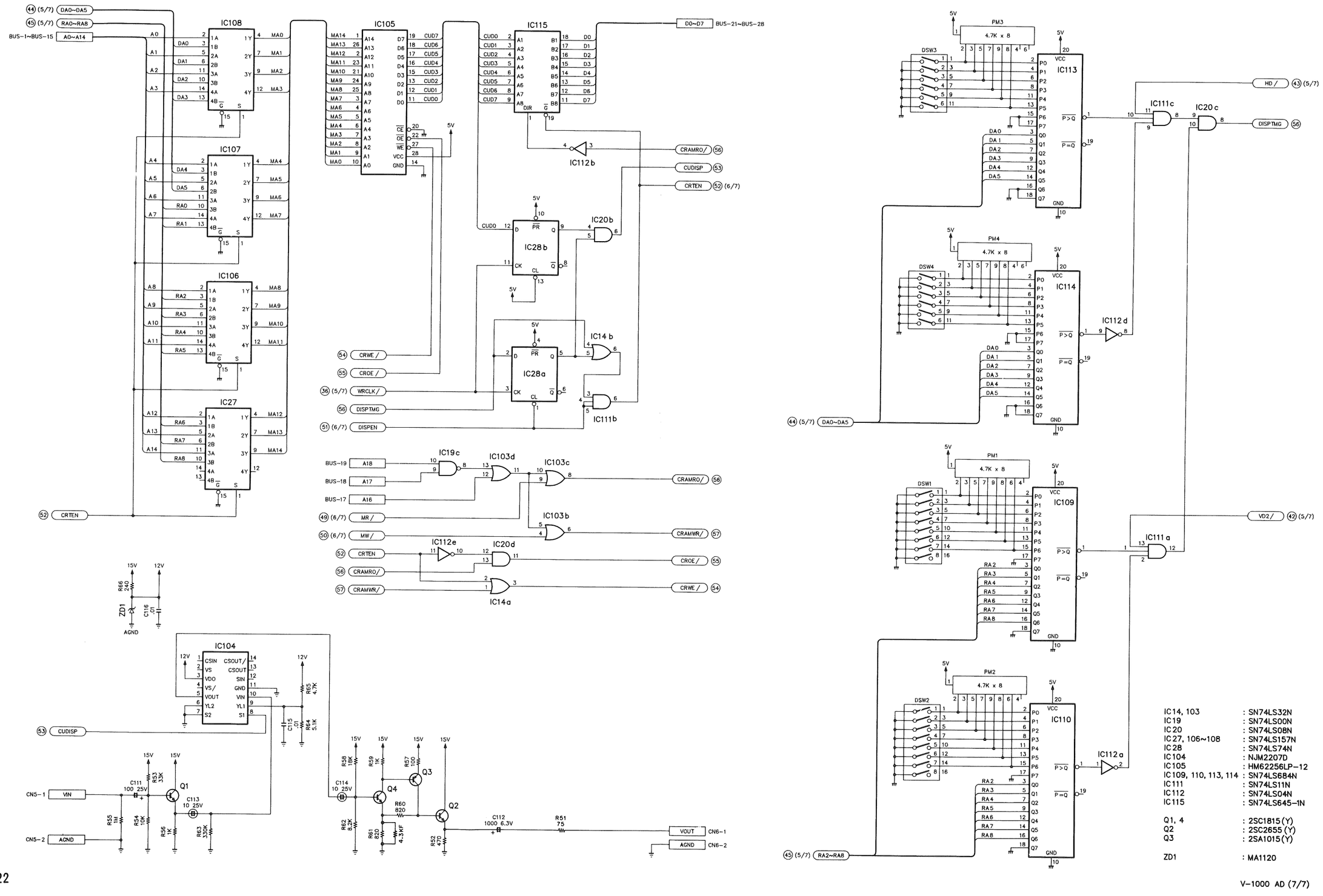
MEMORY CONTROL CPU INTERFACE

IC1 : SN74LS393N
IC3, 19 : SN74LS00N
IC4, 14, 15, 31, 103 : SN74LS32N
IC5, 112 : SN74LS04N
IC6, 7, 18, 22, 122 : SN74LS74N
IC8 : SN7406N
IC9, 59 : SN74LS138N
IC10, 102 : SN74LS273N
IC11, 12, 121 : SN74LS645-1N
IC41 : T93-0731-08
IC42 : T93-0732-08
IC100 : SN74LS123N
IC101 : SN74LS374N



SCHEMATIC DIAGRAM

A/D CONVERTER UNIT (W02-2028-08)



IC14, 103 : SN74LS32N
IC19 : SN74LS00N
IC20 : SN74LS08N
IC27, 106~108 : SN74LS157N
IC28 : SN74LS74N
IC104 : NJM2207D
IC105 : HM62256LP-12
IC109, 110, 113, 114 : SN74LS684N
IC111 : SN74LS11N
IC112 : SN74LS04N
IC115 : SN74LS645-1N

Q1, 4 : 2SC1815(Y)
Q2 : 2SC2655(Y)
Q3 : 2SA1015(Y)

ZD1 : MA1120

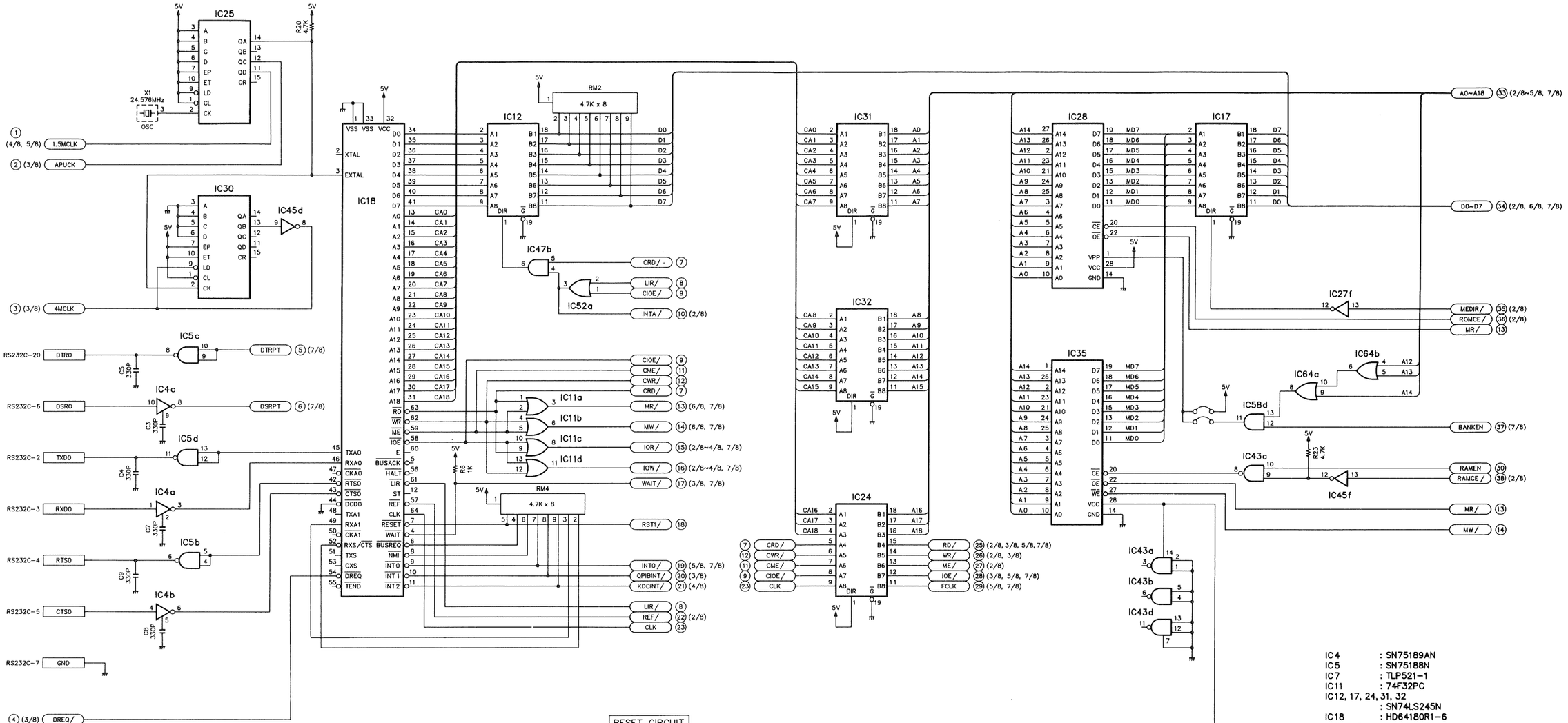
V-1000 AD (7/7)

SCHEMATIC DIAGRAM

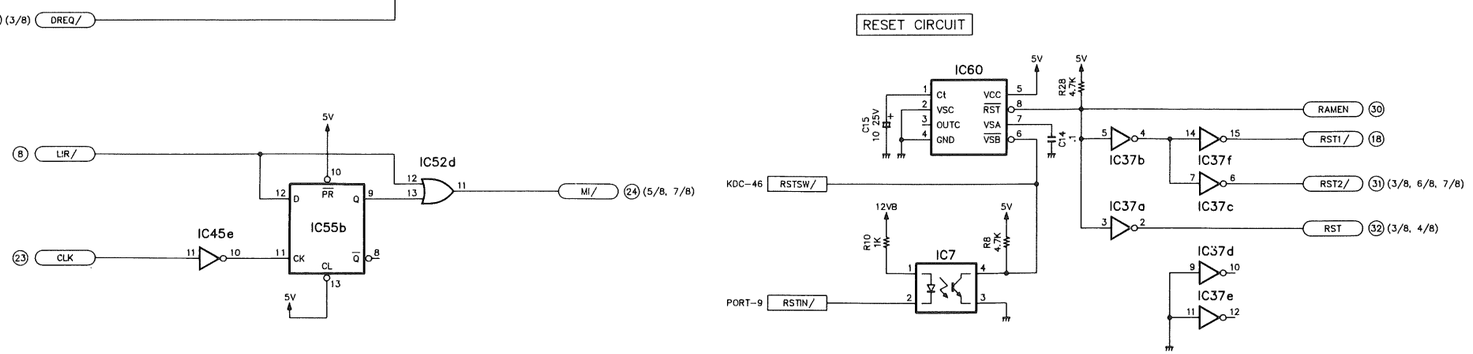
CPU UNIT (W02-2029-08)

