1260 VXI
SWITCHING CARD

Model 1260-84
VXI OPTICAL SWITCH

PUBLICATION NO. 980673-057

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2. Product model number
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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.

Optical Ports

WARNING: To avoid eye damage, do not look directly into the optical output ports while there is an optical signal connected to the input port. Always attach the output ports to a receiver or cover with the supplied dust caps before enabling the source signal to the input port.

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Chapter 1
MODULE SPECIFICATION

Introduction

The 1260-84 is a VXI Optical Switch Module developed for the Racal 1260 Series of switch modules.

The 1260-84 is available configured from the factory and can be ordered with the Option-01T Message Based Interface.

The following features are included in the 1260-84

- Single or Dual 1X4 Optical Switching.
- Message Based Interface Option available.
- New Data Driven Model embedded firmware.
- Up to two independent optical switches. Each with a common optical port that connects to 1 of 4 channels or can be disconnected (other configurations are available as specials).
- Single Mode, 9/125µm optical fiber with a wavelength range of 1290-1570 nm standard. Optional fiber types and wavelengths are available as specials.
- FC/SPC connectors are standard (other connectors or fiber pigtails are available as specials).
- Dust Caps are supplied with all front panel Fiberoptic adapters.

Figure 1-1, The 1260-84

Specifications[1]

Optical Fiber Type	9/125µm
Wavelength Range	1290-1570 nm
Insertion Loss[2]	<1.2dB max., 0.6dB typ. <2.0dB max., including connectors
Back Reflection[2]	<-55dB max, 60dB typ.
Polarization Dependent Loss[3]	.05dB max.
Repeatability[4]	+/- .03dB max, +/- .01dB typ.
Isolation	80dB max, 90dB typ.
Switching Time	325msec. +16msec. per channel
Shock	30g, 11msec, ½ sine wave
Vibration	0.013” PK-PK, 5-55Hz
Bench Handling	4in, 45°

Temperature		
	Operating	0 to +50 degrees Centigrade
	Non-operating	-20 to +70 degrees Centigrade
Relative Humidity		90% RH Non-Condensing at ≤ 40°C for 5 days
Power requirements		5 VDC at 1.4 Amps W/Option 01T 5 VDC at 0.4 Amp WO/Option 01T 12 VDC at 0.25 Amps (1260-84A) 12 VDC at .50 Amps (1260-84B)
Cooling Requirements		1.0 liter/sec @ .12 mmH_2O (1260-84-1)
Dimensions	Single-wide	C-Size, VXIbus Module (1260-84-1)

Module Weight	1260-84A-1	1260-84B-1
w/OPT 01T	3.6lbs (1.63kg)	4.7lbs (2.13kg)
w/o OPT 01T	3.4lbs (1.54kg)	4.4lbs (2.00kg)

MTBF 100,000 Hours minimum

NOTES:

1. **All Specifications are referenced without connectors and measured at 23^{0}C $\pm 5^{0}$C.**
2. **Connector Insertion Loss typically less than 0.25dB, 0.4dB maximum per connector. Back Reflection less than –45dB.**
3. **Connector PDL typically less than .02dB, measured at 1550 nm.**
4. **Sequential Repeatability, 100 cycles measured at constant temperature after 1 hour warm-up**

Ordering Information

Listed below are part numbers for both the 1260-84 switch modules and available accessories.

ITEM	DESCRIPTION	PART #
1260-84A-1 Switch Module	1260-84A-1, Single-wide 1X4 Optical Switch	407692-001
1260-84B-1 Switch Module	1260-84B-1, Single-wide Dual 1X4 Optical Switch	407692-002
Additional Manual	1260-84 User Manual	980673-057

Safety

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

Product 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 servicing, call 1-800-722-3262 or 1-949-859-8999 and ask for Customer Support. You may also contact Customer Support via E-Mail at:

Helpdesk@racalate.com

If parts are required to repair the product at your facility, call 1-800-722-3262 or 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 and enclose it with the instrument.

About MTBF

The 1260-84 MTBF is >100,000 hours, calculated in accordance with MIL-HDBK-217E, Ground Benign Environment.

The optical switch used on the 1260-84 module is Racal part no. 602364-004. The switch manufacturer's specifications for this switch are:

Switch Durability $>10^7$ operations minimum

Chapter 2
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 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.

CAUTION

Always perform unpacking, disassembly, repair, and cleaning at a static safe work station.

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 plastic spray foam to surround and protect the instrument.

3. Reship in either the original or a new shipping carton.

Option 01T Installation

Installation of the Option 01T is described in the Installation and Setup section of the 1260A-Option 01T Users Manual, Publication No. 980806-999.

NOTE:

Only install a 1260A Option 01T controller with release 7.1 or later firmware. The 1260-84 is not compatible with the older 1260 Option 01 controller.

Module Installation

Installation of the 1260-84 Switching Module into a VXI mainframe, including the setting of switches SW1-1 through SW1-4, SW2, and SW3, is described in the Installation and Setup Section of the 1260A Option 01T Users Manual, Publication No. 980806-999.

Module Configuration

The 1260-84 is a 1X4 optical switch module consisting of up to two optical switch modules. Refer to **Figure 2-1** for a block diagram of the 1260-84A. The 1260-84 is available as a single 1X4, 1260-84A or as a dual 1X4, 1260-84B. Refer to **Figure 2-2** for a block diagram of the 1260-84B.

This architecture permits the 1260-84B module to be organized via software as two independent 1X4 optical switches or as a synchronous duplex 1X4 switch by use of the **INCLUDE** command (Refer to the 1260-01T User Manual). In addition, the user can configure the module as a 1X7 optical switch by connecting the common port of one switch to one of the channels of the other switch.

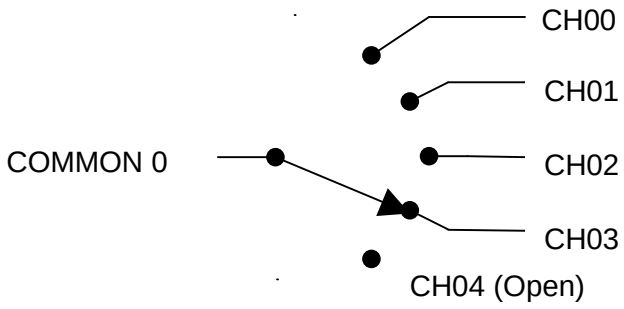

Figure 2-1, 1260-84A Block Diagram

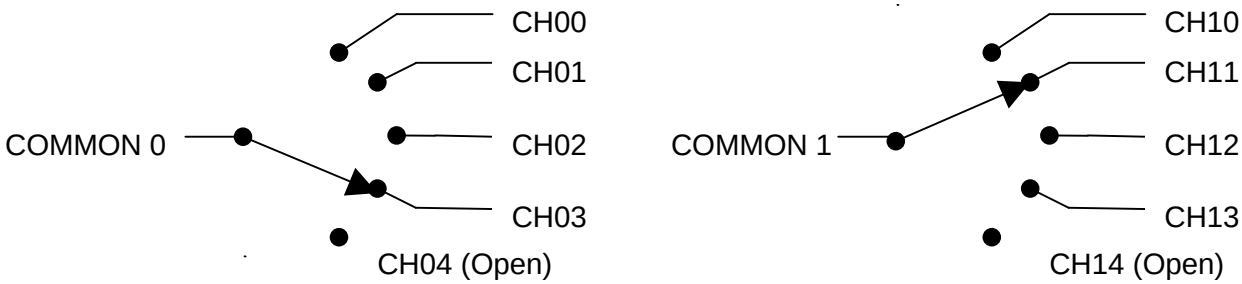

Figure 2-2, 1260-84B Block Diagram

Front Panel Connectors

The 1260-84 front panel connectors are labeled as shown in **Figure 2-3 and 2-4**. The connector type is a single mode FC connector adapter.

Fail LED

The Fail LED is available if the 1260 Option 01T Message Based Controller is installed. For further information refer to the 1260 Option 01T Users Manual, Publication No. 980806-999

Switch Status LED

The 1260-84 provides a switch status LED (S0 or S1) for each switch installed. The status LED provides an indication of the state of the optical switch as shown below:

OFF: The optical switch is in an idle state.

Green: The optical switch is busy, in the process of switching. At power up, the status LED will default to Green, indicating power applied to the optical switch. The Green LED will turn off after a BNO (Begin Normal Operation) has been issued to the 1260-84.

Red: An Error has occurred as a result of the last command. An Error can be caused by:

a. The optical switch was commanded to a non-existent channel.

b. An internal switch error has occurred as the result of a failed home position or a stepper motor failure.

c. A Red LED at power-up indicates a possible disconnected control cable to the optical switch.

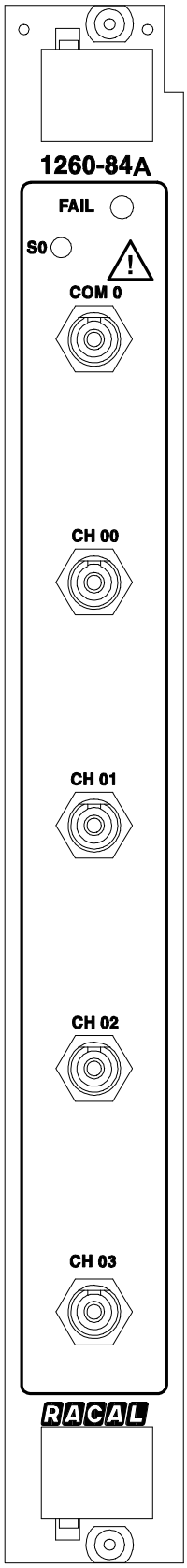

Figure 2-3 1260-84A-1 Front Panel Pin Connections, Front View

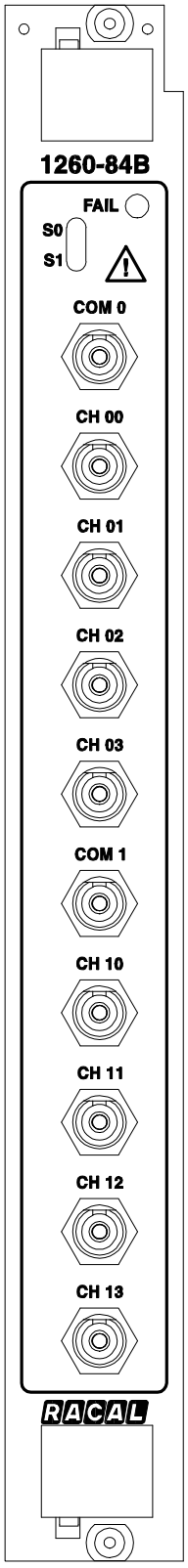

Figure 2-4, 1260-84B-1 Front Panel Pin Connections, Front View

Mating Connectors

Mating connectors for the 1260-84 module are standard FC types. It is preferable to use fiberoptic cables with low insertion loss, low reflection FC/UPC or FC/SPC connector types.

Refer to Appendix C for cleaning adapters, connectors, and handling of fiberoptic cables.

Optical Ports

WARNING: To avoid eye damage, do not look directly into the optical output ports while there is an optical signal connected to the input port. Always attach the output ports to a receiver or cover the ports with the supplied caps before enabling the source signal to the input port.

Chapter 3
MODULE OPERATION

General Information

The 1260-84 may be operated either in *message-based mode* or in *register-based mode*.

When the *message-based mode* of operation is used, commands are sent to the 1260-01T command module. The 1260-01T command module interprets the commands, and operates the 1260-84 module by sending 8-bit bytes to control registers on the 1260-84 module.

A conceptual view of the message-based mode of operation is shown in Figure 3-1 below.

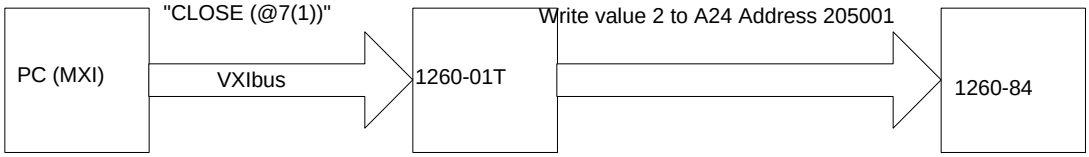

Figure 3-1, Message-Based Mode of Operation

When the *register-based mode* of operation is used, the user writes to the control registers on the 1260-84 module directly. The 1260-01T command module does not monitor the operations, and does not track the state of the optical switch on the module in this mode.

A conceptual view of the register-based mode of operation is shown in Figure 3-2 below.

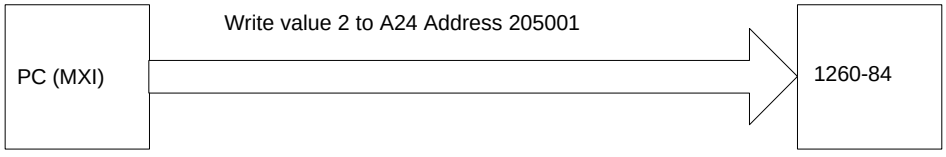

Figure 3-2, Register-Based Mode of Operation

Since the 1260-01T command module does not monitor the register-based mode of operation, it is advisable to select **either** the message-based or the register-based mode of operation, and continue to use the same mode throughout the application program.

