

1260 VXI SWITCHING CARD

1260-58 HIGH FREQUENCY SWITCH MODULE

PUBLICATION NO. 980673-049



RACAL INSTRUMENTS

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All Racal Instruments, Inc. products are designed and manufactured to exacting standards and in full conformance to Racal's ISO 9001 procedures.

For the specific terms of your standard warranty, or optional extended warranty or service agreement, contact your Racal customer service advisor. Please have the following information available to facilitate service.

1. Product serial number
2. Product model number
3. Your company and contact information

You may contact your customer service advisor by:

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RETURN of PRODUCT

Authorization is required from Racal Instruments before you send us your product for service or calibration. Call your nearest Racal Instruments support facility. A list is located on the last page of this manual. If you are unsure where to call, contact Racal Instruments, Inc. Customer Support Department in Irvine, California, USA at 1-800-722-3262 or 1-949-859-8999 or via fax at 1-949-859-7139. We can be reached at: helpdesk@racalstruments.com.

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FOR YOUR SAFETY

Before undertaking any troubleshooting, maintenance or exploratory procedure, read carefully the **WARNINGS** and **CAUTION** notices.



CAUTION
RISK OF ELECTRICAL SHOCK
DO NOT OPEN



This equipment contains voltage hazardous to human life and safety, and is capable of inflicting personal injury.



If this instrument is to be powered from the AC line (mains) through an autotransformer, ensure the common connector is connected to the neutral (earth pole) of the power supply.



Before operating the unit, ensure the conductor (green wire) is connected to the ground (earth) conductor of the power outlet. Do not use a two-conductor extension cord or a three-prong/two-prong adapter. This will defeat the protective feature of the third conductor in the power cord.



Maintenance and calibration procedures sometimes call for operation of the unit with power applied and protective covers removed. Read the procedures and heed warnings to avoid “live” circuit points.

Before operating this instrument:

1. Ensure the proper fuse is in place for the power source to operate.
2. Ensure all other devices connected to or in proximity to this instrument are properly grounded or connected to the protective third-wire earth ground.

If the instrument:

- fails to operate satisfactorily
- shows visible damage
- has been stored under unfavorable conditions
- has sustained stress

Do not operate until, performance is checked by qualified personnel.

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NOTE FOR SYSTEMS WITH 1260-OPT 01T

The “Module-Specific Syntax” section of this manual shows the command syntax for the 1260-01S Smart Card. If you are using the newer 1260-01T Smart Card, the commands will NOT work as shown.

Consult the 1260-01T Manual for a description of the commands which may be used with the 1260-01T Smart Card.

The channel numbers described in this manual are valid for the 1260-01T. The channel numbers continue to be used for the 1260-01T.

The syntax of the commands which use channel numbers has changed for those cards controlled by the 1260-01T.

The new syntax used to close a channel is:

```
CLOSE (@ <module address> ( <channel> ) )
```

For example, with for a relay module whose <module address> is set to 7, closing <channel> 0 is performed with the command:

```
CLOSE (@ 7 (0))
```

Using the older 1260-01S, the command would be (as shown in this manual):

```
CLOSE 7.0
```

Many other command syntax differences exist. Please consult chapter 2 of the 1260-01T manual for a description of the commands which are available for the 1260-01T.

Control Information for the 1260-58

The following information describes the control-register-to-relay-channel mapping for a 1260-58 Relay Module. This information may be used to control a 1260-58 when using a 1260-01T in the register-based mode of operation.

A channel within each 1x8MUX may be selected by programming a single Control Register. A different 8-bit pattern must be written to the Control Register to select the desired channel, which closes a single input to the COM output. Closing one channel effectively opens the other 7 channels of the MUX. A value of 0 may be written to the Control Register to open ALL 8 channels of the MUX.

Each Control Register is located 2 addresses from the previous Control Register. That is, each Control Register is located at an odd address. This is shown in Table 2-2 of the 1260-01T manual. Control Register 0 is located at the "Base A24 Address" for the module. Consult the "Register-Based Operation" Section of Chapter 2 of the 1260-01T manual for a description of calculating control register addresses.

The table below shows the mapping from logical channels to control bits. The logical channels are used when operating the relay module in message-based mode. The control bits within the Control Registers are used to operate the module in register-based mode.

Channel	Control Register	Control Register Value (hex)
00	4	08
01	4	09
02	4	0B
03	4	0A
04	4	2C
05	4	3C
06	4	1C
07	4	0C
10	5	08
11	5	18
12	5	38
13	5	28
14	5	0E
15	5	0F
16	5	0D
17	5	0C
20	3	08
21	3	18
22	3	38
23	3	28
24	3	0E
25	3	0F
26	3	0D
27	3	0C
30	2	08
31	2	09
32	2	0B
33	2	0A
34	2	2C
35	2	3C
36	2	1C
37	2	0C

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MODULE SPECIFICATION

Introduction

The 1260-58 High Frequency Switch consists of four single pole eight throw RF switches. Each of the four switches is independently controlled.

1260-58 Module Specification

Maximum Switching Voltage	30VDC, 30VAC RMS
Maximum Switching Current	0.5ADC, 0.5AAC (RMS)
Maximum Switching Power	10WDC, 10VA, 10W RF into 50Ω
-3dB Bandwidth (50Ω)	> 1GHz
Insertion Loss (50Ω)	< 1.5dB to 1GHz < 1dB at 500 MHz < 0.6dB to 100 MHz
Crosstalk (50Ω)	< -35dB to 1GHz < -43dB to 500 MHz < -60dB to 100MHz
Isolation (50Ω)	> 35dB at 1GHz > 55dB to 500MHz > 70dB to 100MHz
VSWR	100MHz <1.1:1 500MHz <1.3:1 750MHz <1.7:1
Path Resistance	< 1.0Ω
Thermal EMF	< 20μV
Impedance	
Input-Chassis	> 2000M
Output to Chassis	> 2000M
Input-Output	~ 50Ω
Capacitance	
Channel to Chassis	< 50pF

Revised 03/14/02

Temperature	
Operating	0°C to +55°C
Non-Operating	-40°C to +71°C
Relative Humidity	
	95 +/-5% RH Non-Condensing <30°C
	75+/-5 %RH > 30°C
	45+/-5 %RH > 40°C
Altitude	
Operating	10,000 ft
Non-Operating	15,000 ft
Vibration	
	0.013" double amplitude, 5-55Hz
Shock, functional	
	30g, 11 msec, ½ sine wave
Bench Handling	
	4 inch drop @ 45°
Cooling Requirement	
Without Option 01 installed	
Airflow	1.0 liters/sec
Backpressure	0.05mm H ₂ O
With Option 01 installed	
Airflow	2.0 liters/sec
Backpressure	0.2mm H ₂ O
Power Requirement	
Without Option 01 installed	
+5V Static Current, I _{pm}	0.4A
+5V Dynamic Current, I _{dm}	0.075A
With Option 01 installed	
+5V Static Current, I _{pm}	2.5A
+5V Dynamic Current, I _{dm}	0.225A
+24V Static Current, I _{pm}	15mA per energized relay
+24V Dynamic Current, I _{dm}	0A
MTBF	
	>312,218 Hours (per MIL-HBK-217, including relays)
Weight	
Without Option 01 installed	3.2lb (1.45kg)
With Option 01 installed	3.5lb (1.60kg)
Minimum Option 01 Firmware Revision	
	29.1

Ordering Information

Listed below are the part numbers for the 1260-58 Switch Module and additional manuals. Mating connector are SMB and not provided by Racal Instruments.

Item	Description	Part #
1260-58 Switch Module	1260-58 High Freq. Coaxial Switch	407512
Additional Manual		980673-049

Safety

Refer to the "**FOR YOUR SAFETY**" page preceding the Table of Contents. Follow all **NOTES, CAUTIONS** and **WARNINGS** to ensure personal safety and prevent damage to the instrument.

Product Support

Authorization is required from Racal Instruments before you send us your product for service or calibration. Call your nearest Racal Instruments support facility. A list is located on the last page of this manual. If you are unsure where to call, contact Racal Instruments, Inc. Customer Support Department in Irvine, California, USA at 1-800-722-3262 or 1-949-859-8999 or via fax at 1-949-859-7309. We can be reached at: helpdesk@racalate.com.

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INSTALLATION INSTRUCTIONS

Unpacking and Inspection

1. Before unpacking the switching module, check the exterior of the shipping carton for any signs of damage. All irregularities should be noted on the shipping bill.
2. Remove the instrument from its carton, preserving the factory packaging as much as possible.
3. Inspect the switching module for any defect or damage. Immediately notify the carrier if any damage is apparent.
4. Have a qualified person check the instrument for safety before use.

Reshipment Instructions

1. Use the original packing when returning the switching module to Racal Instruments for calibration or servicing. The original shipping carton and the instrument's plastic foam will provide the necessary support for safe reshipment.
2. If the original packing material is unavailable, wrap the switching module in an ESD Shielding bag and use foam to surround and protect the instrument.
3. Reship in either the original or a new shipping carton.

Option 01 Installation

Installation of the Option 01 into the 1260-58 is described in the Installation section of the 1260 Series VXI Switching Cards Manual, under the Option 01 installation section.

Module Installation

Installation of the 1260-58 Switching Module into a VXI mainframe, including the setting of switches SW1-1 through SW1-4, SW2 and SW3, is described in the Installation section of the 1260 Series VXI Switching Cards Manual. Configuration of switch SW1-5 must be configured in the OFF state.

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MODULE SPECIFIC SYNTAX

Module Configuration

The 1260-58 consists of four, single pole, eight throw coaxial RF switches.

Reference should be made to **Figure 3-1**, 1260-58 Block Diagram.

Front Panel Connectors

The 1260-58 front panel connectors are divided up into four groups of eight connectors, each representing one SP8T switch. Within each group, the connectors are labeled COM, A0 through A7; COM, B0 through B7; etc. The connectors are SMB type. See **Figure 3-2**.

Mating Connectors

Mating connectors are available from many off the shelf sources for the 1260-58 module.