CPU CIRCUIT

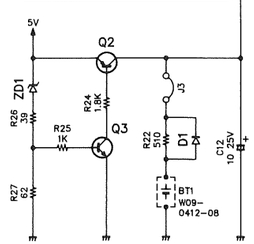
ROM/RAM CIRCUIT



RESET CIRCUIT



BATTERY BACK-UP CIRCUIT



IC4 : SN75189AN
IC5 : SN7518BN
IC7 : TLP521-1
IC11 : 74F32PC
IC12, 17, 24, 31, 32 : SN74LS245N
IC18 : HD64180R1-6
IC25, 30 : 74F163APC
IC27, 45 : SN74LS04N
IC28 : T93-0733-08
IC35 : HM62256LP-12
IC37 : TC4049BP
IC43 : TC74HC00AP
IC47, 58 : SN74LS08N
IC52, 64 : SN74LS32N
IC55 : SN74LS74AN
IC60 : MB3771P-G

Q2 : 2SA684(R)
Q3 : 2SC1815(Y)

D1 : 10D1
ZD1 : MA1033

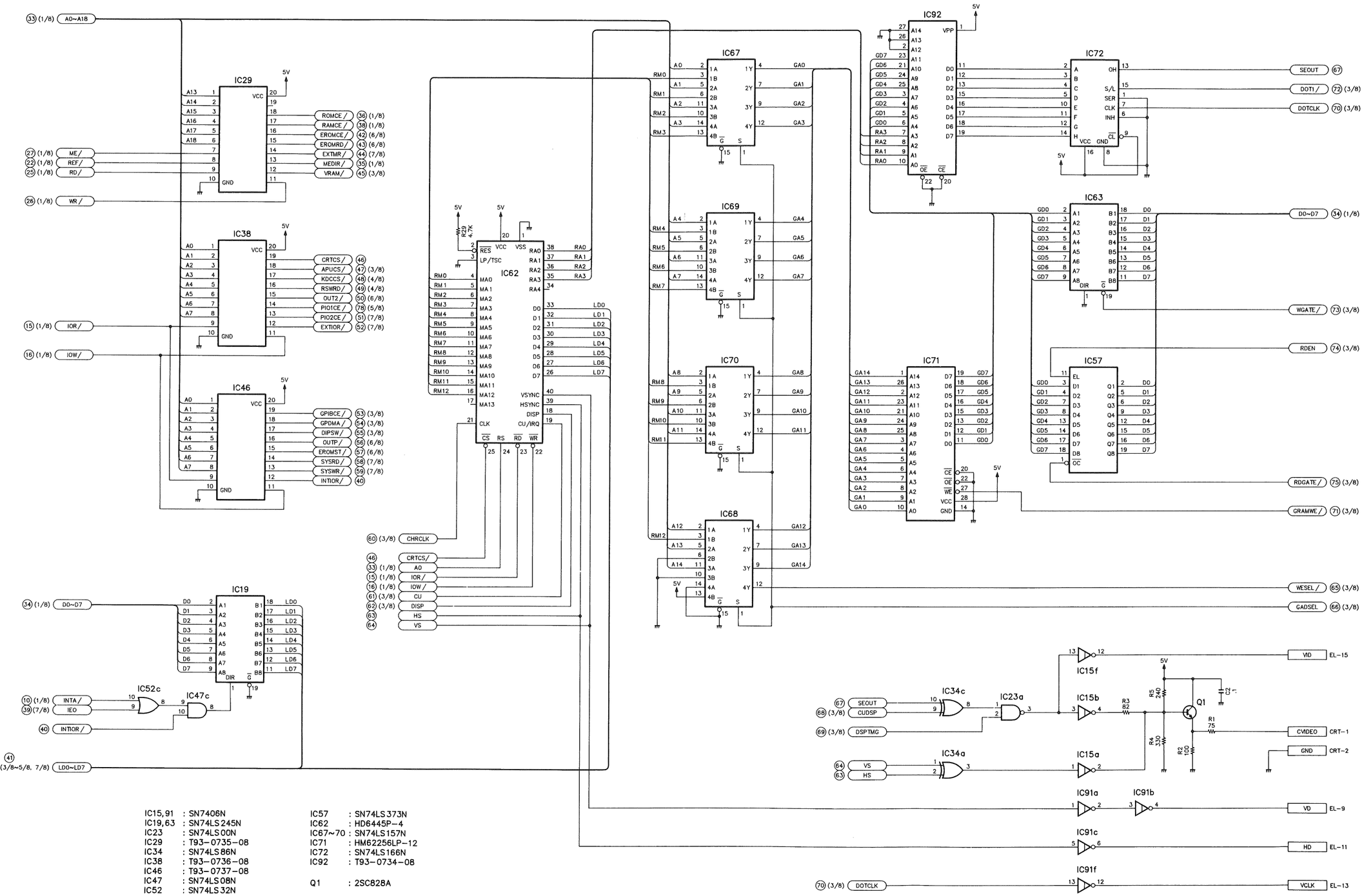
V-1000 CPU (1/8)

CPU UNIT (W02-2029-08)

SCHEMATIC DIAGRAM

ADDRESS DECODE CIRCUIT

CRT CIRCUIT

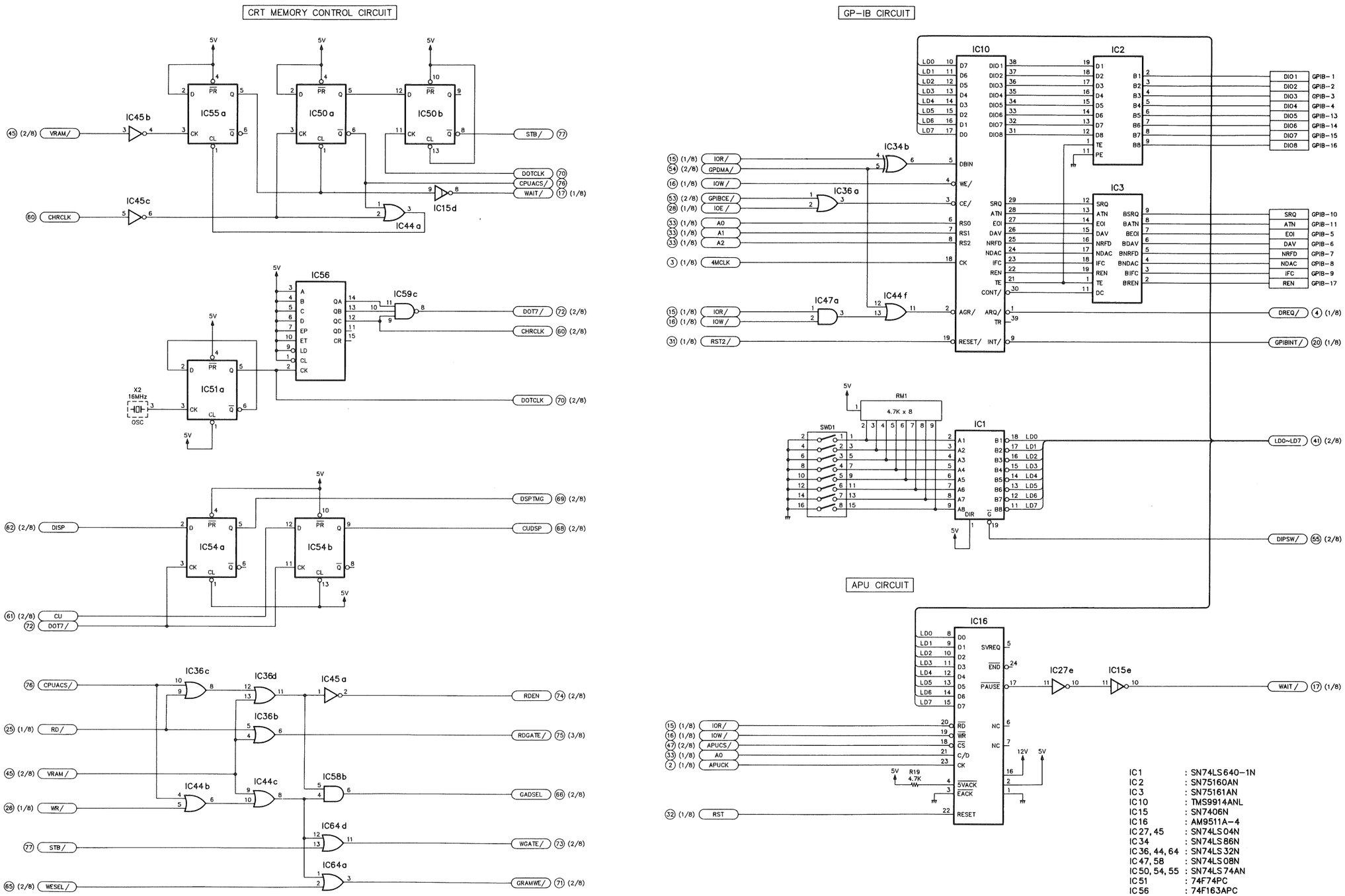


IC15,91	: SN7406N	IC57	: SN74LS373N
IC19,63	: SN74LS245N	IC62	: HD6445P-4
IC23	: SN74LS00N	IC67~70	: SN74LS157N
IC29	: T93-0735-08	IC71	: HM62256LP-12
IC34	: SN74LS86N	IC72	: SN74LS166N
IC38	: T93-0736-08	IC92	: T93-0734-08
IC46	: T93-0737-08		
IC47	: SN74LS08N	Q1	: 2SC828A
IC52	: SN74LS32N		