In general, the message-based mode of operation is easier to use with utility programs, such as National Instruments VIC program. The message-based mode allows the user to send ASCII text commands to the 1260-01T and to read replies from the 1260-01T. In addition, there are a few features, such as a **SCAN** list and **OPC** commands, which are available only with the message-based mode of operation.

The register-based mode of operation provides a faster update of optical switches. This mode provides for switch operations in less than 4.5 microseconds (not counting software overhead inherent in I/O libraries such as VISA) and optical switch switching time. Since the optical switch switching time is slow, the Message Based operation is preferable.

Consult the 1260-01T User's Manual for a comparison of the message-based and register-based modes of operation.

Operating The 1260-84 In Message-Based Mode

Channel Descriptors For The 1260-84 Module

The standard 1260-01T commands are used to operate the 1260-84 module. These commands are described in the 1260-01T User's Manual.

Each 1260-01T command uses a *channel descriptor* to select the channel(s) of interest. The syntax for a channel descriptor is the same for all 1260 series modules. In general, the following syntax is used to select a single channel:

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

Where:

<module address> is the address of the 1260-84 module, as set by the logical address DIP switch SW1 on the 1260-84.

The module address is a number from 1 through 12, inclusive.

Set the module addresses for the 1260-84 and other 1260-Series

modules so that no address is used by more than one 1260-Series module. For instructions on setting module addresses for a 1260-Series module, see the label on the side panel of the module.

<channel descriptor> is the 1260-84 channel to operate. The <channel descriptor> Is comprised of a switch designator 0 or 1 and a channel designator 0 – 4 where 4 designates all channels open. If a switch designator is not specified the default is switch 0.

Multiple individual channels may be specified using the following channel descriptor syntax:

```
(@ <module address> ( <chan1> , <chan2> , . . ., <chanN> ))
```

A range of channels may be specified using the following channel descriptor syntax:

```
(@ <module address> ( <first channel> : <last channel> ))
```

The following examples illustrate the use of the channel descriptors for the 1260-84:

`OPEN (@8(00))`	Open channel 0 of switch 0 on the 1260-84 with module address 8
`CLOSE (@8(00,13))`	Close channels 0 of switch 0 and 3 of switch1 on the 1260-84 with module address 8.
`CLOSE (@2(04,14))`	Open all channels on both switches on the 1260-84 with module address 2

Implicit Exclusion List

The firmware for the 1260-84 implements an “implicit exclusion list”. This means that for any given Switch, **no more than one channel can be connected to the common channel at one time**. Thus if the user specifies the command:

```
CLOSE (@12(0:3))
```

Then, after the command has been executed, the only channel that will be connected is channel “3” of switch 0. Channels 0,1, and 2 will not have been closed, since the firmware enforces the “implicit exclusion list”

Reply To The MOD:LIST? Command

The 1260-01T returns a reply to the MOD:LIST? command. This reply is unique for each different 1260 series switch module. The syntax for the reply is:

<module address> : <module-specific identification string>

The <module-specific identification string> for the 1260-84 is:

1260-84A SINGLE 1X4 OPTICAL SWITCH MODULE

or

1260-84B DUAL 1X4 OPTICAL SWITCH MODULE

So, for a 1260-84A whose <module address> is set to 8, the reply to this query would be:

8 : 1260-84A SINGLE 1X4 OPTICAL SWITCH MODULE

Using The *OPC Query / Command

When you are using the 1260-84 in an automated test environment, it is important that you be aware of the time it takes for the switch movement to complete. For example, suppose you develop an automated test in which the optical switch closure is over the VXI bus via the CLOSE command. After each switch configuration, you might then take a reading from an optical power meter. In such a sequence, it is important that you not initiate the reading from the optical power meter before the 1260-84 has come to a stable position (that is, the BUSY indicator is no longer illuminated).

Below is an example that illustrates the use of instrument commands and queries utilizing the *OPC? query. In this example, queries to other instruments (such as the power meter) are not

made until all of the 1260-84's pending operations have completed.

Example: A command is sent to the 1260-84 to make a connection to channel 07, the command is immediately followed by an *OPC? query to the same 1260-84.

1. Write to the 1260-84 VXI address:

```
CLOSE(@8(03)); *OPC?
```

2. Read from 1260-84 the VXI address:

```
1
```

Depending on the previous switch setting of the 1260-84, several hundred milliseconds may be required before the `CLOSE(@8(03))` command is completed and the *OPC? produces a "1" in the 1260-01T output queue. After the *OPC? query is sent to the1260-84, the programmer should immediately attempt a read instruction from the controller. The programmer's controller will wait until the 1260-84 finishes all adjustments and the *OPC query provides a "1" to be read.

NOTE:

It is important that you remember to set the time-out of the controller's READ instruction to be greater than the longest time possible for the 1260-84 to make any channel changes (up to 500msecs may be required to make large changes to the optical switch.

You can also have the OPC bit of the SESR set by using the command form of *OPC instead of the query form. By setting the OPC bit to "1" via an *OPC command, an event will be generated assuming the user has enabled the proper register bits.

- Advanced programmers can develop other methods to accomplish the set-and-wait-until-complete routine utilizing the event queues and status registers provided in the 1260-01T controller. Refer to the 1260 Option 01T Users Manual Publication No. 980806-999.

Operating The 1260-84 in Register-Based Mode

The 1260-84 may be operated by directly setting one of the three control registers on the 1260-84 module. The first control register on the module sets the channel for switch 0. The second control register sets the channel for switch 1. The third control register controls the channel update for both switches.

The control registers are located in the VXIbus A24 Address Space. The actual A24 address for a control register depends on:

1. The A24 Address Offset assigned to the 1260-01T module by the Resource Manager program. The Resource Manager program is provided by the VXIbus slot-0 controller vendor. The A24 Address Offset is placed into the "Offset Register" of the 1260-01T by the Resource Manager.

2. The <module address> of the 1260-84 module. This is set by the setting of the logical Address DIP switch SW1on the 1260-84 to a value between 1 and 12 inclusive .

3. The control register on the 1260-84 to update. Each control register on the 1260-84 has a unique address.

The base A24 Address for the 1260-84 module may be calculated by:

(A24 Offset of the 1260-01T) + (1024 x Module Address of 1260-84).

The A24 Offset is usually expressed in hexadecimal. A typical value of 204000_{16} will be used in the examples which follow. So, a sample 1260-84 with a module address of 7 would have the base A24 Address computed as follows:

Base A24 Address of 1260-84 = 204000_{16} + (400_{16} x 7_{10}) = $205C00_{16}$

The control registers for 1260 series modules are always on odd A24 addresses. The three control registers for the 1260-84 reside at the following three odd A24 addresses for the module:

(Base A24 Address of 1260-84) + 1 = Switch Data Register 0

(Base A24 Address of 1260-84) + 3 = Switch Data Register 1

(Base A24 Address of 1260-84) + F = Switch Strobe/Status Register F

So, for our example, the three control registers are located at:

205C01 Switch Data Register 0, controls Optical Switch 0

205C03 Switch Data Register 1, controls Optical Switch 1

205C0F Switch Strobe/Status Register, controls both Optical Switches 0 & 1.

Switch Data Write Register

When a channel is closed, the two front-panel connectors associated with that channel are optically connected. When a channel is opened, the optical connection is broken and the two front panel connectors are optically isolated.

The Optical Switch is controlled in an eight-bit wide bank (since the firmware outputs an entire eight-bit byte at a time over the local bus to the channel module). The Switch is controlled via the firmware by the encoded data that is written to the corresponding Switch Data Register. Refer to the address map in Appendix B for specific addresses and data bits. Subsequent to writing to the Data Registers, firmware must toggle the switch strobe bit in order to store the data in the switch data registers into the switch. This will be explained in the following paragraphs.

The Switch Data Register data bits for Switch 0 channels are shown below and also in Appendix A.

Switch Data Register 0 Bits	Channel Descriptor	Connector Channel	Connector Channel
00_{16}- $7f_{16}$	04	COM 0	No Connection
80_{16}	00	COM 0	00
81_{16}	01	COM 0	01
82_{16}	02	COM 0	02
83_{16}	03	COM 0	03

Switch Data Status Read Register

The 1260-84, via the Data Status Register provides a read back of the data that is stored in the corresponding Switch Data Register. This can be used as verification of the status of the switch data bits. Refer to the address map in Appendix B for specific addresses.

Optical Switch Strobe Write Register

As mentioned before, the data that resides in the Switch Data Register needs to be "Strobed" into the Optical Switch. The D0 and D1 bits in this register must be toggled. (set to a 1, set to a 0, set to a 1) in order to strobe the data from the data register into the optical switch. This happens after data is written to the switch data register. Refer to the address map in Appendix B for specific addresses and data bits.

Optical Switch Status Read Register

In addition to the status of the data bits, the 1260-84 provides a status of the optical switch as well as the status of the Strobe Register Strobe Bits. The optical switch provides a Busy/Ready- status bit as well as an Error bit that can be queried by the software. Refer to the address map in Appendix B for specific addresses and data bits.

Busy/Ready- Status

The Busy/Ready- Status bit will be a logic 1 when the optical switch is busy (during the switching time) and a logic 0 when the switch is ready (in a stable channel position) This bit will stay at a logic 1 until the switch is ready to receive a new position command. If the software commands the switch to move to it's existing position (no data change) this bit will go to a logic 1 for 60-80 msecs.

The register based application software will have to query this bit in order to synchronize the switch closure with the application software. The application software may require the Busy bit to be polled in order to determine when the optical switch is closed.

Error Status

The Error Status bit will be a logic 1 when a stepper motor or the reset (channel 4) proximity switch error occurs. An error status also occurs if the switch module is commanded to go to a position other than channels 0 through 4 (84_{16} to FF_{16}).

This bit should be read at the same time the Busy/Ready- Status bit is read. If an error occurs, the software can attempt to clear the error by resetting the switch (to 00_{16}) followed by a second attempt to set the channel. If an error occurs again the application software should respond with an error message indicating a switch failure.

Strobe Status

The Strobe Status bit provides a read back of the present state of the Strobe bit in the Optical Switch Strobe Register.

1260-84 Example Code

The VISA I/O library may be used to control the module. The VISA function viOut8() is used to write a single 8-bit byte to a control register, while viIn8() is used to read a single 8-bit byte from the control register. The following code example shows th use of viOut8() to update the 1260-84 module.

The VISA library functions (viIn8() and viOut8()) account for the base A24 offset of the 1260-01T controller. Therefore, the application code below uses only the module address to calculate the offset of the two control registers and the status register.