NOTE:

The <module address> used here is not the VXIbus defined Logical Address of the 1260 Series Master. It is unique to the 1260 Series and describes the switching module in relation to the Master. This address corresponds to the binary value of the switch setting of SW1 on the switching module PCB. Refer to the Installation Section of the 1260 Series VXI Switching Cards Manual for more information

1260-58 Syntax

1260-01 Compatibility

The 1260-58 card uses the existing 1260 series switch card command set. All of the commands supported by other relay modules (including PDATAOUT, PSETUP, CLOSE, OPEN, SLIST, EQUATE, EXCL, and so on) are supported. The READ and WRITE commands are NOT supported. The INCL command, used to equate two relays with a single module, is also NOT supported, since each MUX can connect only one input to the COM output.

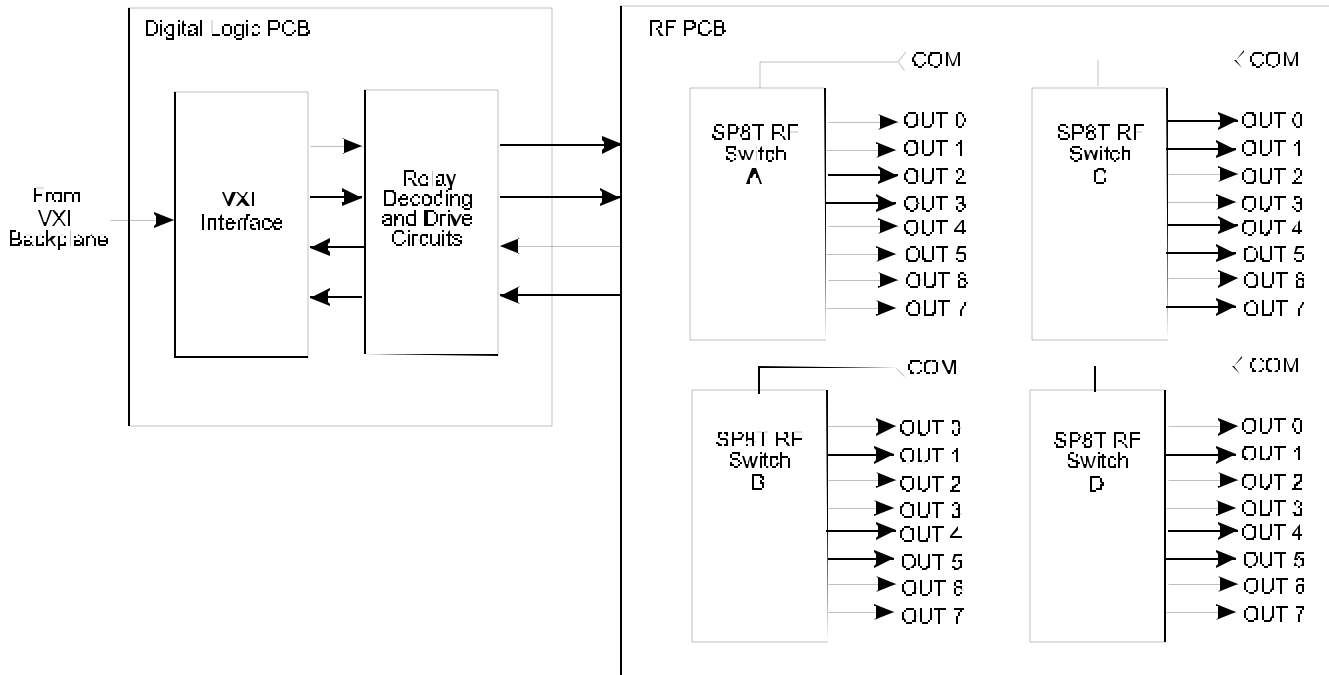


Figure 3-1, 1260-58 Block Diagram

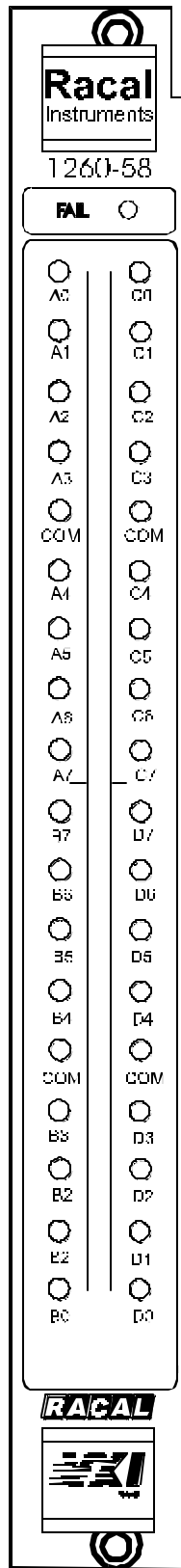


Figure 3-2 1260-58 Front Panel

1260-58 Relay Descriptors

A "relay descriptor" identifies a relay (or range of relays) which is to be operated. The "relay descriptor" uses module-specific syntax to uniquely identify each relay on the module.

The "relay descriptor" for the 1260-58 has the form:

```

<relay descriptor> ::= <module address> . <relay range>
<relay range>      ::= <channel descriptor> - <channel descriptor> | <channel
                        descriptor> , <channel descriptor> | <channel descriptor>
<module address>  ::= 1 to 12
<channel descriptor> ::= <MUX> <channel>
<MUX>             ::= 0 to 3
<channel>         ::= 0 to 8
  
```

The <MUX> selects which of the individual MUXes are to be operated. When MUX = 0, the COM A MUX is operated. When MUX = 1, the COM B MUX is operated, and so on.

The <channel> selects which of the inputs of the MUX will be connected to the COM output of the MUX. In the case of the 1260-58, <channel> designators 0-7 connect the COM to one of the eight inputs, while <channel> 8 causes the COM to be routed to the no-connect position.

Examples of commands using the <relay descriptors> are shown below. All examples use the module address of 12 to select the 1260-58 card.

```

CLOSE 12.00      connect input A0 to the COM A output
CLOSE 12.01      connect input A1 to the COM A output
CLOSE 12.23      connect input C3 to the COM C output
CLOSE 12.12,31   connect input B2 to COM B, and D1 to COM D

OPEN 12.11       disconnect input B1 from COM B. If B1 is not
                  presently connected, then this command will
                  have no effect. If B1 is connected, then set
                  MUX B to the default state, with COM B
                  connected to the no-connect node.

CLOSE 12.08       connect COM A to the no-connect node.
                  This command causes COM A to be
                  connected to the no-connect node regardless
                  of where it was previously connected.
  
```

Each MUX is controlled using multiple physical relays. The multiple relays may all be inactive (in the normally closed position), one or more of the relays may be active, or all of the relays may be active. These combinations of relays produce eight unique combinations. Each combination connects one of the inputs of a MUX to the COM output of that MUX.

Implicit Exclusion List

The firmware for the 1260-58 shall implement an “implicit exclusion list.” This means that for any given MUX, no more than one output may be connected to the common input at one time. Thus, if the user specifies the command:

```
CLOSE 12.00-03
```

Then, after the command has been executed, the only relay closed will be the one identified as channel “03”. Channels “00,” “01,” and “02” are not closed, since the firmware enforces the “implicit exclusion list.”

PDATAOUT and PSETUP Module Identification

The first line of the reply to the PDATAOUT and PSETUP commands for the 1260-58 shall be one of the following, depending on the module type:

```
XXX. 1260-58 4 1x8 750 MHZ SWITCH MODULE
```

where:

XXX is the module address of the 1260-58 ("001" to "012").

All other reply lines for these commands shall follow the syntax used for all of the other 1260 series relay cards. Note that the lines of the reply for the PDATAOUT command will contain relay descriptors which follow the syntax described in this manual.

Application Software Requirements

The 1260-58 module is supported by *VXIplug&play* software consisting of:

LabVIEW driver

LabWindows/CVI driver

Executable Soft Front Panel

Knowledge Base entry in the existing knowledge base file

Header files for Visual Basic, C and C++

Any other files/data which are required to fully comply with *VXIplug&play* requirements

1260-58 ID Bytes

The ID bytes for the 1260-58 is:

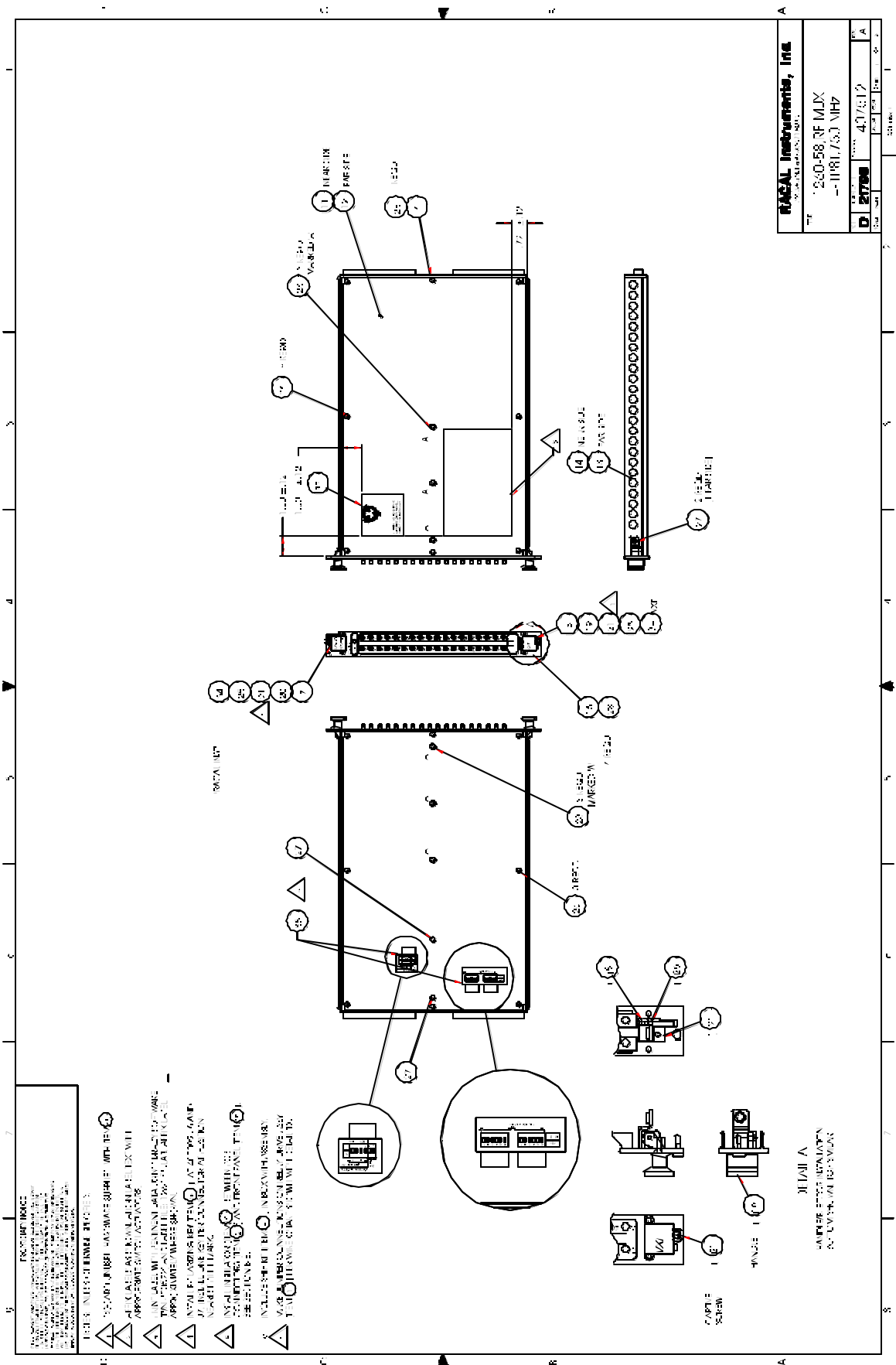
1260-58: 5A hexadecimal (= 90 decimal)

