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53A-123 DIFFERENTIAL COMMUNICATIONS CARD

OPERATING MANUAL

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through
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53A-123 DIFFERENTIAL COMMUNICATIONS CARD

OPERATING MANUAL

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53A-123 DIFFERENTIAL COMMUNICATIONS CARD

DESCRIPTION

The 53A-123 Differential Communications Card is a printed circuit board assemblyfor use in a CDS 53/63 Series System. The 53A-123 Card provides a differential communications link between the card cage in which the card is installed and the system controller or the previous card cage in a chained 53/63 Series System.

The 53A-123 Card allows data transfer rates of up to 500,000 ASCII characters (8-bit parallel with differential drivers and receivers) per second up to a distance of 300 meters (984 feet).

CONTROLS AND INDICATORS

The following controls and indicators are provided to select and display the functions of the 53A-123 Card's operating environment.

Power LED

The Power LED provides a valuable diagnostic tool by giving the system programmer a visual indication of the action which the system is currently taking. Whenever the 53A-123 Card is addressed by the system controller, the Power LED goes out. The LED remains out until another function card is addressed. Since only one function card can be addressed at a time, an unlit Power LED indicates the function card with which the system controller is currently communicating. The Power LED being lit not only indicates that the 53A-123 Card is unaddressed, but that all required dc power (5V dc, ±15V dc) is being supplied.

Fuse

The 5V DC power bus has a fuse that protects the system from overloads. If the fuse has blown, the Power LED will not light.

Function LEDS

I/O LED

This LED is lit when the 53/63 Series System is in input, and is out when the system is in output. As a matter of convention, input means data being sent to the system controller from the 53/63 Series System; output means data being sent from the system controller to the 53/63 Series System.

Data LEDs (B0 - B7)

A column of eight LEDs, labeled B0 through B7 from top to bottom, is situated below the I/O LED. These LEDs display the current data word being received or transmitted by the 53A-123 Card. The least significant bit is B0.

SPECIFICATIONS

Differential Drivers/ Receivers:	TI 75119.
Differential Impedance:	130 ohms.
Protocol:	ASCII 8-bit parallel.
Communications Distance:	300 m. (984 ft).
Data Rate:	500,000 ASCII characters per second.
Power Requirements:	5V dc power is provided by the internal Power Supply in the 53/63 Series Card Cage.
Voltage:	4.75V DC to 5.25V DC.
Current:	1.05 A, maximum quiescent. 1.15 A, peak.
Cooling:	Provided by the fan in the 53/63 Card Cage.
Temperature:	-10 °C to +65 °C, operating (assumes ambient temperature of 55 ° and airflow to assure less than 10 °C temperature rise). -40 °C to +85 °C, storage.
Humidity:	Less than 95% R.H. noncondensing, -10 °C to +30 °C. Less than 75% R.H. non-condensing, +31 °C to +40 °C. Less than 45% R.H. non-condensing, +41 °C to +55 °C.
Dimensions:	197 mm high, 221 mm deep, 13 mm wide. (7.75" x 8.69" x 0.5").
Dimensions, Shipping:	When ordered with a 53A-002 or 63A-012 Card Cage, the card is installed in the card cage's communications card slot. When ordered alone, the shipping dimensionsare: 254 mm x 254 mm x 127 mm. (10" x 10" x 5").
Weight:	0.23 kg. (0.5 lb).
Weight, Shipping:	When ordered with a 53A-002 or 63A-012 Card Cage, the card is installed in the card cage's communications card slot.

When ordered alone, the shipping weight is:

0.64 kg. (1.4 lb).

Mounting Position: Any orientation.

Mounting Location: Installs in the communications card slot of the 53/63 Card Cage.

Output Connections: 53A-741 Cable provides communications.
53A-743 Cable provides chaining.

Equipment Required (Not Supplied): Control card.
Mainframe.

Equipment Supplied:
1 - 53A-123 Differential Communications Card.
1 - Spare fuse (Part # 42202-52001).
1 - Operating Manual (Part # 00000-11230).
1 - Service Manual (Part # 00000-21230).

INSTALLATION

The 53A-123 Differential Communications Card must be plugged into the green communications card slot.

CAUTION:

To avoid plugging the card in backwards, observe the following:

a. Match the keyed slot on the card to the key in the backplane connector. The component side should be to the right for a 53 Series Chassis and to the top for a 63 Series Chassis.

b. There are two ejectors on the card. Make sure the ejector marked "53A-123" is at the top for a 53 Series Chassis and to the left for a 63 Series Chassis.

CAUTION:

The 53A-123 Card is a piece of electronic equipment and therefore has some susceptibility to electrostatic damage (ESD). ESD precautions must be taken whenever the module is handled.