V-1000 CPU (2/8)

SCHEMATIC DIAGRAM

CPU UNIT (W02-2029-08)



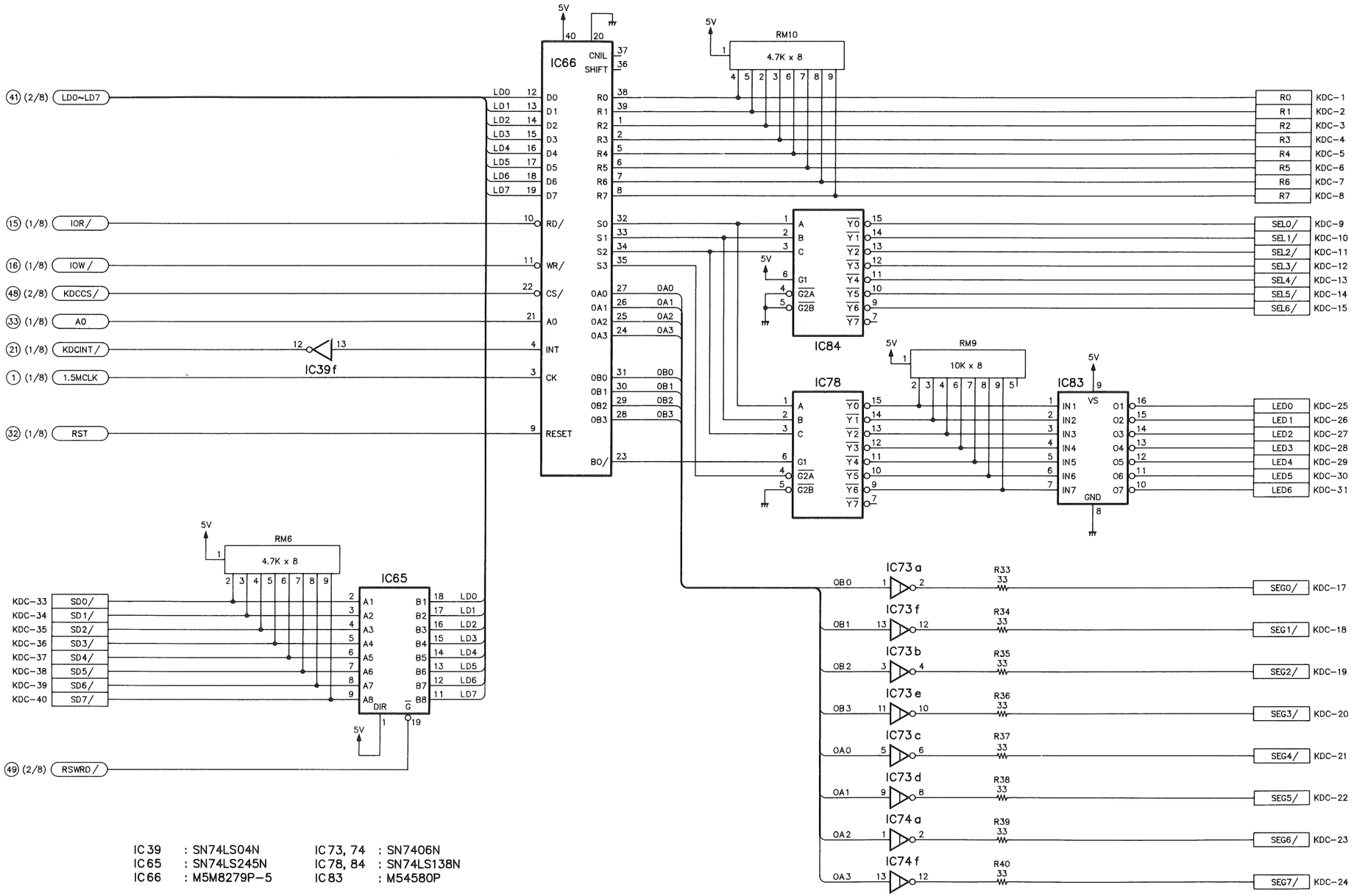
IC1 : SN74LS640-1N
IC2 : SN75160AN
IC3 : SN75161AN
IC10 : TMS9914ANL
IC15 : SN7406N
IC16 : AM9511A-4
IC27, 45 : SN74LS04N
IC34 : SN74LS86N
IC36, 44, 64 : SN74LS32N
IC47, 58 : SN74LS08N
IC50, 54, 55 : SN74LS74AN
IC51 : 74F74PC
IC56 : 74F163APC
IC59 : SN74LS10N

V-1000 CPU (3/8)

SCHEMATIC DIAGRAM

CPU UNIT (W02-2029-08)

KDC CIRCUIT



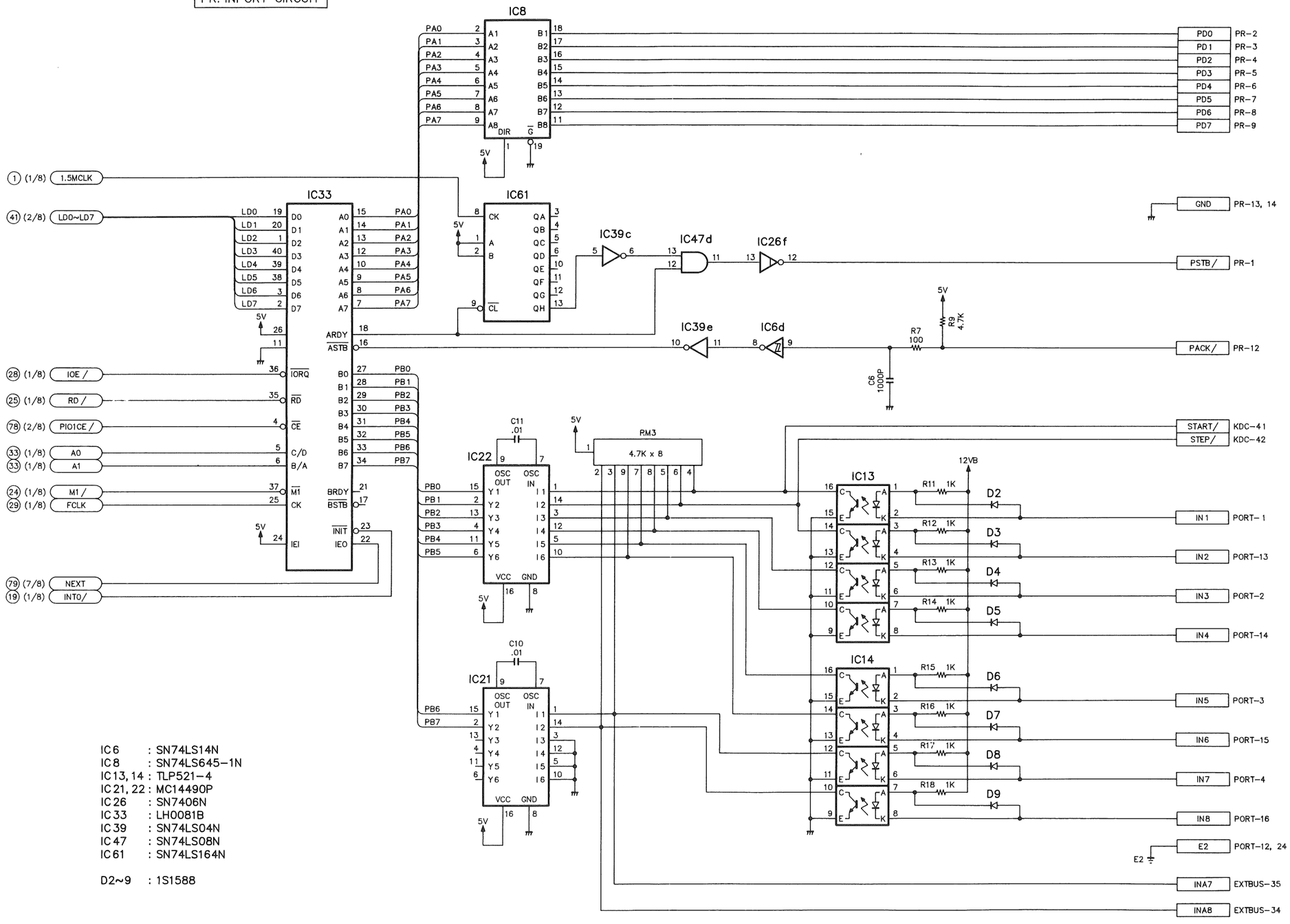
IC39 : SN74LS04N
IC65 : SN74LS245N
IC66 : M5M8279P-5
IC73, 74 : SN7406N
IC78, 84 : SN74LS138N
IC83 : M54580P

V-1000 CPU (4/8)

SCHEMATIC DIAGRAM

CPU UNIT (W02-2029-08)