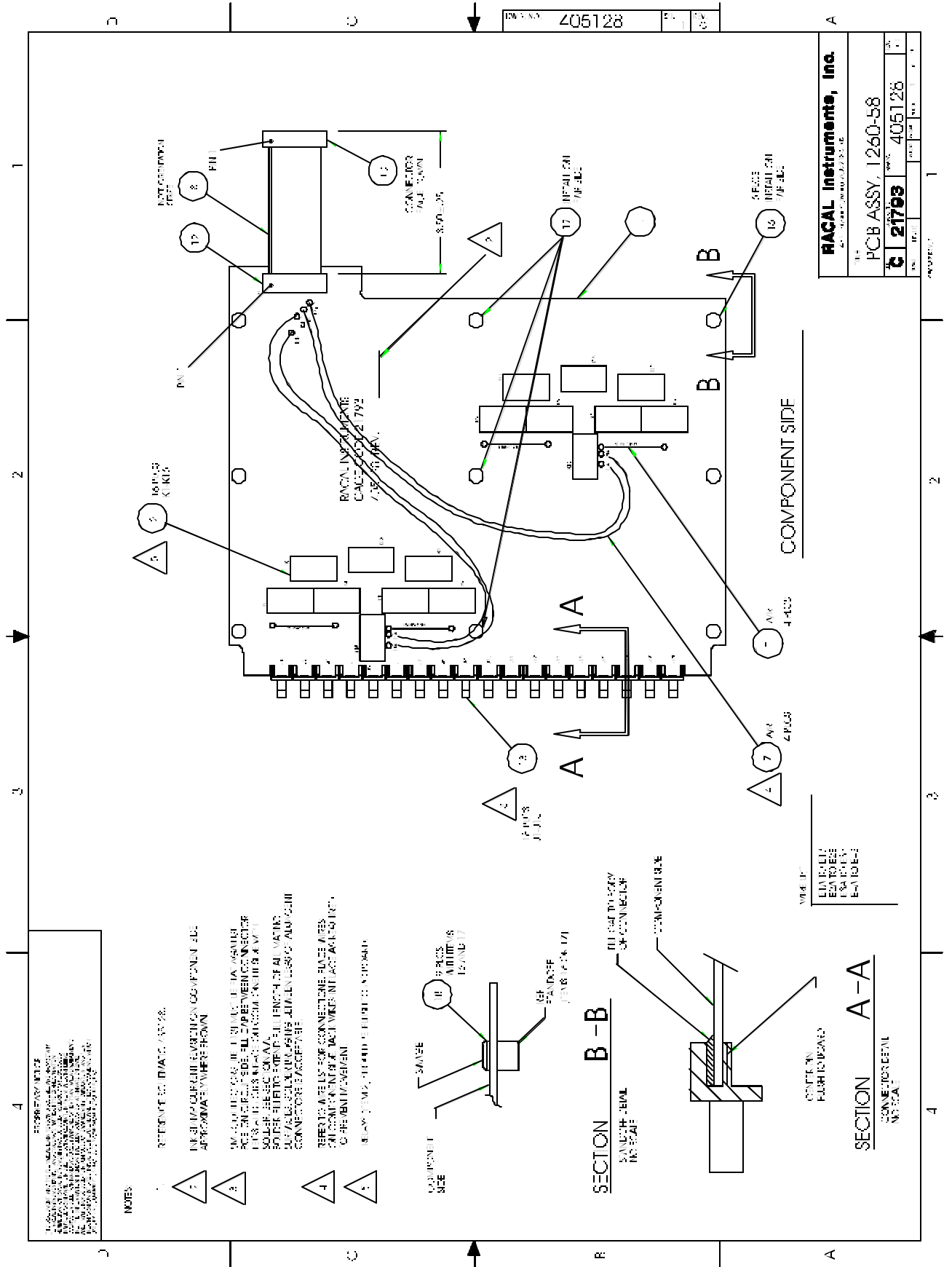
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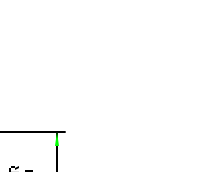




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 1. THIS DRAWING IS MADE FOR THE PURPOSE OF
 IDENTIFYING THE PARTS OF THE PCB ASSY.
 IT IS NOT TO BE USED AS A MANUFACTURING
 DRAWING. FOR MANUFACTURING DRAWINGS,
 SEE THE DRAWING TITLED 'PCB ASSY. 1260-58
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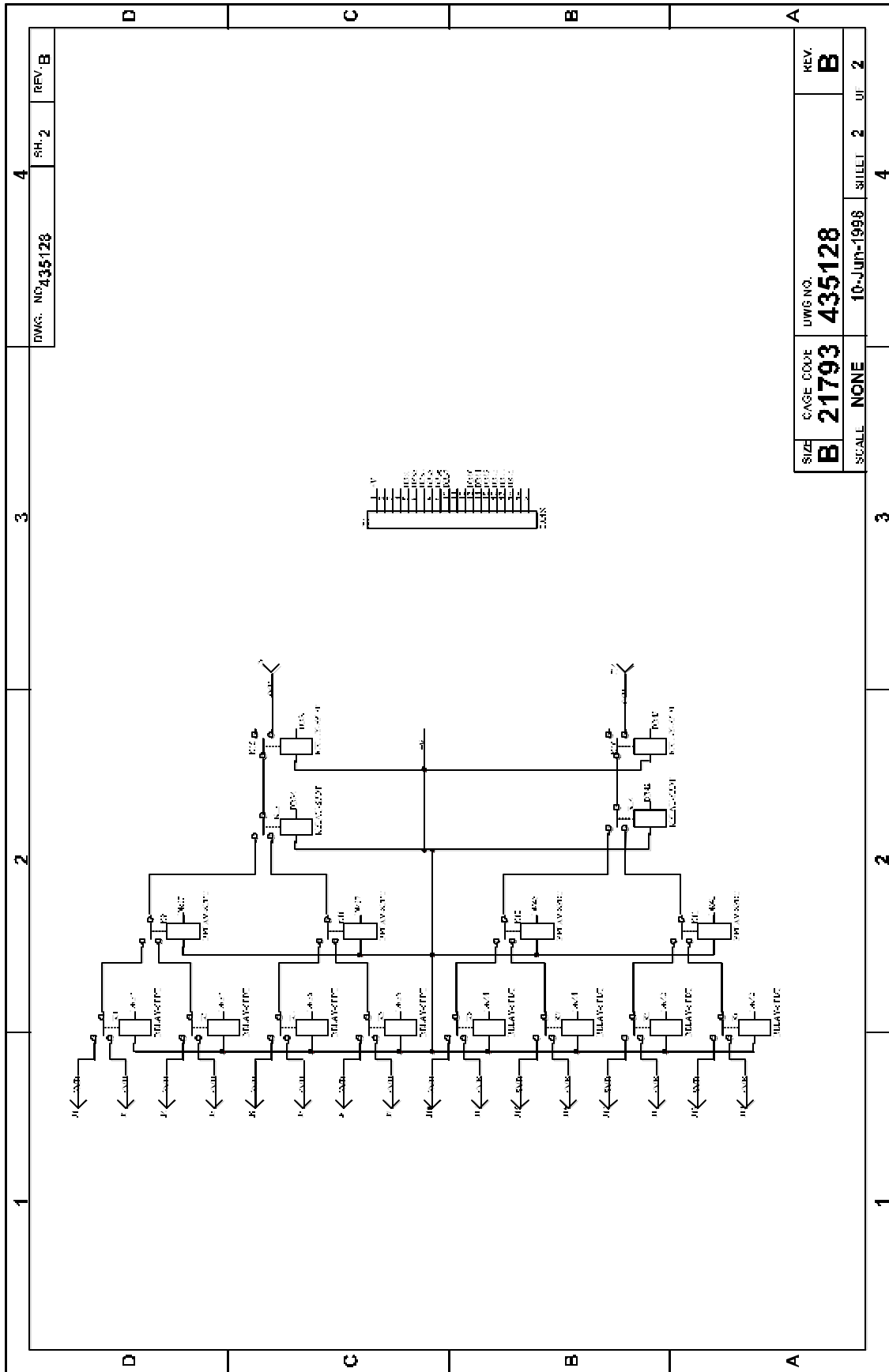
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- 4. SOURCE PARTS FOR THE BOARD SHALL BE THE BOARD SIDE. ALL DIMENSIONS SHALL BE IN INCHES UNLESS OTHERWISE SPECIFIED.
- 5. THERE IS A RELIABLE CONNECTION PLACE AT THE BOARD SIDE OF THE BOARD. THE BOARD SHALL BE IN CONTACT WITH THE BOARD SIDE.
- 6. BOARD SIDE SHALL BE USED FOR THE BOARD.