The following example shows many places where “error handling code goes here”. This is intended for application-specific error handling code which depends on the application and the manner in which errors are handled. Therefore, the specifics of the error handling code are not shown in the example.

```
#include <visa.h>

/* This example shows a 1260-01T at logical address 16 and a VXI/MXI*
/* interface */
#define RI1260_01_DESC     "VXI::16"

/* For a GPIB-VXI interface, and a logical address of 77 */
/* the descriptor would be:  "GPIB-VXI::77" */

/* this example shows a 1260-84B with module address 7 */
#define MOD_ADDR_84   7

/* bit patterns to control strobes and to read status */
#define STROBE0_MASK  0x01
#define STROBE1_MASK  0x02
#define BUSY0_MASK    0x10
#define ERR0_MASK          0x20
#define BUSY1_MASK    0x40
#define ERR1_MASK          0x80

void example_operate_1260_84(void)
{
ViInt32 base_addr;
ViBusAddress mux0_creg;
ViBusAddress mux1_creg;
ViBusAddress statctl_reg;
ViSession hdl1260;    /* VISA handle to the 1260-01T */
ViSession hdlRM;      /* VISA handle to the resource manager */
ViStatus error;       /* VISA error code */
ViUInt8 reg_val;      /* register value read back */
ViUInt8 ctrl_val;          /* control register value */
int is_busy;          /* flag for testing busy status */


     /* open the resource manager */
     /* this must be done once in application program */
     error = viOpenDefaultRM (&hdlRM);
     if (error < 0) {
          /* error handling code goes here */
     }

     /* get a handle for the 1260-01T */
     error = viOpen (hdlRM, RI1260_01_DESC, VI_NULL,VI_NULL,&hdl1260);
     if (error < 0) {
          /* error handling code goes here */
     }
```

```
/* form the offset for control register 0 */
/* note that the base A24 Address for the 1260-01T */
/* is already accounted for by VISA calls viIn8() and viOut8() */

     /* module address shifted 10 places = module address x 1024 */
     base_addr = (MOD_ADDR_84 << 10);
     mux0_creg = (ViBusAddress) (base_addr + 1);
     mux1_creg = (ViBusAddress) (base_addr + 3);
     statctl_reg = (ViBusAddress) (base_addr + 0xF);


     /*
      * CLOSE CHANNEL 3 OF MUX 0
      */

     /* first set up data register for MUX 0 to select channel 3 */
     error = viOut8 (hdl1260, VI_A24_SPACE, mux0_creg, 0x83);
     if (error < 0) {
          /* error handling code goes here */
     }

     /* now strobe MUX 0 (set bit high-low-high) */
     ctrl_val = STROBE0_MASK | STROBE1_MASK;
     error = viOut8 (hdl1260, VI_A24_SPACE, statctl_reg, ctrl_val);
     if (error < 0) {
          /* error handling code goes here */
     }

     ctrl_val = STROBE1_MASK;
     error = viOut8 (hdl1260, VI_A24_SPACE, statctl_reg, ctrl_val);
     if (error < 0) {
          /* error handling code goes here */
     }

     ctrl_val = STROBE0_MASK | STROBE1_MASK;
     error = viOut8 (hdl1260, VI_A24_SPACE, statctl_reg, ctrl_val);
     if (error < 0) {
          /* error handling code goes here */
     }

     /* read the status register, wait until BUSY is low */
     is_busy = 1;
     while (is_busy) {

          /* read status register */
          error = viIn8( hdl1260, VI_A24_SPACE, statctl_reg,
```

```
                    &reg_val);
      if (error < 0) {
           /* error handling code goes here */
      }

      /* check for error */
      if (reg_val & ERR0_MASK)
           {
           /* error has occurred, reset MUX 0 */
           viOut8( hdl1260, VI_A24_SPACE, mux0_creg, 0x00 );
           ctrl_val = STROBE0_MASK | STROBE1_MASK;
           viOut8(hdl1260, VI_A24_SPACE, statctl_reg, ctrl_val);
           ctrl_val = STROBE1_MASK;
           viOut8(hdl1260, VI_A24_SPACE, statctl_reg, ctrl_val);
           ctrl_val = STROBE0_MASK | STROBE1_MASK;
           viOut8(hdl1260, VI_A24_SPACE, statctl_reg, ctrl_val);

           /* rest of error handling code goes here */
           }

      /* check if still busy (moving) */
      if ( ! (reg_val & BUSY0_MASK) )
           is_busy = 0;

} /* end of while loop */

/*
 * CLOSE CHANNEL 2 of MUX 1
 */

/* first set up data register for MUX 1 to select channel 2 */
error = viOut8 (hdl1260, VI_A24_SPACE, mux1_creg, 0x82);
if (error < 0) {
     /* error handling code goes here */
}

/* now strobe MUX 1 (set bit high-low-high) */
ctrl_val = STROBE0_MASK | STROBE1_MASK;
error = viOut8 (hdl1260, VI_A24_SPACE, statctl_reg, ctrl_val);
if (error < 0) {
     /* error handling code goes here */
}

ctrl_val = STROBE0_MASK;
error = viOut8 (hdl1260, VI_A24_SPACE, statctl_reg, ctrl_val);
if (error < 0) {
     /* error handling code goes here */
```

```
      }

      ctrl_val = STROBE0_MASK | STROBE1_MASK;
      error = viOut8 (hdl1260, VI_A24_SPACE, statctl_reg, ctrl_val);
      if (error < 0) {
            /* error handling code goes here */
      }

      /* read the status register, wait until BUSY is low */
      is_busy = 1;
      while (is_busy) {

            /* read status register */
            error = viIn8( hdl1260, VI_A24_SPACE, statctl_reg,
                           &reg_val);
            if (error < 0) {
                  /* error handling code goes here */
            }

            /* check for error */
            if (reg_val & ERR1_MASK)
                  {
                  /* error has occurred, reset MUX 1 */
                  viOut8( hdl1260, VI_A24_SPACE, mux1_creg, 0x00 );
                  ctrl_val = STROBE0_MASK | STROBE1_MASK;
                  viOut8(hdl1260, VI_A24_SPACE, statctl_reg, ctrl_val);
                  ctrl_val = STROBE0_MASK;
                  viOut8(hdl1260, VI_A24_SPACE, statctl_reg, ctrl_val);
                  ctrl_val = STROBE0_MASK | STROBE1_MASK;
                  viOut8(hdl1260, VI_A24_SPACE, statctl_reg, ctrl_val);

                  /* rest of error handling code goes here */
                  }

            /* check if still busy (moving) */
            if ( ! (reg_val & BUSY1_MASK) )
                  is_busy = 0;

      } /* end of while loop */

      /* close the VISA session */
      error = viClose( hdl1260 );
      if (error < 0) {
            /* error handling code goes here */
      }
}
```

Power and Module Cooling Considerations

The 1260-84 is a VXI module providing precise switching of optical channels using defraction limited collimating lenses which enhance both thermal stability and repeatability. Because of this, certain precautions should be applied when using the switch module in a VXI chassis.

Airflow Requirements

VXI Modules are required to specify a particular airflow to maintain a specific temperature rise. The air flow required and the resultant back pressure (pressure drop across the module) values determine a specific operating point that is plotted or compared against a VXI chassis cooling curve. If the module operating point is below the chassis cooling curve, there is a high probability that the module will remain within its specified temperature rise. If the operating point lies above the chassis cooling curve the temperature rise may exceed the specified value.

The following procedure details how to calculate the cooling requirements for the 1260-84B-1.

1. Determine the maximum temperature rise allowed across the module. This is typically 10 °C, but could be higher or lower depending the chassis ambient temperature, and the overall reliability requirements of the module.

2. Determine the required airflow to maintain the specified temperature rise of the module. This is calculated from the module power and the desired temperature rise, and the specific heat of air. For a given temperature rise the required air flow is:

   Airflow(liters/sec) = 0.83/Temp Rise(°C) x Module Power (Watts)

   For a 10 °C rise and a 1260-84B-1 module power of 12 Watts:

   Airflow(liters/sec) = 0.83/10 °C x 12 Watts = 1.0 liters /sec

3. Determine the pressure drop across the module when the required airflow (liters/sec) is forced through the module. This can be determined by looking at pressure drop vs. airflow plot for the 1260-84B-1 Module in **Figure 3-4**. Find the required airflow and then read the corresponding pressure in mm H_2O. For the case above, with an airflow of 1.0 liters/sec the pressure drop read from **Figure 3-4** is 0.12 mm H_2O.

4. Plot the 1260-84B-1 operating point (Pressure, Airflow) against the chassis cooling curve. If the module operating point lies under the chassis curve, the module should remain within the specified temperature. An example of a 1260-84B-1 Module in a Racal 1261B VXI Chassis is shown in **Figure 3-4.** The chassis airflow plotted is for the “worst case” slot airflow. In the 1261B chassis, the 1260-84B-1 could be placed in any slot without much concern for the temperature rise of 10 °C being exceeded.

CAUTION

The required airflow may need to be increased depending on airflow distribution across the module, the ambient temperature and reliability issues. Consult the VXI specification for more details.

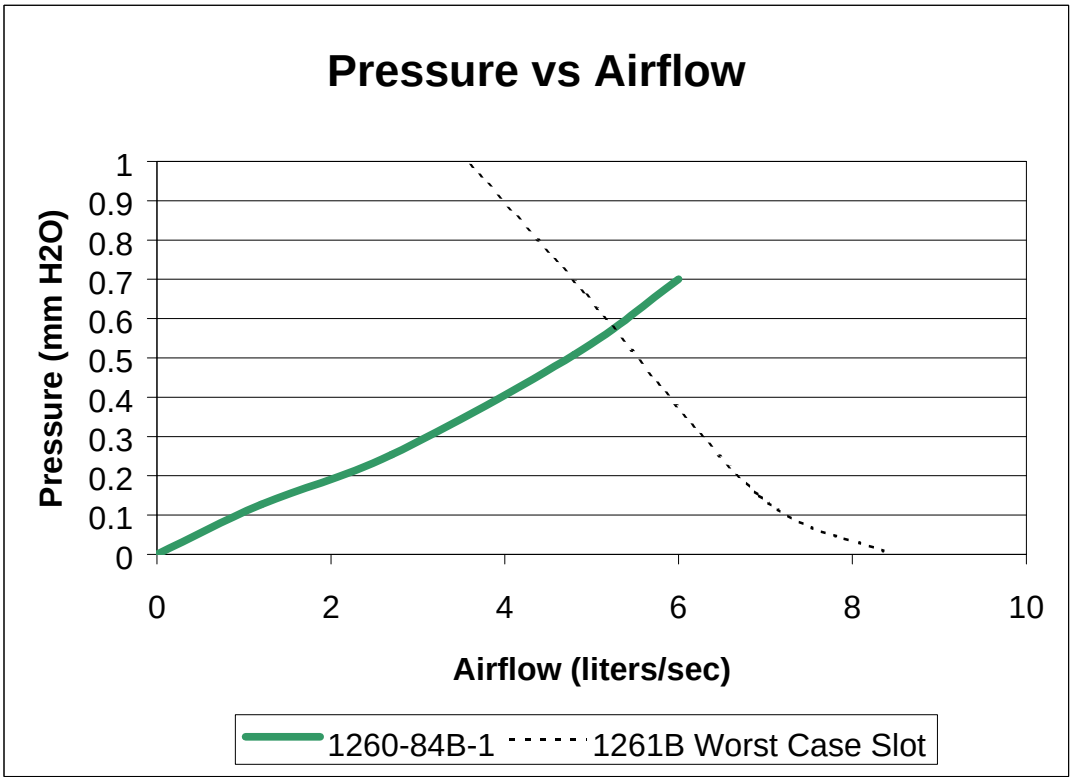

Figure 3-4, 1260-84 Optical Switch and Racal Instruments 1261B Chassis Airflow Resistance Curves

Chapter 4
DRAWINGS

407692-001	Final Assy, 1260-84A-1	4-3
407692-002	Final Assy, 1260-84B-1	4-5
405148	PCB Assy, L-BUS Jumper	4-7
435148	Schematic, L-BUS Jumper	4-8
405154	PCB Assy, 1260-84/88	4-9
435154	Schematic, 1260-84/88	4-10
407691	Cable Assy, Interface	4-21

