1260 VXI
SWITCHING CARD

1260-59
HIGH FREQUENCY
SWITCH MODULE

PUBLICATION NO. 980673-045

RACAL INSTRUMENTS

Racal Instruments, Inc.
4 Goodyear St., Irvine, CA 92618-2002
Tel: (800) 722-3262, FAX: (949) 859-7309

Racal Instruments, Ltd.
480 Bath Road, Slough, Berkshire, SL1 6BE, United Kingdom
Tel: +44 (0) 8706 080134; FAX: +44 (0) 1753 791290

Racal Systems Electronique S.A.
18 Avenue Dutartre, 78150 LeChesnay, France
Tel: +33 (1) 3923 2222; FAX: +33 (1) 3923 2225

Racal Systems Elettronica s.r.l.
Strada 2-Palazzo C4, 20090 Milanofiori Assago, Milan, Italy
Tel: +39 (02) 5750 1796; FAX +39 (02) 5750 1828

Racal Elektronik System GmbH.
Frankenforster Strasse 21, 51427 Bergisch Gladbach, Germany
Tel:+49 2204 92220; FAX: +49 2204 21491

Racal Australia Pty. Ltd.
3 Powells Road, Brookvale, NSW 2100, Australia
Tel: +61 (2) 9936 7000, FAX: +61 (2) 9936 7036

Racal Electronics Pte. Ltd.
26 Ayer Rajah Crescent, 04-06/07 Ayer Rajah Industrial Estate, Singapore 0513.
Tel: +65 7792200, FAX: +65 7785400

Racal Instruments, Ltd.
Unit 5, 25F., Mega Trade Center, No 1, Mei Wan Road, Tsuen Wan, Hong Kong, PRC
Tel: +852 2405 5500, FAX: +852 2416 4335

http://www.racalinst.com

RACAL

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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:

E-Mail:	Helpdesk@racalinstruments.com	
Telephone:	+1 800 722 3262	(USA)
	+44(0) 8706 080134	(UK)
	+852 2405 5500	(Hong Kong)
Fax:	+1 949 859 7309	(USA)
	+44(0) 1628 662017	(UK)
	+852 2416 4335	(Hong Kong)

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@racalinstruments.com.

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FOR YOUR SAFETY

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

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 instrument is configured to operate on the voltage at the power source. See Installation Section.

2. Ensure the proper fuse is in place for the power source to operate.

3. 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 that 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 that 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, 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 that are available for the 1260-01T.

Control Information for the 1260-59

The following information describes the control-register-to-relay-channel mapping for a 1260-59 Relay Module. This information may be used to control a 1260-59 when using a 1260-01T in the register-based mode of operation.

A channel within each 1x4 MUX may be selected by programming a single Control Register. A different 2-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 3 channels of the MUX. A value of 0 may be written to the Control Register to open ALL 4 channels of the MUX.

Each Control Register controls 2 of the 1x4 MUXes. Thus, the present value of the Control Register must be maintained when updating the bits for the selected MUX. If the present value of the other control bits is NOT maintained, a different MUX will be affected when the desired MUX is updated.

In order to ensure that no unwanted side effects occur, the following procedure should be used to maintain the present value of the Control Register:

- Read the present Control Register values
- Invert the Control Register value (the hardware inverts the present value on reading)
- AND the present data with an AND mask from the table below
- OR the present data with the OR mask from the table below.

For example, from the table below, to select channel 43 (MUX #4, channel 3 to COM), we must write to Control Register #3. The Control Register #3 AND mask is 03 (hexadecimal), while the Control Register #3 OR mask is 20 (hexadecimal). Therefore, to select channel 43, perform the following sequence of operations:

- Read the present value of Control Register #3
- Perform a 1's complement (invert) of each of the bits of this register
- AND the value with 03 hexadecimal, leaving the least significant bits unchanged
- OR the value with 20 hexadecimal, selecting channel 3 for this MUX
- Write the value just created back to Control Register #3

In 'C', this can be represented (using ViIn8() and ViOut8() to write) as follows:

```
ViAddr control_reg_3;
ViUInt8 creg0_val;
ViStatus error;
ViSession hdl;          /* this is from the viOpen() function */

control_reg_3 = (module address of card x 0x400) + 7;

error = ViIn8(hdl, control_reg_0, &creg0_val);
creg0_val = ~ creg0_val;      /* invert the data read back */
creg0_val &= 0x03;            /* AND with 03 hex */
creg0_val |= 0x20;            /* OR with  20 hex */
error = viOut8(hdl, control_reg_0, creg0_val);
```

Note that for each MUX, 1 of the 4 channels will always be closed.

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. The table shows holds a single, showing the Control Register, the AND mask, and the OR mask to use to select the desired MUX relay closures.

Channel	Control Register	AND Mask (hex)	OR Mask (hex)
00	4	30	00
01	4	30	01
02	4	30	03
03	4	30	02
10	4	03	00
11	4	03	10
12	4	03	30
13	4	03	20
20	5	30	00
21	5	30	01
22	5	30	03
23	5	30	02
30	5	03	00
31	5	03	10
32	5	03	30
33	5	03	20
40	3	03	00
41	3	03	10
42	3	03	30
43	3	03	20
50	3	30	00
51	3	30	01
52	3	30	03
53	3	30	02
60	2	03	00
61	2	03	10
62	2	03	30
63	2	03	20
70	2	30	00
71	2	30	01
72	2	30	03
73	2	30	02

Table of Contents

List of Figures

Chapter 1
INTRODUCTION

The 1260-59 High Frequency Switch consists of either four single pole four throw RF switches (the 1260-59A), or eight single pole four throw RF switches (the 1260-59B). Each of the switches is independently controlled.

Module Specification

Maximum Channel Power	10 Watts RF
Maximum Channel Voltage	24 VDC
Maximum Channel Current	10 mA DC
-3 dB Bandwidth (50Ω)	>4 GHz Min, 5 GHz Typ
Insertion Loss (50Ω)	< 1 dB @ 1 GHz < 1.75 dB @ 2 GHz < 2.25 dB @ 3 GHz < 3 dB @ 4 GHz
Crosstalk (50Ω) (group to group)	< -55 dB DC to 1GHz min < -45 dB 1 to 2 GHz min < -40 dB 2 to 3 GHz min < -30 dB 3 to 4 GHz min
Isolation (50Ω) (within a group)	> 40 dB DC to 1 GHz min > 35 dB 1 to 2 GHz min > 30 dB 2 to 3 GHz min > 40 dB 2 to 3 GHz typ > 25 dB 3 to 4 GHz min
VSWR	< 1.05 DC to 100 MHz < 1.25 0.1 to 1 GHz < 2.0 1 GHz to 3 GHz < 1.5 Typ 1 to 3 GHz
Path Resistance	< 0.5Ω

Thermal EMF	< 25µV
DC Isolation Resistance	> 100 Megohms
Capacitance, Open Channel, Input to Output	< 1 pF
Capacitance, Open Channel, Input to Ground	< 5 pF
Capacitance, Open Channel, Output to Ground	<5 pF
Temperature Operating	0^{o}C to +55^{o}C
Temperature Non-Operating	-40^{o}C to +71^{o}C
Relative Humidity	95 +/-5% RH Non-Condensing <30^{o}C 75 +/-5% RH > 30^{o}C 45 +/-5% RH > 40^{o}C
Altitude Operating	10,000 ft
Altitude Non-Operating	15,000 ft
Shock, functional	30g, 11 msec, ½ sine wave
Vibration	0.013 inch double amplitude, 10-55Hz
Bench Handling	4 inch/45^{o}

Cooling:

With Option 01	
Airflow	3.0 liters/sec
Backpressure	0.2mm H_20
Without Option 01	
Airflow	2.0 liters/sec
Backpressure	0.05mm H_20

Peak Current:

I_{pm} +5V	
With Option 01	2.8A
Without Option 01	0.4A
I_{pm} +24V	15mA per energized relay

Dynamic Current:

I_{dm} +5V

With Option 01	0.225A
Without Option 01	0.075A
I_{dm} +24V	0A

Weight

Without Option 01	3.44lb (1.56kg)
With Option 01	3.74lb (1.70kg)

MTBF

1260-59A	>58,445 Hours with relays
1260-59B	>31,814 Hours

Relay Life

(Mechanical)	>5 million mechanical operations
(Electrical)	>10,000 operations at 1.2 GHz, 10 Watts

Minimum Option 01 Firmware Revision 29.1

Ordering Information

Listed below are part numbers for both the 1260-59 Switch Module and available accessories.

Item	Description	Part #
1260-59A	1260-59A High Freq. Coaxial Switch	407513-001
1260-59B	1260-59B High Freq. Coaxial Switch	407513-002
	Additional Manual	980673-045

Terminations

50Ω Termination (Low Cost) Pasternak Enterprises P/N PE6044
50Ω Termination (Precision) Huber-Suhner P/N 65SMB-50-0-31

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@racalinst.com

Chapter 2
INSTALLATION

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 and reported.
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 material when returning the switching module to Racal Instruments for 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 1260-59 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 1260-59 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. Switches SW1-5 and SW1-6 must be configured in the OFF state.

Chapter 3
MODULE OPERATION

Module Configuration

The 1260-59 consists of either four or eight single pole, four throw coaxial RF switches.

Reference **Figure 3-1**, 1260-59 Module Configuration Block Diagram.

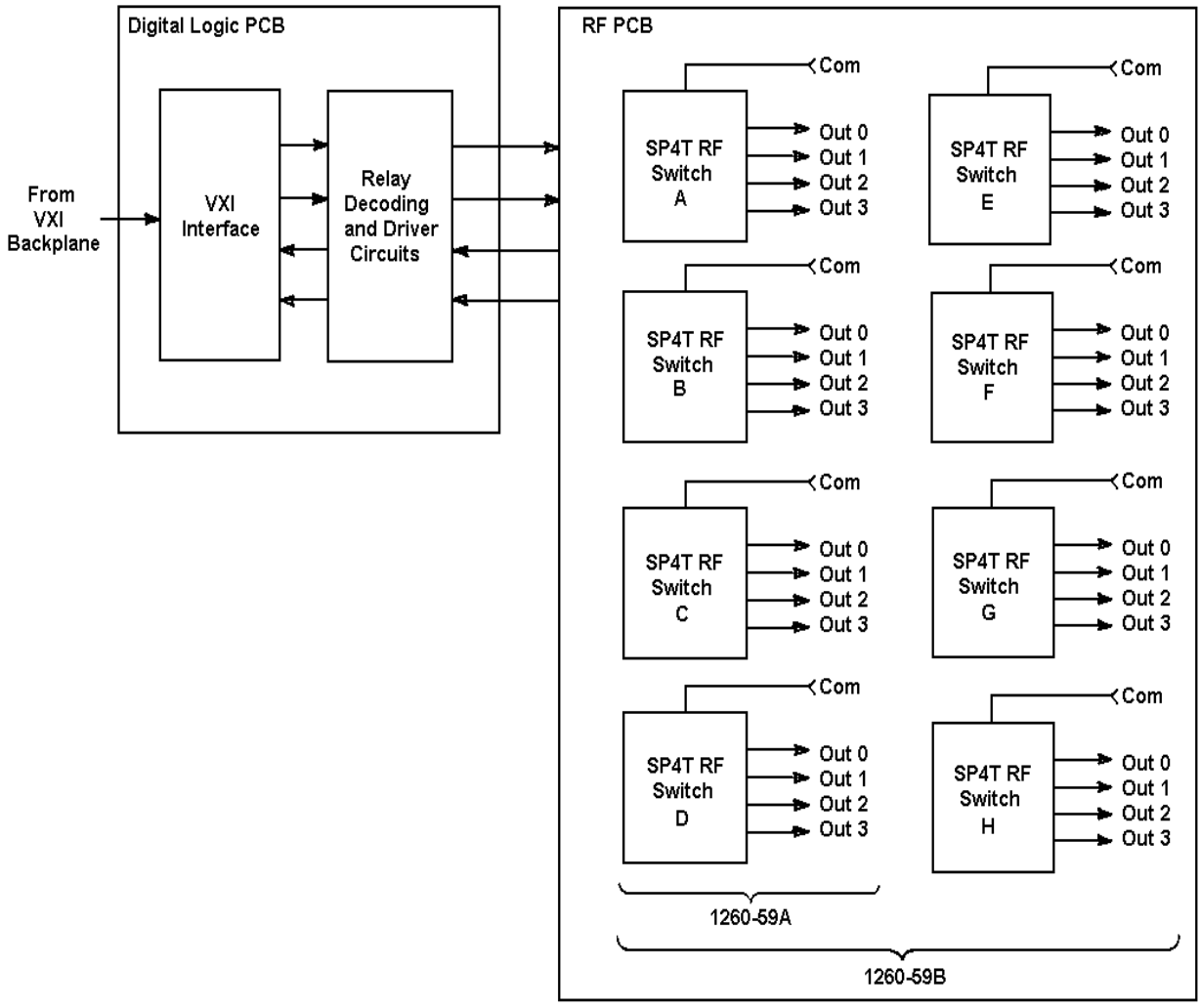

Figure 3-1, 1260-59 Block Diagram

Front Panel Connectors

The 1260-59 front panel connectors are divided into eight groups of four connectors, each representing one SP4T switch. Within each group, the connectors are labeled COM, A0 through A3, COM, B0 through B3, etc. The connectors are SMB type. See **Figure 3-2.**