PR. INPORT CIRCUIT



IC 6 : SN74LS14N
IC 8 : SN74LS645-1N
IC 13, 14 : TLP521-4
IC 21, 22 : MC14490P
IC 26 : SN7406N
IC 33 : LH0081B
IC 39 : SN74LS04N
IC 47 : SN74LS08N
IC 61 : SN74LS164N

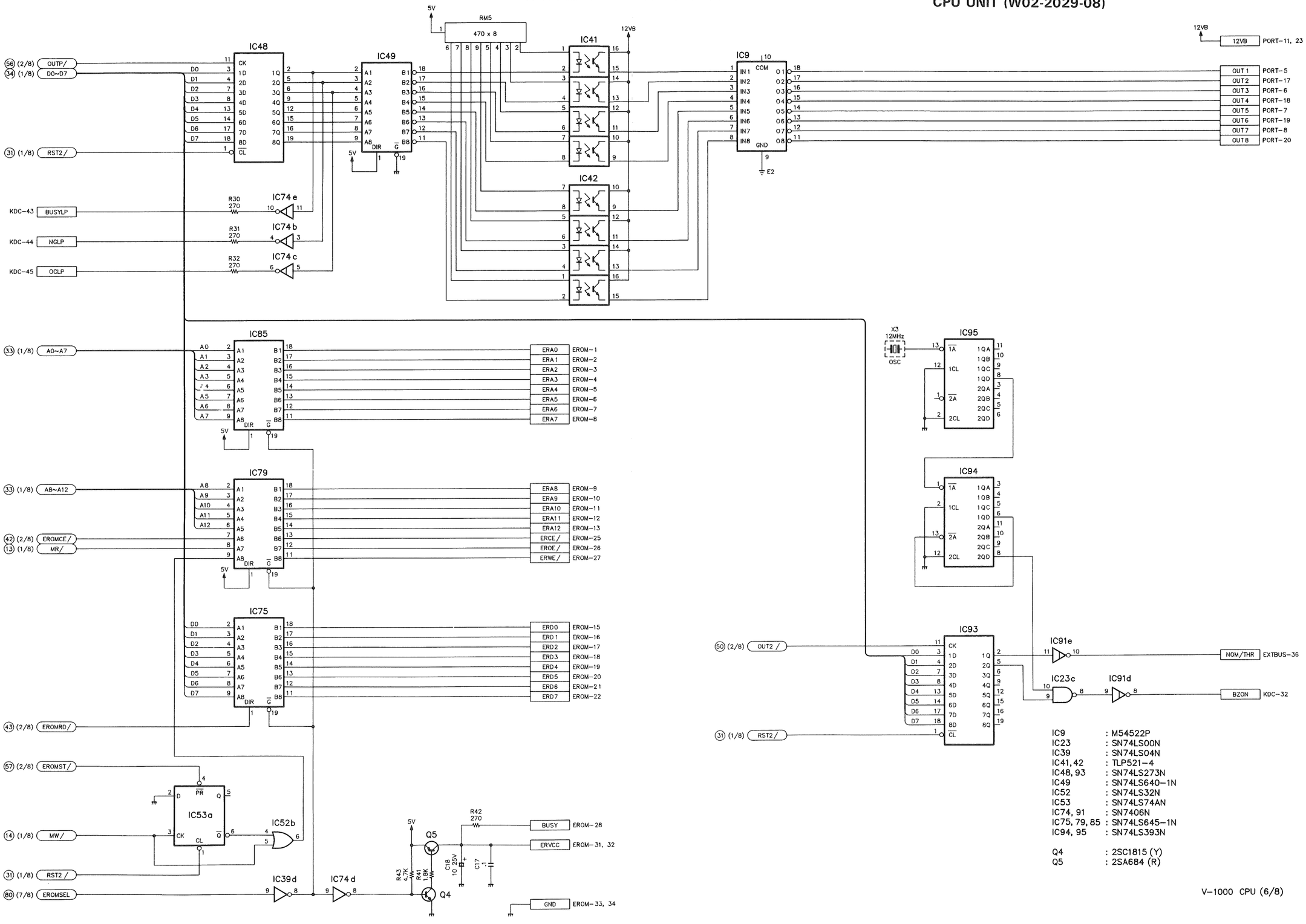
D2~9 : 1S1588

V-1000 CPU (5/8)

OUT PORT. EEROM CIRCUIT

SCHEMATIC DIAGRAM

CPU UNIT (W02-2029-08)



IC9 : M54522P
IC23 : SN74LS00N
IC39 : SN74LS04N
IC41, 42 : TLP521-4
IC48, 93 : SN74LS273N
IC49 : SN74LS640-1N
IC52 : SN74LS32N
IC53 : SN74LS74AN
IC74, 91 : SN7406N
IC75, 79, 85 : SN74LS645-1N
IC94, 95 : SN74LS393N

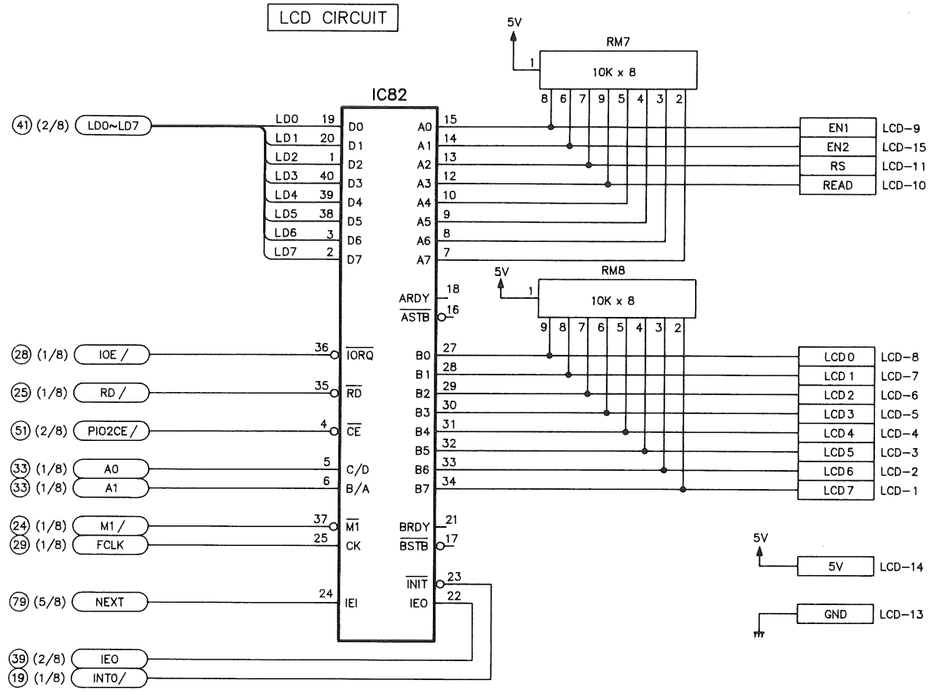
Q4 : 2SC1815 (Y)
Q5 : 2SA684 (R)

V-1000 CPU (6/8)

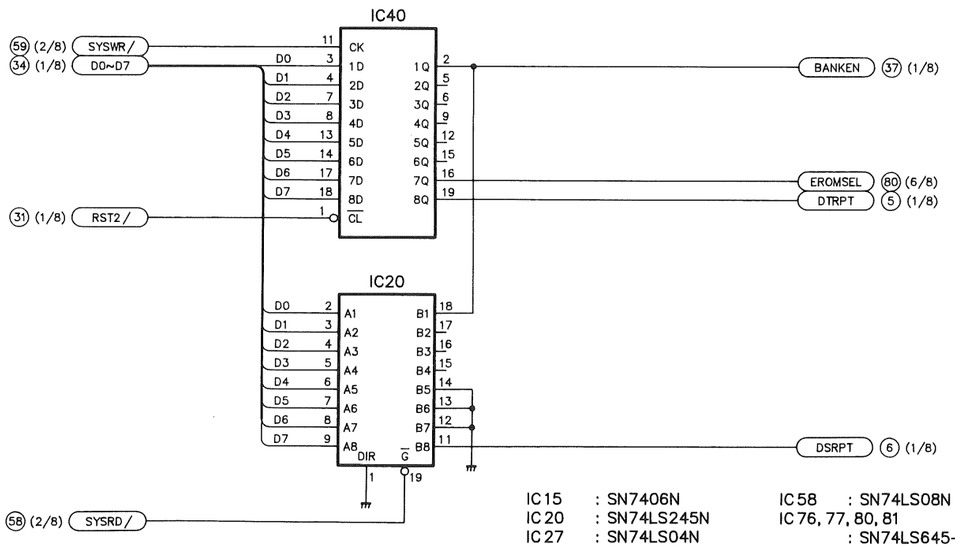
SCHEMATIC DIAGRAM

CPU UNIT (W02-2029-08)