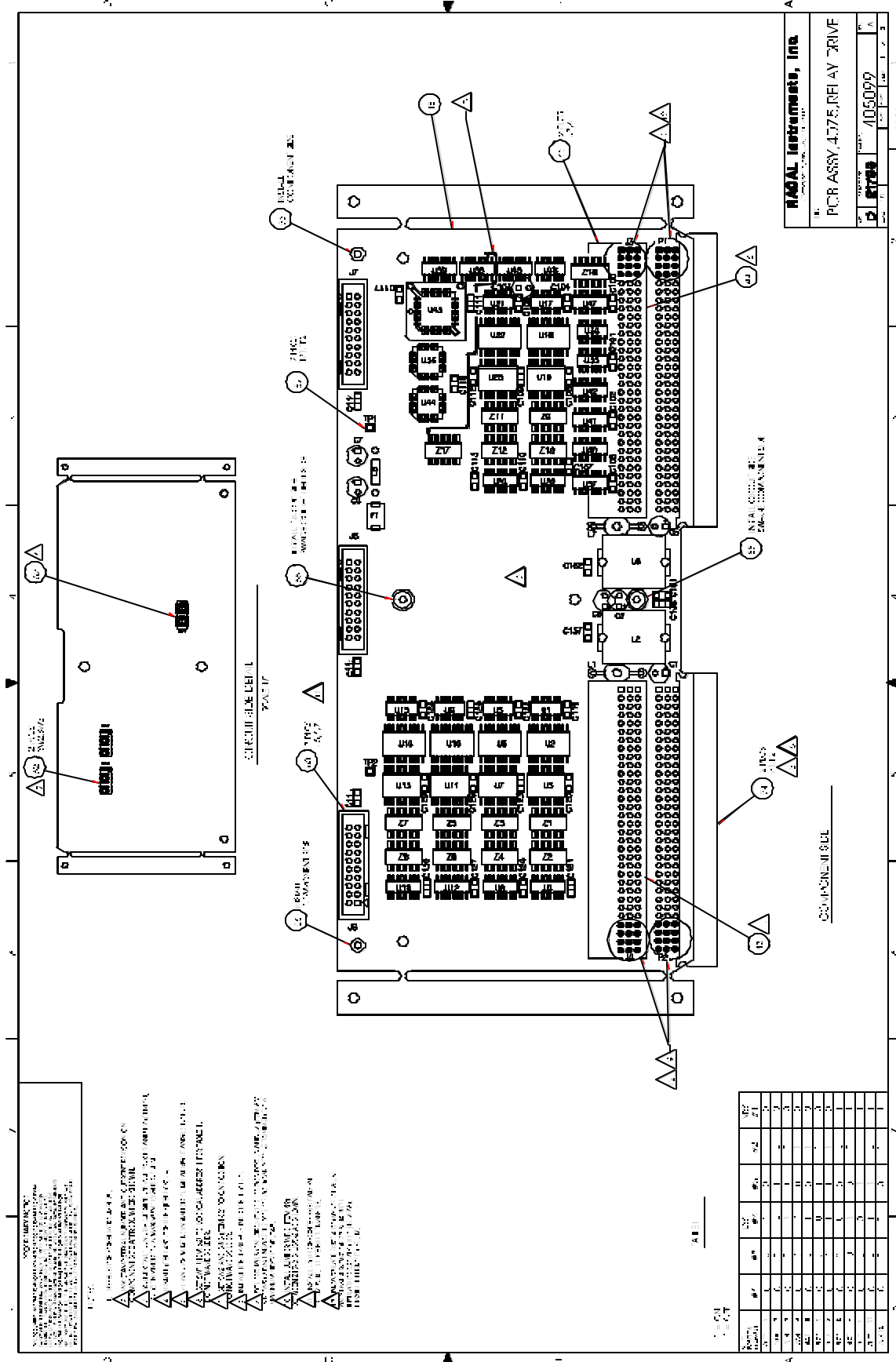
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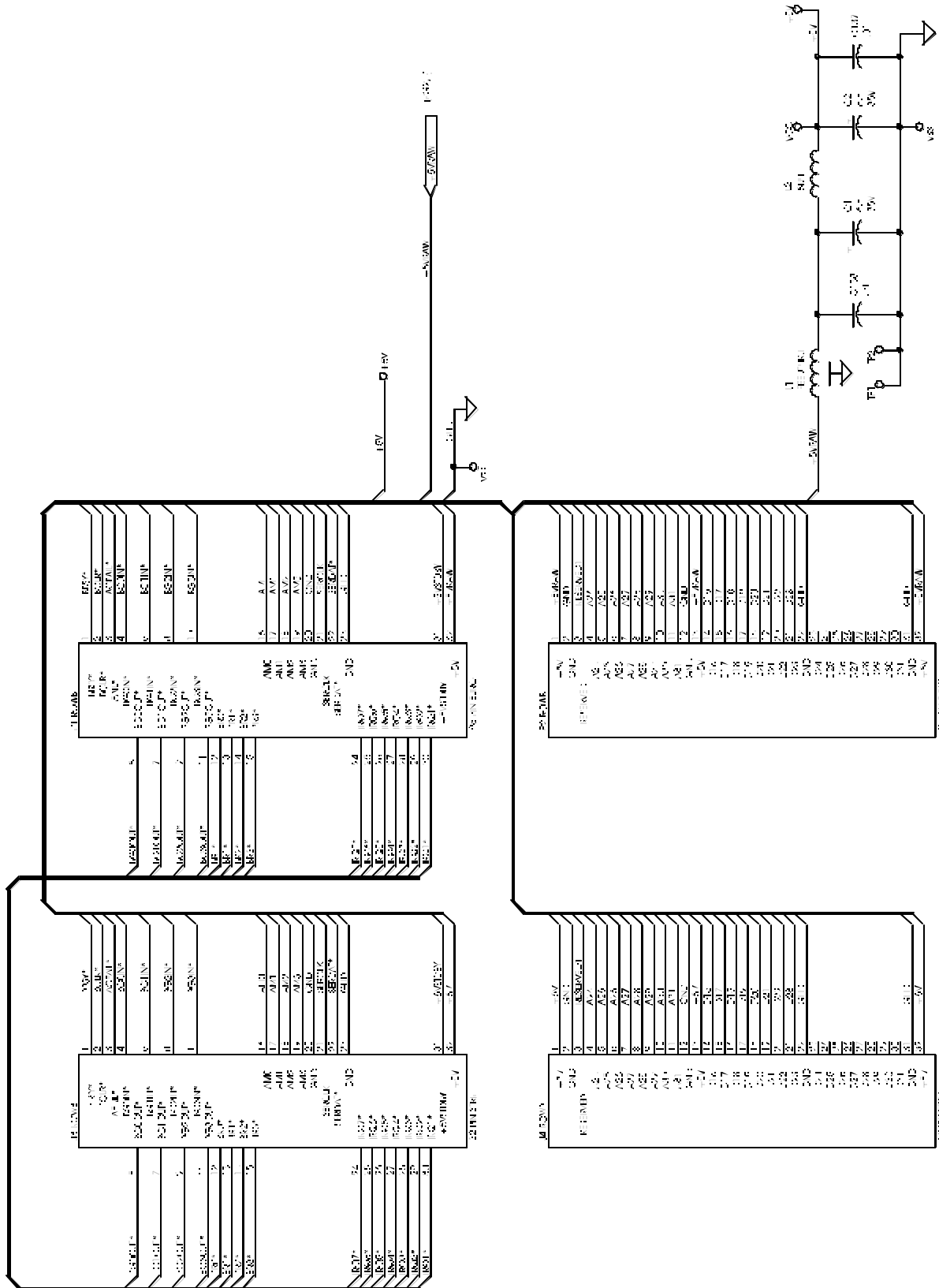
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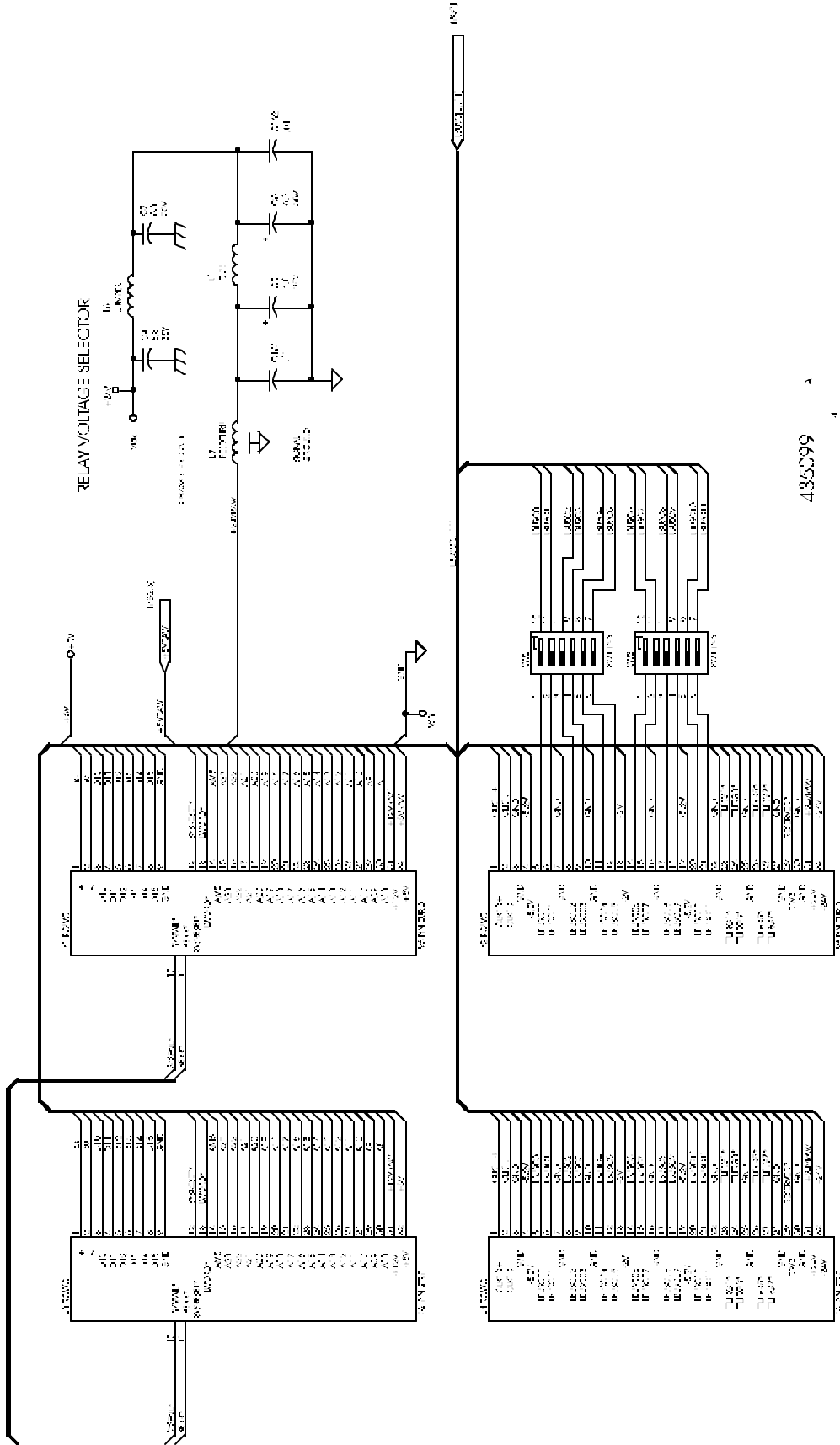
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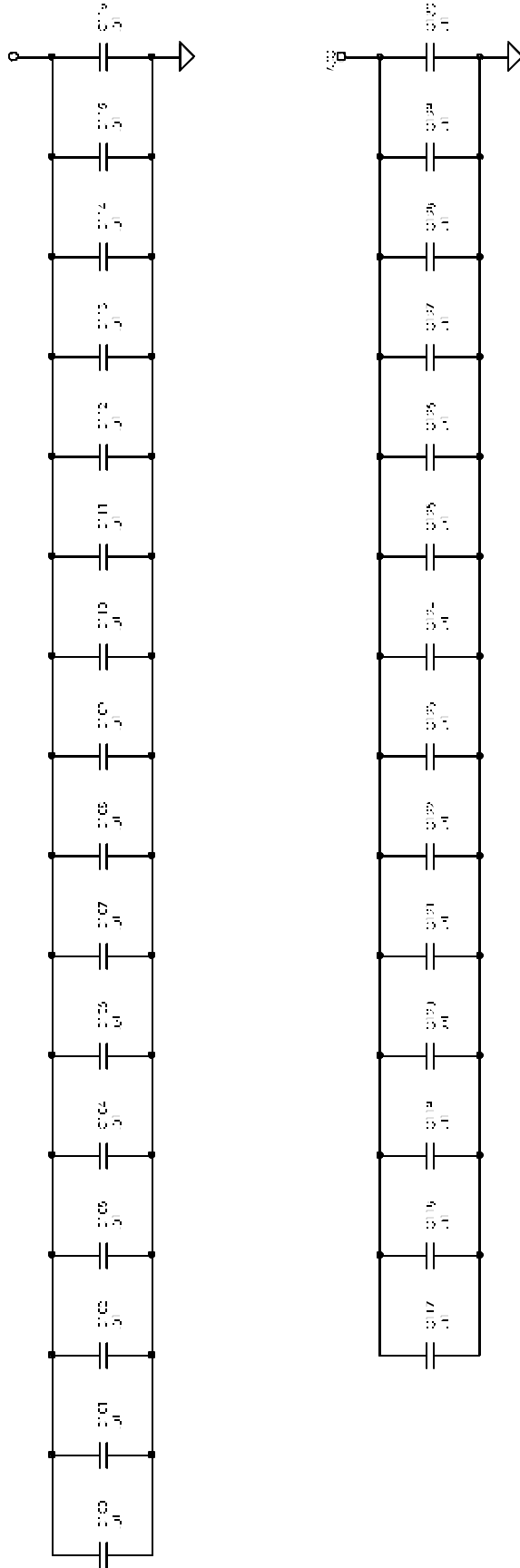