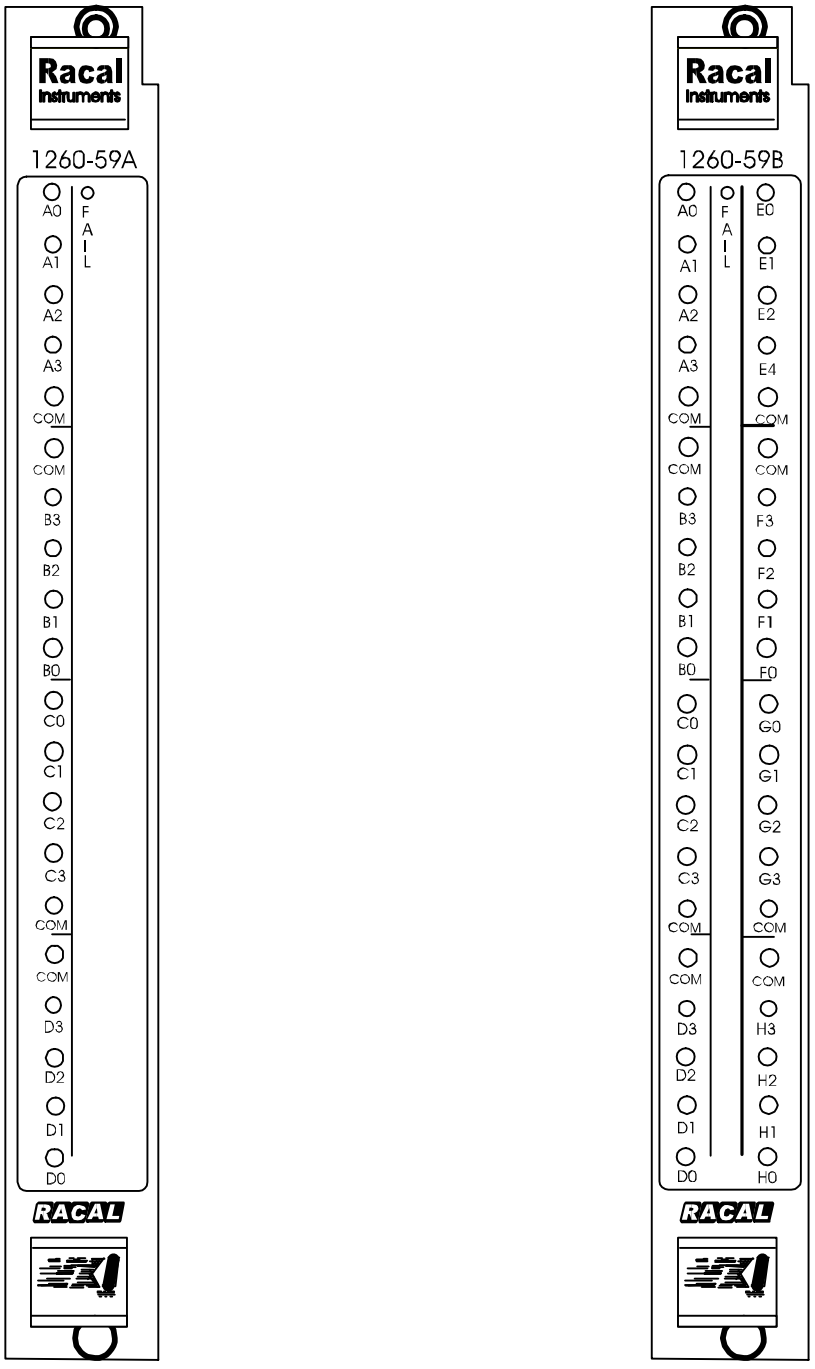

Figure 3-2, Front Panel Connectors

Mating Connectors

Mating connectors for the 1260-59 are available from many sources. Specific part numbers for mating connectors will depend upon cable type, type of attachment, and tooling to be used.

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, Part Number 980673-999, for more information.

Module Specific Syntax

Compatibility

The 1260-59 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 NOT supported, since each MUX can connect only one input to the COM output.

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 1260-59 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 (1260-59A)
0 to 7 (1260-59B)

<channel> ::= 0 to 3

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 1260-59, <channel> designators 0-3 connect the COM to one of the four inputs.

Examples of commands using the <relay descriptors> are shown below. All examples use the module address of 12 to select the 1260-59 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 channel B0.

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 produces 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 1260-59 implements 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 channel “03”. Channels “00”, “01”, and “02” will not have been 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 1260-59 is one of the following, depending on the module type:

```
XXX. 1260-59A 4 1x4 3 GHZ SWITCH MODULE
                    or
XXX. 1260-59B 8 1x4 3 GHZ SWITCH MODULE
```

where:

XXX is the module address of the 1260-59 ("001" to "012").

All other reply lines for these commands follow the syntax used for all of the other 1260 series relay cards. Note that the lines of the reply for the PDATAOUT command contain relay descriptors which follow the syntax described in the paragraph “Relay Descriptors”.

1260-59 ID Bytes

The ID bytes for the 1260-59 are:

1260-59A:	58 hexadecimal (= 88 decimal)
1260-59B:	59 hexadecimal (= 89 decimal)

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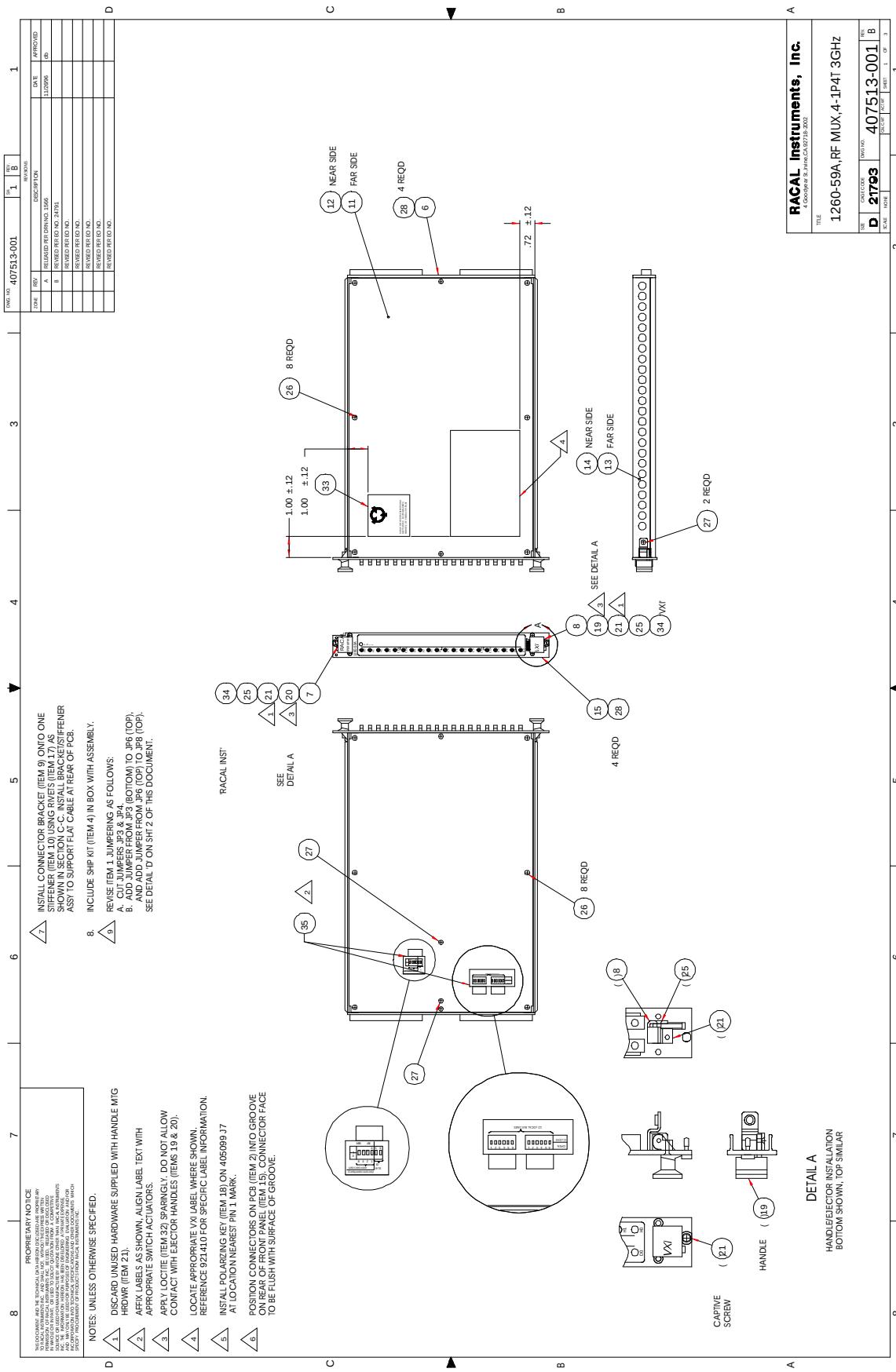
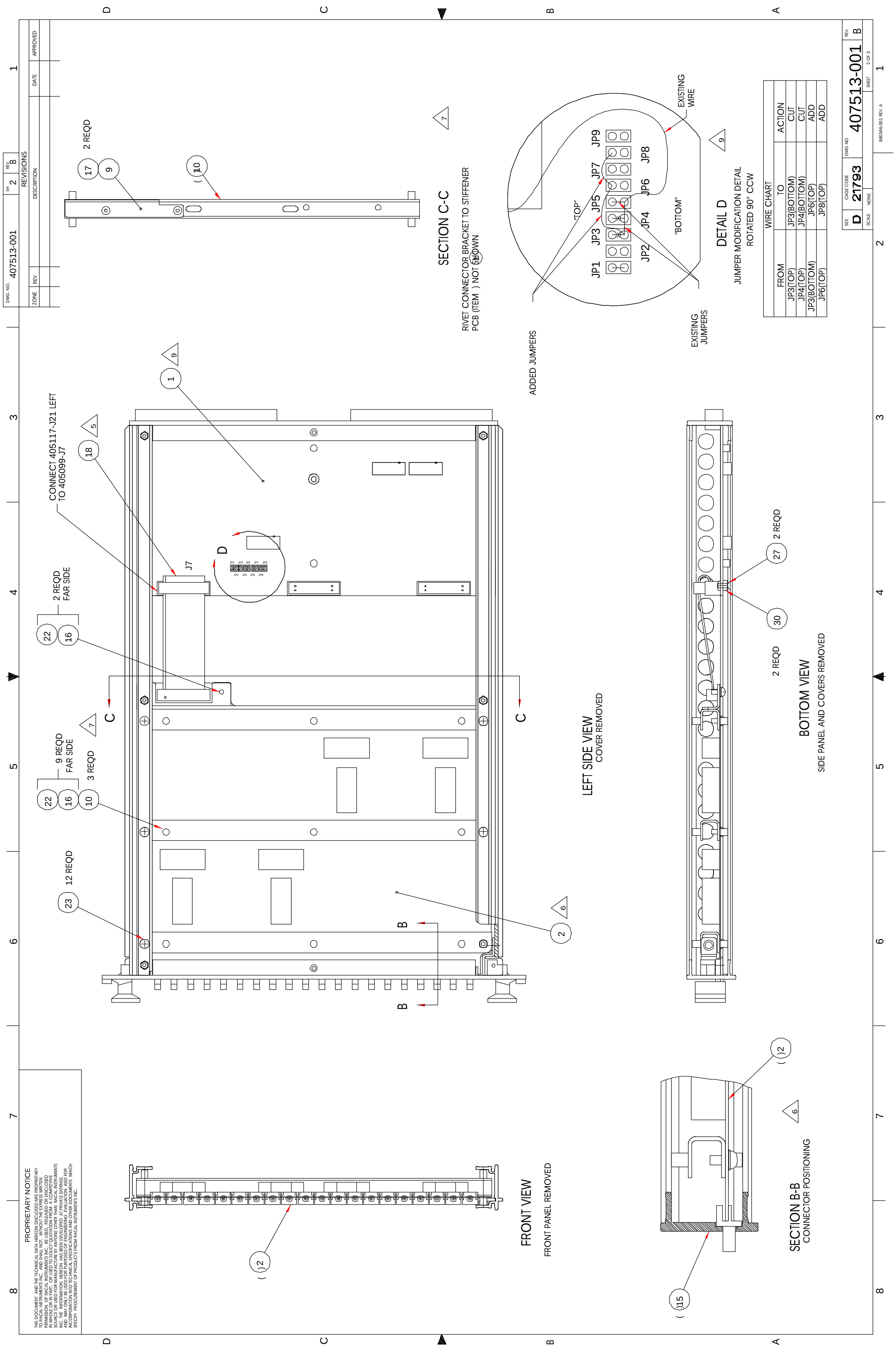
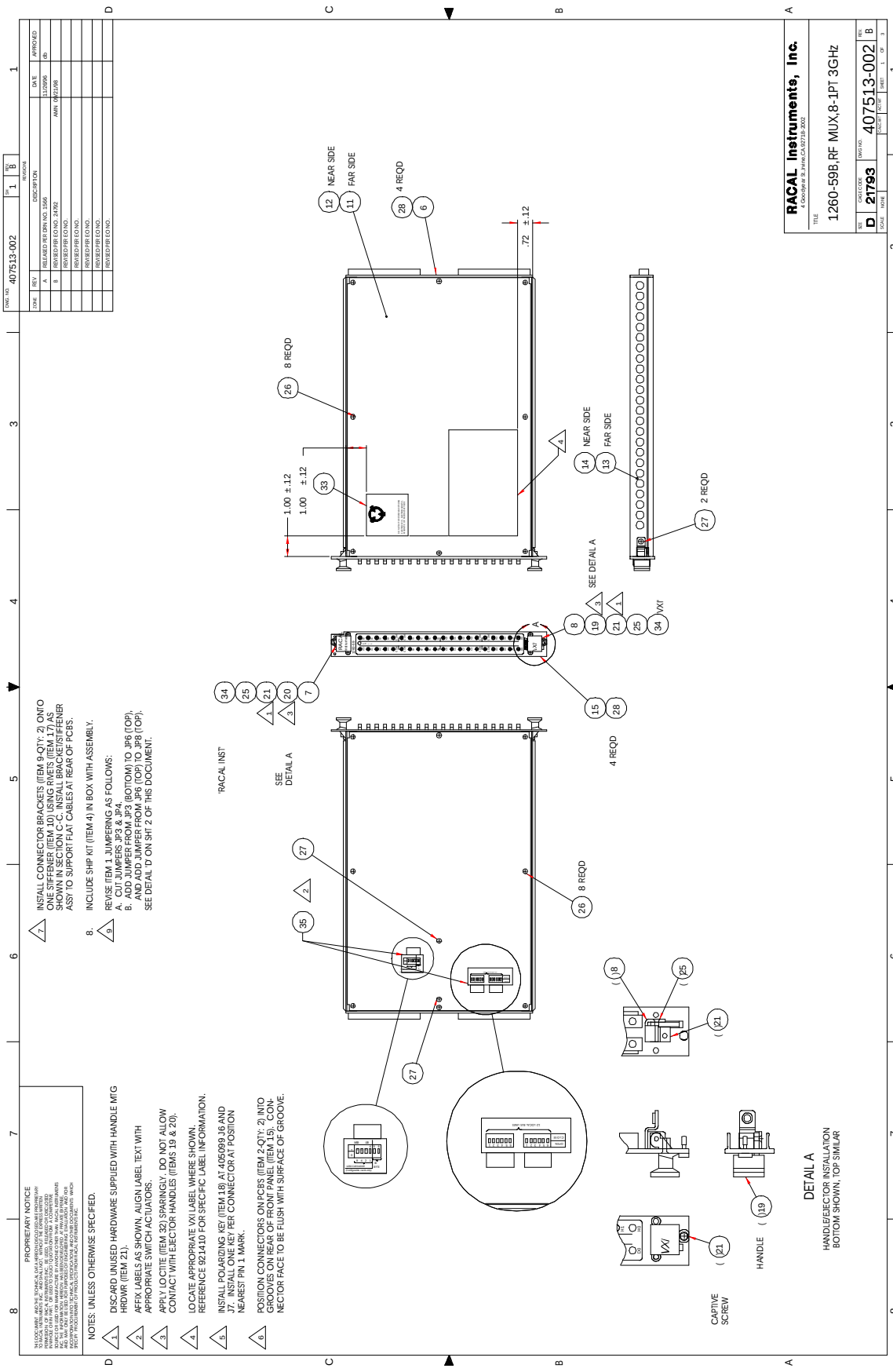
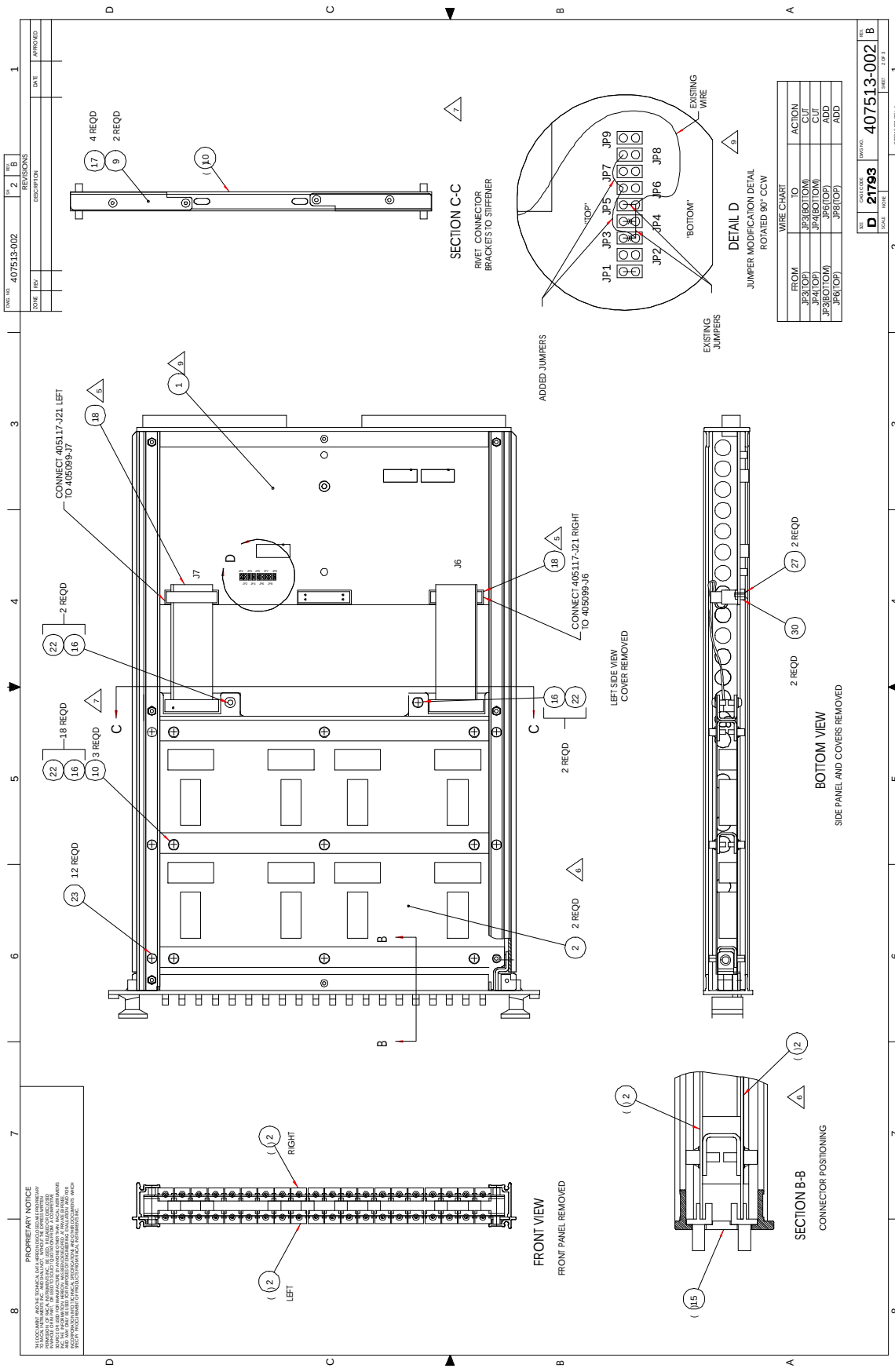
Chapter 4
DRAWINGS