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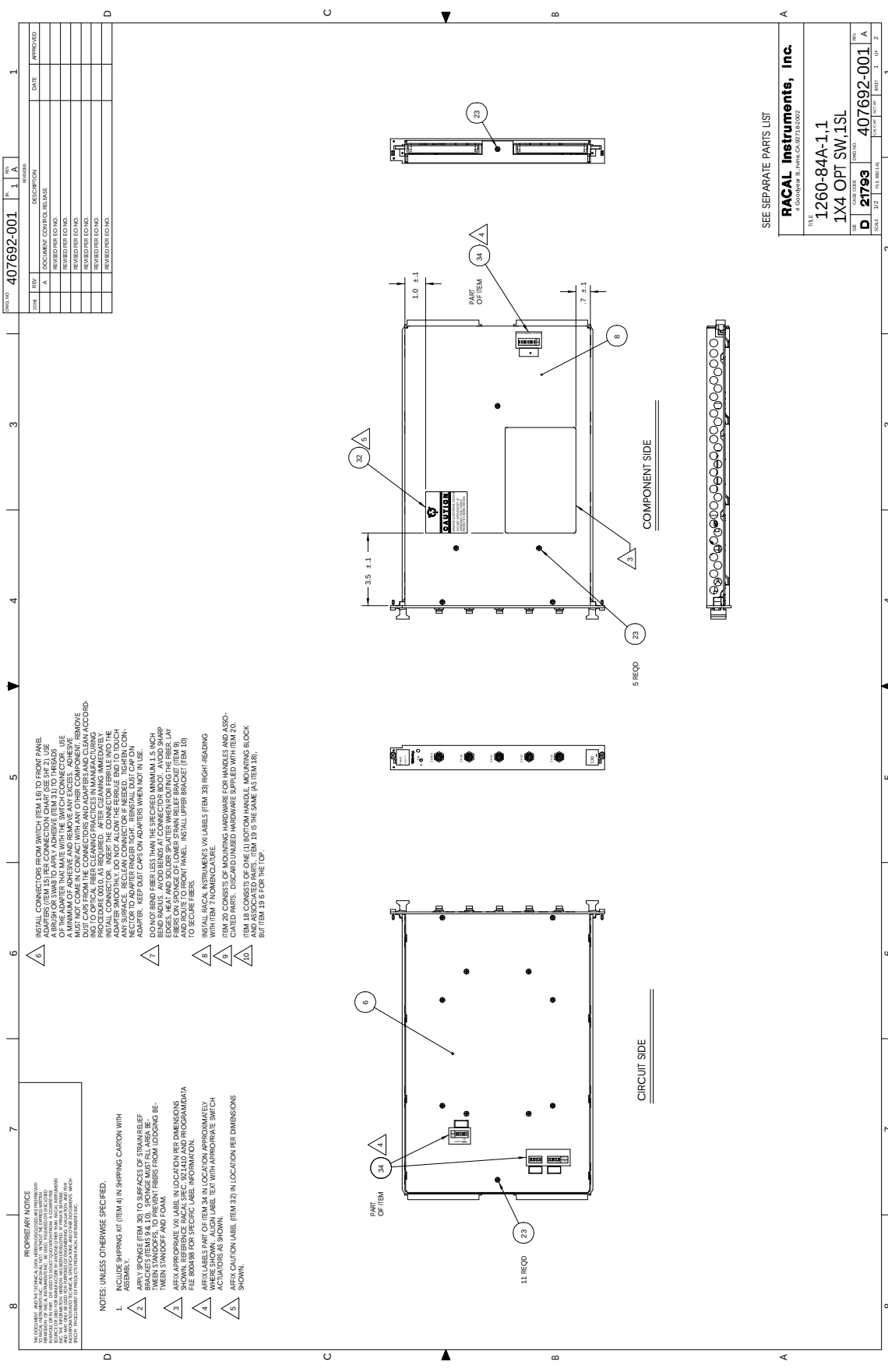
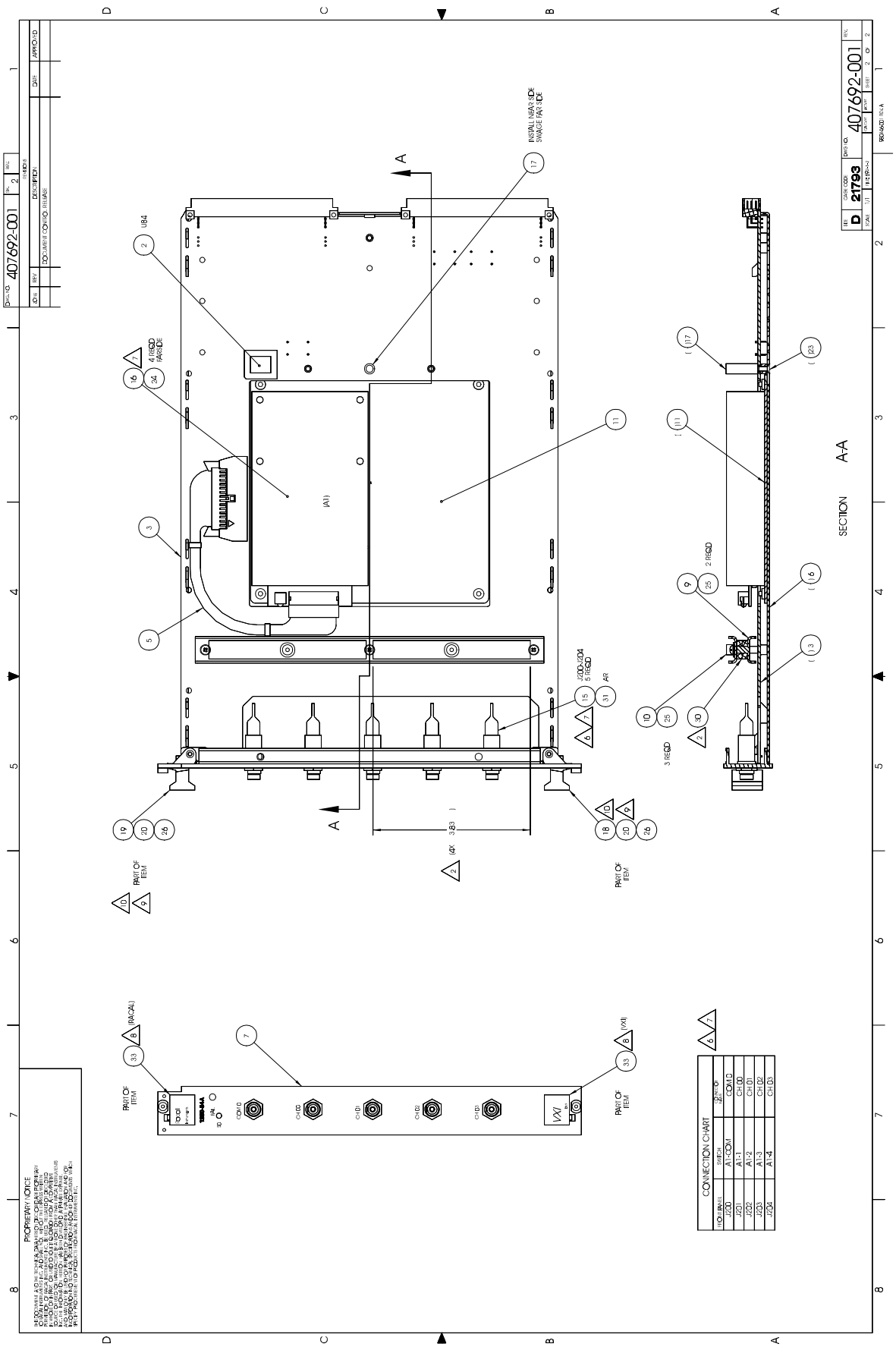
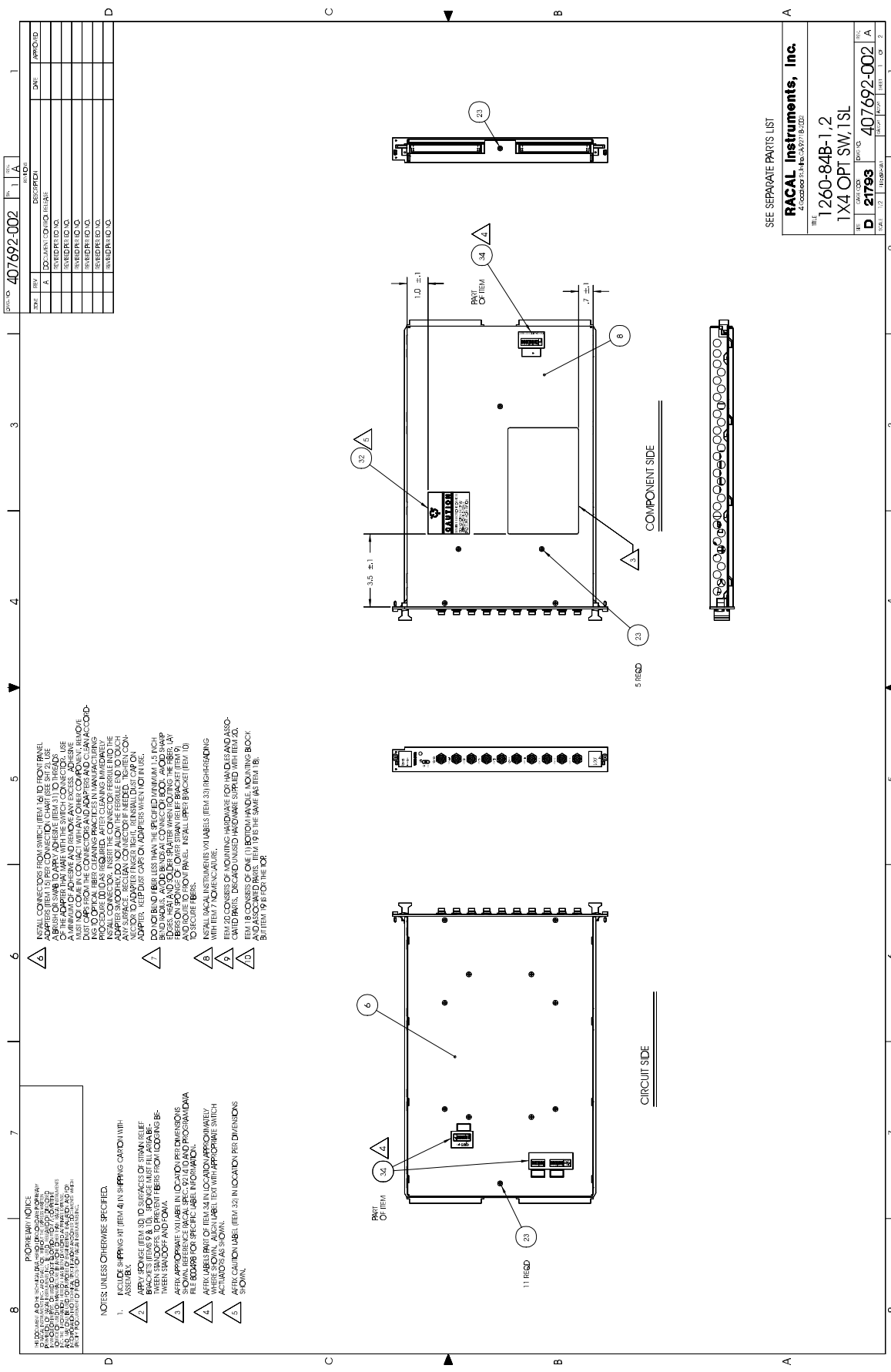
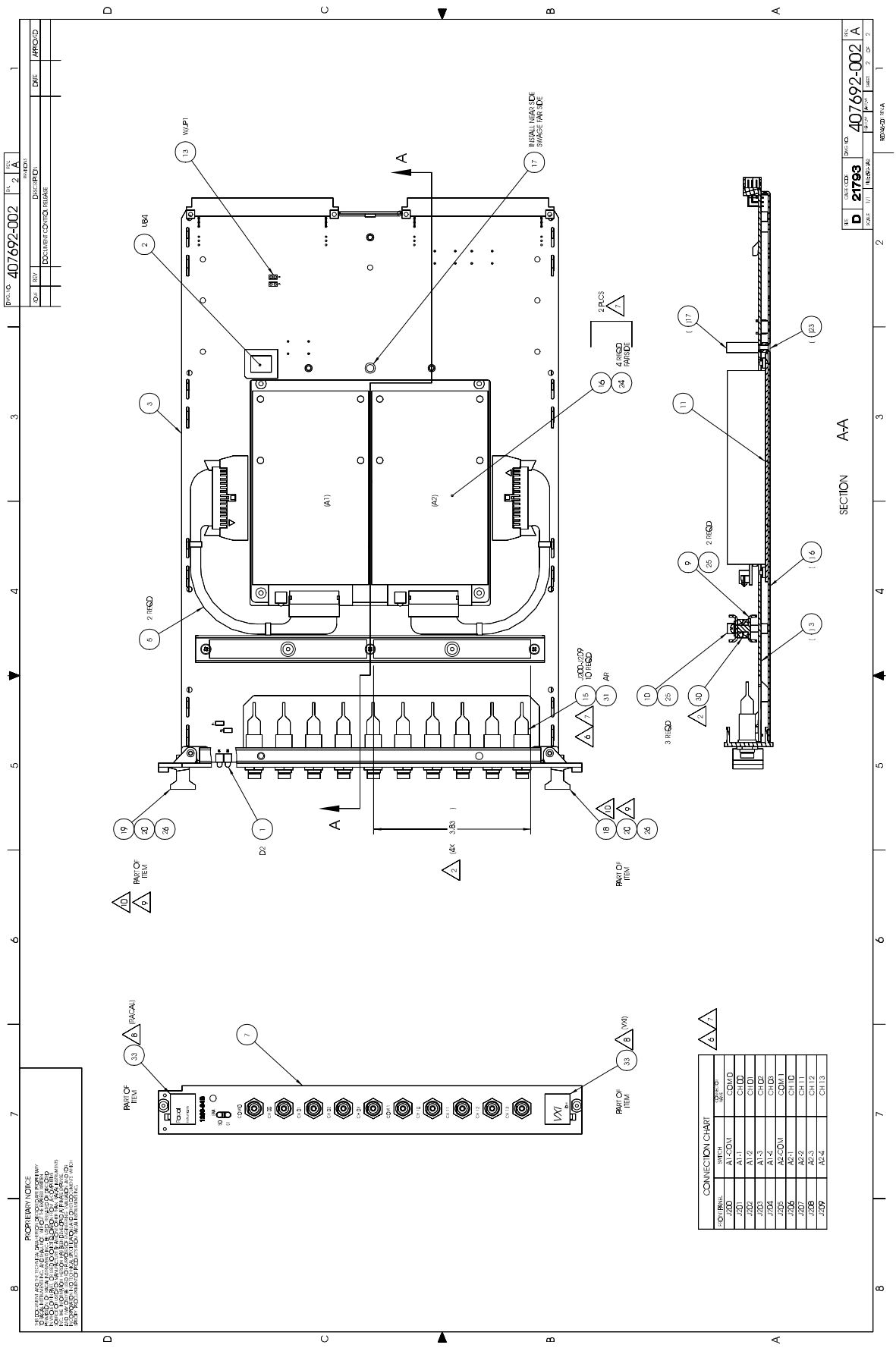