LCD CIRCUIT

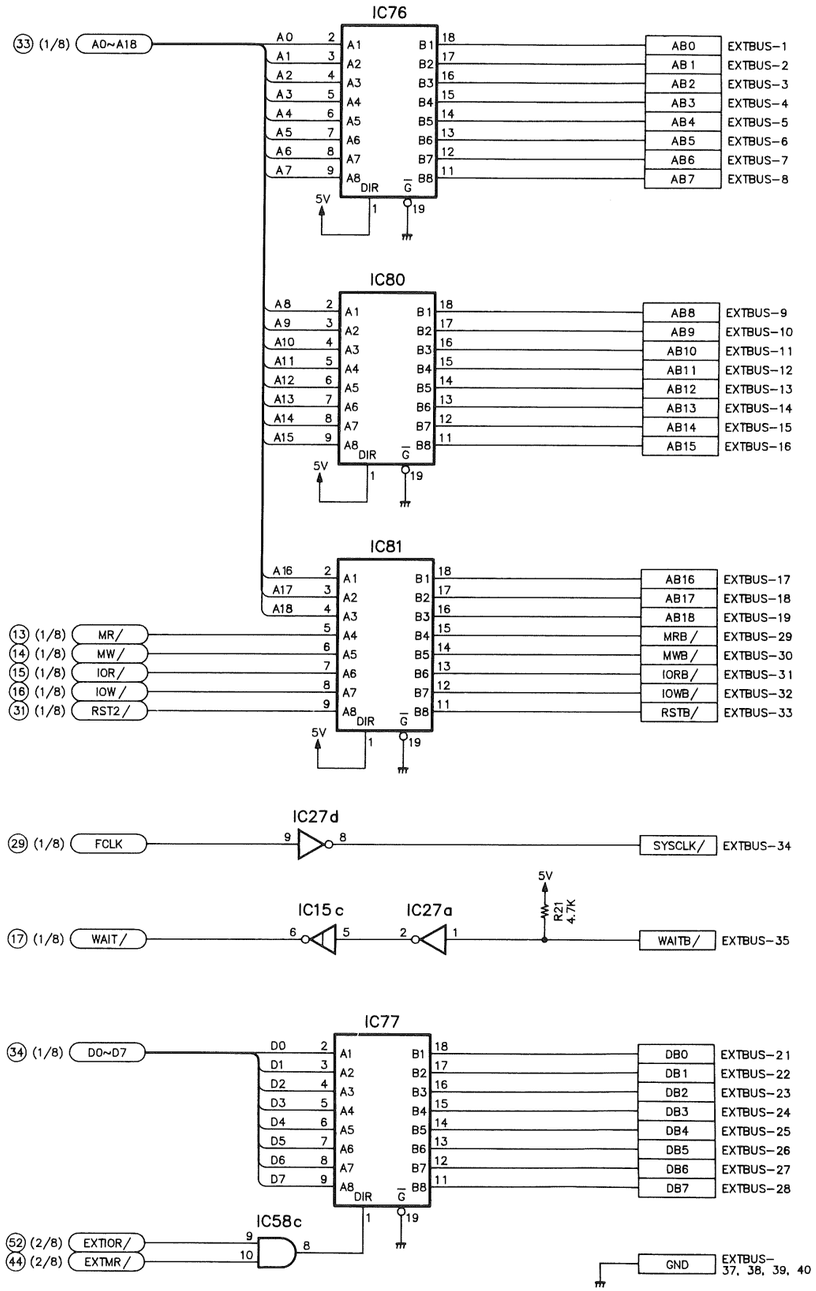


SYSTEM REGISTOR CIRCUIT



IC15 : SN7406N
IC20 : SN74LS245N
IC27 : SN74LS04N
IC40 : SN74LS273N
IC58 : SN74LS08N
IC76, 77, 80, 81 : SN74LS645-1N
IC82 : LH0081B

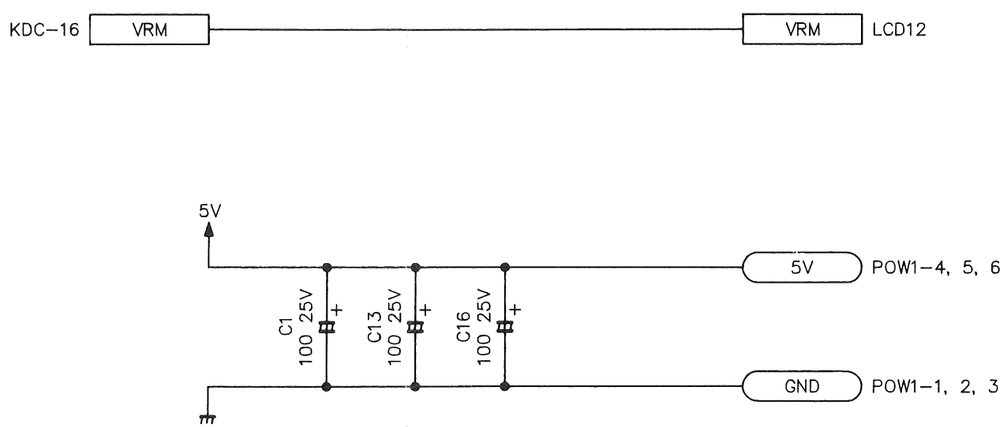
BUS BUFFER CIRCUIT



V-1000 CPU (7/8)

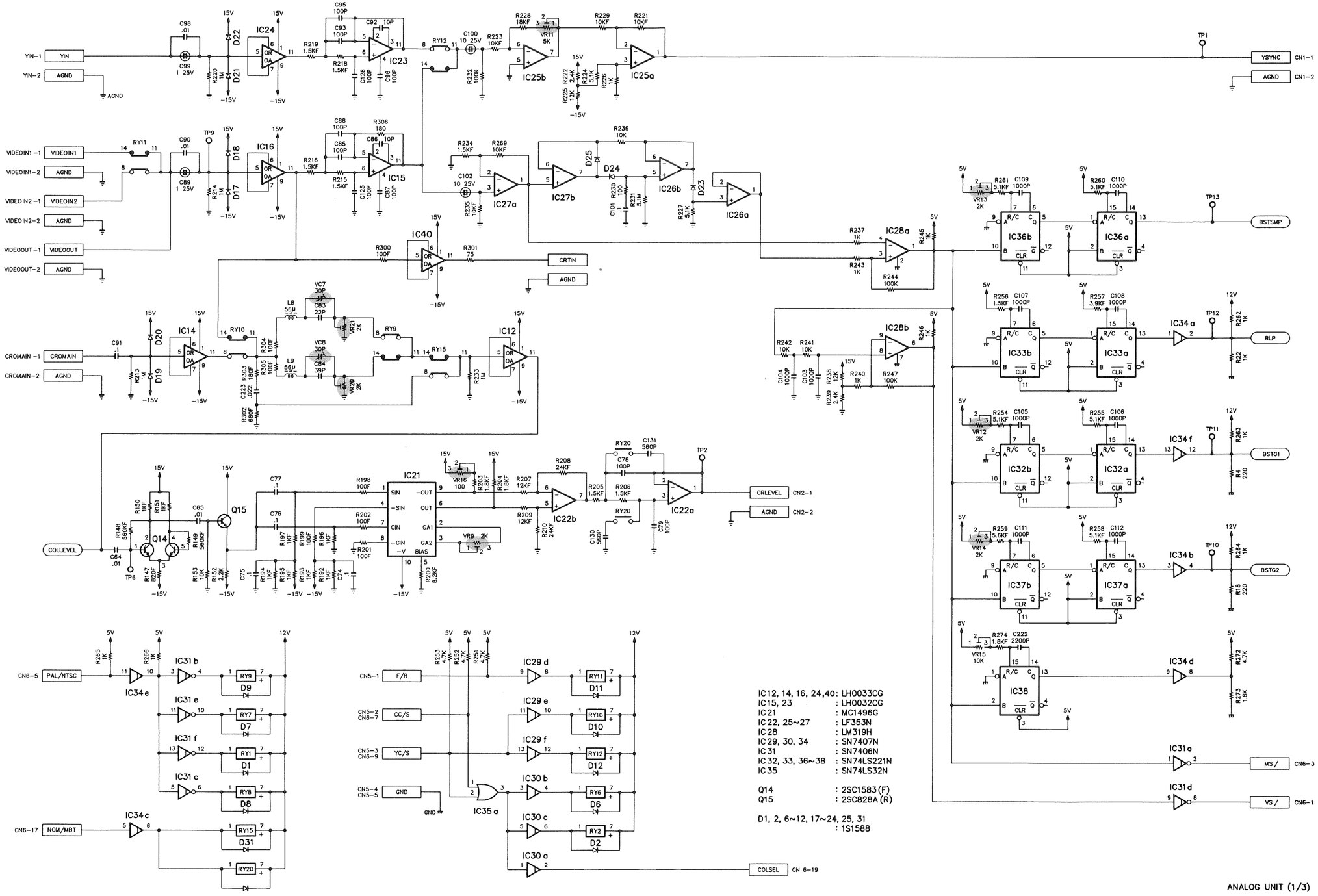
SCHEMATIC DIAGRAM

CPU UNIT (W02-2029-08)