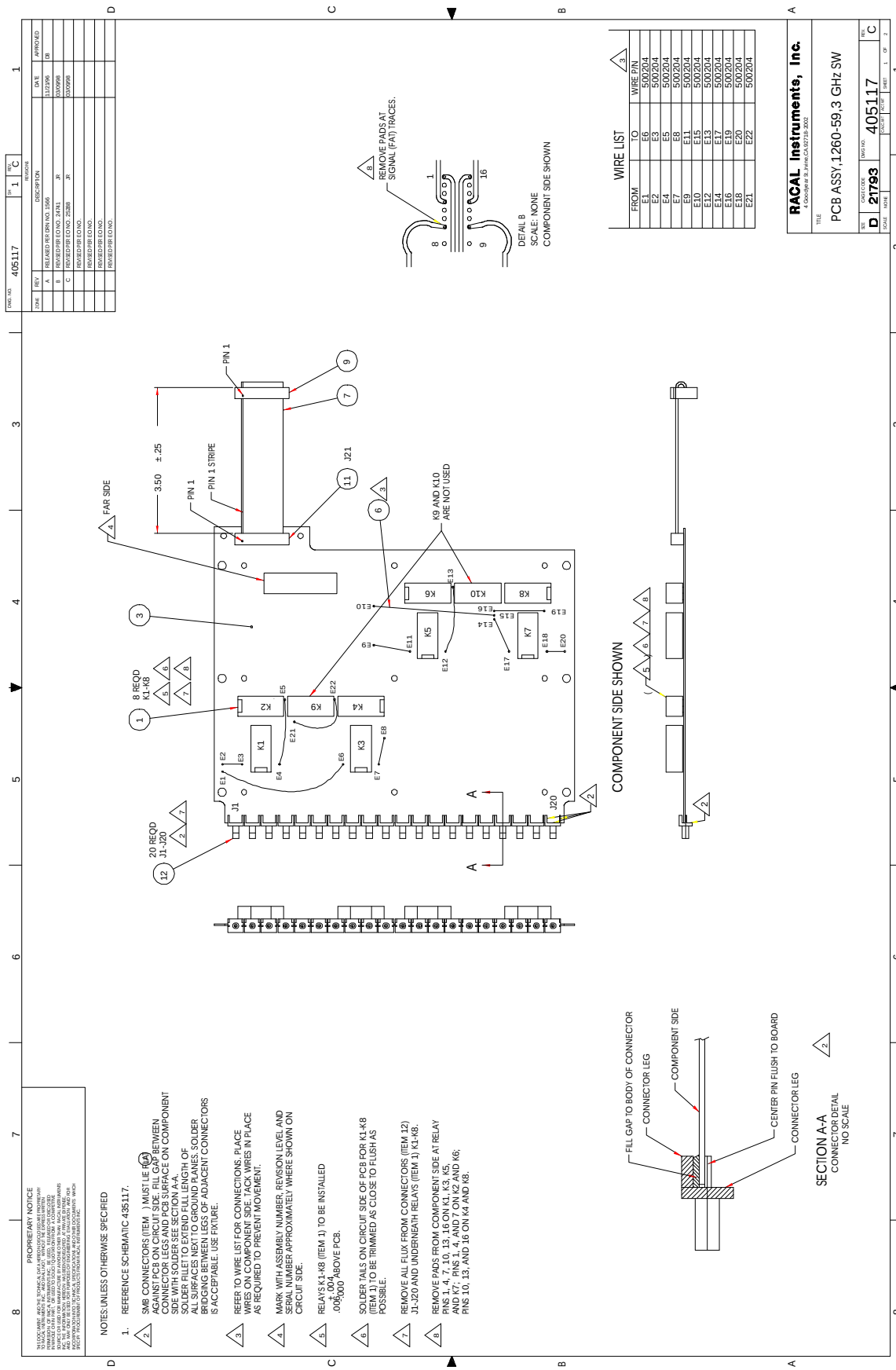

RACAL Instruments, Inc.
1260-59A,RF MUX,4-1P4T 3GHz
407513-001
DETAIL A
HANDLE/EJECTOR INSTALLATION
BOTTOM SHOWN, TOP SIMILAR
NOTES: UNLESS OTHERWISE SPECIFIED.
DISCARD UNUSED HARDWARE SUPPLIED WITH HANDLE MTG HRDWR (ITEM 21).
AFFIX LABELS AS SHOWN, ALIGN LABEL TEXT WITH APPROPRIATE SWITCH ACTUATORS.
APPLY LOCTITE (ITEM 32) SPARINGLY. DO NOT ALLOW CONTACT WITH EJECTOR HANDLES (ITEMS 19 & 20).
LOCATE APPROPRIATE VXI LABEL WHERE SHOWN, REFERENCE 922410 FOR SPECIFIC LABEL INFORMATION.
INSTALL POLARIZING KEY (ITEM 18) ON 405099 J7 AT LOCATION NEAREST PIN 1 MARK.
POSITION CONNECTORS ON PCB (ITEM 2) INTO GROOVE ON REAR OF FRONT PANEL (ITEM 15). CONNECTOR FACE TO BE FLUSH WITH SURFACE OF GROOVE.
INSTALL CONNECTOR BRACKET (ITEM 9) ONTO ONE STIFFNER (ITEM 10) USING RIVETS (ITEM 17) AS SHOWN IN SECTION C-C. INSTALL BRACKET/STIFFENER ASSY TO SUPPORT FLAT CABLE AT REAR OF PCB.
INCLUDE SHIP KIT (ITEM 4) IN BOX WITH ASSEMBLY.
REVISE ITEM 1 JUMPERING AS FOLLOWS:
A. CUT JUMPERS JP3 & JP4.
B. ADD JUMPER FROM JP3 (BOTTOM) TO JP6 (TOP), AND ADD JUMPER FROM JP6 (TOP) TO JP8 (TOP).
SEE DETAIL 'D' ON SHT 2 OF THIS DOCUMENT.
DETAIL A
SEE DETAIL A
4 REQD
8 REQD
2 REQD
NEAR SIDE
FAR SIDE
CAPTIVE SCREW
HANDLE

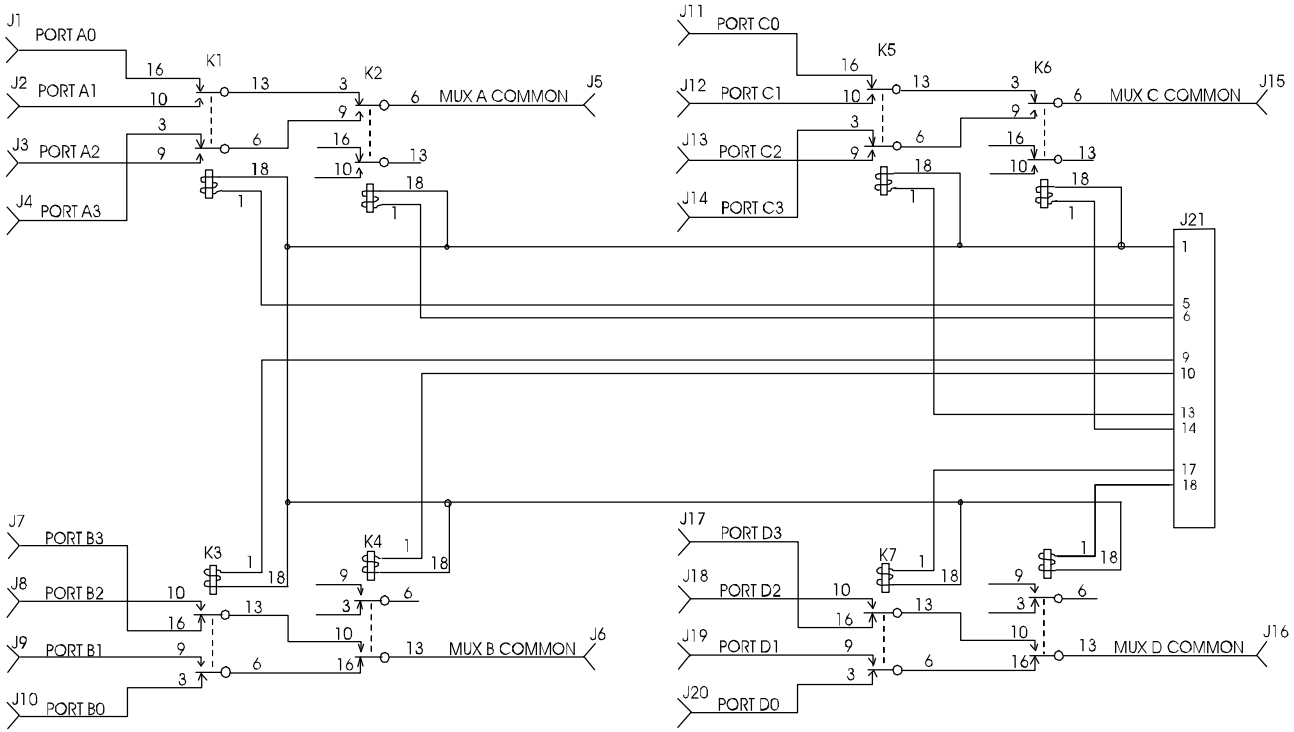


SECTION C-C
RIVET CONNECTOR BRACKET TO STIFFENER
PCB (ITEM) NOT SHOWN
DETAIL D
JUMPER MODIFICATION DETAIL
ROTATED 90° CCW
ADDED JUMPERS
EXISTING JUMPERS
EXISTING WIRE
"TOP"
"BOTTOM"
JP1
JP2
JP3
JP4
JP5
JP6
JP7
JP8
JP9
WIRE CHART
FROM
TO
ACTION
JP3(TOP)
JP3(BOTTOM)
CUT
JP4(TOP)
JP4(BOTTOM)
CUT
JP3(BOTTOM)
JP6(TOP)
ADD
JP6(TOP)
JP8(TOP)
ADD
CONNECT 405117-J21 LEFT
TO 405099-J7
2 REQD
FAR SIDE
9 REQD
3 REQD
12 REQD
LEFT SIDE VIEW
COVER REMOVED
BOTTOM VIEW
SIDE PANEL AND COVERS REMOVED
FRONT VIEW
FRONT PANEL REMOVED
SECTION B-B
CONNECTOR POSITIONING
PROPRIETARY NOTICE
REVISIONS
ZONE
REV
DESCRIPTION
DATE
APPROVED
DWG. NO.
407513-001
SIZE
D
CAGE CODE
21793
407513-001
REV
B
SCALE
NONE