SEE SEPARATE PARTS LIST
RACAL Instruments, Inc.
4 Goodyear St., Irvine, CA 92718-2002
TITLE
1260-84A-1,1
1X4 OPT SW,1SL
SIZE D
CAGE CODE 21793
DWG NO. 407692-001
REV A
SCALE 1/2
FILE 6901.1A
SHEET 1 OF 2
DWG NO. 407692-001
SH. 1
REV A
REVISIONS
ZONE
REV
DESCRIPTION
DATE
APPROVED
A
DOCUMENT CONTROL RELEASE
REVISED PER EO NO.
REVISED PER EO NO.
REVISED PER EO NO.
REVISED PER EO NO.
REVISED PER EO NO.
REVISED PER EO NO.
REVISED PER EO NO.
PROPRIETARY NOTICE
NOTES: UNLESS OTHERWISE SPECIFIED.
1. INCLUDE SHIPPING KIT (ITEM 4) IN SHIPPING CARTON WITH ASSEMBLY.
2 APPLY SPONGE (ITEM 30) TO SURFACES OF STRAIN RELIEF BRACKETS (ITEMS 9 & 10). SPONGE MUST FILL AREA BETWEEN STANDOFFS, TO PREVENT FIBERS FROM LODGING BETWEEN STANDOFF AND FOAM.
3 AFFIX APPROPRIATE 'W' LABEL IN LOCATION PER DIMENSIONS SHOWN. REFERENCE RACAL SPEC. 92-1410 AND PROGRAMMDATA FILE 800498 FOR SPECIFIC LABEL INFORMATION.
4 AFFIX LABELS PART OF ITEM 34 IN LOCATION APPROXIMATELY WHERE SHOWN. ALIGN LABEL TEXT WITH APPROPRIATE SWITCH ACTUATORS AS SHOWN.
5 AFFIX CAUTION LABEL (ITEM 32) IN LOCATION PER DIMENSIONS SHOWN.
6 INSTALL CONNECTORS FROM SWITCH (ITEM 16) TO FRONT PANEL ADAPTERS (ITEM 15) PER CONNECTION CHART (SEE SHT 2). USE A BRUSH OR SWAB TO APPLY ADHESIVE (ITEM 31) TO THREADS OF THE ADAPTER THAT MATE WITH THE SWITCH CONNECTOR. USE A MINIMUM OF ADHESIVE AND REMOVE ANY EXCESS. ADHESIVE MUST NOT COME IN CONTACT WITH ANY OTHER COMPONENT. REMOVE DUST CAPS FROM THE CONNECTORS AND ADAPTERS AND CLEAN ACCORDING TO OPTICAL FIBER CLEANING PRACTICES IN MANUFACTURING PROCEDURE 0010, AS REQUIRED. AFTER CLEANING IMMEDIATELY INSTALL CONNECTOR. INSERT THE CONNECTOR FERRULE INTO THE ADAPTER SMOOTHLY. DO NOT ALLOW THE FERRULE END TO TOUCH ANY SURFACE. RECLEAN CONNECTOR IF NEEDED. TIGHTEN CONNECTOR TO ADAPTER FINGER TIGHT. REINSTALL DUST CAPS ON ADAPTER. KEEP DUST CAPS ON ADAPTERS WHEN NOT IN USE.
7 DO NOT BEND FIBER LESS THAN THE SPECIFIED MINIMUM 1.5 INCH BEND RADIUS. AVOID BENDS AT CONNECTOR BODY. AVOID SHARP EDGES, HEAT AND SOLDER SPLATTER WHEN ROUTING THE FIBER. LAY FIBERS ON SPONGE OF LOWER STRAIN RELIEF BRACKET (ITEM 9) AND ROUTE TO FRONT PANEL. INSTALL UPPER BRACKET (ITEM 10) TO SECURE FIBERS.
8 INSTALL RACAL INSTRUMENTS 'W' LABELS (ITEM 33) RIGHT-READING WITH ITEM 7 NOMENCLATURE.
9 ITEM 20 CONSISTS OF MOUNTING HARDWARE FOR HANDLES AND ASSOCIATED PARTS. DISCARD UNUSED HARDWARE SUPPLIED WITH ITEM 20.
10 ITEM 18 CONSISTS OF ONE (1) BOTTOM HANDLE, MOUNTING BLOCK AND ASSOCIATED PARTS. ITEM 19 IS THE SAME (AS ITEM 18), BUT ITEM 19 IS FOR THE TOP.
PART OF ITEM
11 REQD
CIRCUIT SIDE
COMPONENT SIDE
5 REQD
1.0 ±.1
.7 ±.1
3.5 ±.1
CAUTION


407692-001
DOCUMENT CONTROL RELEASE
INSTALL NEAR SIDE SWAGE FAR SIDE
U84
4 REQD FARSIDE
(A1)
J200-J204 5 REQD
AR
2 REQD
3 REQD
SECTION A-A
PART OF ITEM
(RACAL)
(VXI)
CONNECTION CHART
FRONT PANEL
SWITCH
J200 A1-COM COM 0
J201 A1-1 CH 00
J202 A1-2 CH 01
J203 A1-3 CH 02
J204 A1-4 CH 03
PROPRIETARY NOTICE
D 21793
407692-001


RACAL Instruments, Inc.
1260-84B-1,2
1X4 OPT SW,1SL
407692-002
D 21793
COMPONENT SIDE
CIRCUIT SIDE
PART OF ITEM
5 REQD
11 REQD
SEE SEPARATE PARTS LIST
NOTES: UNLESS OTHERWISE SPECIFIED.
PROPRIETARY NOTICE


407692-002
SECTION A-A
INSTALL NEAR SIDE SWAGE FAR SIDE
PART OF ITEM
CONNECTION CHART
PROPRIETARY NOTICE

DWG. NO. 405148 | SH. 1 | REV. A

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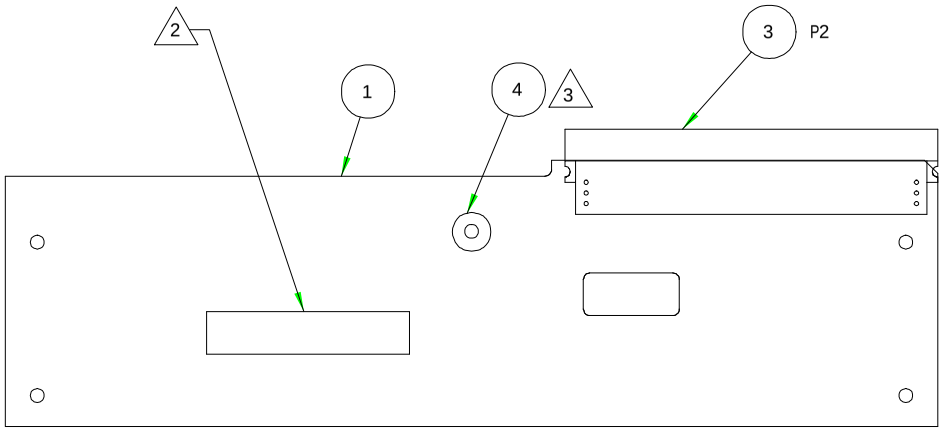
REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED
		DOCUMENT CONTROL RELEASE		
		REVISED PER EO NO.		
		REVISED PER EO NO.		
		REVISED PER EO NO.		

NOTES:

1. REFERENCE SCHEMATIC 435148.
2. (2) INK STAMP ASSEMBLY NUMBER & CURRENT REVISION LETTER APPROXIMATELY WHERE SHOWN.
3. (3) INSTALL FROM COMPONENT SIDE, SWAGE ON CIRCUIT SIDE.



COMPONENT SIDE SHOWN

PARTS LIST

QTY	CAGE CODE	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	REFERENCE OR MATERIAL SPEC.	ZONE	ITEM
1		611263	STS04B.062P.775L.250			4
1		601675-001	CON-PCB-PLG096P.100D	P2		3
REF		435148	SCHEMATIC,L-BUS JUMPER			2
1		415148	PCB,L-BUS JUMPER			1

RACAL Instruments, Inc.
4 Goodyear St., Irvine, CA. 92718-2002

TITLE: PCB ASSY,L-BUS JUMPER

SIZE	CAGE CODE	DWG NO.	REV.
B	21793	405148	A

SCALE NONE | CALC. WT | ACT. WT | SHEET 1 OF 1

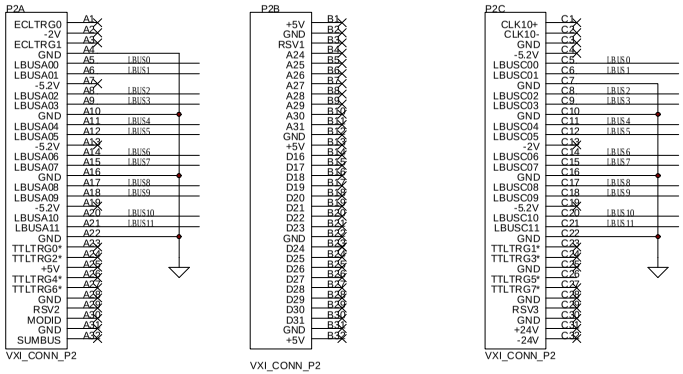
980340 REV. F

DWG. NO. 435148	SH. 1	REV. A

REVISIONS

REV	DESCRIPTION	DATE	APPROVED
A	DOCUMENT CONTROL RELEASE		
	REVISED PER EO NO.		
	REVISED PER EO NO.		
	REVISED PER EO NO.		

NOTES:



VXI LBUS JUMPERS

CAD CURRENT REV. LTR
FOR SHEET 1
REVISION A
DRAWN WITH PROTEL 98
VERSION 4.2.0

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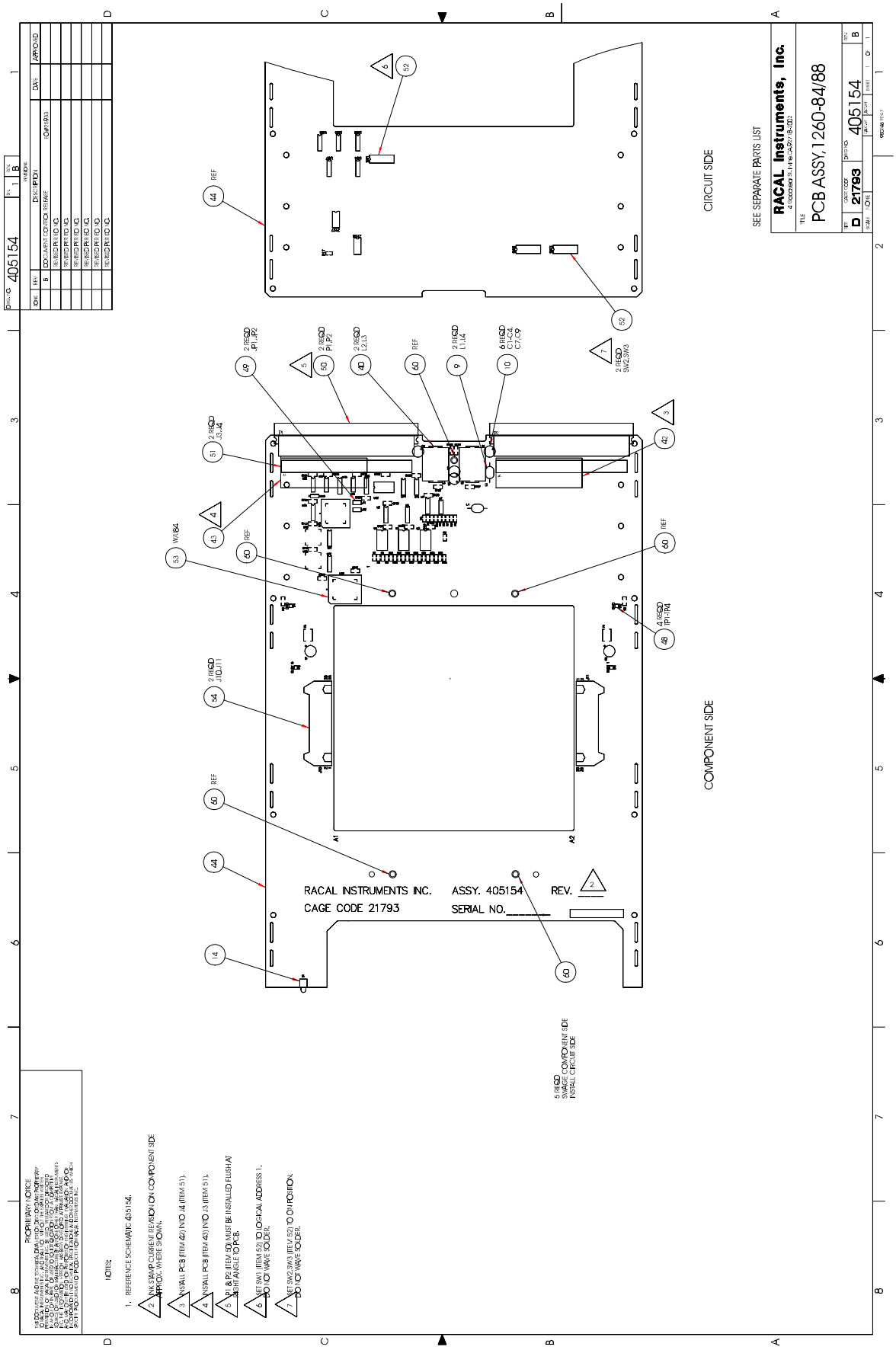
RACAL Instruments, Inc.
4 Goodyear St., Irvine, CA. 92618

TITLE
SCHEMATIC, L-BUS JUMPER

SIZE	CAGE CODE	DWG NO.	REV.
B	21793	435148	A
SCALE NONE		27-Apr-1999	SHEET 1 OF 1


RACAL INSTRUMENTS INC.
CAGE CODE 21793
ASSY. 405154
SERIAL NO._____
REV.
COMPONENT SIDE
CIRCUIT SIDE
SEE SEPARATE PARTS LIST
RACAL Instruments, Inc.
PCB ASSY,1260-84/88
405154
21793
NOTES:
1. REFERENCE SCHEMATIC 405154.