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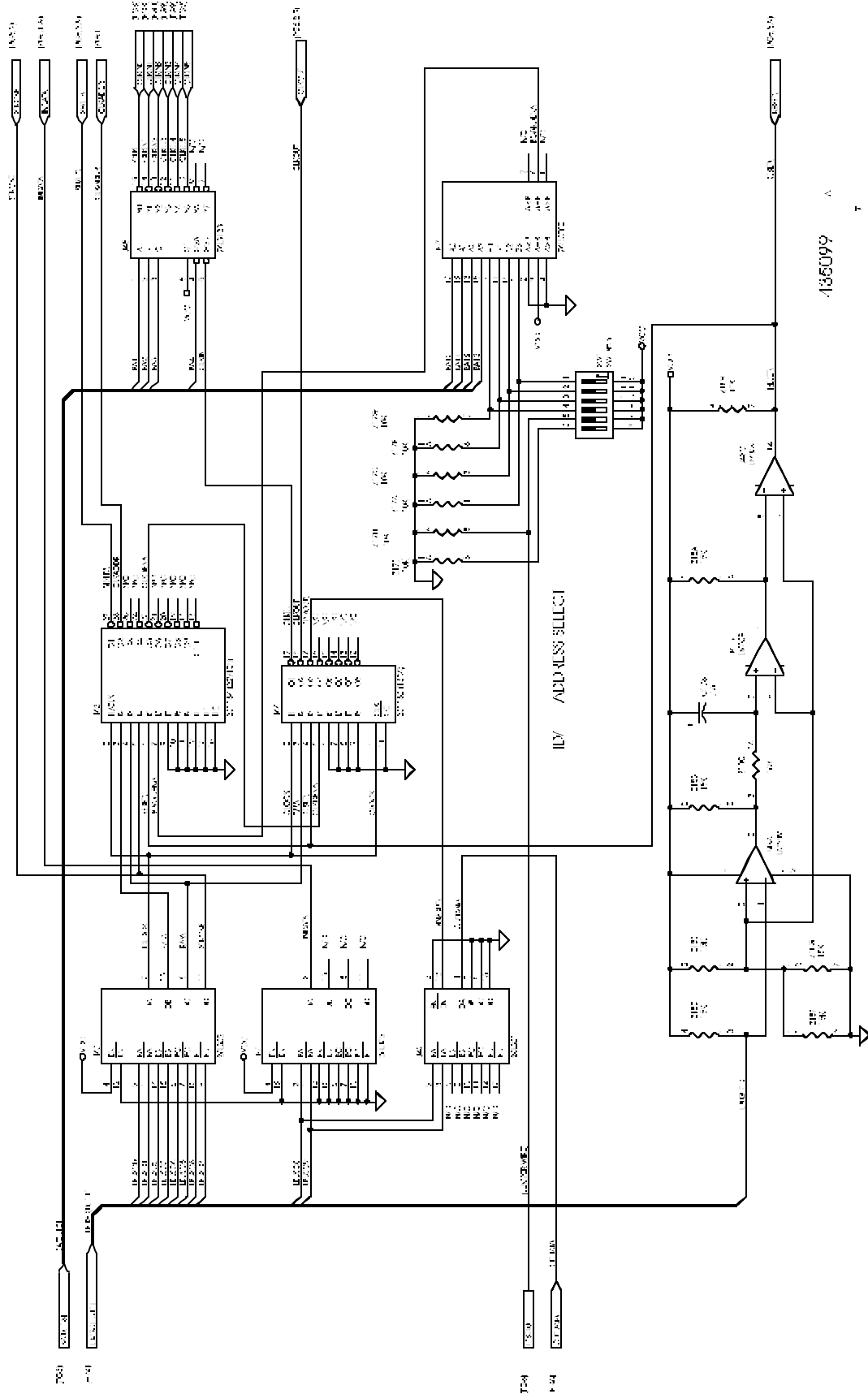