SERVICE MANUAL

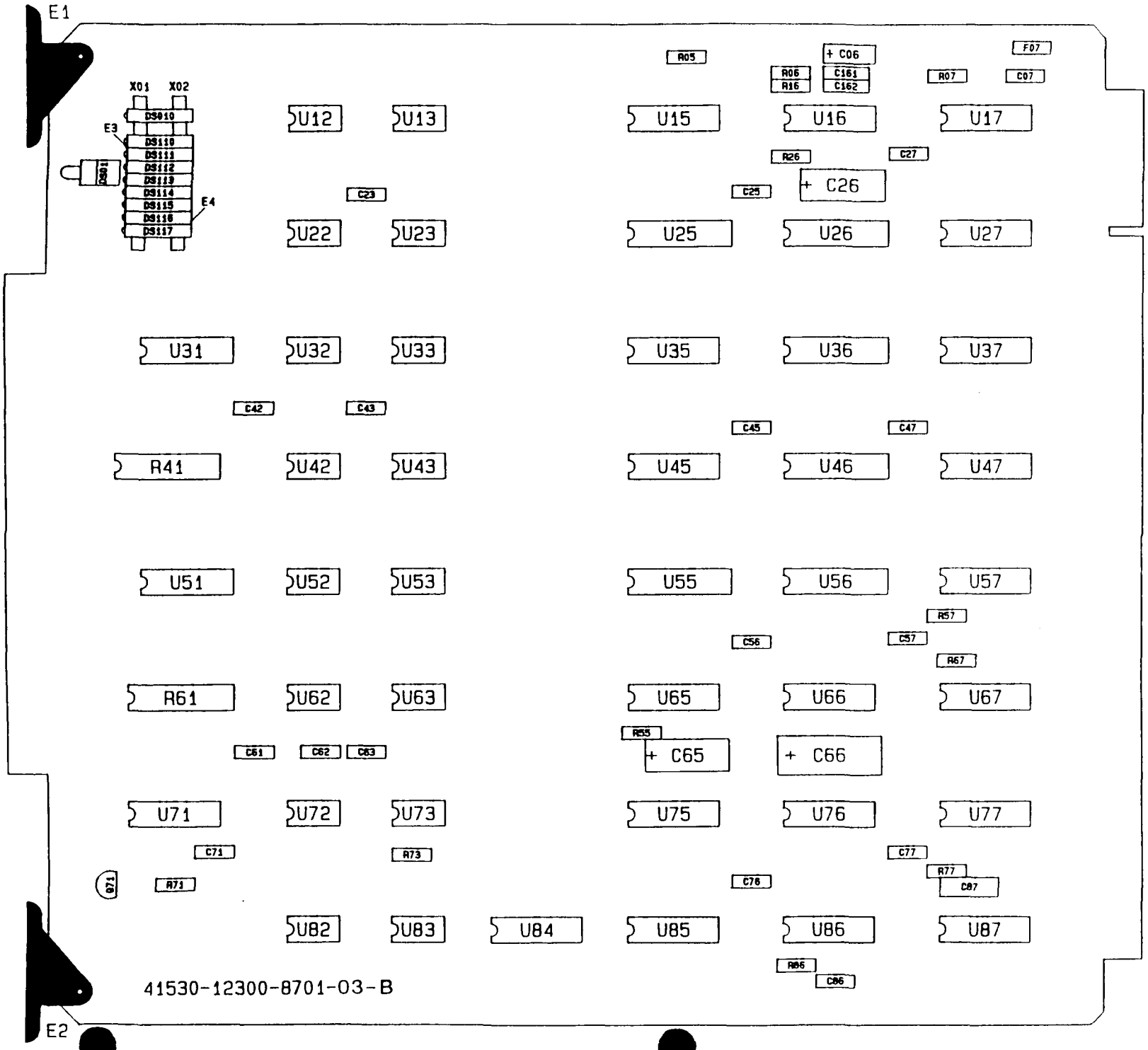
53A-123

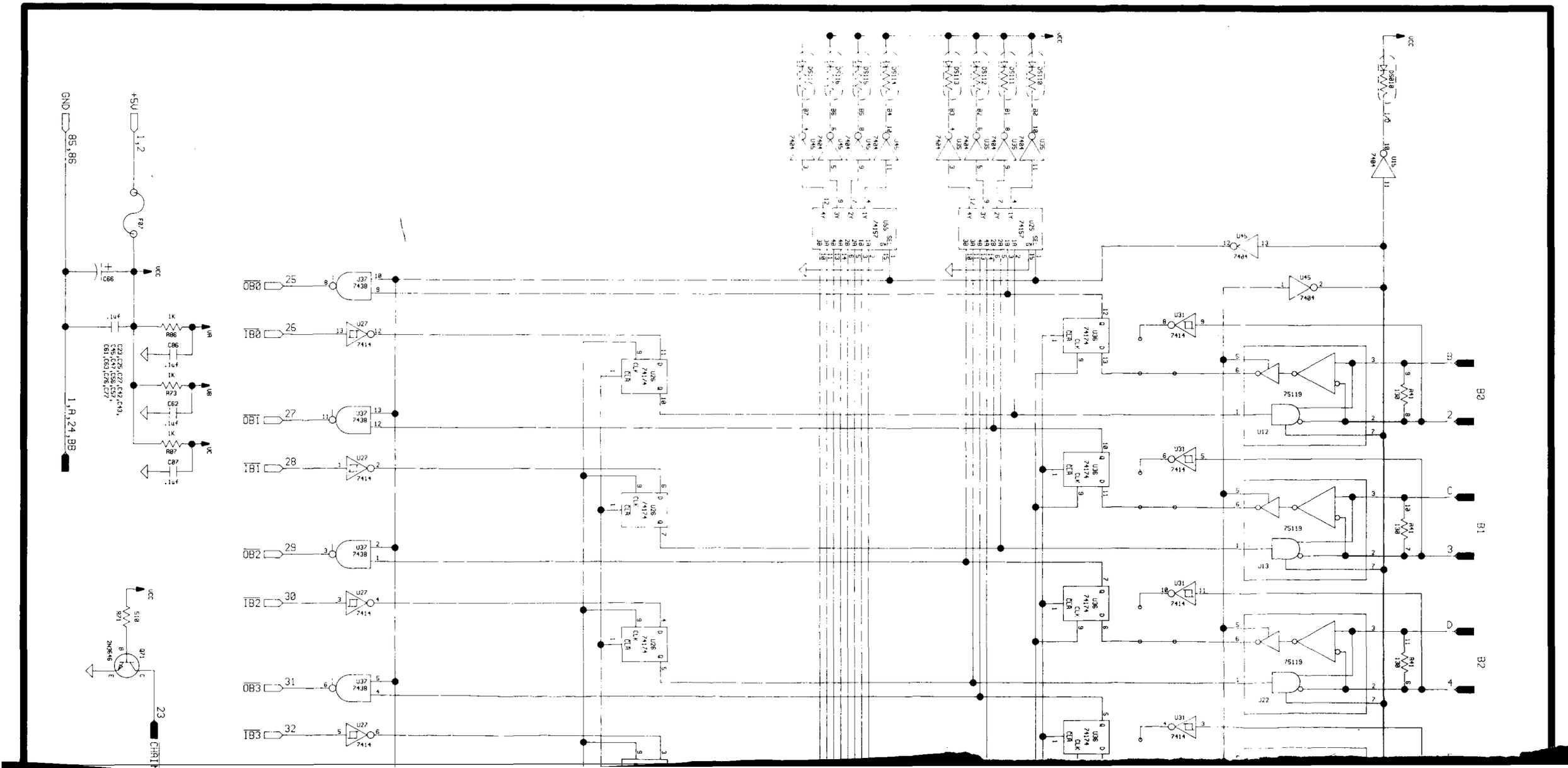
COMMUNICATIONS CARD

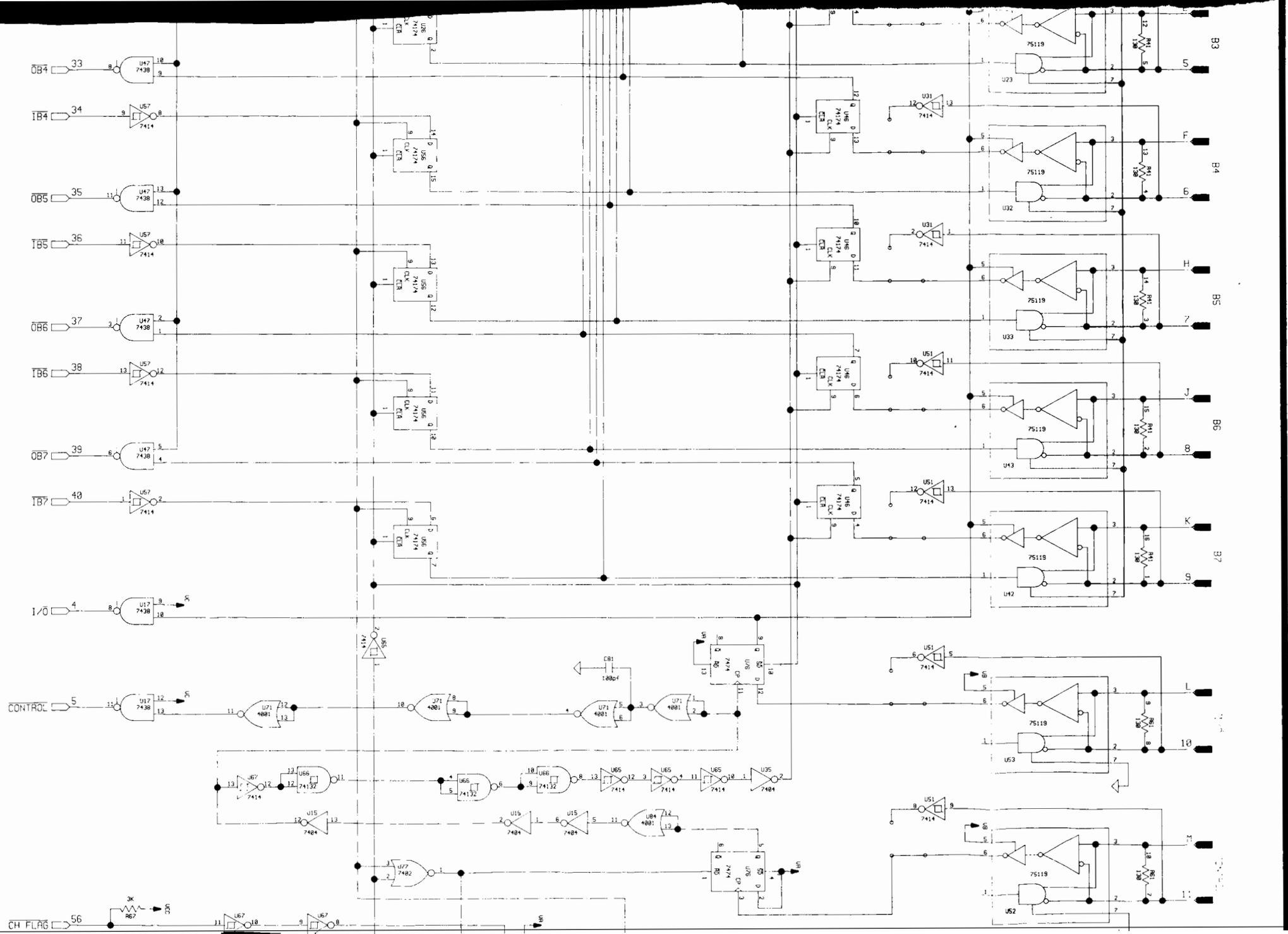
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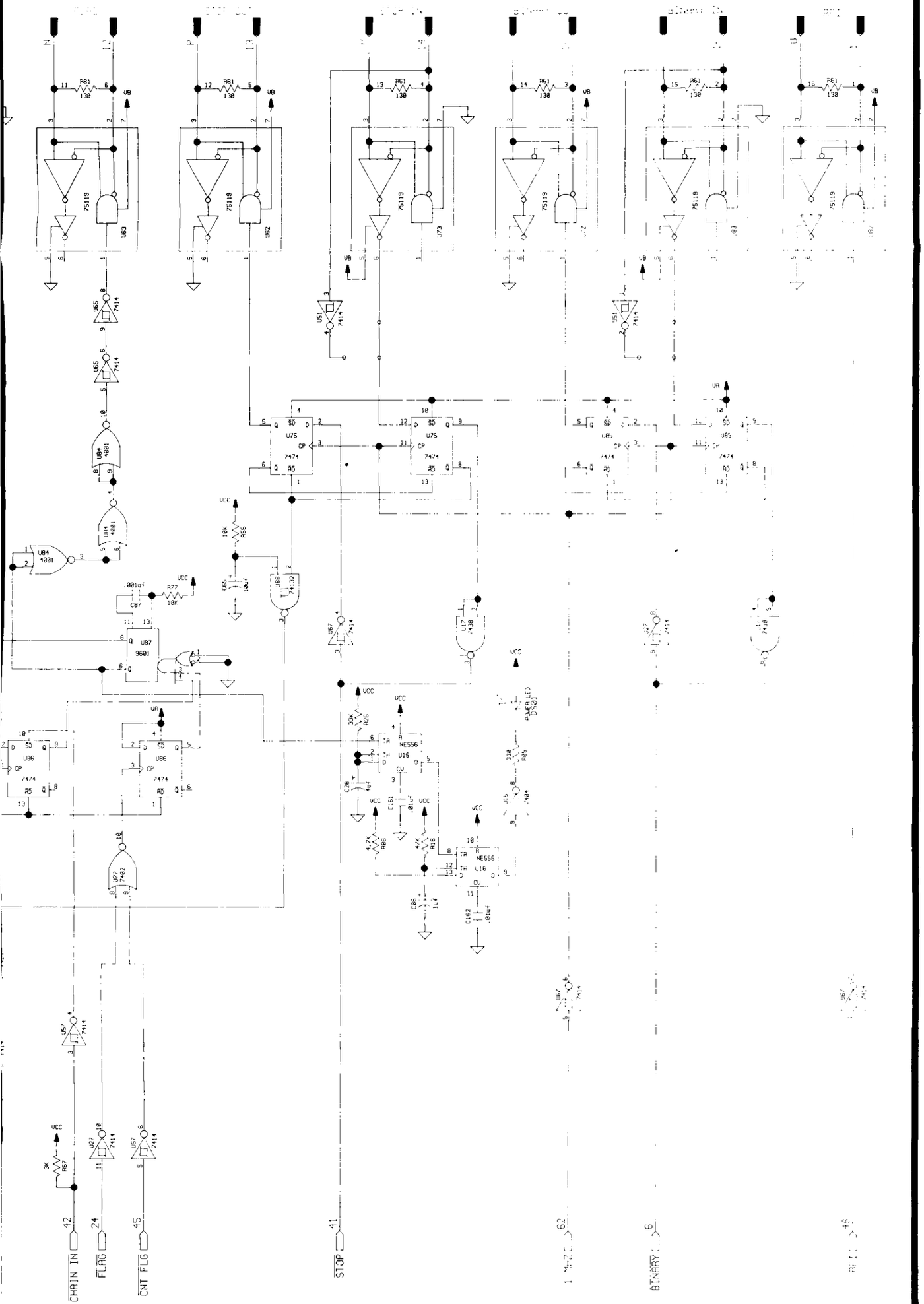
REFERENCE DESIGNATOR	CDS PART NUMBER	QTY.	PART DESCRIPTION	MFG. NUM.	MFG. PART NUMBER
C06	22018-10007	1	CAP FXD TA 1UF 10% 50VDCW	0106	173D105X9050V
C07,23,25,27,42,43,45,47,56,57 61,62,63,76,77,86	20128-10006	16	CAP FXD CER .1UF 20% 50VDCW	0058	C322C104M5U5CA