RACAL Instruments, Inc.
1260-59B,RF MUX,8-1PT 3GHz
407513-002
DETAIL A
HANDLE/EJECTOR INSTALLATION.
BOTTOM SHOWN, TOP SIMILAR
NOTES: UNLESS OTHERWISE SPECIFIED.
DISCARD UNUSED HARDWARE SUPPLIED WITH HANDLE MFG HRDWR (ITEM 21).
AFFIX LABELS AS SHOWN, ALIGN LABEL TEXT WITH APPROPRIATE SWITCH ACTUATORS.
APPLY LOCTITE (ITEM 32) SPARINGLY. DO NOT ALLOW CONTACT WITH EJECTOR HANDLES (ITEMS 19 & 20).
LOCATE APPROPRIATE VXI LABEL WHERE SHOWN, REFERENCE 922410 FOR SPECIFIC LABEL INFORMATION.
INSTALL POLARIZING KEY, (ITEM 18), AT 405099 J6 AND J7. INSTALL ONE KEY PER CONNECTOR AT POSITION NEAREST PIN 1 MARK.
POSITION CONNECTORS ON PCBS (ITEM 2-QTY: 2) INTO GROOVES ON REAR OF FRONT PANEL (ITEM 15). CONNECTOR FACE TO BE FLUSH WITH SURFACE OF GROOVE.
INSTALL CONNECTOR BRACKETS (ITEM 9-QTY: 2) ONTO ONE STIFFENER (ITEM 10) USING RIVETS (ITEM 17) AS SHOWN IN SECTION C-C. INSTALL BRACKET/STIFFENER ASSY TO SUPPORT FLAT CABLES AT REAR OF PCBS.
INCLUDE SHIP KIT (ITEM 4) IN BOX WITH ASSEMBLY.
REVISE ITEM 1 JUMPERING AS FOLLOWS:
A. CUT JUMPERS JP3 & JP4.
B. ADD JUMPER FROM JP3 (BOTTOM) TO JP6 (TOP), AND ADD JUMPER FROM JP6 (TOP) TO JP8 (TOP).
SEE DETAIL 'D' ON SHT 2 OF THIS DOCUMENT.
'RACAL INST'
SEE DETAIL A
4 REQD
8 REQD
2 REQD
NEAR SIDE
FAR SIDE
SEE DETAIL A
1.00 ±.12
.72 ±.12
CAPTIVE SCREW
HANDLE


SECTION C-C
RIVET CONNECTOR BRACKETS TO STIFFENER
DETAIL D
JUMPER MODIFICATION DETAIL ROTATED 90° CCW
WIRE CHART
FROM
TO
ACTION
JP3(TOP)
JP3(BOTTOM)
CUT
JP4(TOP)
JP4(BOTTOM)
CUT
JP3(BOTTOM)
JP6(TOP)
ADD
JP6(TOP)
JP8(TOP)
ADD
EXISTING WIRE
"STOP"
"BOTTOM"
JP1 JP2 JP3 JP4 JP5 JP6 JP7 JP8 JP9
EXISTING JUMPERS
ADDED JUMPERS
CONNECT 405117-J21 LEFT TO 405099-J7
CONNECT 405117-J21 RIGHT TO 405099-J6
LEFT SIDE VIEW COVER REMOVED
BOTTOM VIEW
SIDE PANEL AND COVERS REMOVED
FRONT VIEW
FRONT PANEL REMOVED
SECTION B-B
CONNECTOR POSITIONING
LEFT
RIGHT
4 REQD
2 REQD
18 REQD
3 REQD
12 REQD
PROPRIETARY NOTICE
407513-002
407513-002
21793


RACAL Instruments, Inc.
PCB ASSY,1260-59,3 GHz SW
405117
WIRE LIST
FROM TO WIRE P/N
E1 E6 500204
E2 E3 500204
E4 E5 500204
E7 E8 500204
E9 E11 500204
E10 E15 500204
E12 E13 500204
E14 E17 500204
E16 E19 500204
E18 E20 500204
E21 E22 500204
NOTES: UNLESS OTHERWISE SPECIFIED
1. REFERENCE SCHEMATIC 435117.
2 SMB CONNECTORS (ITEM) MUST LIE FLAT AGAINST PCB ON CIRCUIT SIDE. FILL GAP BETWEEN CONNECTOR LEGS AND PCB SURFACE ON COMPONENT SIDE WITH SOLDER SEE SECTION A-A. SOLDER FILLET TO EXTEND FULL LENGTH OF ALL SURFACES NEXT TO GROUND PLANES. SOLDER BRIDGING BETWEEN LEGS OF ADJACENT CONNECTORS IS ACCEPTABLE. USE FIXTURE.
3 REFER TO WIRE LIST FOR CONNECTIONS. PLACE WIRES ON COMPONENT SIDE. PACK WIRES IN PLACE AS REQUIRED TO PREVENT MOVEMENT.
4 MARK WITH ASSEMBLY NUMBER, REVISION LEVEL AND SERIAL NUMBER APPROXIMATELY WHERE SHOWN ON CIRCUIT SIDE.
5 RELAYS K1-K8 (ITEM 1) TO BE INSTALLED .005 +.004 -.000 ABOVE PCB.
6 SOLDER TAILS ON CIRCUIT SIDE OF PCB FOR K1-K8 (ITEM 1) TO BE TRIMMED AS CLOSE TO FLUSH AS POSSIBLE.
7 REMOVE ALL FLUX FROM CONNECTORS (ITEM 12) J1-J20 AND UNDERNEATH RELAYS (ITEM 1) K1-K8.
8 REMOVE PADS FROM COMPONENT SIDE AT RELAY PINS 1, 7, 10, 13, AND 16 ON K1, K3, K5, AND K7. PINS 1, 4, AND 13 ON K2 AND K6; PINS 10, 13, AND 16 ON K4 AND K8.
FAR SIDE
3.50 ±.25
PIN 1
PIN 1 STRIPE
J21
J1
J20
8 REQD K1-K8
20 REQD J1-J20
K9 AND K10 ARE NOT USED
COMPONENT SIDE SHOWN
REMOVE PADS AT SIGNAL (FAT) TRACES.
DETAIL B
SCALE: NONE
COMPONENT SIDE SHOWN
FILL GAP TO BODY OF CONNECTOR
CONNECTOR LEG
COMPONENT SIDE
CENTER PIN FLUSH TO BOARD
CONNECTOR LEG
SECTION A-A
CONNECTOR DETAIL
NO SCALE



KB
J21
HIGHEST REF. DES.

NOTES:

1. RELAYS K1 THRU K8 ARE RACAL INSTRUMENTS P/N 310260

PROPRIETARY NOTICE

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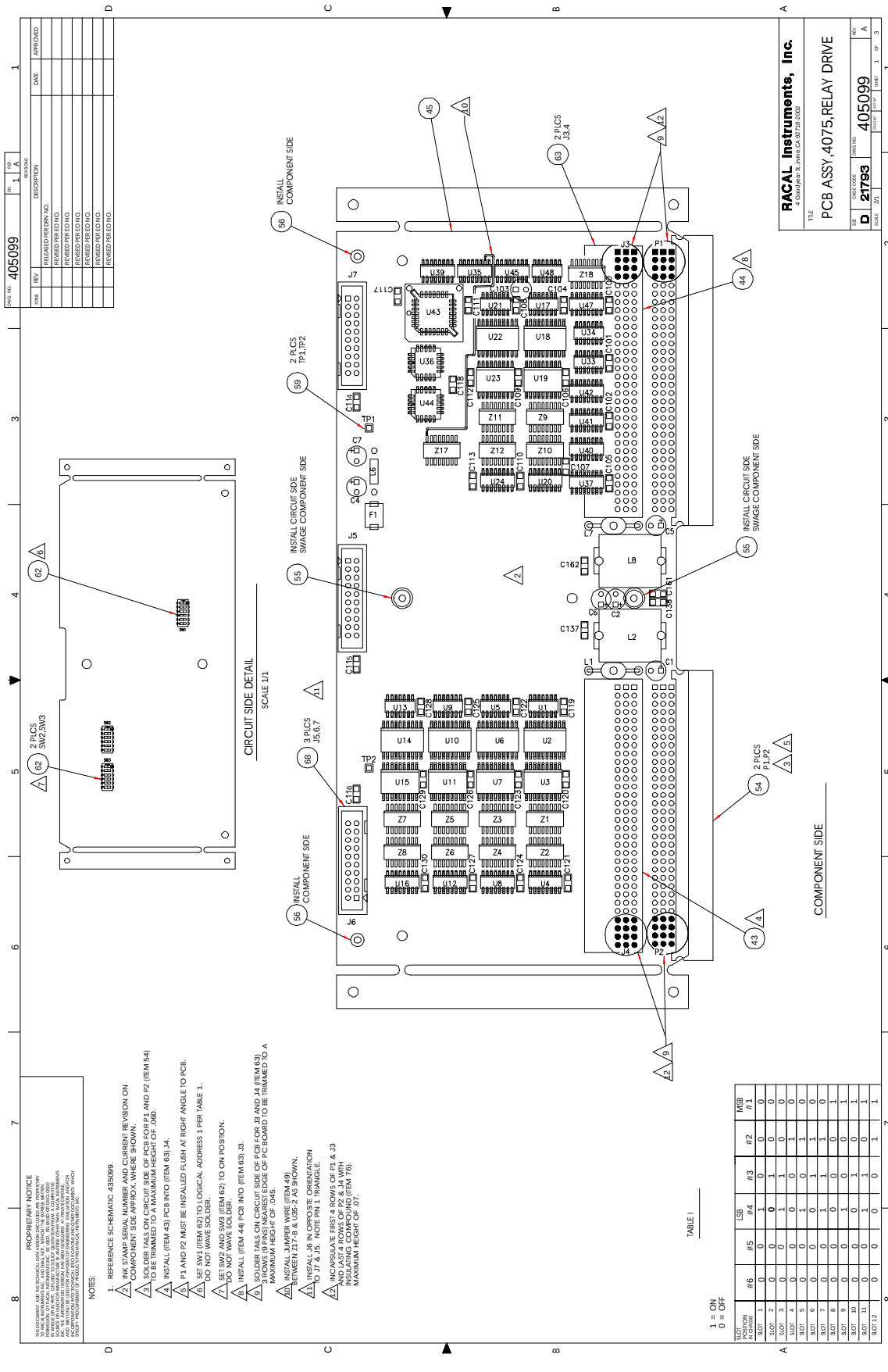
RACAL Instruments, Inc.
4 Goodyear St., Irvine, CA 92618-2002

TITLE

SCHEM., 1260-59 3GHz SWITCH

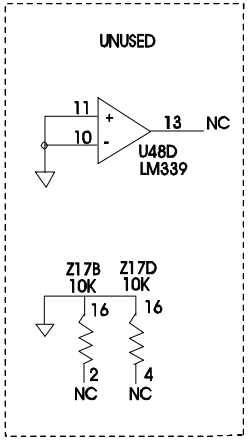
SIZE	CAGE CODE	DWG NO.			
B	12793	435117			
SCALE		CALC VT	ACT. VT	SHEET 1 OF 1	


RACAL Instruments, Inc.
PCB ASSY,4075,RELAY DRIVE
405099
CIRCUIT SIDE DETAIL
SCALE 1/1
COMPONENT SIDE
INSTALL COMPONENT SIDE
INSTALL CIRCUIT SIDE SWAGE COMPONENT SIDE
2 PLCS SW2,SW3
3 PLCS J5,6,7
2 PLCS P1,P2
2 PLCS J3,4
2 PLCS TP1,TP2
PROPRIETARY NOTICE
NOTES:
1. REFERENCE SCHEMATIC 435099.
2. INK STAMP SERIAL NUMBER AND CURRENT REVISION ON COMPONENT SIDE APPROX. WHERE SHOWN.
3. SOLDER TAILS ON CIRCUIT SIDE OF PCB FOR P1 AND P2 (ITEM 54) TO BE TRIMMED TO A MAXIMUM HEIGHT OF .066.
4. INSTALL (ITEM 43) PCB INTO (ITEM 63) J4.
5. P1 AND P2 MUST BE INSTALLED FLUSH AT RIGHT ANGLE TO PCB.
6. SET SW1 (ITEM 62) TO LOGICAL ADDRESS 1 PER TABLE 1. DO NOT WAVE SOLDER.
7. SET SW2 AND SW3 (ITEM 62) TO ON POSITION. DO NOT WAVE SOLDER.
8. INSTALL (ITEM 44) PCB INTO (ITEM 63) J3.
9. SOLDER TAILS ON CIRCUIT SIDE OF PCB FOR J3 AND J4 (ITEM 63) 3 ROWS (9 PINS) NEAREST EDGE OF PC BOARD TO BE TRIMMED TO A MAXIMUM HEIGHT OF .045.
10. INSTALL JUMPER WIRE (ITEM 49) BETWEEN Z17-8 & U35-2 AS SHOWN.
11. INSTALL J6 IN OPPOSITE ORIENTATION TO J7 & J5. NOTE PIN 1 TRIANGLE.
12. INCAPSULATE FIRST 4 ROWS OF P1 & J3 AND LAST 4 ROWS OF P2 & J4 WITH INSULATING COMPOUND (ITEM 76). MAXIMUM HEIGHT OF .07".
TABLE I
1 = ON
0 = OFF