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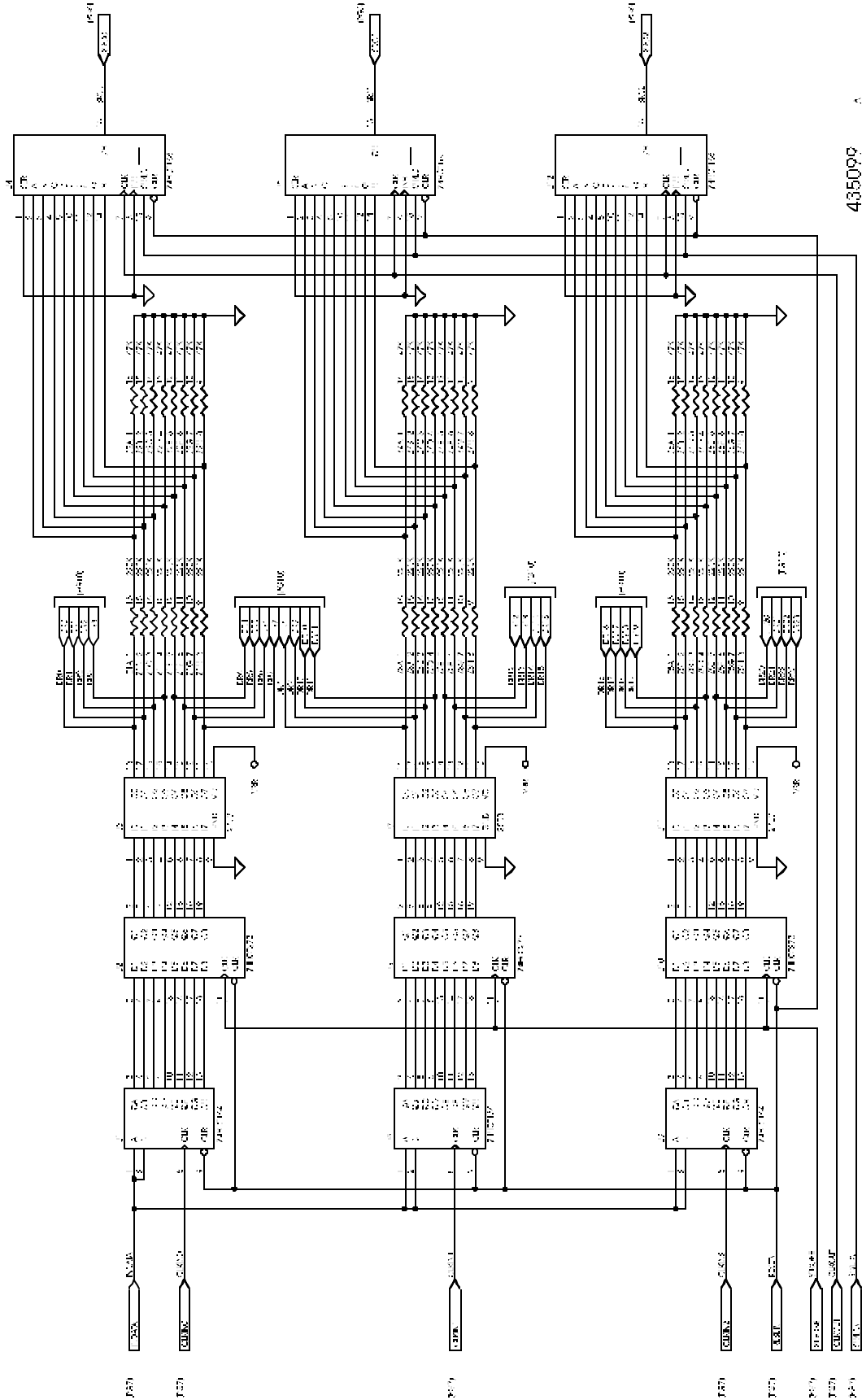
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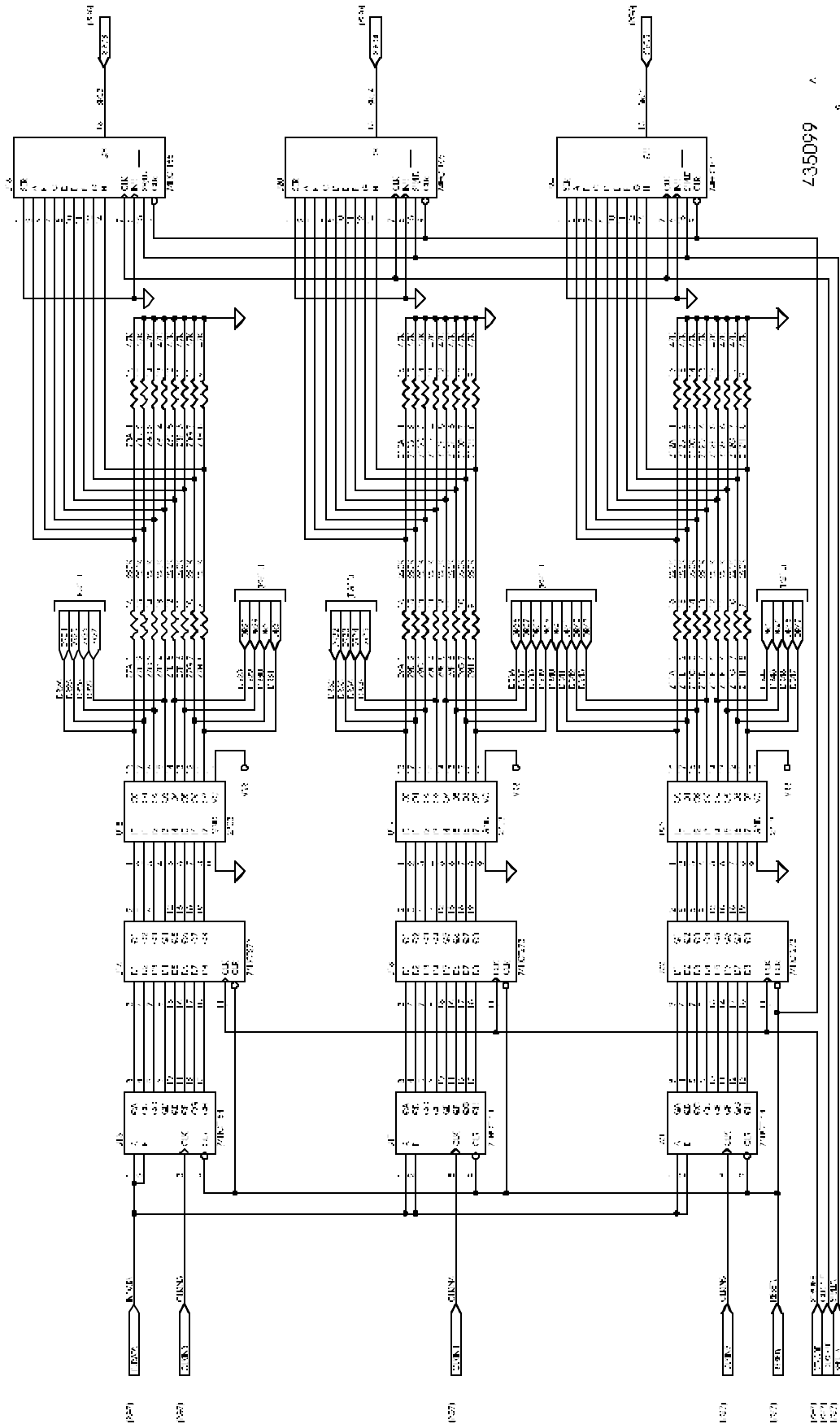


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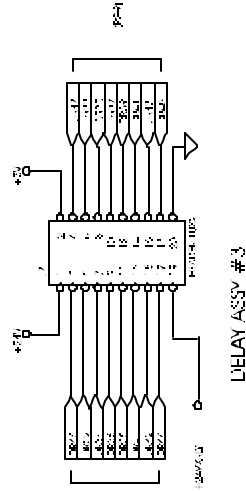
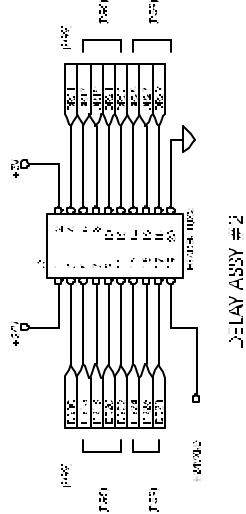
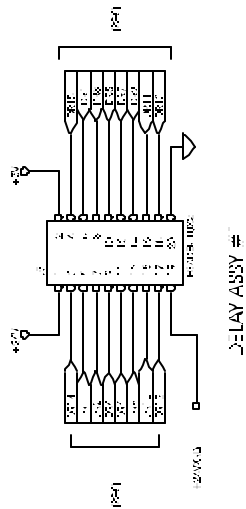
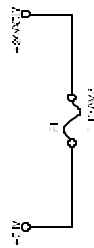


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Chapter 5

PARTS LIST

407512	Final Assy, 1260-58	5-3
407622	Shipping Kit, 1260-58	5-4
405128	PCB Assy, 1260-58	5-5
405099	PCB Assy, 4075 Relay Drive	5-6
	List of Suppliers	5-9

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407512- FINAL ASSY, 1260-58

REF DESIG	RACAL INST P/N	DESCRIPTION	FSC	MANUFACTURER'S P/N
(1)1	405099	PCB ASSY, 4075 RELAY DRIVE	21793	405099
(2)1	405128	PCB ASSY, 1260-58	21793	405128
(4)1	407622	SHIP KIT, 1260-58	21793	407622
(6)1	456442	PANEL, REAR	21793	456442
(7)1	456535-001	BRACKET, EJECTOR	21793	456535-001
(8)1	456535-002	BRACKET, EJECTOR	21793	456535-002
(10)1	456620	INSULATOR, FRONT PANEL, 1260-58	21793	456620
(11)1	456618	COVER, RIGHT, 1260-58	21793	456618
(12)1	456619	COVER, LEFT, 1260-58	21793	456619
(13)1	456540-001	PANEL, SIDE, 1260-58	21793	456540-001
(14)1	456540-002	PANEL, SIDE, 1260-58	21793	456540-002
(15)1	456543	PANEL, FRONT, 1260-58	21793	456543
(18)2	611023	KEY, POLARIZING CONNECTOR	06776	PK-3
(19)1	611264	HANDLE, EXTRACTOR, BOTTOM	62559	20817-327
(20)1	611265	HANDLE, EXTRACTOR, TOP	62559	20817-328
(21)0.5	611266	MOUNTING HARDWARE, HANDLE	62559	21100-745
(23)18	615543	SCREW, PFH, 4-40X.375	-	-
(25)2	616405	SCREW, PFH, M2.5 X 12	-	-
(26)16	616414	SCREW, PFH, M3X.5	-	-
(27)6	616416	SCREW, PFH, M3 X 8	-	-
(28)8	616480	SCREW, PFH, #4 X .375	-	-
(30)2	617168	WASHER, NON-METALLIC, FLAT,#4	86928	5610-55-1000
(32)A/R	920962	LOCTITE, 242, MED STR	05972	272
(33)1	921059	LABEL, CAUTION, STATIC	21793	921059
(34)1	921148-001	LABEL SET VXI	21793	921148-001
(35)1	921309	LABEL, VXI SWITCH ID	21793	921309

407622 - SHIP KIT, 1260-58

REF DESIG	RACAL INST P/N	DESCRIPTION	FSC	MANUFACTURER'S P/N
(1)2	455540	KEY, LOCKOUT, TTL, A/C	21793	455540
(2)2	455541	KEY, LOCKOUT, TTL, C	21793	455541
(3)2	455542	KEY, LOCKOUT, TTL, A	21793	455542
(4)3	615013	SCREW, PPF, 2-56 X .188		
(5)1	980673-049	MANUAL, 1260-58	21793	980673-049

405128 - PCB ASSY, 1260-58

REF DESIGN	RACAL INST P/N	DESCRIPTION	FSC	MANUFACTURER'S P/N
J1-J18	602284	CONNECTOR, COAX SMB, RECEPTACLE	74970	131-3701-801
J21	602129-020	CONNECTOR, CABLE, PLUG, DBL ROW, 20-PIN	52072	CA-20IDPSL-IT
K1-K16	310257	RF RELAY, ELECTRO/MECH, 1P2T, 24V	61529	RK1E-24V
(4)1	415128	PCB, 1260-58 (UNLOADED)	21793	415128
(7)A/R	500204	WIRE, TEFLON, SOLID, 28 GA, WHT	04946	1100-32-C-9
(8)A/R	500252	CABLE, FLAT, RIBBON, 20C, 28 GA	08261	843-191-2801-020
(10)1	601436	CONNECTOR, FLAT CABLE, 20-PIN	08261	842-812-2022-418
(16)6	610288	STANDOFF, SWAGE, 4-40X.187	06540	9532B-B-0440-3A
(17)3	610776	STANDOFF, SWAGE, 4-40X.250	06540	9533B-B-0440-3A
(18)9	611442	WASHER, FLAT, #10	86928	5710-287-20-P