DWG. NO. 435154	SH. 1	REV. A

REVISIONS

REV	DESCRIPTION	DATE	APPROVED
A	DOCUMENT CONTROL RELEASE		
	REVISED PER EO NO.		
	REVISED PER EO NO.		
	REVISED PER EO NO.		

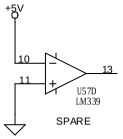
NOTES:

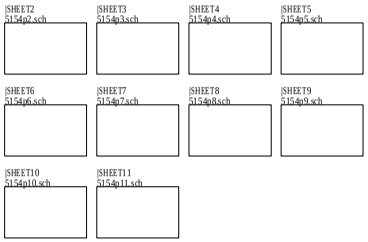
1. CAPACITOR VALUES ARE IN MICROFARADS, 50V, +/-20% UNLESS OTHERWISE SPECIFIED.
2. RESISTOR VALUES ARE IN OHMS, 1/16W, +/-5% UNLESS OTHERWISE SPECIFIED.
3. RESISTOR NETWORK VALUES ARE IN OHMS, +/-2%.

4 PARTS INDICATED ARE NOT INSTALLED.

5 PARTS INDICATED ARE INSTALLED FOR ASSYS 1260-84B AND 1260-88B ONLY.

UNUSED GATES





REFERENCE DESIGNATOR	DEVICE TYPE	POWER PINS		
		+5V PIN	+12V PIN	GND PIN
U3,5,6	74HCT273	20		10
U1,2,4,60,88	74HCT166	16		8
U7	74AHCT00	14		7
U53	231153-002 (16R4)	20		10
U54	74HCT138	16		8
U56	74HCT95	16		8
U57	LM339	3		12
U61,62	74HCT164	14		7
U70	231152-004(16L8Q-25)	20		10
U71,77	74HC253	16		8
U73,74	26LS32	16		8
U75	26LS31	16		8
U76	231154 (22V10)	28		14
U82	74HC299	20		10
U84	27C256	32		16
U85,86,87	74LS161	16		8

CAD CURRENT REV. LTR
FOR SHEETS 1 THRU 11
REVISION A
DRAWN WITH PROTEL 98
VERSION 4.2.0

PROPRIETARY NOTICE

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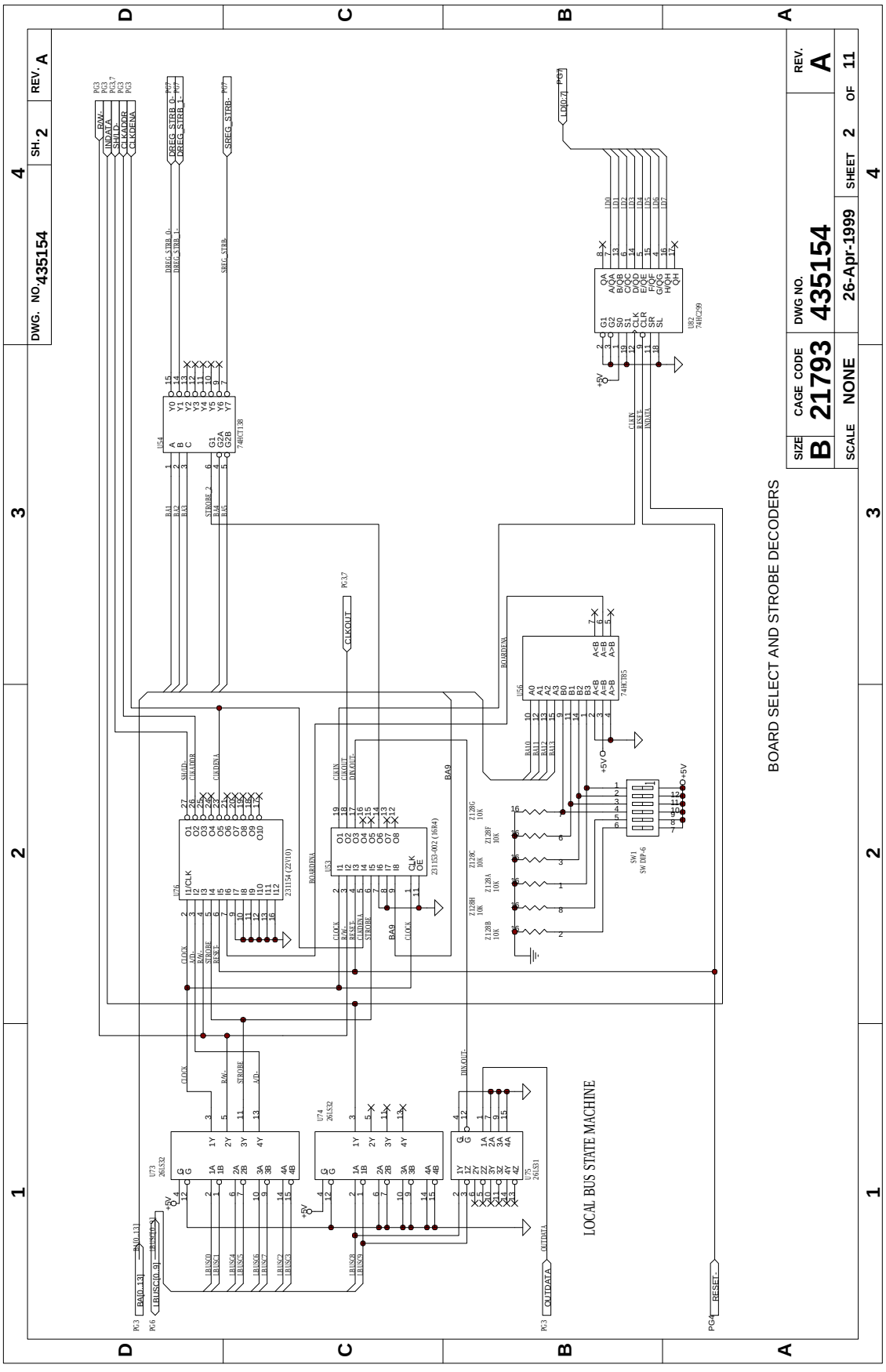
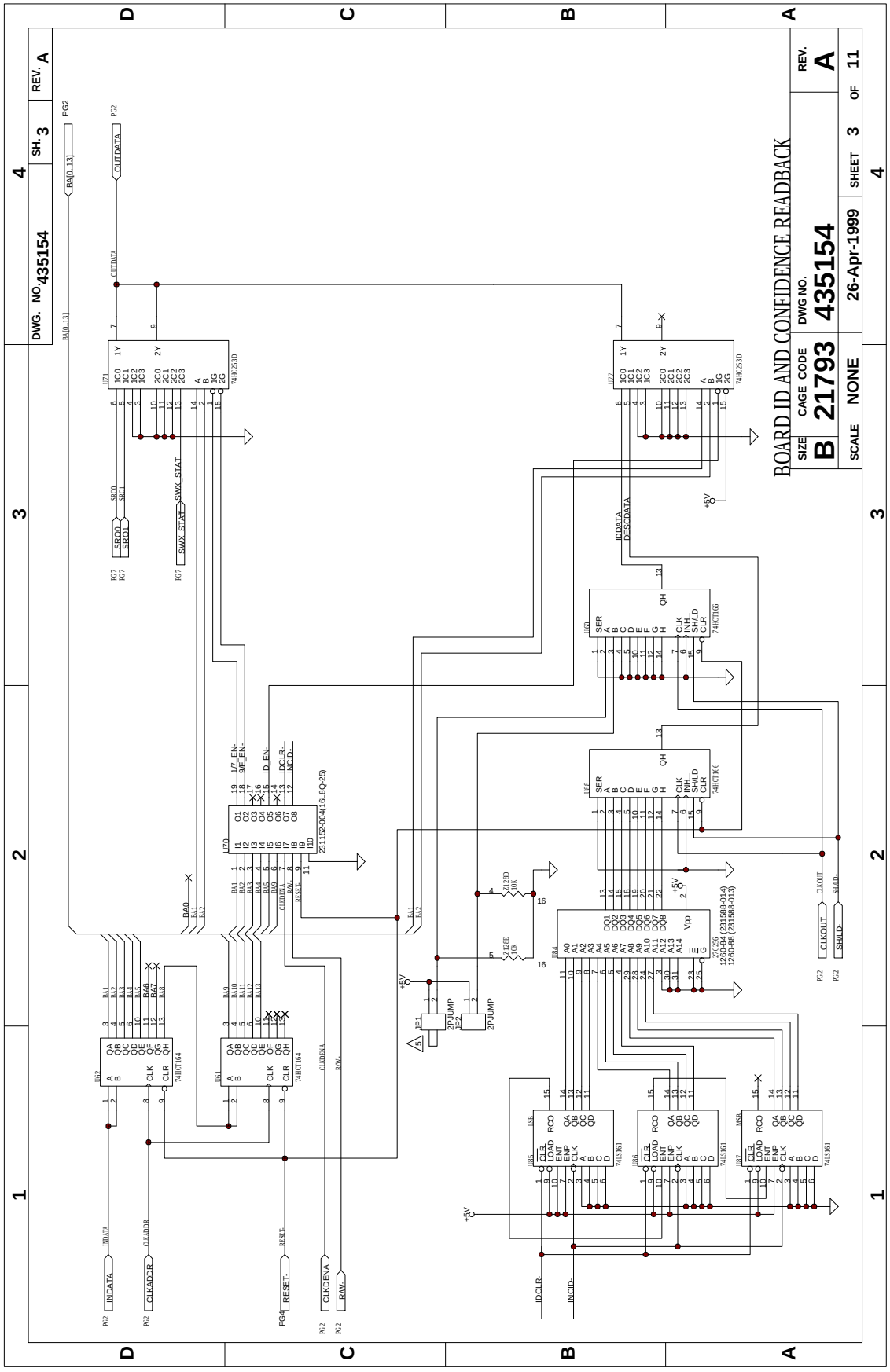
RACAL Instruments, Inc.
4 Goodyear St., Irvine, CA. 92618