C161,162	20128-10005	2	CAP FXD CER .01UF 20% 50VDCW	0106	1C25Z5U103M050B
C26	21018-40007	1	CAP FXD ELECT 4UF 75% -10% 12VDCW	0025	NLW4-50
C65	21018-10008	1	CAP FXD ELECT 10UF 75% -10% 16VDCW	0025	NLW10-16
C66	21018-15009	1	CAP FXD ELECT 150UF 75% -10% 16VDCW	0025	NLW150-16
C71	21528-10003	1	CAP FXD MICA 100PF 5% 500VDCW	0025	CD5FD101J3
C87	21528-10004	1	CAP FXD MICA 1000PF 5% 100VDCW	0012	DM-15-102J
DS01	32000-00103	1	DIODE LIGHT EMITTING RED 50MA	0039	550-0103
DS010,110,111,112,113,114,115 116,117	32000-02003	9	DIODE LIGHT EMITTING RED WITH RESISTOR 0	0039	547-2003
E1	40401-00123	1	STAMP 53A-123 STYLE B GREEN	0026	40401-00123
E2	40401-10008	1	STAMP COMMO STYLE D GREEN	0026	40401-10008
E2	45050-03218	1	DCL LED 10POS BLK DRW 000 00-00072 2-16-7 ·	0026	45050-03218
E3	45050-03233	1	DCL LED 10POS DRW 00000 -00465	0026	45050-03233
F07	42202-52001	1	FUSE SUB-MIN 2AMP	0061	251002
PCB	41530-12300	1	P.C. BOARD VERSION 2S 8701	0498	41530-12300
Q71	51100-03646	1	TRANSISTOR NPN HIGH SPEED SWITCH	0074	MPS3646
R05	10117-33003	1	330 OHM RES COMP 1-4W 5%	0087	R25J-330-5%
R06	10117-47004	1	4.7K RES COMP 1-4W 5%	0087	R25J-4.7K-5%