405099 - PCB ASSY, 4075 RELAY DRIVE

REF DESIG	RACAL INST P/N	DESCRIPTION	FSC	MANUFACTURER'S P/N
C1	110126	CAP, TANTA, 6.8UF, 35V, 20 PERCENT	05397	T355F685MO35A5
C2	110126	CAP, TANTA, 6.8UF, 35V, 20 PERCENT	05397	T355F685MO35A5
C4-C7	110126	CAP, TANTA, 6.8UF, 35V, 20 PERCENT	05397	T355F685MO3SA5
C100-CI02	R-21-1801	CAP, CHIP, 10 NF	95275	VJ1206YI03MF
C103	110165	CAP, TANTA, .15 MF, 35V, 10PCT	05397	T355A1-54KO35AS
C104-CI30	R-21-1801	CAP, CHIP, 10 NF	95275	VJ1206YI03MF
C137	R-21-1801	CAP, CHIP, 10 NF	95275	VJ1206YI03MF
C138	R-21-1801	CAP, CHIP, 10 NF	95275	VJ1206YI03MF
C161	R-21-1801	CAP, CHIP, 10 NF	95275	VJ1206YI03MF
C162	R-21-1801	CAP, CHIP, 10 NF	95275	VJ1206YI03MF
F1	921421	FUSE, PO.TEMP., 1.1A, 30V, SMD	06090	SMD100
J3	601925	CONNECTOR, PCB,RECEPT, 3 ROW, 96P	52072	618008
J4	601925	CONNECTOR, PCB,RECEPT, 3 ROW, 96P	52072	618008
J5	602250	CONNECTOR, 2 ROW, 20 PIN	52072	CA-20HL-01F
J6	602250	CONNECTOR, 2 ROW, 20 PIN	52072	CA-20HL-01F
J7	602250	CONNECTOR, 2 ROW, 20 PIN	52072	CA-20HL-01F
L1	100164	CAP, FEED-THRU,BOOPF, 50V	0779	842448-2
L2	310193	CHOKE, SHIELDED, 5UH	91637	IH-5-5-10
LG	600245	JUMPER, INSULATED	52210	L-2007-1
L7	100164	CAP, FEED-THRU,80OPF, 50V	00779	842448-2
L8	310193	CHOKE, SHIELDED, 5UH	91637	IH-5-5-10
P1	601675-001	CONNECTOR, EUROCARD,96 PIN MOD.	21793	601675-001
P2	601675-001	CONNECTOR, EUROCARD,96 PIN MOD.	21793	601675-001
SW1	601969	SWITCH, DIP 6 POS, LOW PROFILE	65832	K406S
SW2	601969	SWITCH, DIP 6 POS, LOW PROFILE	65832	K406S
SW3	601969	SWITCH, DIP 6 POS, LOW PROFILE	65832	K406S
TP1	601197	POST, TEST, .025 SQ	00779	6-87022-6
TP2	601197	POST, TEST, .025 SQ	00779	6-87022-6
U1	231131	IC, DIGITAL, SHIFT REGISTER	18324	PC74HCT164D
U2	231130	IC, DIGITAL, FLIP FLOP	18324	PC74HC273
U3	231098	IC, SOIC TRANSISTOR	56289	ULN-2803LW
U4	231120	IC, 8-BIT, PARALLEL/SERIAL OUT S.R.	18324	74HCT166D
U5	231131	IC, DIGITAL, SHIFT REGISTER	18324	PC74HCT164D
U6	231130	IC, DIGITAL, FLIP FLOP	18324	PC74HC273
U7	231098	IC, SOIC TRANSISTOR	56289	ULN-2803LW

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U8	231120	IC, 8-BIT, PARALLEL/SERIAL OUT S.R.	18324	74HCT166D
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REF DESIG	RACAL INST P/N	DESCRIPTION	FSC	MANUFACTURER'S P/N
U9	231131	IC, DIGITAL, SHIFT REGISTER	18324	PC74HCT164D
U10	231130	IC, DIGITAL, FLIP FLOP	18324	PC74HC273
U11	231098	IC, SOIC TRANSISTOR	56289	ULN-2803LW
U12	231120	IC, 8-BIT, PARALLEL/SERIAL OUT S.R.	18324	74HCT166D
U13	231131	IC, DIGITAL, SHIFT REGISTER	18324	PC74HCT164D
U14	231130	IC, DIGITAL, FLIP FLOP	18324	PC74HC273
U15	231098	IC, SOIC TRANSISTOR	56289	ULN-2803LW
U16	231120	IC, 8-BIT, PARALLEL/SERIAL OUT S.R.	18324	74HCT166D
U17	231131	IC, DIGITAL, SHIFT REGISTER	18324	PC74HCT164D
U18	231130	IC, DIGITAL, FLIP FLOP	18324	PC74HC273
U19	231098	IC, SOIC TRANSISTOR	56289	ULN-2803LW
U20	231120	IC, 8-BIT, PARALLEL/SERIAL OUT S.R.	18324	74HCT166D
U21	231131	IC, DIGITAL, SHIFT REGISTER	18324	PC74HCT164D
U22	231130	IC, DIGITAL, FLIP FLOP	18324	PC74HC273
U23	231098	IC, SOIC TRANSISTOR	56289	ULN-2803LW
U24	231120	IC, 8-BIT, PARALLEL/SERIAL OUT S.R.	18324	74HCT166D
U33	231131	IC, DIGITAL, SHIFT REGISTER	18324	PC74HCT164D
U34	231131	IC, DIGITAL, SHIFT REGISTER	18324	PC74HCT164D
U35	231120	IC, 8-BIT, PARALLEL/SERIAL OUT S.R.	18324	74HCT166D
U36	231152-001	IC, DIGITAL 16L8, PAL	21793	231152-001
U37	231147	IC, MULTIPLEXER	04713	74HC253D
U39	231147	IC, MULTIPLEXER	04713	74HC253D
U40	231096	IC, QUAD DIFF RECEIVER	01295	AM26LS32ACD
U41	231096	IC, QUAD DIFF RECEIVER	01295	AM26LS32ACD
U42	231125	IC, DIGITAL, LINE DRIVER	27014	DS26LS31MN
U43	231154	IC, PROGRAMMED PLA	21793	231154
U44	231153	IC, PROGRAMMED PLA	21793	231153
U45	231094	IC, DEMUX DECODER	18324	N74LS138D
U47	231135	IC, DIGITAL, 4-BIT COMPARATOR	18324	PC74HCT85D
U48	231093	IC, QUAD COMPARATOR	04713	LM339D
Z1	080119	RES NETWORK, 220K	91637	SOMC-1603
Z2	080117	RES NETWORK, 16P8R, 47K	73138	628-AL-47
Z3	080119	RES NETWORK, 220K	91637	SOMC-1603

Z4	080117	RES NETWORK,16P8R, 47K	73138	628-AL-47
Z5	080119	RES NETWORK, 220K	91637	SOMC-1603
Z6	080117	RES NETWORK, 16P8R,47K	73138	628-AL-47

REF DESIG	RACAL INST P/N	DESCRIPTION	FSC	MANUFACTURER'S P/N
Z7	080119	RES NETWORK, 220K	91637	SOMC-1603
Z8	080117	RES NETWORK,16P8R,47K	73138	628-AL-47
Z9	080119	RES NETWORK, 220K	91637	SOMC-1603
Z10	080117	RES NETWORK, 16P8R, 47K	73138	628-AL-47
Z11	080119	RES NETWORK, 220K	91637	SOMC-1603
Z12	080117	RES NETWORK, 16P8R, 47K	73138	628-AL-47
Z17	080120	RES NETWORK, 10K	11236	767-I6IRI
Z18	080114	RES NETWORK,16P8R, 15K	73138	628-AL-15
(43)1	401951	PCB ASSY., LBUS JUMPER	2 1793	401951
(44)1	401951-003	PCB ASSY., P3 JUMPER	217 93	401951 - 00
(45)1	415099	PCB, 4075 RELAY DRIVE (UNLOADED)	21793	41509 9
(49)A/R	500274-555	WIRE, TEFLON STRANDED, 26GA, GRN	92194	5853-GRN
(55)2	611367	STANDOFF, ROUND SWAGE, M3X0.5X4.3	06540	21003B-B-
(56)2	611405	NUT, PRESS, M3	46384	KFS2-M3
(76)A/R	920450	ADHESIVE/SEALANT	01139	RTV-108

List of Suppliers

FSC	SUPPLIER	FSC	SUPPLIER
00779	AMP, INC. HARRISBURG, PA	65832	AMERICAN RESEARCH & ENGINEERING ELGIN, IL
01139	GENERAL ELECTRIC CO. (SILICONE PRODUCTS) WATERFORD, NY	70770	ACCUTITE FASTENERS SIGNAL HILL, CA
01295	TEXAS INSTRUMENTS, INC. DALLAS, TX	73138	BECKMAN INSTRUMENTS FULLERTON, CA
04713	MOTOROLA INC. SEMICONDUCTOR PRODUCTS DIV. PHOENIX, AZ	86928	SEASTROM MFG. CO. GLENDALE, CA
04946	STANDARD WIRE & CABLE RANCHO DOMINGUEZ, CA	91637	DALE ELECTRONICS, INC. COLUMBUS, NE
05397	UNION CARBIDE CORP. (MATERIALS SYSTEMS DIV.) CLEVELAND, OH	92194	ALPHA WIRE ELIZABETH, NJ
05972	LOCTITE CORP. HARTFORD, CT	9S27S	VITRAMON, INC. BRIDGEPORT, CT
06090	RACHEM CORP. MENLO PARK, CA		
06540	AMATOM ELECTRONIC HARDWARE NEW ROCHELLE, NY		
06776	ROBINSON NUGENT, INC. NEW ALBANY, IN		
08261	SPECTRA-STRIP CORP. GARDEN GROVE, CA		
11236	CTS OF BERNE, INC. BERN, IN		
18324	SIGNETICS, INC. SUNNYVALE, CA		
19738	AVDEL-CHOBERT PARSIPPANY, NJ		
21793	RACAL INSTRUMENTS, INC. IRVINE, CA		
27014	NATIONAL SEMI-CONDUCTOR CORP. SANTA CLARA, CA		
46384	PENN ENG. & MFG. CORP. DOYLESTOWN, PA		
52072	CIRCUIT ASSY. CORP. COSTA MESA, CA		
52210	GETTING ENGRG. & MFG. SPRING MILLS, PA		
56289	SPAGUE ELECTRIC CO. N. ADAMS, MA		
61529	AROMAT CORPORAT70N NEW		

	PROVIDENCE, NJ
62559	SCHROFF, INC. WARWICK, RI

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Chapter 6

OPTIONAL HARNESS ASSEMBLY

The following harness assemblies are used to connect Racal Instruments Model 1260-58 to Freedom Series Test Receiver Interfaces.