REF. DES.	IC TYPE	+5V PIN NO.	GND PIN NO.
U48	LM339	3	12
U47	74HCT85	16	8
U45	74LS138	16	8
U44	231153 (16R4)	20	10
U43	231154 (22V10H)	28	14
U42	26LS31	16	8
U40, 41	26LS32	16	8
U37, 39	74HCT253	16	8
U36	231152-001 (16LBQ)	20	10
U4, 8, 12, 16, 20, 24, 35	74HTC166	16	8
U3, 7, 11, 15, 19, 23	2803	NC	9
U2, 6, 10, 14, 18, 22	74HTC273	20	10
U1, 5, 9, 13, 17, 21, 33, 34	74HTC164	14	7

IC POWER AND GROUND CONNECTIONS

HIGHEST REF. DES.
C162
F1
J4
P2
L8
SW3
TP2
U48
Z18



NOTES:

1. CAPACITOR VALUES ARE IN MICROFARADS, 50V. +/-20% UNLESS OTHERWISE SPECIFIED.
2. RESISTOR NETWORKS ARE IN OHMS.

PROPRIETARY NOTICE

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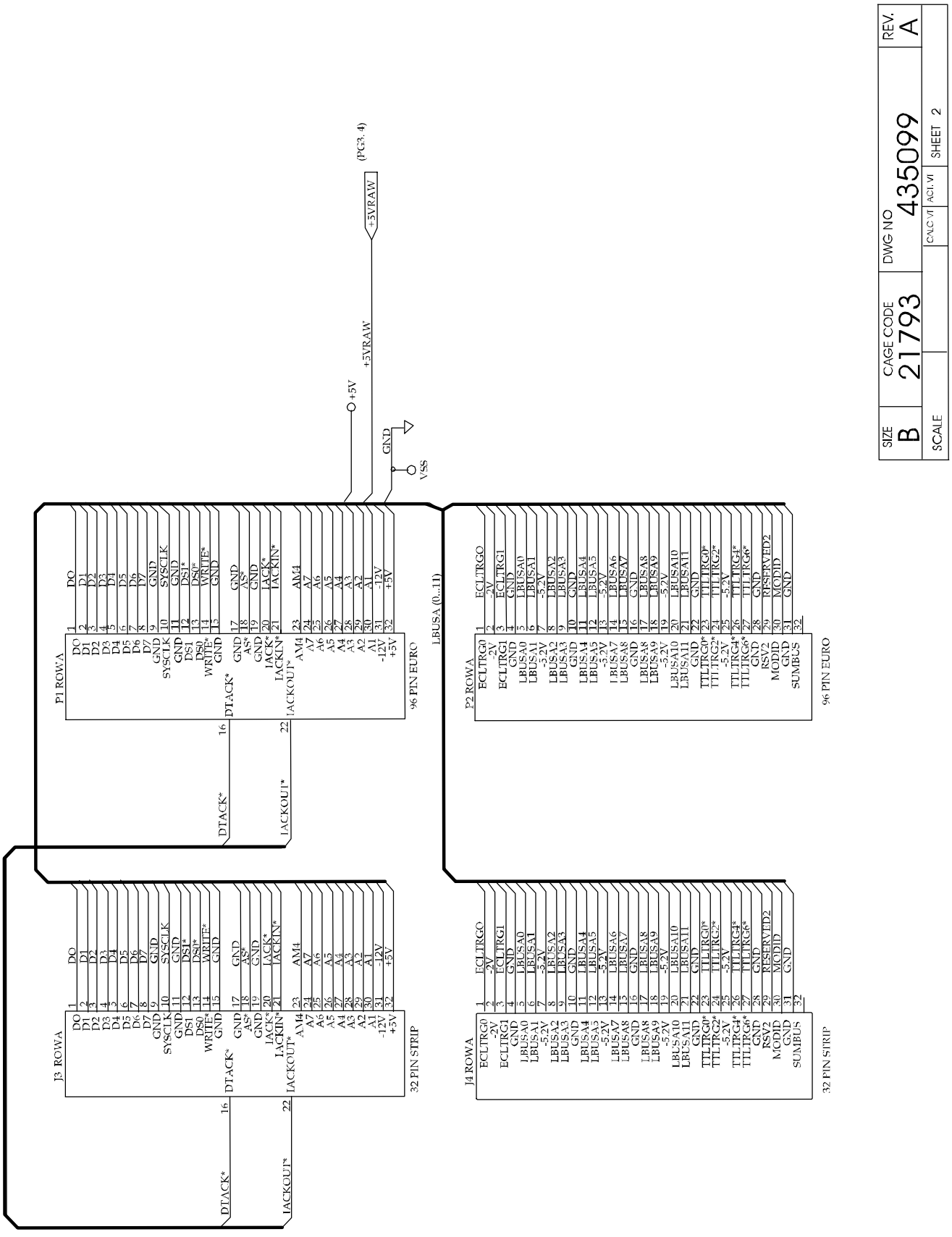
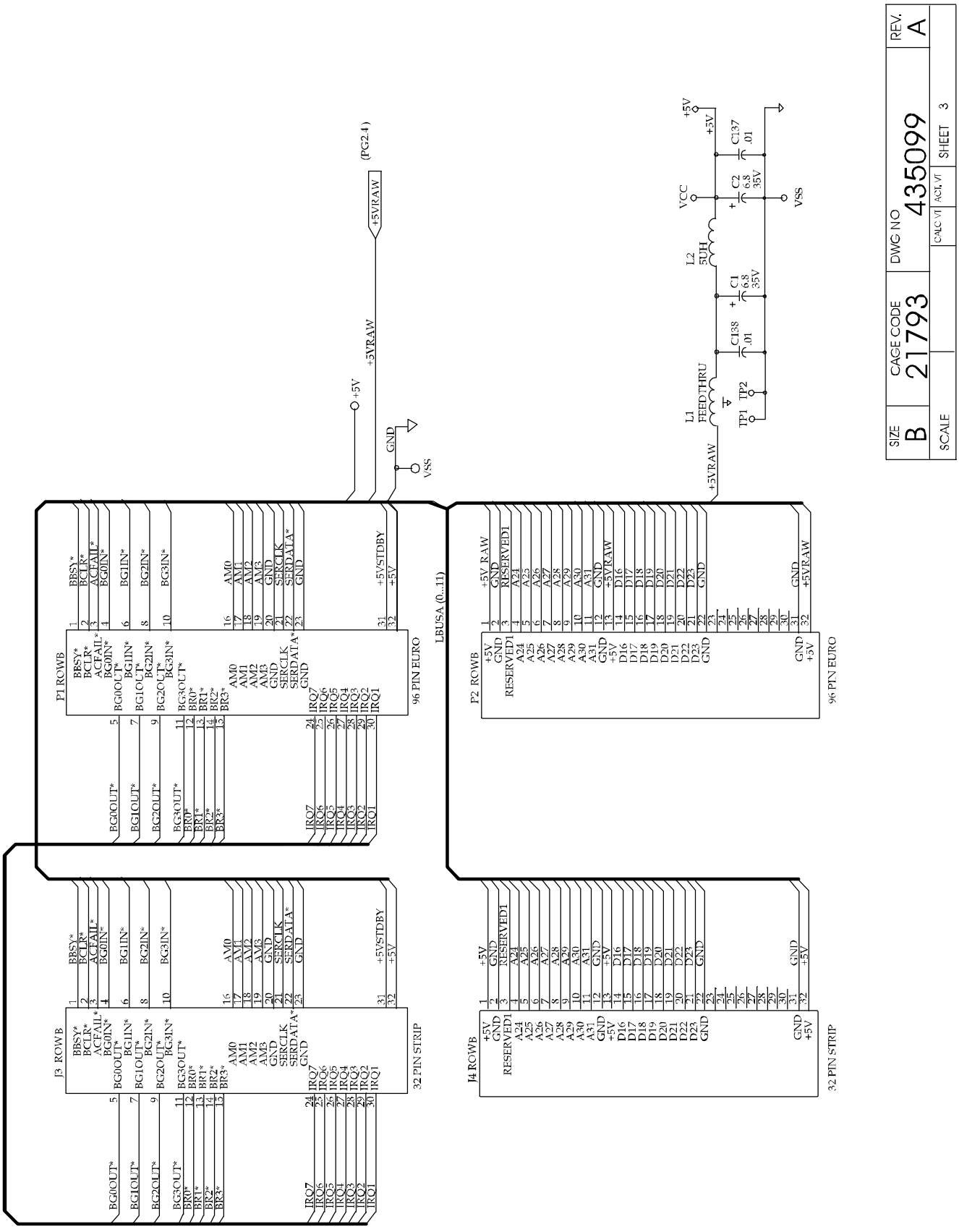
RACAL Instruments, Inc.
4 Goodyear St., Irvine, CA 92618-2002