REFERENCE DESIGNATOR	CDS PART NUMBER	QTY.	PART DESCRIPTION	MFG. NUM.	MFG. PART NUMBER
R07,73,86	10117-10004	3	1K RES COMP 1-4W 5%	0087	R25J-1K-5%
R16	10117-47005	1	47K RES COMP 1-4W 5%	0087	R25J-47K-5%
R26	10117-33005	1	33K RES COMP 1-4W 5%	0087	R25J-33K-5%
R41,61	12001-13004	2	130 OHM RES NETWORK 5% 1-4W 8-PKG	0008	316B131
R55,77	10117-10005	2	10K RES COMP 1-4W 5%	0087	R25J-10K-5%
R57,67	10117-30004	2	3K RES COMP 1-4W 5%	0087	R25J-3K-5%
R71	10117-51003	1	510 OHM RES COMP 1-4W 5%	0087	R25J-510-5%
U12,13,22,23,32,33,42,43,52,53 62,63,72,73,82,83	73303-75119	16	IC TTL DIFFERENTIAL LINE TRANSCEIVER	0107	75119 TI ONLY
U15,35,45	73302-07404	3	IC TTL ALS HEX INVERTER	0107	74ALS04
U16	79606-00556	1	IC TTL DUAL TIMER	0107	NE556A
U17,37,47	76601-07438	3	IC TTL QUAD 2-INPUT NAND BUFFER W-OC	0107	7438
U25,55	79911-74157	2	IC TTL LS QUAD 2-TO-1 LINE DATA SEL-MUX	0107	74LS157
U26,36,46,56	73005-74174	4	IC HCT HEX D-TYPE FLIP-FLOP	0088	74HCT174
U27,31,51,57,65,67	78403-07414	6	IC HCT HEX SCHMITT INVERTING BUFFER	0088	74HCT14
U66	76606-07400	1	IC HCT QUAD 2-INPUT NAND GATE	0088	74HCT00
U71,84	76900-04001	2	IC CMOS QUAD 2-INPUT NOR GATE	0107	4001AE
U75,76,85,86	73005-07474	4	IC HCT DUAL D-TYPE FLIP FLOP	0092	74HCT74N
U77	76905-07402	1	IC HCT QUAD 2-INPUT NOR GATE	0088	74HCT02
U87	74200-09601	1	IC TTL RETRIGGERABLE MONOSTABLE	0078	9601
X01,02	45001-12100	2	CONNECTOR SIP 12 PIN	0026	45001-12100