Each harness documentation consists of an assembly drawing, parts list, system wire list and wire list.

407550	TTI Testron, Inc. Interface Harness (TTI Receiver must be above chassis)
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For more information on Racal Instruments complete line of Test Receivers Interface solution, contact your Sales Representative.

PARTS LIST

#	Component	Description	U/M	Qty Reqd	Ref
1	407263-001	CABLE ASSY, COAX/SMB, TTI	EA	36.00000	
2	610777	TIE-CA-LKG-. 062-. 750	EA	.00001	
4	GRP-110-3/4	TBGWQV-POY. 500 ID-BLACK	FT	.00001	
5	M23053/5-110-4	TBGSRK-POF1 . 00 ID-YELLQW	FT	.00001	
6	500202	TBGSRK-POF1. 00 ID-CLEAR	FT	.00001	
7	M23053/4-205-0	TBGSRK-POF. 950 ID-BLACK	FT	.00001	
8	M23053/5-105-4	TBGSRK-POF. 187 ID-YELLQW	FT	.00001	
9	500056	TBGSRK-POF. 187 ID-CLEAR	FT	.00001	

RACAL Instruments, Inc., 4 Goodyear St. Irvine CA 92718				
DOCUMENT TITLE	SIZE	CODE NO.	DOCUMENT NO.	REV
HARNESS ASSEMBLY, 1260-58, TTI	A	21793	407550	A
	DRN	SHEET 1 of 4		

ENGINEERING WIRE LIST

WIRE	FROM	TO	TYPE	PART	WIRE LEN	REFERENCE
	BLK AAx PN 01 (J100)	Uxx-SLOT yy (CH 00)	CABLE	407550		SYSTEM WIRE LIST
	BLK AAx PN 02 (J101)	Uxx-SLOT yy (CH 01)	CABLE	407550		
	BLK AAx PN 03 (J102)	Uxx-SLOT yy (CH 02)	CABLE	407550		
	BLK AAx PN 04 (J103)	Uxx-SLOT yy (CH 03)	CABLE	407550		
	BLK AAx PN 05 (J104)	Uxx-SLOT yy (CH 04)	CABLE	407550		
	BLK AAx PN 06 (J105)	Uxx-SLOT yy (CH 05)	CABLE	407550		
	BLK AAx PN 07 (J106)	Uxx-SLOT yy (CH 06)	CABLE	407550		
	BLK AAx PN 08 (J107)	Uxx-SLOT yy (CH 07)	CABLE	407550		
	BLK AAx PN 09 (J108)	Uxx-SLOT yy (COM 0)	CABLE	407550		
	BLK AAx PN 10 (J109)	Uxx-SLOT yy (CH 10)	CABLE	407550		
	BLK AAx PN 11 (J110)	Uxx-SLOT yy (CH 11)	CABLE	407550		
	BLK AAx PN 12 (J111)	Uxx-SLOT yy (CH 12)	CABLE	407550		
	BLK AAx PN 13 (J112)	Uxx-SLOT yy (CH 13)	CABLE	407550		
	BLK AAx PN 14 (J113)	Uxx-SLOT yy (CH 14)	CABLE	407550		
	BLK AAx PN 15 (J114)	Uxx-SLOT yy (CH 15)	CABLE	407550		
	BLK AAx PN 16 (J115)	Uxx-SLOT yy (CH 16)	CABLE	407550		
	BLK AAx PN 17 (J116)	Uxx-SLOT yy (CH 17)	CABLE	407550		
	BLK AAx PN 18 (J117)	Uxx-SLOT yy (COM 1)	CABLE	407550		
	BLK AAx PN 19 (J118)	Uxx-SLOT yy (CH 20)	CABLE	407550		
	BLK AAx PN 20 (J119)	Uxx-SLOT yy (CH 21)	CABLE	407550		
	BLK AAx PN 21 (J120)	Uxx-SLOT yy (CH 22)	CABLE	407550		
	BLK AAx PN 22 (J121)	Uxx-SLOT yy (CH 23)	CABLE	407550		
	BLK AAx PN 23 (J122)	Uxx-SLOT yy (CH 24)	CABLE	407550		
	BLK AAx PN 24 (J123)	Uxx-SLOT yy (CH 25)	CABLE	407550		
	BLK AAx PN 25 (J124)	Uxx-SLOT yy (CH 26)	CABLE	407550		

RACAL Instruments, Inc., 4 Goodyear St. Irvine CA 92718

DOCUMENT TITLE	SIZE	CODE NO.	DOCUMENT NO.	REV
HARNESS ASSEMBLY, 1260-58, TTI	A	21793	407550	A
	DRN	SHEET 2 of 4		

ENGINEERING WIRE LIST

WIRE	FROM	TO	TYPE	PART #	WIRE LEN	REFERENCE
	BLK AAx PN 26 (J125)	Uxx-SLOT yy (CH 27)	CABLE	407550		
	BLK AAx PN 27 (J126)	Uxx-SLOT yy (COM 2)	CABLE	407550		
	BLK AAx PN 28 (J127)	Uxx-SLOT yy (CH 30)	CABLE	407550		
	BLK AAx PN 29 (J128)	Uxx-SLOT yy (CH 31)	CABLE	407550		
	BLK AAx PN 30 (J129)	Uxx-SLOT yy (CH 32)	CABLE	407550		
	BLK AAx PN 31 (J130)	Uxx-SLOT yy (CH 33)	CABLE	407550		
	BLK AAx PN 32 (J131)	Uxx-SLOT yy (CH 34~)	CABLE	407550		
	BLK AAx PN 33 (J132)	Uxx-SLOT yy (CH 35)	CABLE	407550		
	BLK AAx PN 34 (J133)	Uxx-SLOT yy (CH 36)	CABLE	407550		
	BLK AAx PN 35 (J134)	Uxx-SLOT yy (CH 37)	CABLE	407550		
	BLK AAx PN 36 (J135)	Uxx-SLOT yy (COM 3)	CABLE	407550		

This system wirelist serves as a template for incorporating this harness assembly into the overall system wirelist. it does not in any way affect the fabrication of this harness assembly.

RACAL Instruments, Inc., 4 Goodyear St. Irvine CA 92718				
DOCUMENT TITLE	SIZE	CODE NO.	DOCUMENT NO.	REV
HARNESS ASSEMBLY, 1260-58, TTI	A	21793	407550	A
	DRN	SHEET 3 of 4		

ENGINEERING WIRE LIST

WIRE	FROM	TO	TYPE	PART #	WIRE LEN	REFERENCE
1	J100	CH 00	COAX	407263-001	40"	CH 00
2	J101	CH 01	COAX	407263-001	40"	CH 01
3	J102	CH 02	COAX	407263-001	40"	CH 02
4	J103	CH 03	COAX	407263-001	40"	CH 03
5	J104	CH 04	COAX	407263-001	40"	CH 04
6	J105	CH 05	COAX	407263-001	40"	CH 05
7	J106	CH 06	COAX	407263-001	40"	CH 06
8	J107	CH 07	COAX	407263-001	40"	CH 07
9	J108	COM 0	COAX	407263-001	40"	COM 0
10	J109	CH 10	COAX	407263-001	40"	CH 10
11	J110	CH 11	COAX	407263-001	40"	CH 11
12	J111	CH 12	COAX	407263-001	40"	CH 12
13	J112	CH 13	COAX	407263-001	40"	CH 13
14	J113	CH 14	COAX	407263-001	40"	CH 14
15	J114	CH 15	COAX	407263-001	40"	CH 15
16	J115	CH 16	COAX	407263-001	40"	CH 16
17	J116	CH 17	COAX	407263-001	40"	CH 17
18	J117	COM 1	COAX	407263-001	40"	COM 1
19	J118	CH 20	COAX	407263-001	40"	CH 20
20	J119	CH 21	COAX	407263-001	40"	CH 21
21	J120	CH 22	COAX	407263-001	40"	CH 22
22	J121	CH 23	COAX	407263-001	40"	CH 23
23	J122	CH 24	COAX	407263-001	40"	CH 24
24	J123	CH 25	COAX	407263-001	40"	CH 25
25	J124	CH 26	COAX	407263-001	40"	CH 26
26	J125	CH 27	COAX	407263-001	40"	CH 27
27	J126	COM 2	COAX	407263-001	40"	COM 2
28	J127	CH 30	COAX	407263-001	40"	CH 30
29	J128	CH 31	COAX	407263-001	40"	CH 31
30	J129	CH 32	COAX	407263-001	40"	CH 32
31	J130	CH 33	COAX	407263-001	40"	CH 33
32	J131	CH 34	COAX	407263-001	40"	CH 34
33	J132	CH 35	COAX	407263-001	40"	CH 35
34	J133	CH 36	COAX	407263-001	40"	CH 36
35	J134	CH 37	COAX	407263-001	40"	CH 37
36	J135	COM 3	COAX	407263-001	40"	COM 3

RACAL Instruments, Inc., 4 Goodyear St. Irvine CA 92718

DOCUMENT TITLE	SIZE	CODE NO.	DOCUMENT NO.	REV
HARNESS ASSEMBLY, 1260-58, TTI	A	21793	407550	A
DRN			SHEET 4 of 4	

Chapter 7

PRODUCT SUPPORT

Support

Racal Instruments has a complete Service and Parts Department. If you need technical assistance or should it be necessary to return your product for repair or calibration, call 1-800-722-3262 or 1-949-859-8999 or your closest service facility. If parts are required to repair the product at your facility, call 1-949-859-8999 and ask for the Parts Department.

When sending your instrument in for repair, complete the form in the back of this manual.

For worldwide support and the office closes to your facility, refer to the Support Offices section on the following page.

Reshipment Instructions

Use the original packing material when returning the equipment to Racal Instruments for calibration or servicing. The original shipping crate and associated packaging material will provide the necessary protection for safe reshipment.

If the original packing material is unavailable, contact Racal Instruments Customer Service for information.

Support Offices

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Racal Systems Elettronica s.r.l.

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