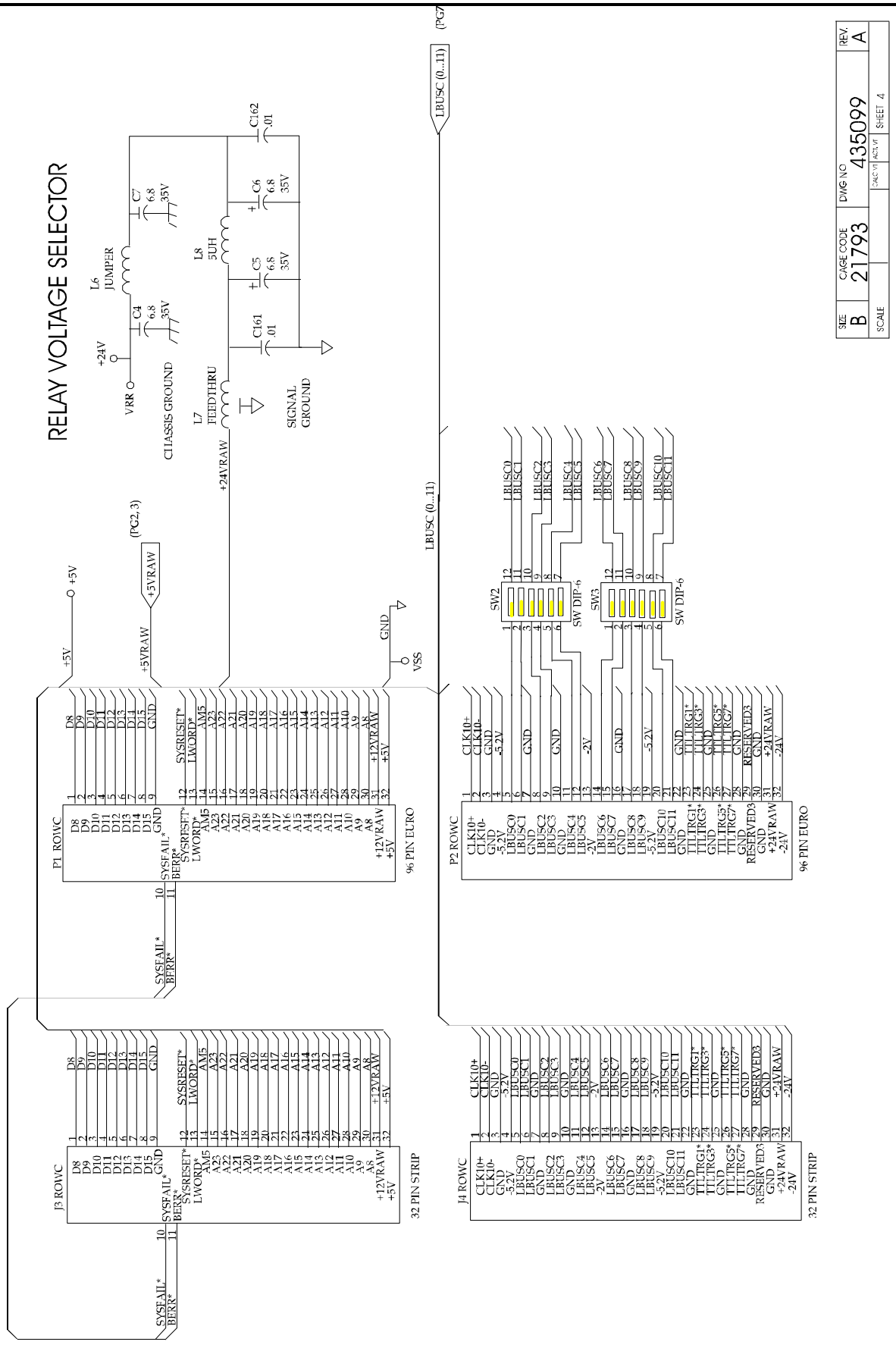
TITLE
SCHEM.. 4075 RELAY DRIVE

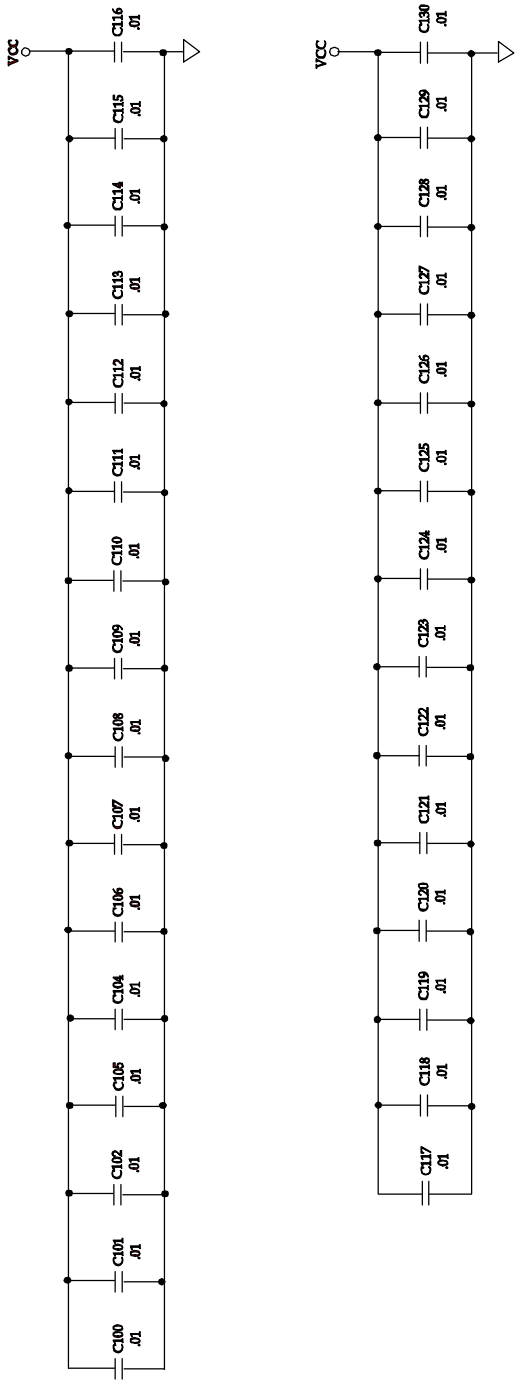
SIZE	CAGE CODE	DWG NO
B	12793	435099

SCALE		CALC VT	ACT. VT	SHEET 1 OF 10

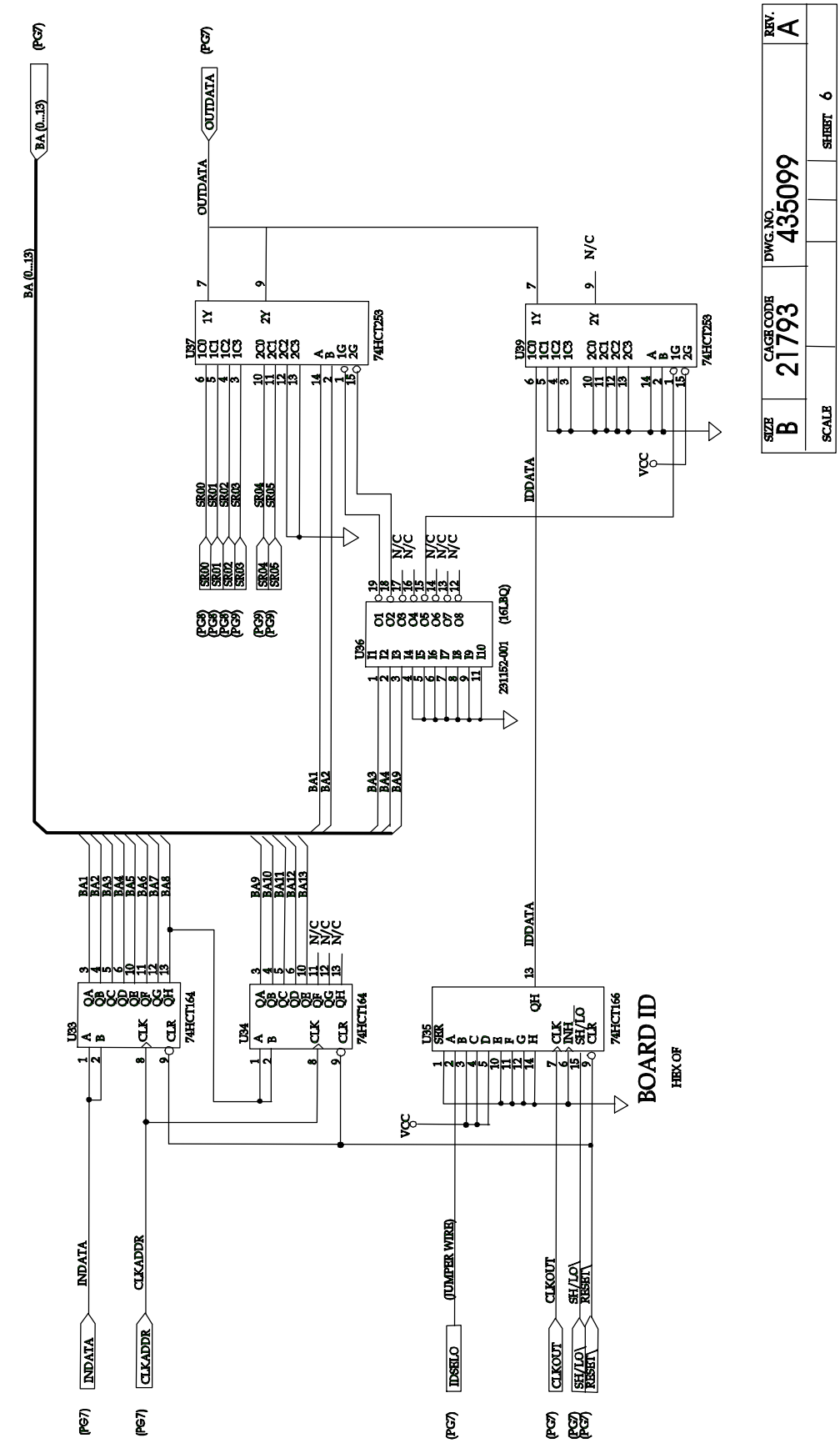

SIZE B
CAGE CODE 21793
DWG NO 435099
REV. A
SCALE
CALC VI
AGI. VI
SHEET 2
P1 ROW A
P2 ROW A
J3 ROW A
J4 ROW A
96 PIN EURO
32 PIN STRIP
LBUSA (0..11)
+5V
+5VRAW
GND
VSS
(PG3, 4)
DTACK*
IACKOUT*

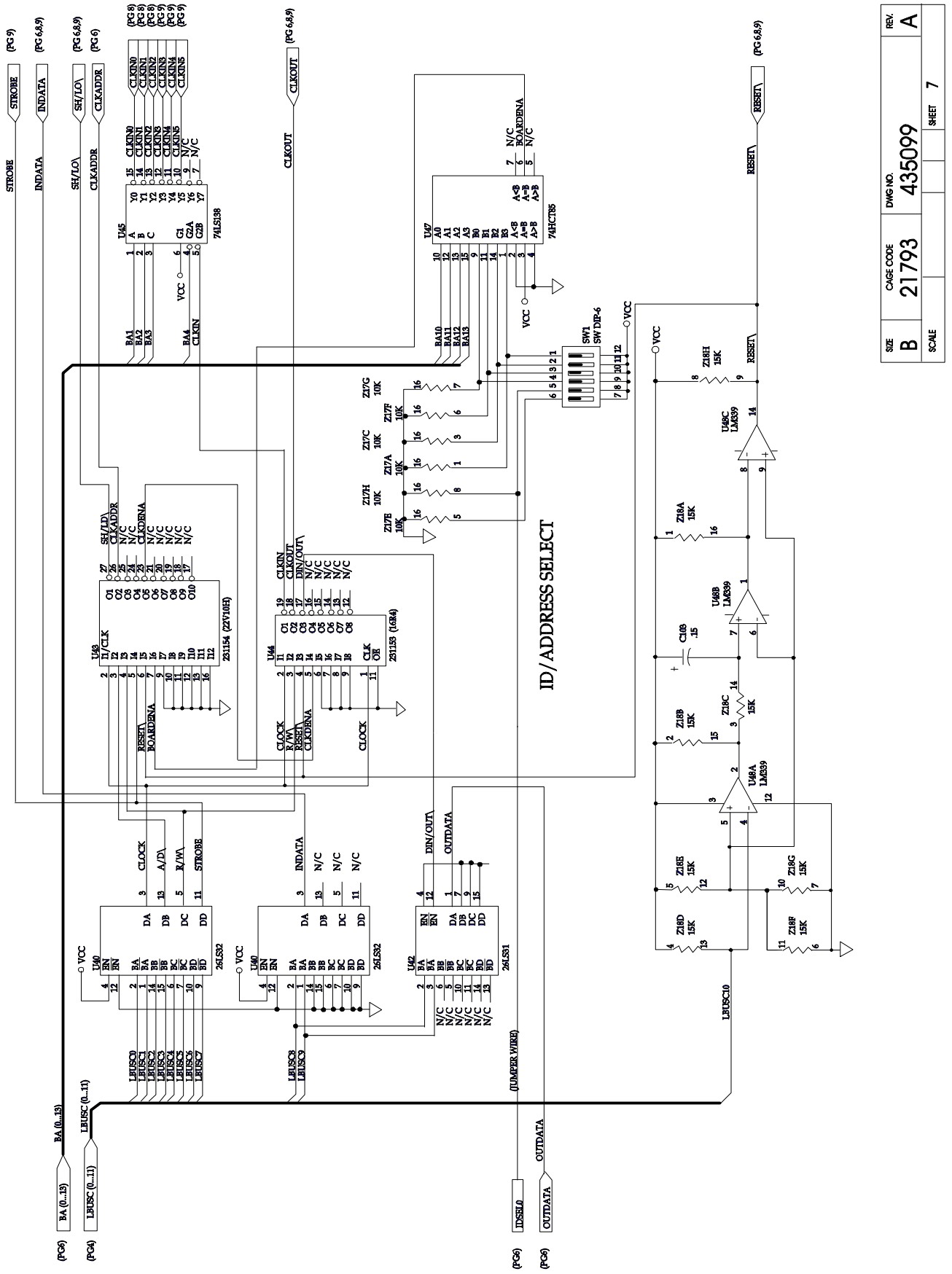

J3 ROWB
J4 ROWB
P1 ROWB
P2 ROWB
32 PIN STRIP
96 PIN EURO
LBUSA (0...11)
+5VRAW
(PG2.4)
+5V
GND
VSS
VCC
L1
FEEDTHRU
L2
5UH
C1
6.8
35V
C2
6.8
35V
C137
.01
C138
.01
TP1
TP2
SIZE
B
CAGE CODE
21793
DWG NO
435099
REV.
A
SCALE
SHEET 3

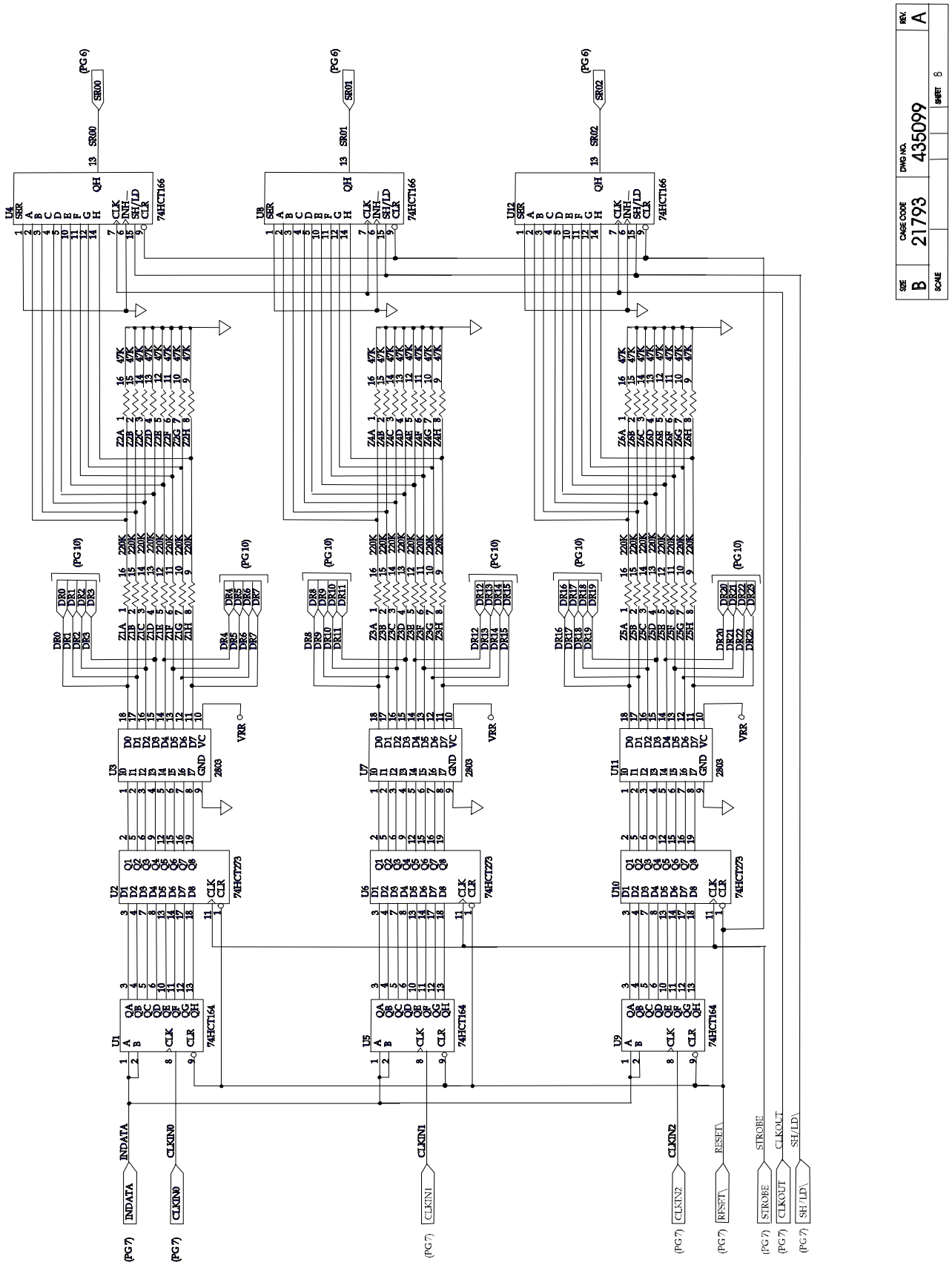

RELAY VOLTAGE SELECTOR
+24V
VRR
L6
JUMPER
C4
6.8
35V
C7
6.8
35V
CHASSIS GROUND
L7
FEEDTHRU
+24VRAW
L8
5UH
C161
.01
C5
6.8
35V
C6
6.8
35V
C162
.01
SIGNAL
GROUND
(PG2, 3)
+5VRAW
+5V
GND
VSS
LBUSC (0...11)
(PG7
SW2
SW3
SW DIP-6
P1 ROWC
P2 ROWC
J3 ROWC
J4 ROWC
96 PIN EURO
32 PIN STRIP
SIZE
B
CAGE CODE
21793
DWG NO
435099
REV.
A
SCALE
SHEET 4