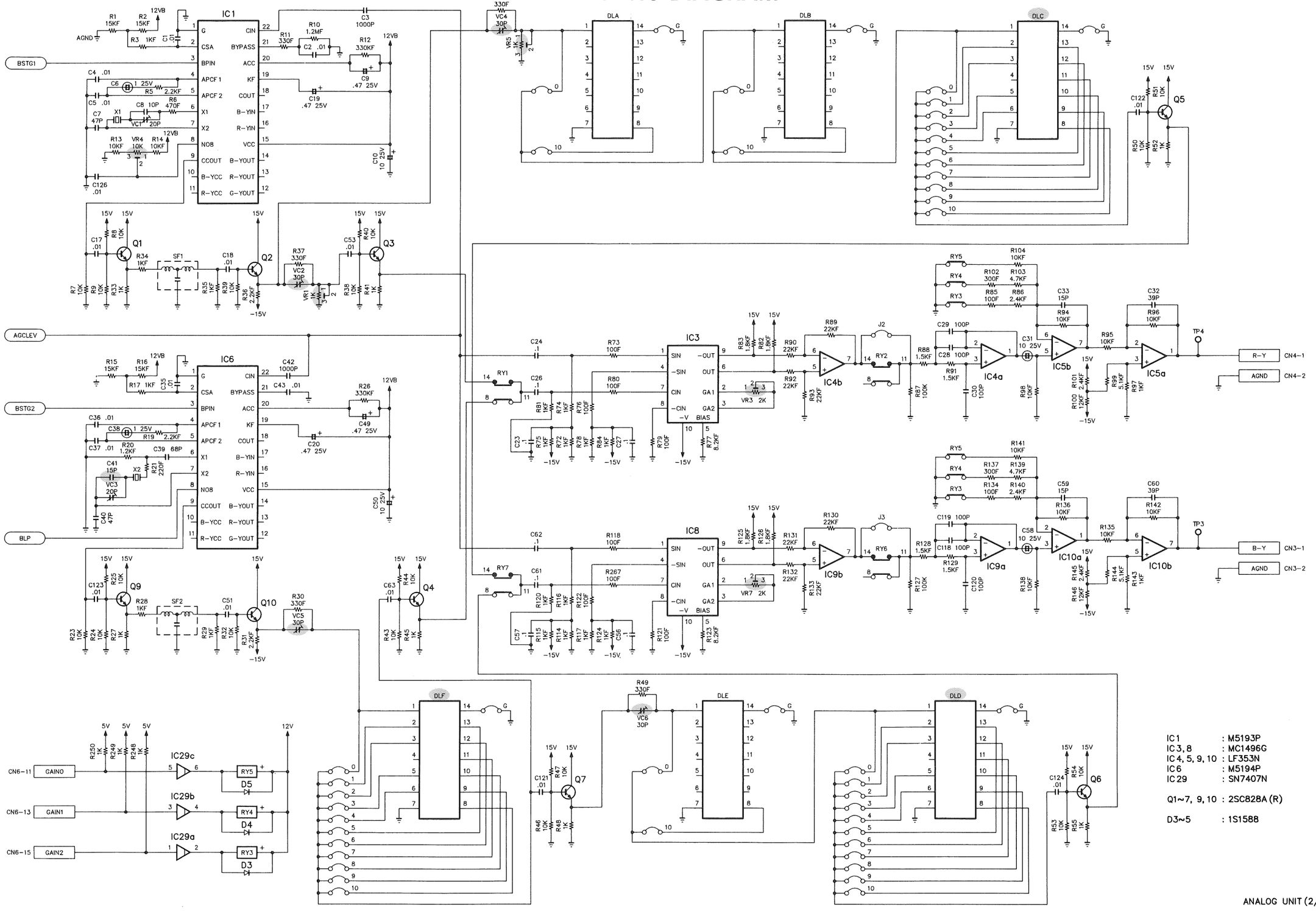
V−1000 CPU (8/8)

SCHEMATIC DIAGRAM



ANALOG UNIT (W02-2030-08)

SCHEMATIC DIAGRAM



IC1 : M5193P
IC3, 8 : MC1496G
IC4, 5, 9, 10 : LF353N
IC6 : M5194P
IC29 : SN7407N

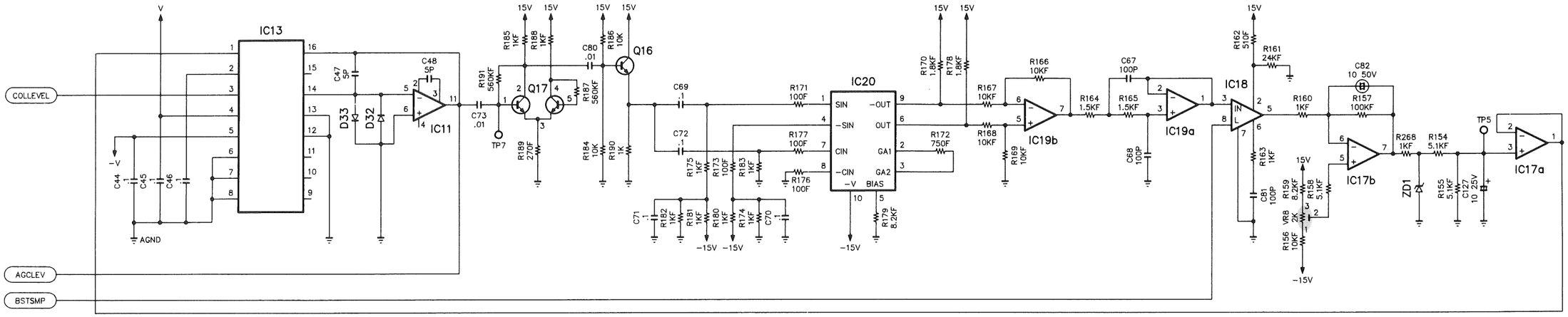
Q1~7, 9, 10 : 2SC828A (R)

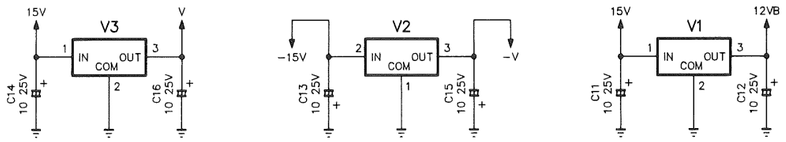
D3~5 : 1S1588

ANALOG UNIT (2/3)

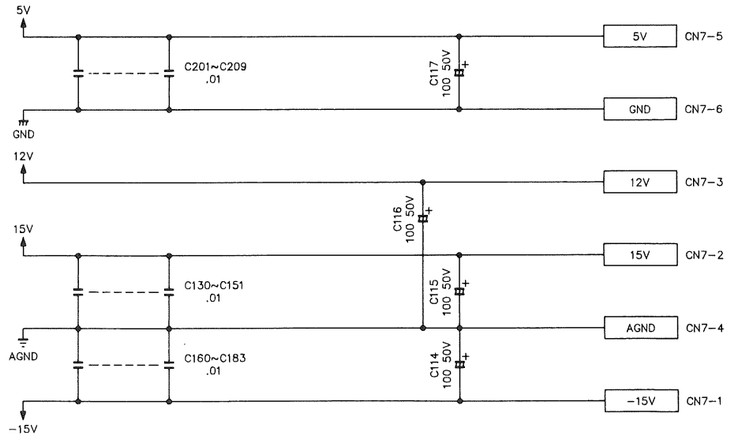
SCHEMATIC DIAGRAM

ANALOG UNIT (W02-2030-08)





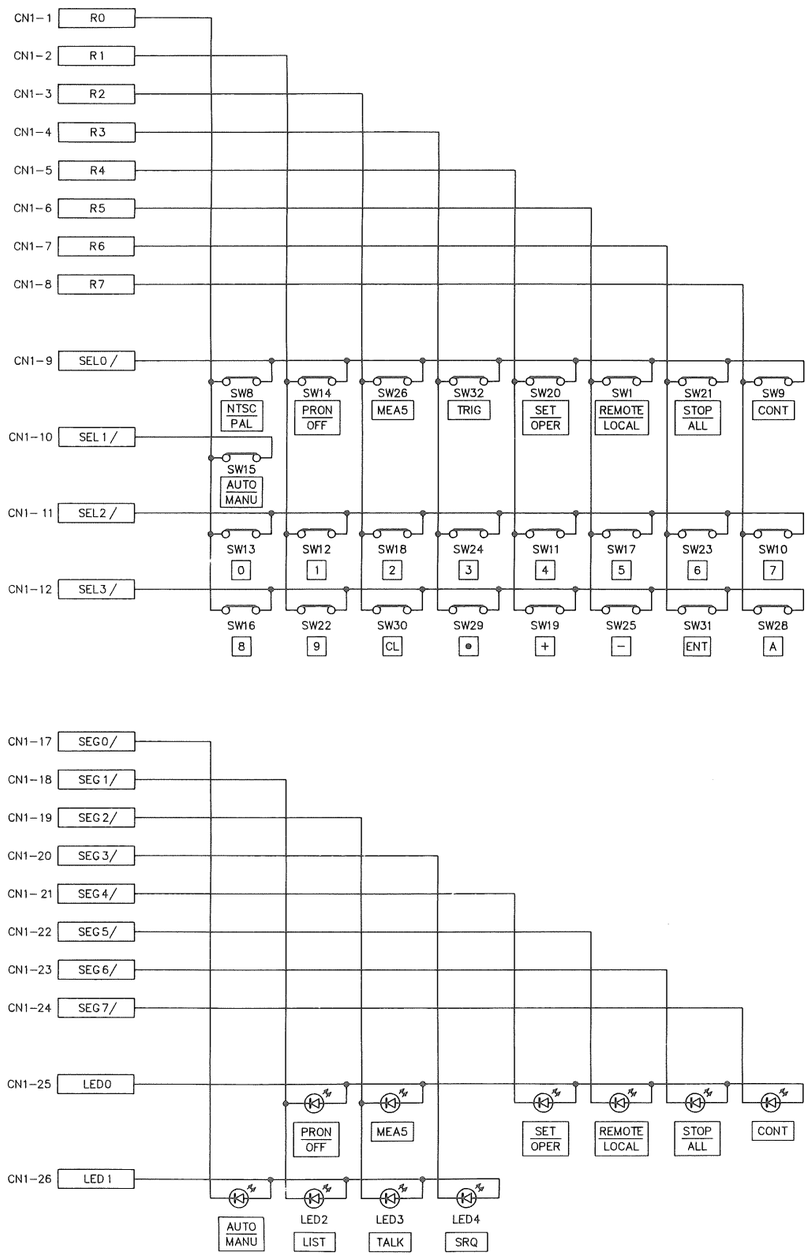
IC11	: LH0032CG
IC13	: AD539JN
IC17, 19	: LF353N
IC18	: LF398N
IC20	: MC1496G
V1	: NJM7812FA
V2	: μPC7908H
V3	: NJM7805FA
Q16	: 2SC828A (R)
Q17	: 2SC1583 (F)
D32, 33	: 1S1588