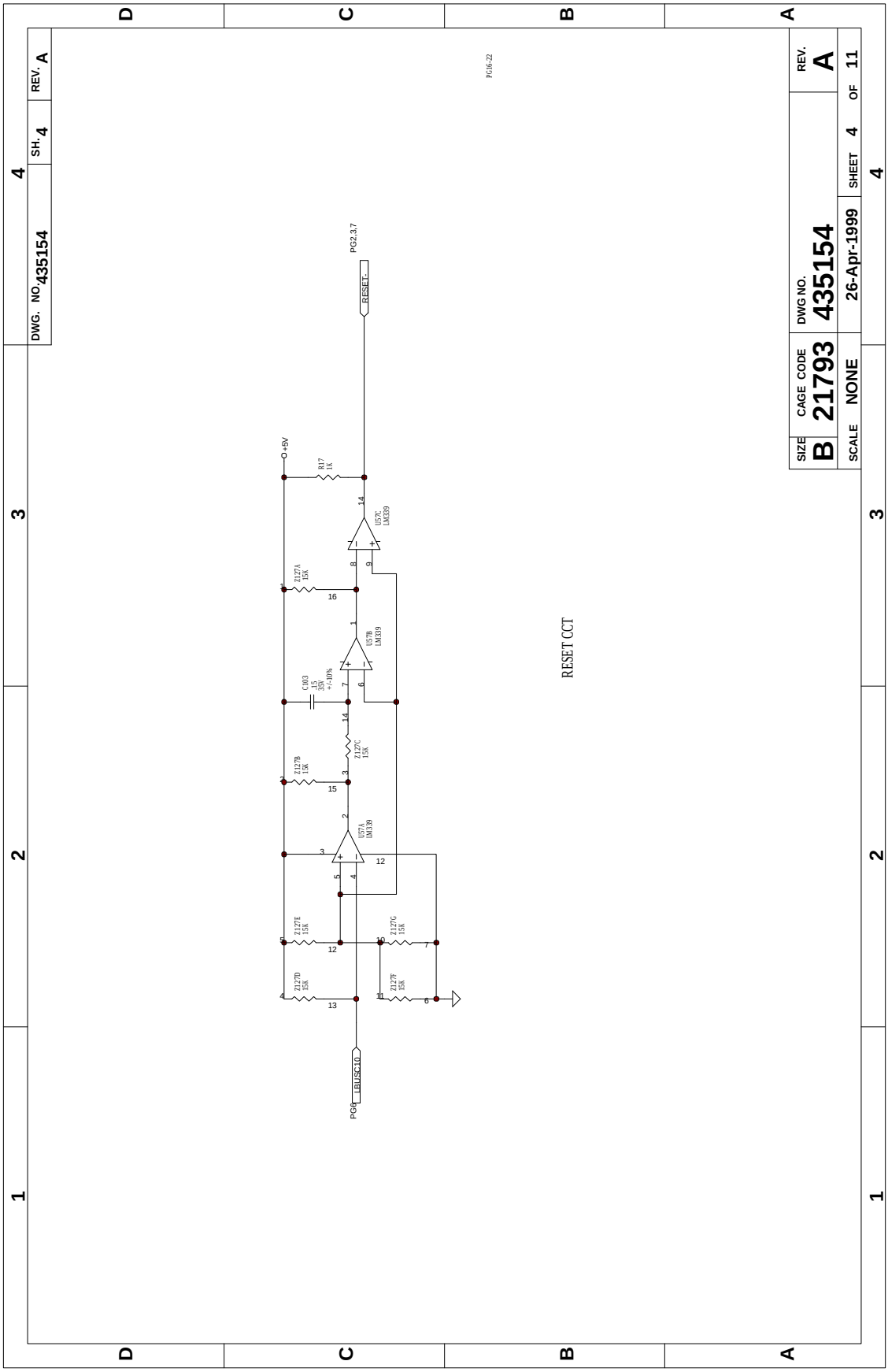
TITLE
SCHEMATIC, 1260-84/88

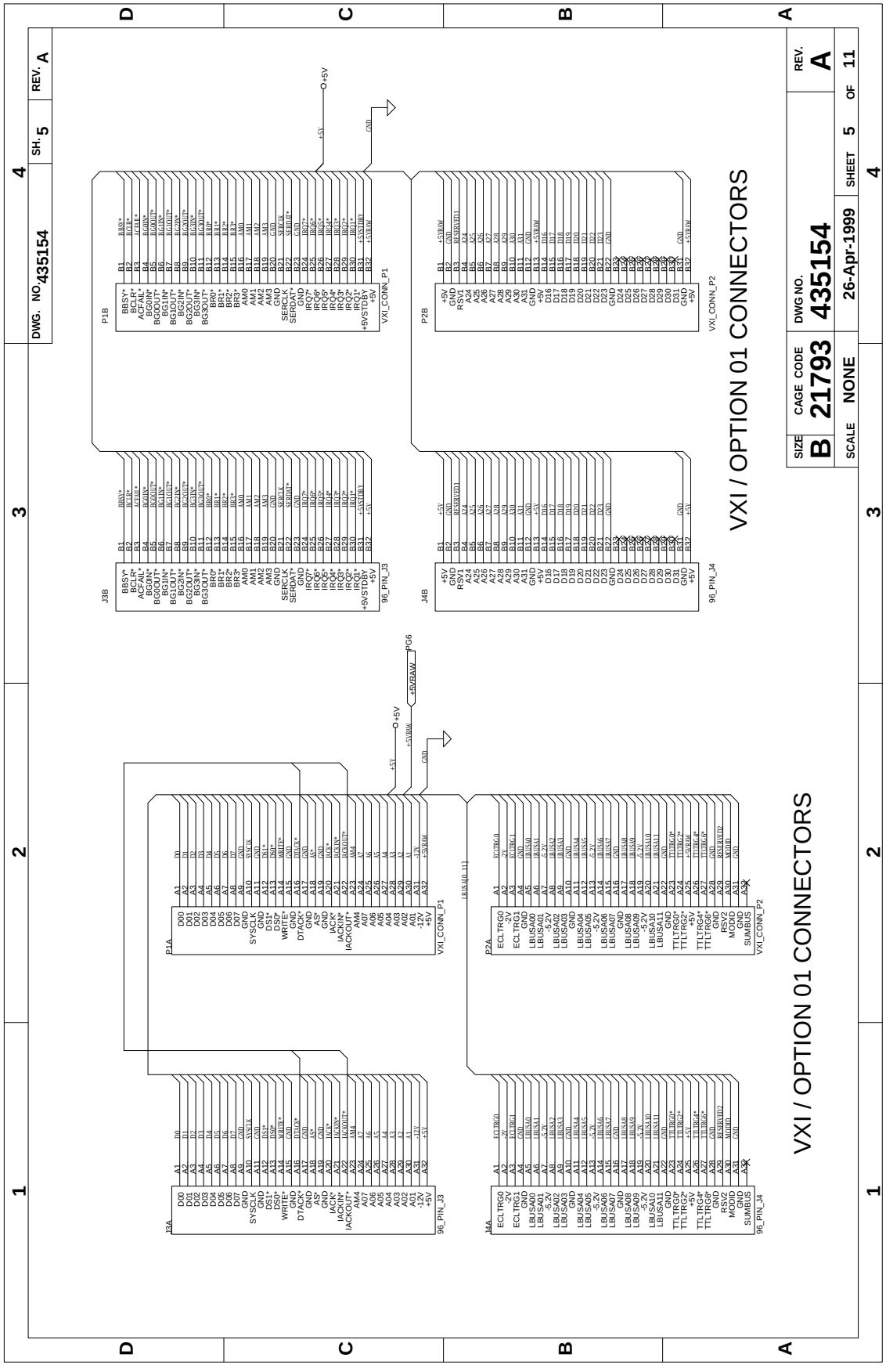
SIZE	CAGE CODE	DWG NO.	REV.
B	21793	435154	A

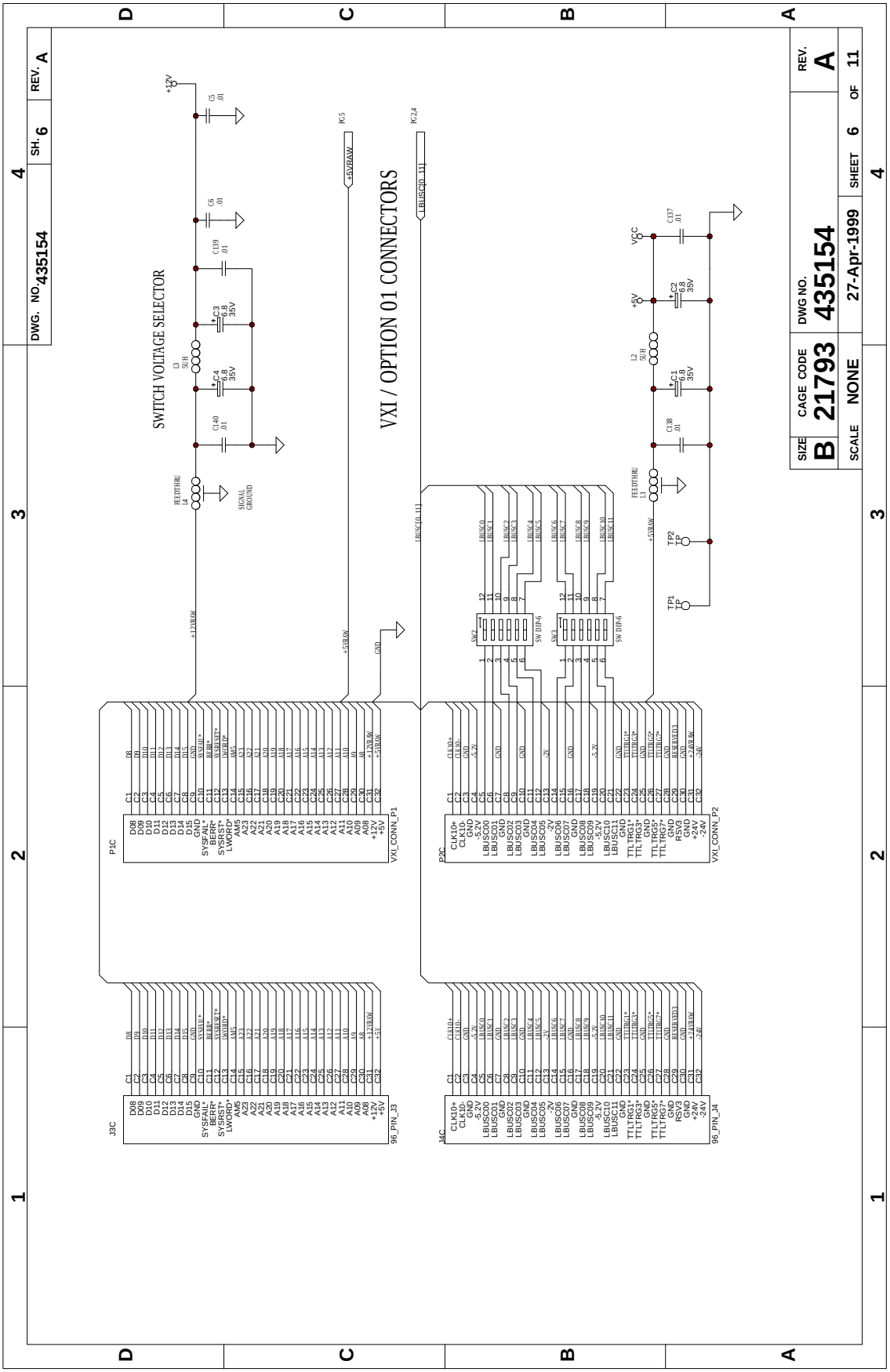
SCALE	DATE	SHEET	OF
NONE	26-Apr-1999	1	11

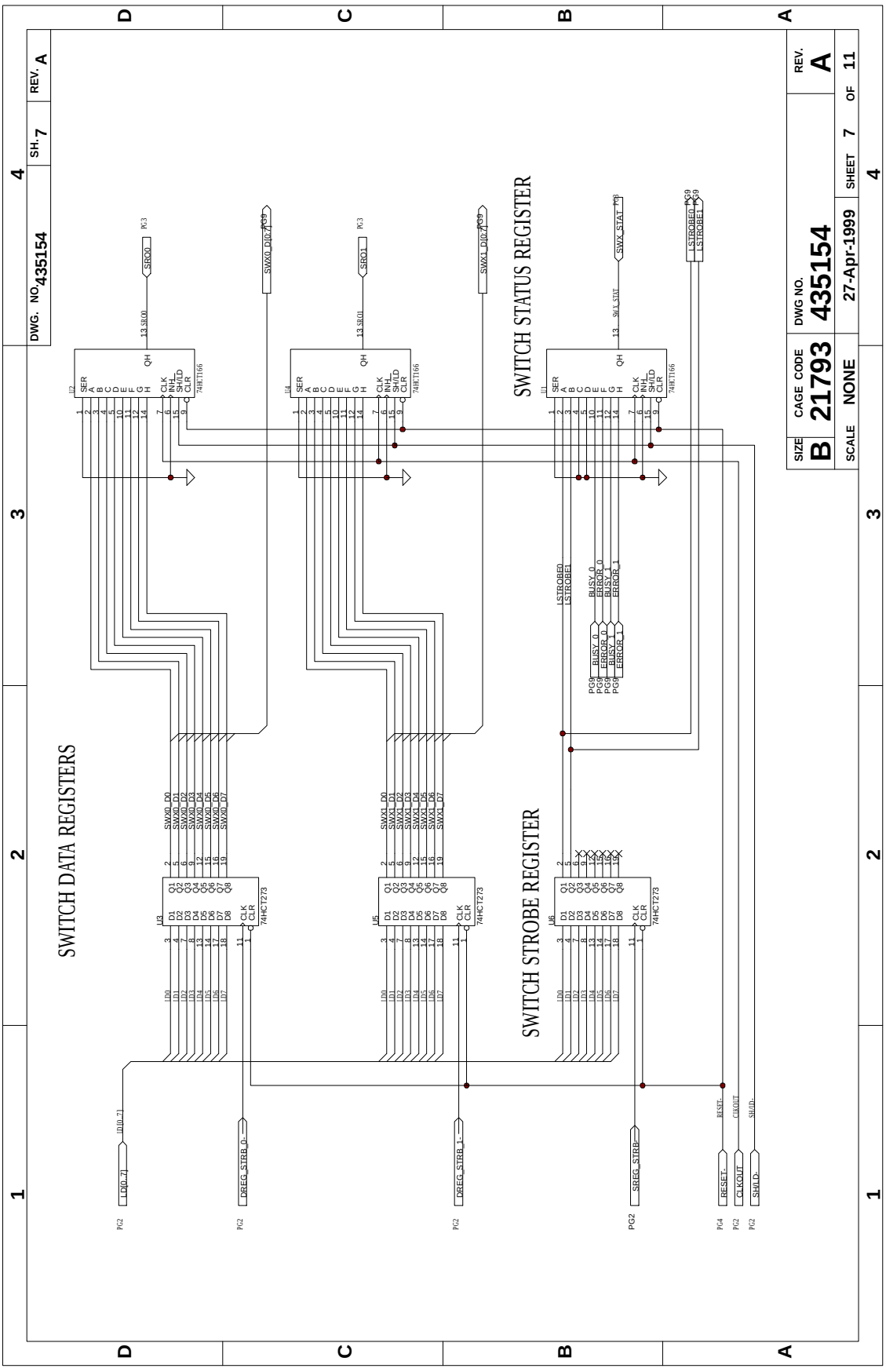

BOARD SELECT AND STROBE DECODERS
LOCAL BUS STATE MACHINE
SIZE B
CAGE CODE 21793
DWG NO. 435154
REV. A
SCALE NONE
26-Apr-1999
SHEET 2 OF 11
DWG. NO. 435154
SH. 2
REV. A