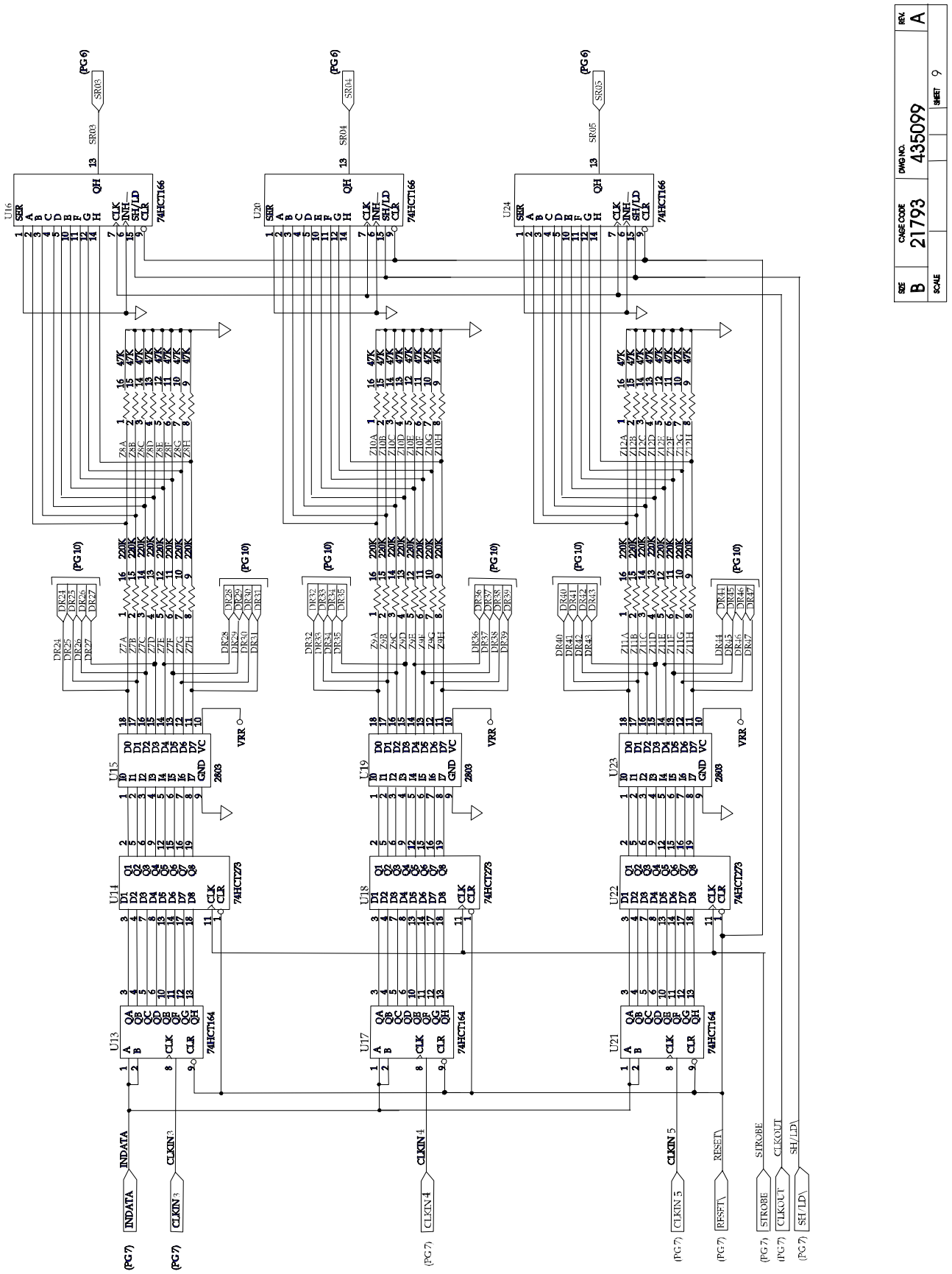


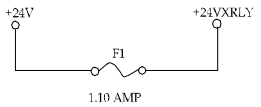
SIZE	CAGE CODE	DWG NO	REV.
B	21793	435099	A
SCALE		CALC VT ACT VT	SHEET 5

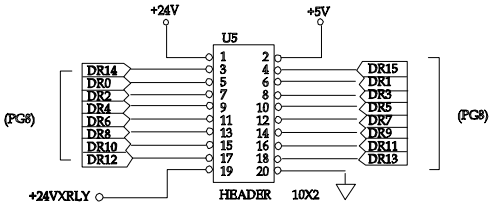

BA (0...13)
OUTDATA
U37
74HCT253
U39
74HCT253
N/C
VCC
IDDATA
U36
231152-001 (16LBQ)
SR00
SR01
SR02
SR03
SR04
SR05
BA1
BA2
BA3
BA4
BA9
U33
74HCT164
U34
74HCT164
U35
74HCT166
BOARD ID
HEX OF
INDATA
CLKADDR
(JUMPER WIRE)
IDSELO
CLKOUT
SH/LO\
RESET\
SIZE
B
CAGE CODE
21793
DWG. NO.
435099
REV.
A
SCALE
SHEET 6


ID/ADDRESS SELECT
SIZE B
CAGE CODE 21793
DWG NO. 435099
REV. A
SCALE
SHEET 7
(JUMPER WIRE)

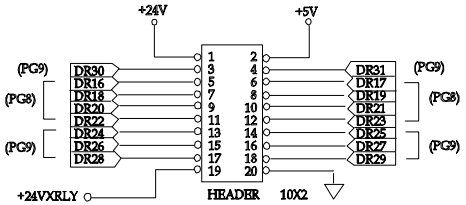

SIZE B
CAGE CODE 21793
DWG NO. 435099
REV. A
SCALE
SHEET 8
74HCT166
74HCT273
74HCT164
2803
INDATA
CLKIN0
CLKIN1
CLKIN2
RESET\
STROBE
CLKOUT
SH/LD\


SIZE B
CAGE CODE 21793
DWG NO. 435099
REV. A
SCALE
SHEET 9
U16
U20
U24
74HCT166
SR03
SR04
SR05
(PG 6)
U15
U19
U23
2803
VRR
(PG 10)
U14
U18
U22
74HCT273
U13
U17
U21
74HCT164
INDATA
CLKIN 3
CLKIN 4
CLKIN 5
RESET\
STROBE
CLKOUT
SH/LD\
(PG 7)

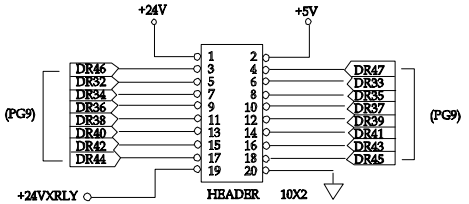




DELAY ASSY #1



DELAY ASSY #2



DELAY ASSY #3

SIZE	CAGE CODE	DWG NO.	REV.
B	21793	435099	A
SCALE		SHEET 10	

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Chapter 5
PARTS LIST

407513-001 - FINAL ASSY, 1260-S9A

REF DESIG	RACAL INST P/N	DESCRIPTION	FSC	MANUFACTURER'S P/N
(1)1	405099	PCB ASSY, 4075 RELAY DRIVE	21793	405099
(2)1	405117	PCB ASSY, 1260-59	21793	405117
(4)1	407514	SHIP KIT, 1260-59	21793	407514
(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
(9)1	456536	BRACKET, CONNECTOR	21793	456536
(10)3	456537	STIFFNER, INTERBOARD	21793	456537
(11)1	456538	COVER, RIGHT, 1260-59	21793	456538
(12)1	456539	COVER, LEFT, 1260-59	21793	456539
(13)1	456540-001	PANEL, SIDE, 1260-59	21793	456540-001
(14)1	456540-002	PANEL, SIDE, 1260-59	21793	456540-002
(15)1	456546	PANEL, FRONT, 1260-59	21793	456546
(16)11	610872	WASHER, FLAT, #4SS	---	---
(17)2	610949	RIVET, .205D X .276L	19738	1601-5307
(18)1	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
(22)11	611427	SCREW, PPH THREAD FORMING, 4-40X.250	70770	0404RPP
(23)12	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

407513-002 - FINAL ASSY, 1260-59B

REF RESIG	RACAL INST P/N	DESCRIPTION	FSC	MANUACTURER'S P/N
(1)1	405099	PCB ASSY, 4075 RELAY DRIVE	21793	405099
(2)2	405117	PCB ASSY, 1260-59	21793	405117
(4)1	407514	SHIP KIT, 1260-59	21793	407514
(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
(9)2	456536	BRACKET, CONNECTOR	21793	456536
(10)3	456537	STIFFNER, INTERBOARD	21793	456537
(11)l	456538	COVER, RIGHT, 1260-59	21793	456538
(12)1	456539	COVER, LEFT, 1260-59	21793	456539
(13)1	456540-001	PANEL, SIDE, 1260-59	21793	456540-001
(14)1	456540-002	PANEL, SIDE, 1260-59	21793	456540-002
(15)1	456541	PANEL, FRONT, 1260-59	21793	456541
(16)22	610872	WASHER, FLAT, #4SS		
(17)4	610949	RIVET, 205D X .276L	19738	1601-5307
(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
(22)22	611427	SCREW, PPH THREAD FORMING, 4 40X.250	70770	0404RPP
(23)12	615543	SCREW, PFH, 4 40X.375		
(25)2	616405	SCREW, PFH, M2.S X 12		
(26)16	616414	SCREW, PFL, M3 X 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	S610-55-1000
(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

407514 - SHIP KIT, 1260-59

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	980673-045	MANUAL, 1260-59	21793	980673-045

405117 - PCB ASSY, 1260-59 3 GHZ SWITCH

REF DESIGN	RACAL INST P/N	DESCRIPTION	FSC	MANUFACTURER'S P/N
Jl-J20	602284	CONNECTOR, COAX SMB, RECEPTACLE	74970	131-3701-801
J21	602129-020	CONNECTOR, CABLE, PLUG, DBL ROW, 20-PIN	52072	CA-20IDPSL-lT
Kl-K8	310260	RF RELAY, ELECTRO/MECH, DPDT, 24V	61529	RM2-24V
(3)1	415117	PCB, 1260-59 (UNLOADED)	21793	415117
(6)A/R	500204	WIRE, TEFLON, SOLID, 28 GA, WHT	04946	1100-32-C-9
(7)A/R	500252	CABLE, FLAT, RIBBON, 20C, 28 GA	08261	843-191-2801-020
(9)1	601436	CONNECTOR, FLAT CABLE, 20-PIN	08261	842-812-2022-418

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-ClO2	R-21-1801	CAP, CHIP, *10 NF*	95275	VJ1206YI03MF
C103	110165	CAP, TANTA, .15 MF, 35V, 1OPCT	05397	T355A1-54KO35AS
C104-Cl3O	R-21-1801	CAP, CHIP, *10 NF*	95275	VJ1206YlO3MF
C137	R-21-1801	CAP, CHIP, *10 NF*	95275	VJ1206YlO3MF
C138	R-21-1801	CAP, CHIP, *10 NF*	95275	VJ1206YlO3MF
C161	R-21-1801	CAP, CHIP, 10 *NF*	95275	VJ1206YlO3MF
C162	R-21-1801	CAP, CHIP, *10 NF*	95275	VJ1206YlO3MF
F1	921421	FUSE, PO.TEMP., 1.lA, 3OV, 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
pi	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	74HCT!66D
U5	231131	IC, DIGITAL, SHIFT REGISTER	18324	PC74HCT164D
U6	231130	IC, DIGITAL, FLIP FLOP	18324	PC74HC273
U7	231098	IC, SOIC TRANSISTOR	56289	ULN-2803LW
U8	231120	IC, 8-BIT, PARALLEL/SERIAL OUT S.R.	18324	74HCT!66D

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-l6lRl
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, M3XO.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
00779	AMP, INC. HARRISBURG, PA
01139	GENERAL ELECTRIC CO. (SILICONE PRODUCTS) WATERFORD, NY
01295	TEXAS INSTRUMENTS, INC. DALLAS, TX
04713	MOTOROLA INC. SEMICONDUCTOR PRODUCTS DIV. PHOENIX, AZ
04946	STANDARD WIRE & CABLE RANCHO DOMINGUEZ, CA
05397	UNION CARBIDE CORP. (MATERIALS SYSTEMS DIV.) CLEVELAND, OH
05972	LOCTITE CORP. HARTFORD, 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	INATIONAL 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
65832	AMERICAN RESEARCH & ENGINEERING ELGIN, IL
70770	ACCUTITE FASTENERS SIGNAL HILL, CA
73138	BECKMAN INSTRUMENTS FULLERTON, CA
86928	SEASTROM MFG. CO. GLENDALE, CA
91637	DALE ELECTRONICS, INC. COLUMBUS, NE
92194	ALPHA WIRE ELIZABETH, NJ
9S27S	VITRAMON, INC. BRIDGEPORT, CT

Chapter 6

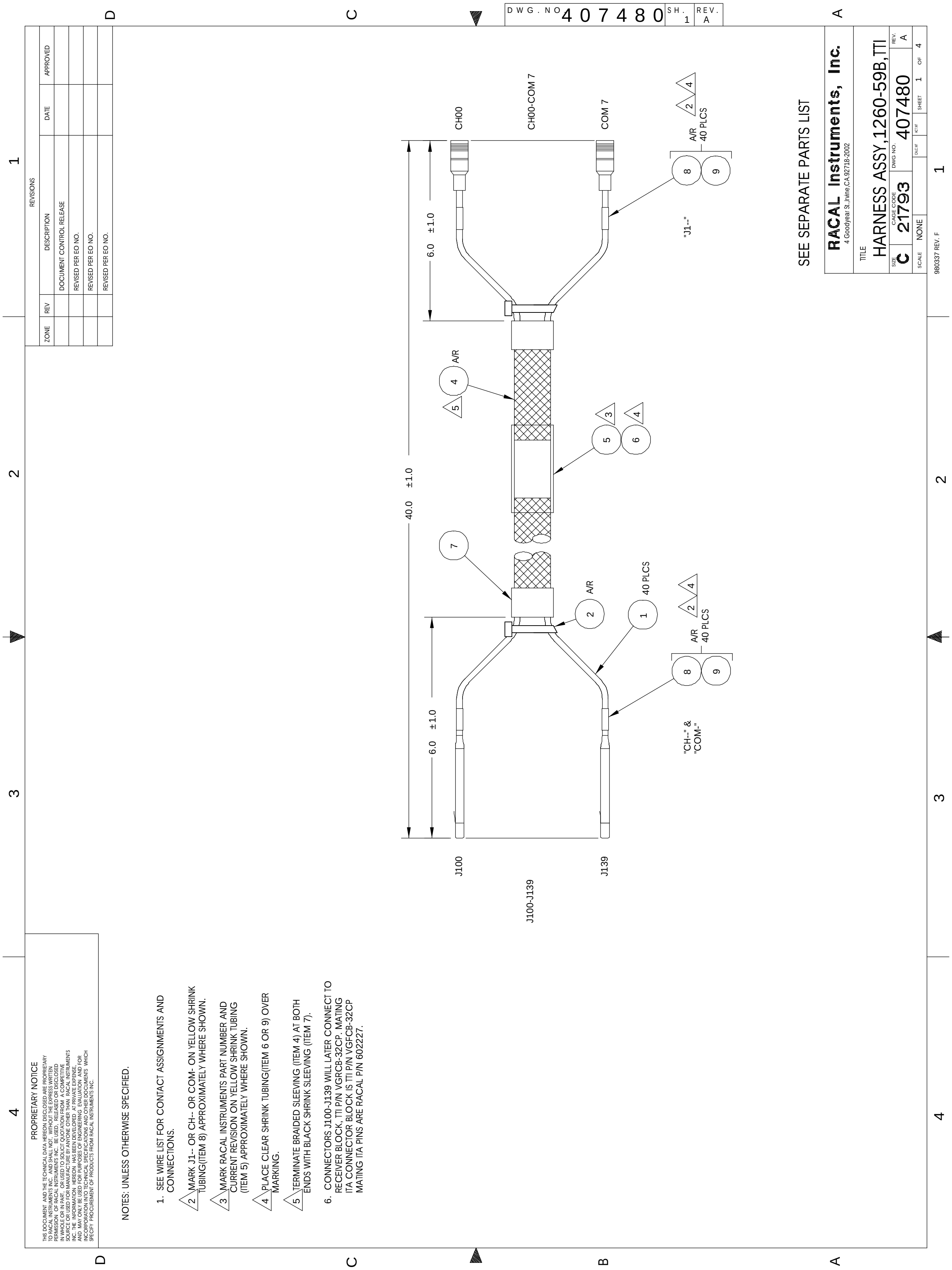
OPTIONAL HARNESS ASSEMBLY

The following harness assemblies are used to connect Racal Instruments Model 1260-59 to Freedom Series Test Receiver Interfaces.