E1
X01
X02
DS010
E3
DS110
DS111
DS112
DS113
DS114
DS115
DS116
DS117
E4
DS01
U12
U13
U15
U16
U17
+ C06
C161
C162
R05
R06
R16
R07
C07
F07
R26
C27
C25
+ C26
C23
U22
U23
U25
U26
U27
U31
U32
U33
U35
U36
U37
C42
C43
C45
C47
R41
U42
U43
U45
U46
U47
U51
U52
U53
U55
U56
U57
R57
C56
C57
R67
R61
U62
U63
U65
U66
U67
R55
C61
C62
C63
+ C65
+ C66
U71
U72
U73
U75
U76
U77
C71
R73
C77
R77
C76
C87
R71
G71
U82
U83
U84
U85
U86
U87
R86
C86
41530-12300-8701-03-B
E2


GND
85,86
+5V
1,2
F8
VCC
C66
.1uf
1K
R86
C86
.1uf
R73
C62
.1uf
R87
C87
.1uf
VA
VB
VC
C23,C25,C27,C42,C43,
C45,C47,C58,C57,
C61,C63,C76,C77
1,A,24,BB
OB0
IB0
OB1
IB1
OB2
IB2
OB3
IB3
25
26
27
28
29
30
31
32
U37
7438
U27
7414
U26
74174
CLK
CLR
U35
7404
U55
74157
SEL
DS10
DS11
DS12
DS13
DS14
DS15
DS16
DS17
DS18
DS19
R71
510
Q21
2N5946
23
CHAIN
U45
U31
75119
U12
U13
U22
R41
130
B0
B1
B2
B3


OB4
IB4
OB5
IB5
OB6
IB6
OB7
IB7
I/O
CONTROL
CH FLAG
B3
B4
B5
B6
B7
75119
7414
7438
74174
74132
7404
7402
7400
CB1
100pf
3K
R67