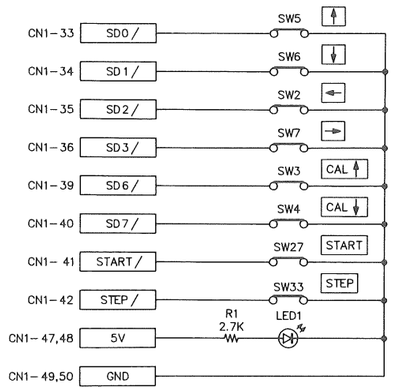


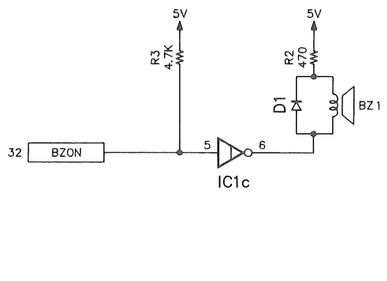
ANALOG UNIT (3/3)

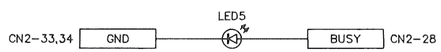
SCHEMATIC DIAGRAM

FRONT PANEL/EEPROM UNIT (W02-2031-08)







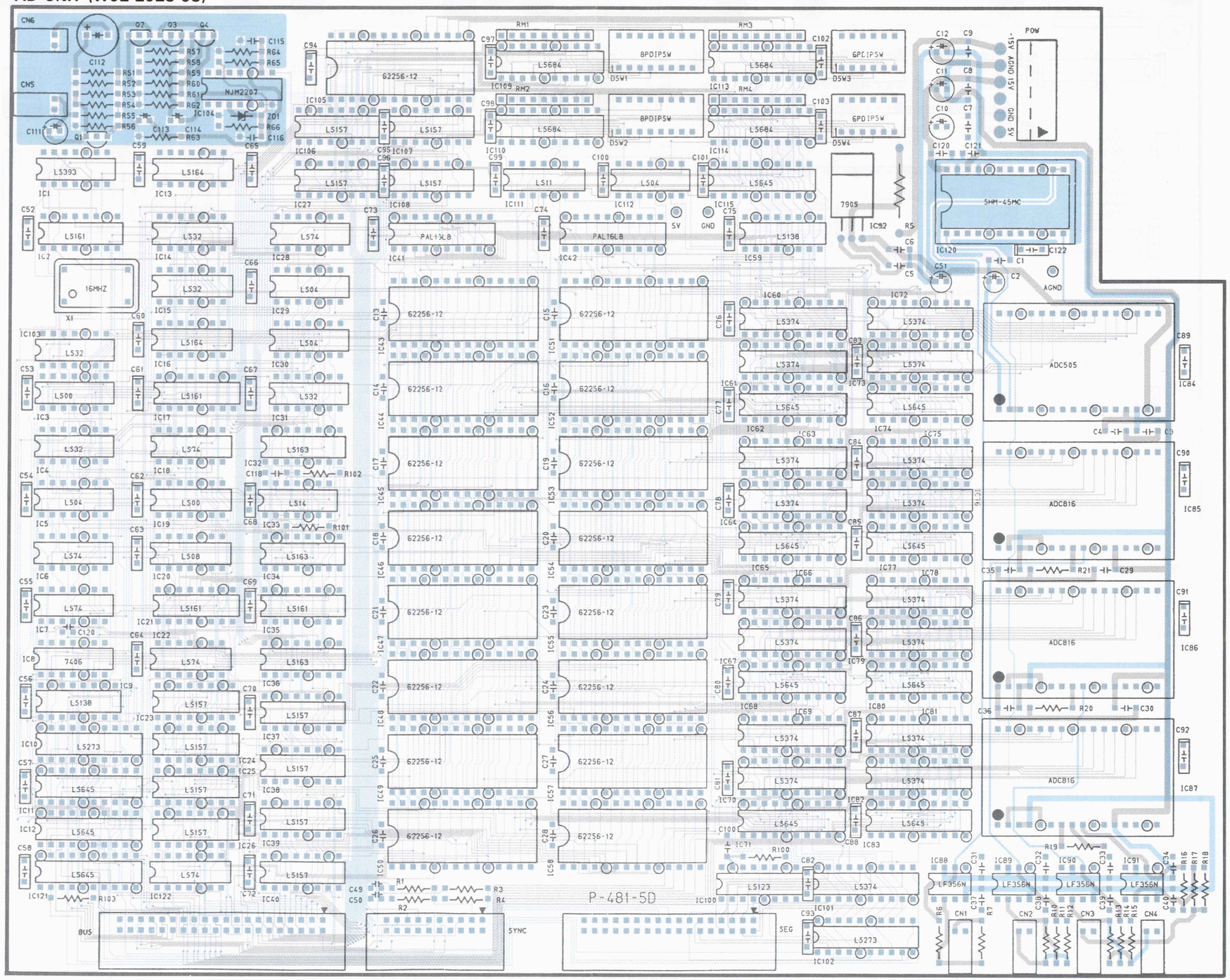


IC1 : SN7406N

D1 : 1S1588

P.C. BOARD

AD UNIT (W02-2028-08)



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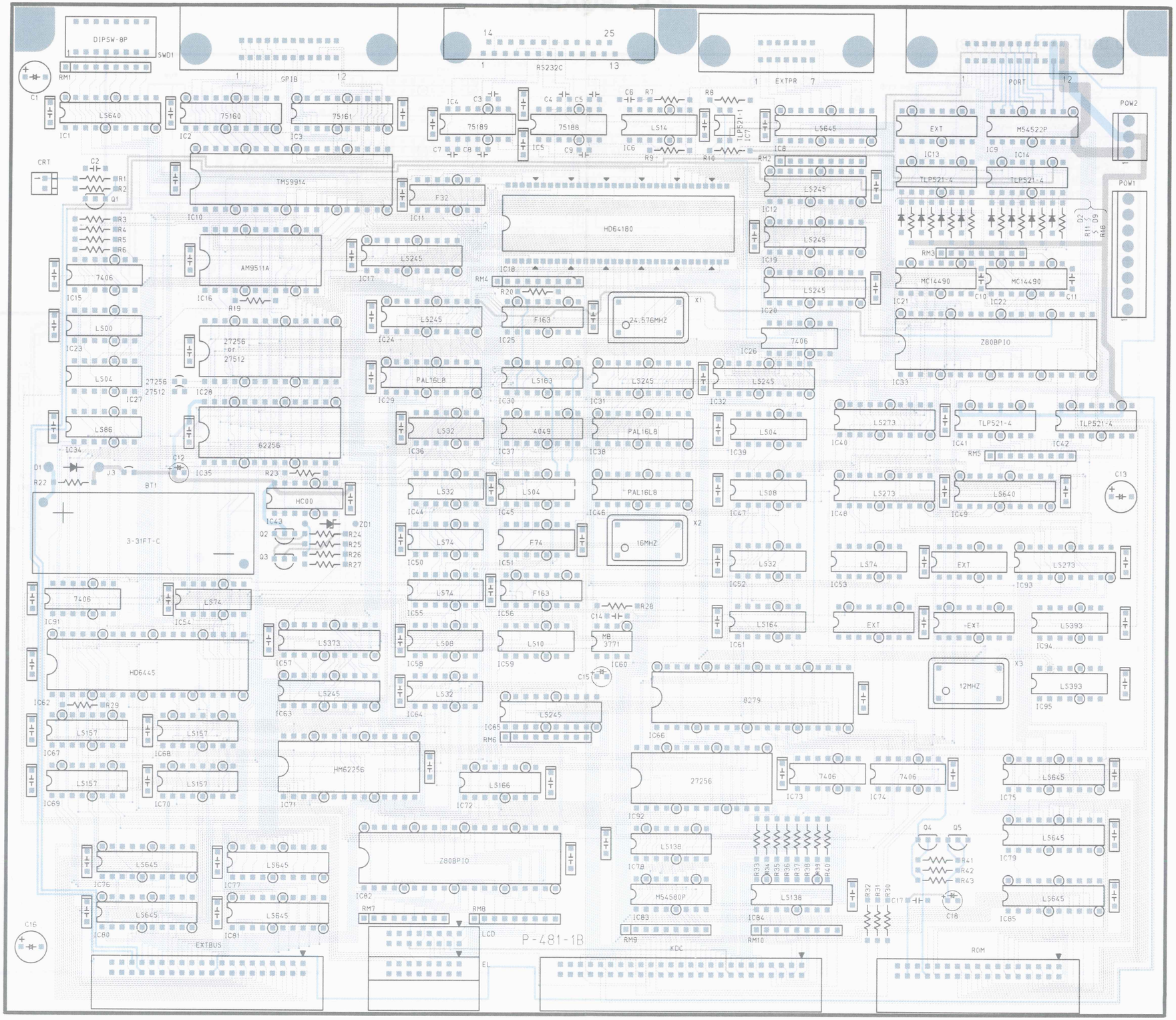
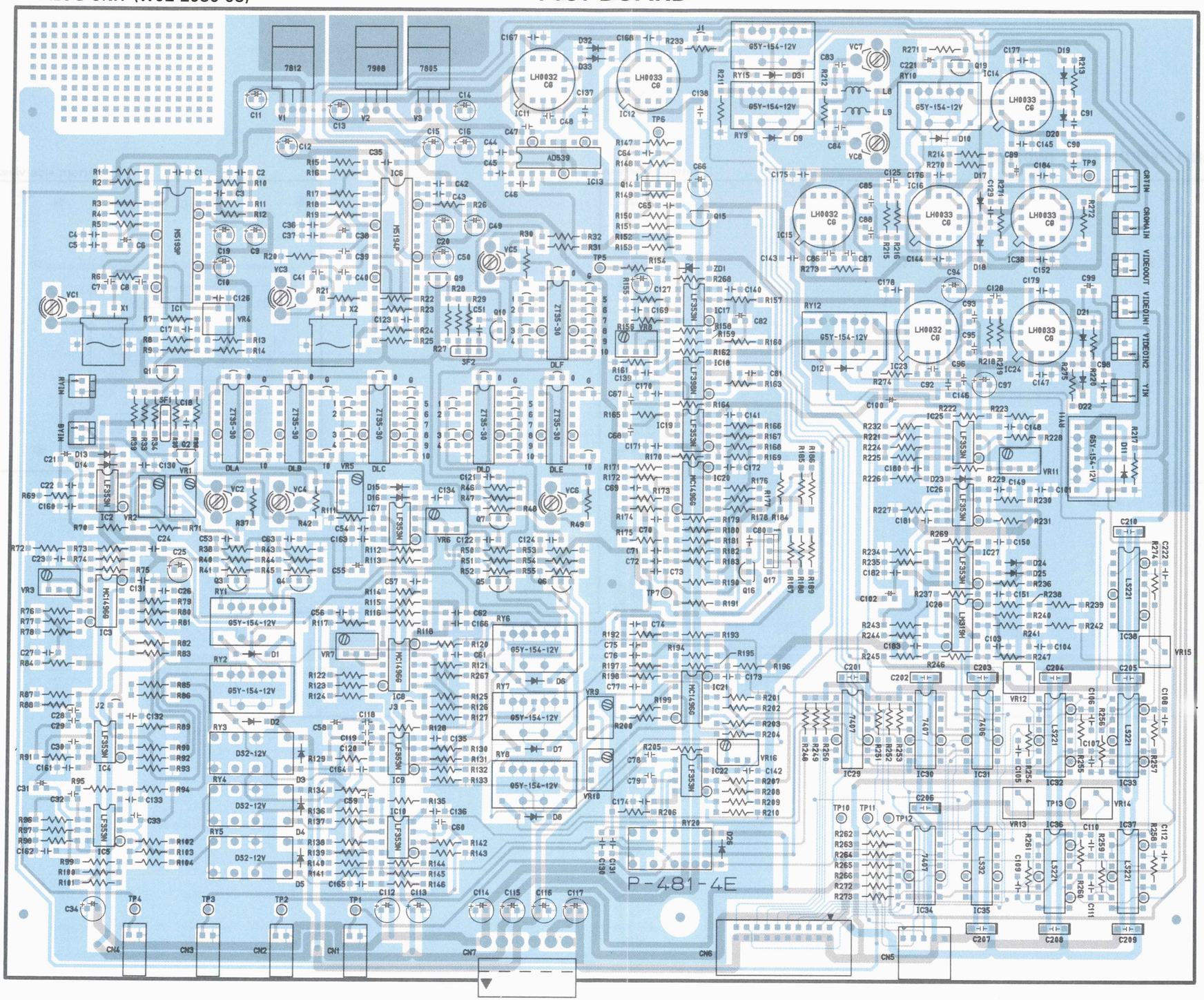