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

407480	TTI Testron, Inc. Interface Harness (TTI Receiver must be above chassis)

For more information on Racal Instruments complete line of Test Receivers Interface solution, contact your Sales Representative.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REVISIONS
ZONE
REV
DESCRIPTION
DATE
APPROVED
DOCUMENT CONTROL RELEASE
REVISED PER EO NO.
REVISED PER EO NO.
REVISED PER EO NO.
NOTES: UNLESS OTHERWISE SPECIFIED.
1. SEE WIRE LIST FOR CONTACT ASSIGNMENTS AND CONNECTIONS.
2 MARK J1-- OR CH-- OR COM- ON YELLOW SHRINK TUBING(ITEM 8) APPROXIMATELY WHERE SHOWN.
3 MARK RACAL INSTRUMENTS PART NUMBER AND CURRENT REVISION ON YELLOW SHRINK TUBING (ITEM 5) APPROXIMATELY WHERE SHOWN.
4 PLACE CLEAR SHRINK TUBING(ITEM 6 OR 9) OVER MARKING.
5 TERMINATE BRAIDED SLEEVING (ITEM 4) AT BOTH ENDS WITH BLACK SHRINK SLEEVING (ITEM 7).
6. CONNECTORS J100-J139 WILL LATER CONNECT TO RECEIVER BLOCK, TTI P/N VGRCB-32CP. MATING ITA CONNECTOR BLOCK IS TTI P/N VGFCB-32CP MATING ITA PINS ARE RACAL P/N 602227.
40.0 ±1.0
6.0 ±1.0
6.0 ±1.0
J100
J100-J139
J139
CH00
CH00-COM 7
COM 7
A/R
A/R
40 PLCS
"CH--" &
"COM-"
A/R
40 PLCS
"J1--"
A/R
40 PLCS
D W G . N O 4 0 7 4 8 0
S H . 1
R E V . A
SEE SEPARATE PARTS LIST
RACAL Instruments, Inc.
4 Goodyear St.,Irvine,CA.92718-2002
TITLE
HARNESS ASSY,1260-59B,TTI
SIZE C
CAGE CODE 21793
DWG NO. 407480
REV. A
SCALE NONE
SHEET 1 OF 4
980337 REV. F

PARTS LIST

#	Component	Description	U/M	Qty Reqd	Ref
1	407263-001	CABLE ASSY, COAX/SMB, TTI	EA	40.00000	
2	610777	TIE-CA-LKG-. 062-. 750	EA	.00001	
4	GRP-110-3/4	TBGWOV- POY. 500 ID-BLACK	FT	.00001	
5	M23053/5-110-4	TBGSRK-POF1. 00 ID-YELLOW	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-YELLOW	FT	.00001	
9	500056	TBGSRK-POF. 187 ID-CLEAR	FT	.00001	

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DOCUMENT TITLE	SIZE	CODE NO.	DOCUMENT NO.	REV
HARNESS ASSEMBLY, 1260-59, TTI	**A**	**21793**	407480	**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	407263-001		SYSTEM WIRE LIST
	BLK AAx PN 02 (J101)	Uxx-SLOT yy (CH 01)	CABLE	407263-001		
	BLK AAx PN 03 (J102)	Uxx-SLOT yy (CH 02)	CABLE	407263-001		
	BLK AAx PN 04 (J103)	Uxx-SLOT yy (CH 03)	CABLE	407263-001		
	BLK AAx PN 05 (J104)	Uxx-SLOT yy (COM 0)	CABLE	407263-001		
	BLK AAx PN 06 (J105)	Uxx-SLOT yy (CH 10)	CABLE	407263-001		
	BLK AAx PN 07 (J106)	Uxx-SLOT yy (CH 11)	CABLE	407263-001		
	BLK AAx PN 08 (J107)	Uxx-SLOT yy (CH 12)	CABLE	407263-001		
	BLK AAx PN 09 (J108)	Uxx-SLOT yy (CH 13)	CABLE	407263-001		
	BLK AAx PN 10 (J109)	Uxx-SLOT yy (COM 1)	CABLE	407263-001		
	BLK AAx PN 11 (J110)	Uxx-SLOT yy (CH 20)	CABLE	407263-001		
	BLK AAx PN 12 (J111)	Uxx-SLOT yy (CH 21)	CABLE	407263-001		
	BLK AAx PN 13 (J112)	Uxx-SLOT yy (CH 22)	CABLE	407263-001		
	BLK AAx PN 14 (J113)	Uxx-SLOT yy (CH 23)	CABLE	407263-001		
	BLK AAx PN 15 (J114)	Uxx-SLOT yy (COM 2)	CABLE	407263-001		
	BLK AAx PN 16 (J115)	Uxx-SLOT yy (CH 30)	CABLE	407263-001		
	BLK AAx PN 17 (J116)	Uxx-SLOT yy (CH 31)	CABLE	407263-001		
	BLK AAx PN 18 (J117)	Uxx-SLOT yy (CH 32)	CABLE	407263-001		
	BLK AAx PN 19 (J118)	Uxx-SLOT yy (CH 33)	CABLE	407263-001		
	BLK AAx PN 20 (J119)	Uxx-SLOT yy (COM 3)	CABLE	407263-001		
	BLK AAx PN 21 (J120)	Uxx-SLOT yy (CH 40)	CABLE	407263-001		
	BLK AAx PN 22 (J121)	Uxx-SLOT yy (CH 41)	CABLE	407263-001		
	BLK AAx PN 23 (J122)	Uxx-SLOT yy (CH 42)	CABLE	407263-001		
	BLK AAx PN 24 (J123)	Uxx-SLOT yy (CH 43)	CABLE	407263-001		
	BLK AAx PN 25 (J124)	Uxx-SLOT yy (COM 4)	CABLE	407263-001		

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DOCUMENT TITLE	SIZE	CODE NO.	DOCUMENT NO.	REV
HARNESS ASSEMBLY, 1260-59, TTI	**A**	**21793**	407480	**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 50)	CABLE	407263-001		SYSTEM WIRE LIST
	BLK AAx PN 27 (J126)	Uxx-SLOT yy (CH 51)	CABLE	407263-001		
	BLK AAx PN 28 (J127)	Uxx-SLOT yy (CH 52)	CABLE	407263-001		
	BLK AAx PN 29 (J128)	Uxx-SLOT yy (CH 53)	CABLE	407263-001		
	BLK AAx PN 30 (J129)	Uxx-SLOT yy (COM 5)	CABLE	407263-001		
	BLK AAx PN 31 (J130)	Uxx-SLOT yy (CH 54) 60	CABLE	407263-001		
	BLK AAx PN 32 (J131)	Uxx-SLOT yy (CH 55) 61	CABLE	407263-001		
	BLK AAx PN 33 (J132)	Uxx-SLOT yy (CH 56) 62	CABLE	407263-001		
	BLK AAx PN 34 (J133)	Uxx-SLOT yy (CH 57) 63	CABLE	407263-001		
	BLK AAx PN 35 (J134)	Uxx-SLOT yy (COM 6)	CABLE	407263-001		
	BLK AAx PN 36 (J135)	Uxx-SLOT yy (CH 58) 70	CABLE	407263-001		
	BLK AAx PN 37 (J136)	Uxx-SLOT yy (CH 59) 71	CABLE	407263-001		
	BLK AAx PN 38 (J137)	Uxx-SLOT yy (CH 60) 72	CABLE	407263-001		
	BLK AAx PN 39 (J138)	Uxx-SLOT yy (CH 61) 73	CABLE	407263-001		
	BLK AAx PN 40 (J139)	Uxx-SLOT yy (COM 7)	CABLE	407263-001		

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.

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DOCUMENT TITLE	SIZE	CODE NO.	DOCUMENT NO.	REV
HARNESS ASSEMBLY, 1260-59, TTI	**A**	**21793**	407480	**A**
	DRN		SHEET 3 of 4	

ENGINEERING WIRE LIST

WIRE	FROM	TO	TYPE	PART #	WIRE LEN	REFERENCE
1	J100	CH 00	COAX	407263	40"	CHANNEL 00
2	J101	CH 0l	COAX	-001	40"	CHANNEL 01
3	J102	CH 02	COAX	407263	40"	CHANNEL 02
4	J103	CH 03	COAX	-001	40"	CHANNEL 03
5	J104	COM 0	COAX	407263	40"	COM 0
				-001		
6	J105	CH 10	COAX	407263	40"	CHANNEL 10
7	J106	CH 11	COAX	-001	40"	CHANNEL 11
8	J107	CH 12	COAX	407263	40"	CHANNEL 12
9	J108	CH 13	COAX	-001	40"	CHANNEL 13
10	J109	COM 1	COAX	407263	40"	COM 1
				-001		
11	J110	CH 20	COAX	407263	40"	CHANNEL 20
12	J111	CH 21	COAX	-001	40"	CHANNEL 21
13	J112	CH 22	COAX	407263	40"	CHANNEL 22
14	J113	CH 23	COAX	-001	40"	CHANNEL 23
15	J114	COM 2	COAX	407263	40"	COM 2
				-001		
16	J115	CH 30	COAX	407263	40"	CHANNEL 30
17	J116	CH 31	COAX	-001	40"	CHANNEL 31
18	J117	CH 32	COAX	407263	40"	CHANNEL 32
19	J118	CH 33	COAX	-001	40"	CHANNEL 33
20	J119	COM 3	COAX	407263	40"	COM 3
				-001		
21	J120	CH 40	COAX	407263	40"	CHANNEL 40
22	J121	CH 41	COAX	-001	40"	CHANNEL 41
23	J122	CH 42	COAX	407263	40"	CHANNEL 42
24	J123	CH 43	COAX	-001	40"	CHANNEL 43
25	J124	COM 4	COAX	407263	40"	COM 4
				-001		
26	J125	CH 50	COAX	407263	40"	CHANNEL 50
27	J126	CH 51	COAX	-001	40"	CHANNEL 51
28	J127	CH 52	COAX	407263	40"	CHANNEL 52
29	J128	CH 53	COAX	-001	40"	CHANNEL 53
30	J129	COM 5	COAX	407263	40"	COM 5
				-001		
31	J130	CH 60	COAX	407263	40"	CHANNEL 60
32	J131	CH 61	COAX	-001	40"	CHANNEL 61
33	J132	CH 62	COAX	407263	40"	CHANNEL 62
34	J133	CH 63	COAX	-001	40"	CHANNEL 63
35	J134	COM 6	COAX	407263	40"	COM 6
				-001		
36	J135	CH 70	COAX	407263	40"	CHANNEL 70
37	J136	CH 71	COAX	-001	40"	CHANNEL 71
38	J137	CH 72	COAX	407263	40"	CHANNEL 72
39	J138	CH 73	COAX	-001	40"	CHANNEL 73
40	J139	COM 7	COAX	407263	40"	COM 7
				-001		

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

DOCUMENT TITLE	SIZE	CODE NO.	DOCUMENT NO.	REV
HARNESS ASSEMBLY, 1260-59, TTI	**A**	**21793**	407480	**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

Racal Instruments, Inc.
4 Goodyear St., Irvine, CA 92618-2002
Tel: (800) 722-3262, FAX: (949) 859-7309

Racal Instruments, Ltd.
480 Bath Road, Slough, Berkshire, SL1 6BE, United Kingdom
Tel: +44 (0) 8706 080134; FAX: +44 (0) 1753 791290

Racal Systems Electronique S.A.
18 Avenue Dutartre, 78150 LeChesnay, France
Tel: +33 (1) 3923 2222; FAX: +33 (1) 3923 2225

Racal Systems Elettronica s.r.l.
Strada 2-Palazzo C4, 20090 Milanofiori Assago, Milan, Italy
Tel: +39 (02) 5750 1796; FAX +39 (02) 5750 1828

Racal Elektronik System GmbH.
Frankenforster Strasse 21, 51427 Bergisch Gladbach, Germany
Tel:+49 2204 92220; FAX: +49 2204 21491

Racal Australia Pty. Ltd.
3 Powells Road, Brookvale, NSW 2100, Australia
Tel: +61 (2) 9936 7000, FAX: +61 (2) 9936 7036

Racal Electronics Pte. Ltd.
26 Ayer Rajah Crescent, 04-06/07 Ayer Rajah Industrial Estate, Singapore 0513.
Tel: +65 7792200, FAX: +65 7785400

Racal Instruments, Ltd.
Unit 5, 25F., Mega Trade Center, No 1, Mei Wan Road,
Tsuen Wan, Hong Kong, PRC
Tel: +852 2405 5500, FAX: +852 2416 4335