8701-03 A

REVISION LEVEL	ECO #
8701-03-A	545

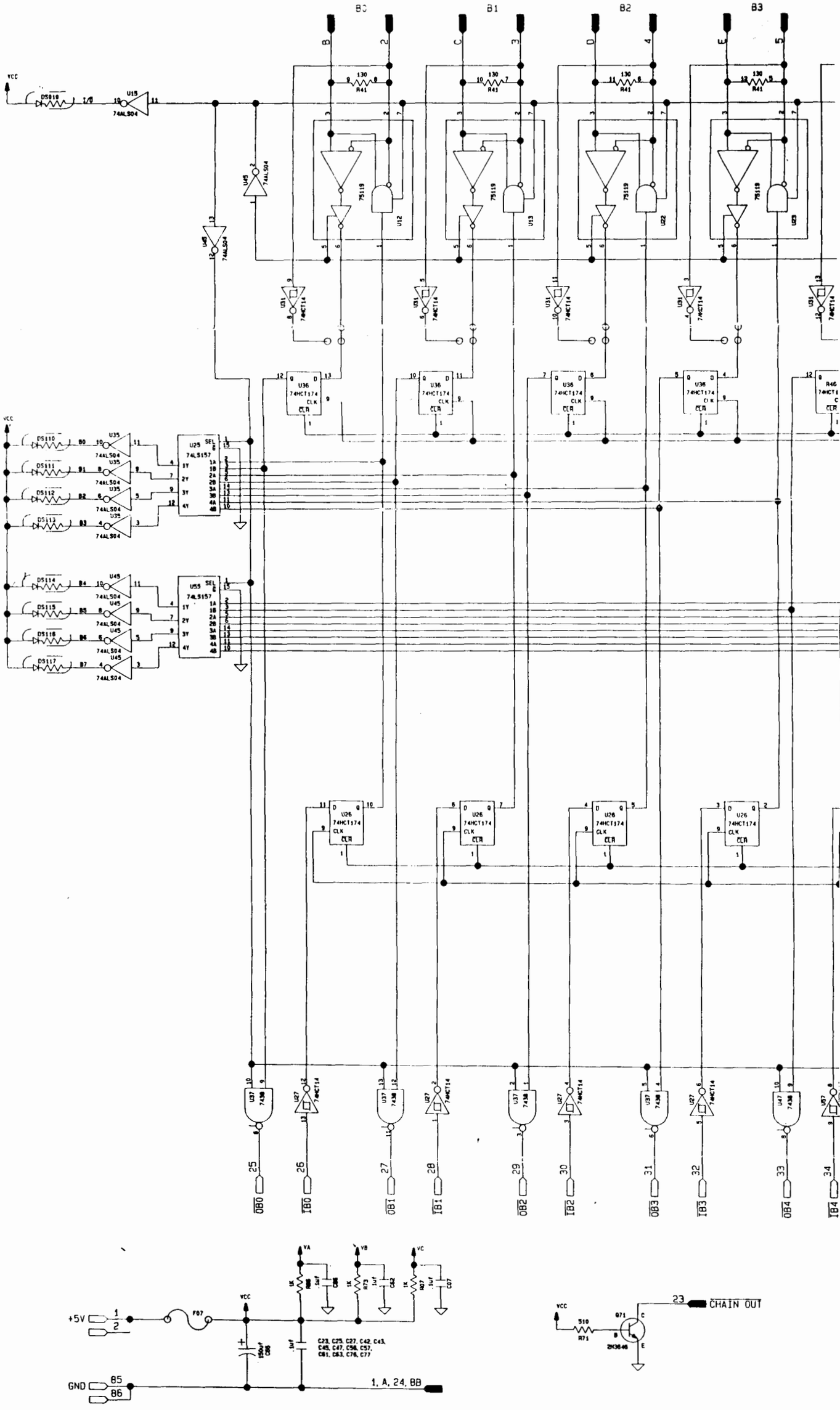
COLORADO DATA SYSTEMS

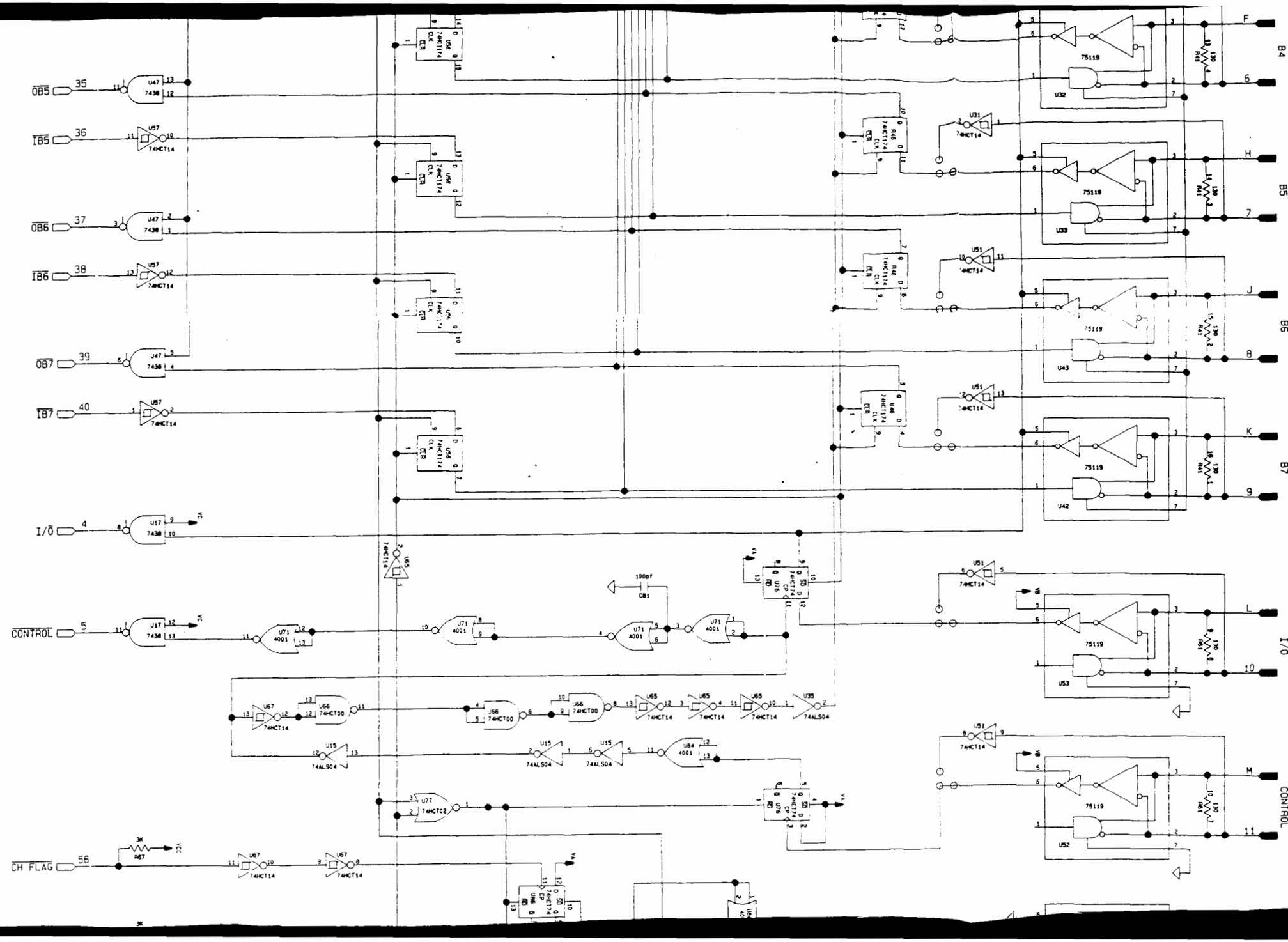
PART NO.: 53A-123

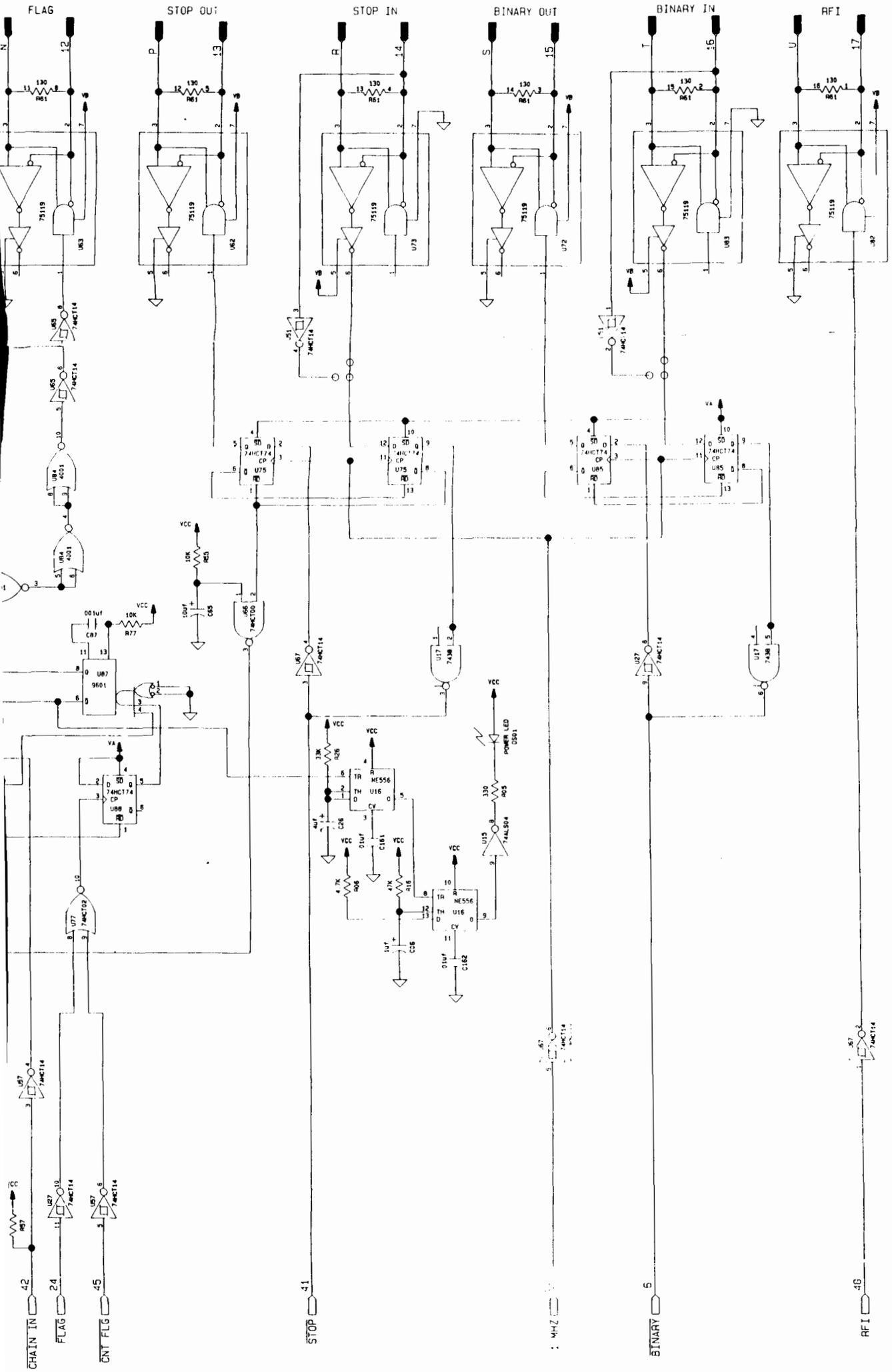
DESCRIPTION: COMMUNICATIONS CARD

P.C.B. NUMBER: 41530-12300

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B0
B1
B2
B3
VCC
74ALS04
74HCT174
74LS157
74LS30
74HCT14
130
R41
510
R71
2N3646
CHAIN OUT
+5V
GND
F07
1, A, 24, BB
23
25
26
27
28
29
30
31
32
33
34


OB5
35
IB5
36
OB6
37
IB6
38
OB7
39
IB7
40
I/O
4
CONTROL
5
CH FLAG
56
B4
B5
B6
B7
I/O
CONTROL
F
6
H
7
J
8
K
9
L
10
M
11
100pf
C81
3K
R67
74HCT14
74ALS04
74HCT00
74HCT02
4001
7438
75119



8701-03-B

REVISION LEVEL	ECO #
8701-03-A	545
8701-03-B	1686

COLORADO DATA SYSTEMS

PART NO.: 53A-123

DESCRIPTION: COMMUNICATIONS CARD

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