ANALOG UNIT (W02-2030-08)

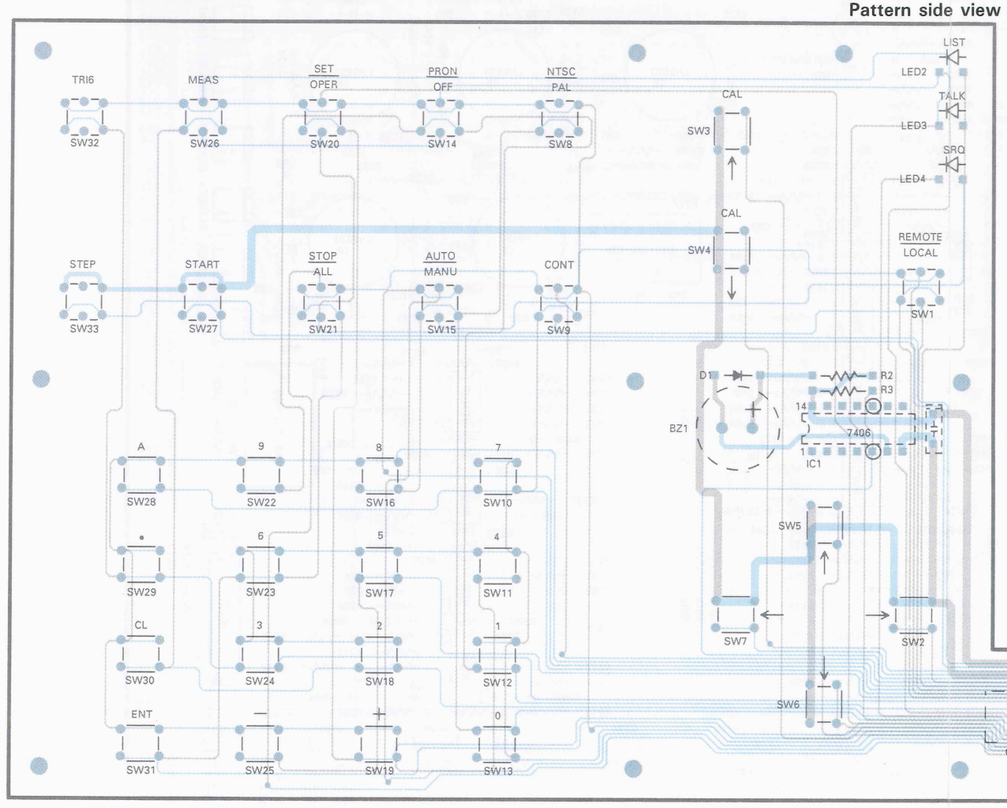
P.C. BOARD



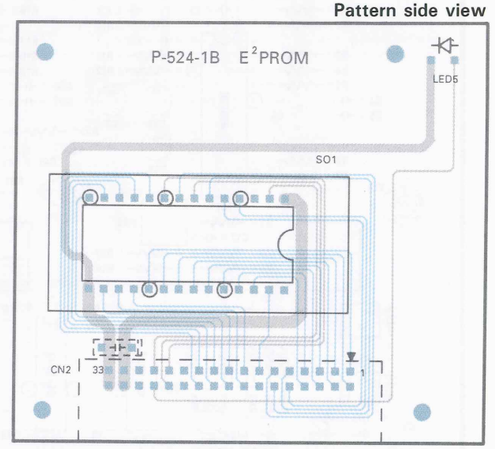
P.C. BOARD

FRONT PANEL/EEPROM UNIT (W02-2031-08)

Pattern side view

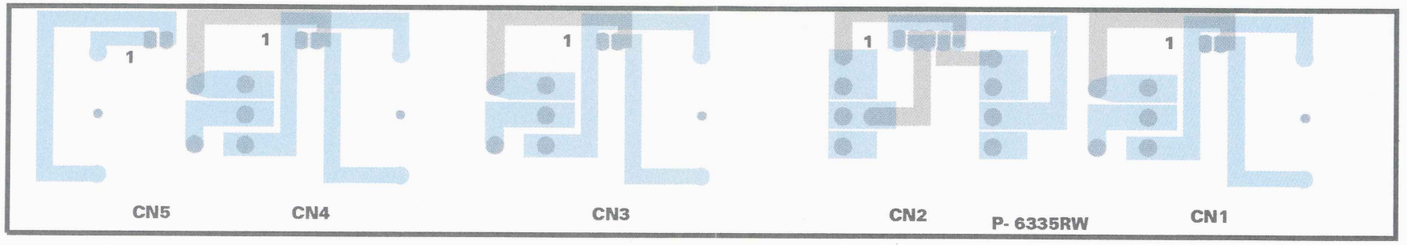


Pattern side view

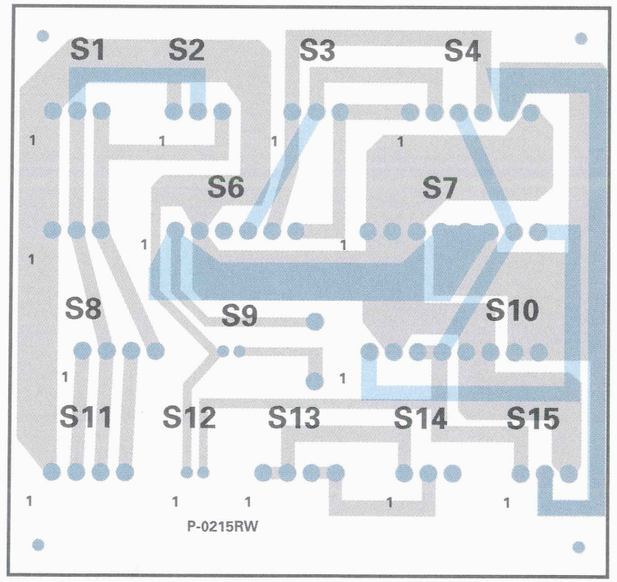


P.C. BOARD

REAR PANEL UNIT (W02-2032-05)



CONNECTION UNIT (W02-2033-08)



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