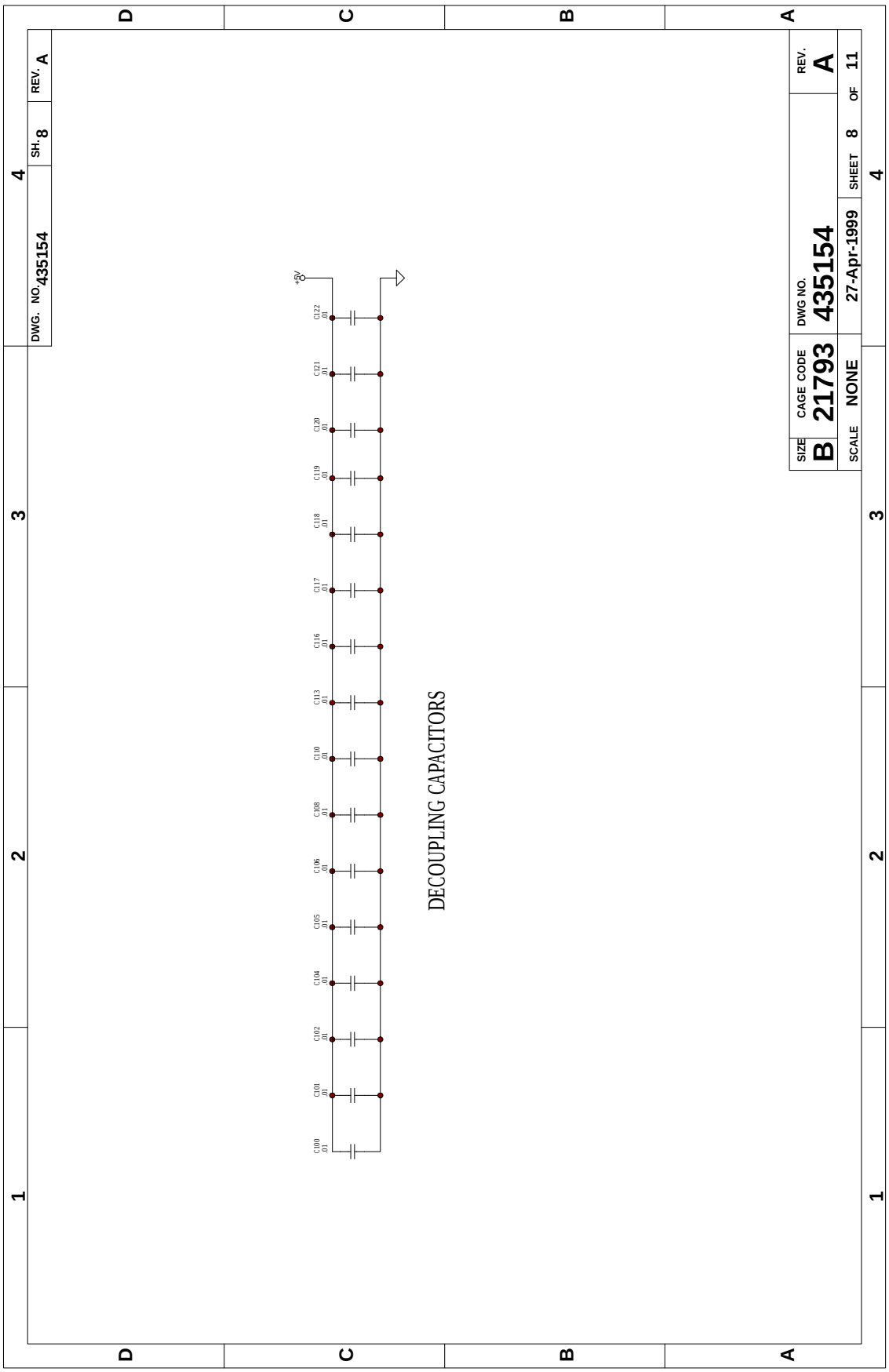

BOARD ID AND CONFIDENCE READBACK
SIZE B
CAGE CODE 21793
DWG NO. 435154
REV. A
SCALE NONE
26-Apr-1999
SHEET 3 OF 11
DWG. NO. 435154
SH. 3
REV. A

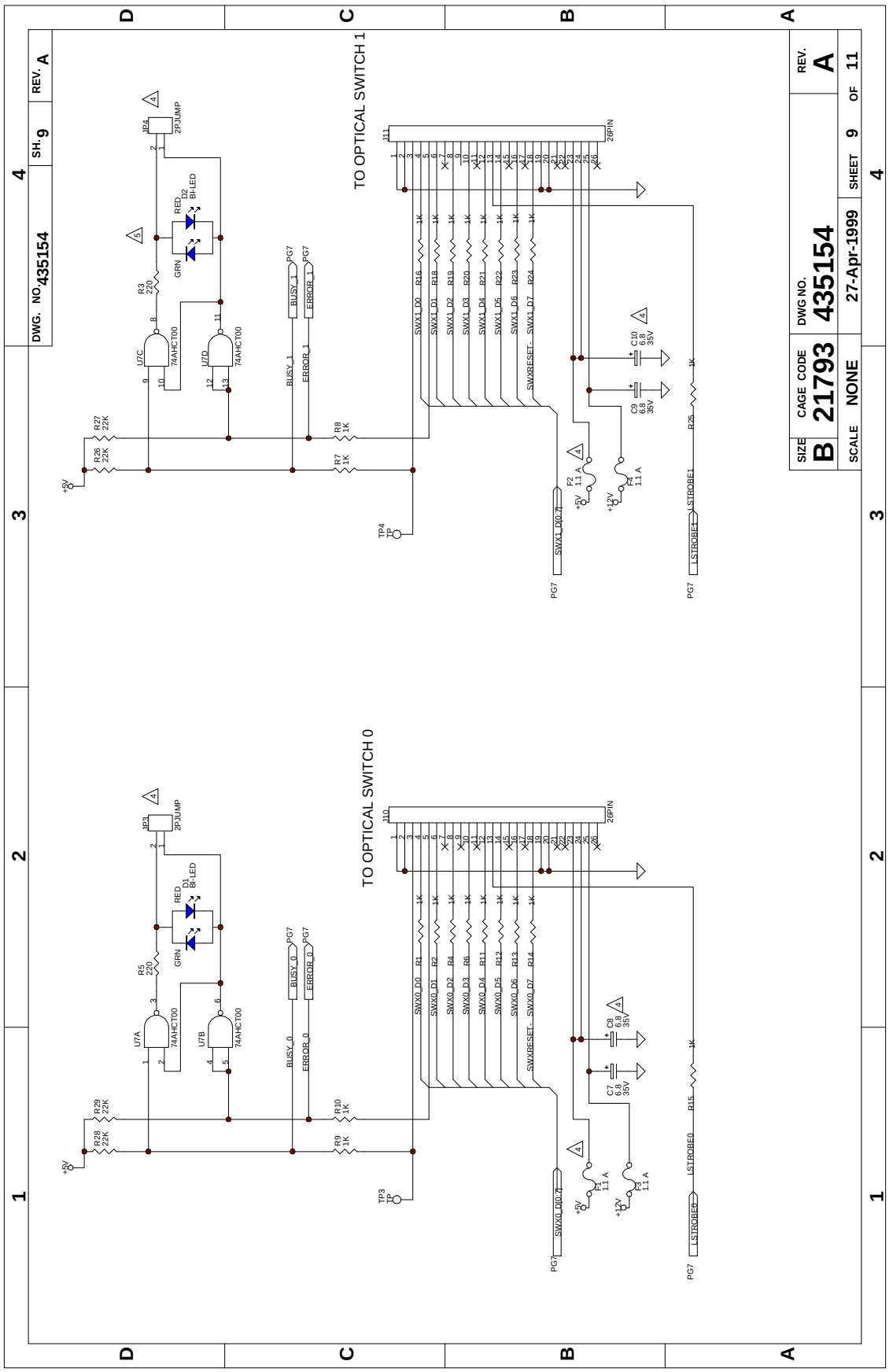

RESET CCT
PG2,3,7
RESET
+5V
R17
1K
U57C
LM339
Z127A
15K
U57B
LM339
C103
1.5
35V
+/-10%
Z127C
15K
Z127B
15K
U57A
LM339
Z127E
15K
Z127G
15K
Z127D
15K
Z127F
15K
PG4
LBUSC10
PG16-22
SIZE
B
CAGE CODE
21793
DWG NO.
435154
REV.
A
SCALE
NONE
26-Apr-1999
SHEET 4 OF 11
DWG. NO 435154
SH. 4
REV. A

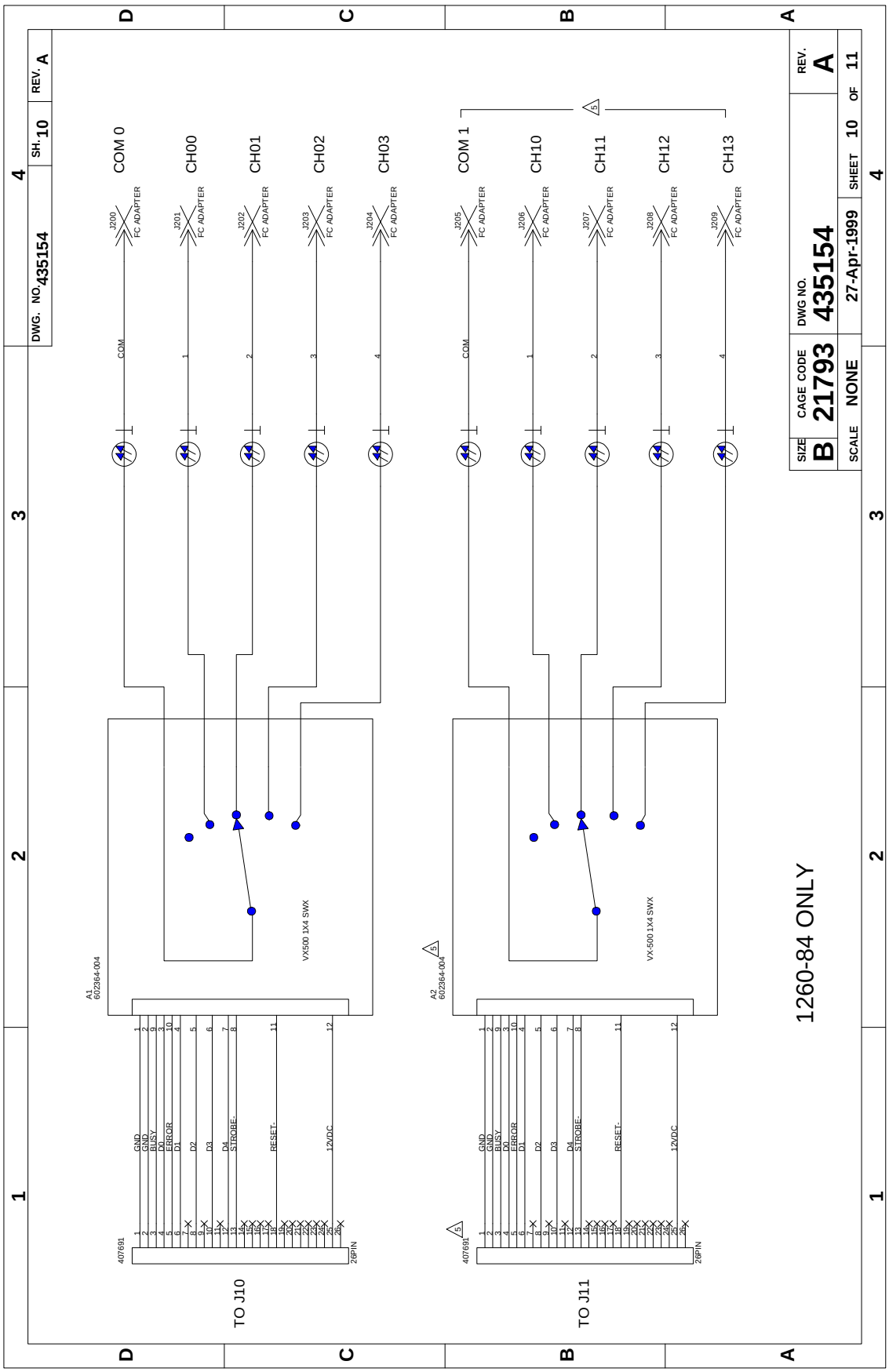

VXI / OPTION 01 CONNECTORS
VXI / OPTION 01 CONNECTORS
SIZE B
CAGE CODE 21793
DWG NO. 435154
REV. A
SCALE NONE
26-Apr-1999
SHEET 5 OF 11
DWG. NO. 435154
SH. 5
REV. A
VXI_CONN_P1
VXI_CONN_P2
96_PIN_J3
96_PIN_J4
P1A
P2A
P1B
P2B
J3A
J4A
J3B
J4B
VXI_CONN_P1
VXI_CONN_P2
96_PIN_J3
96_PIN_J4

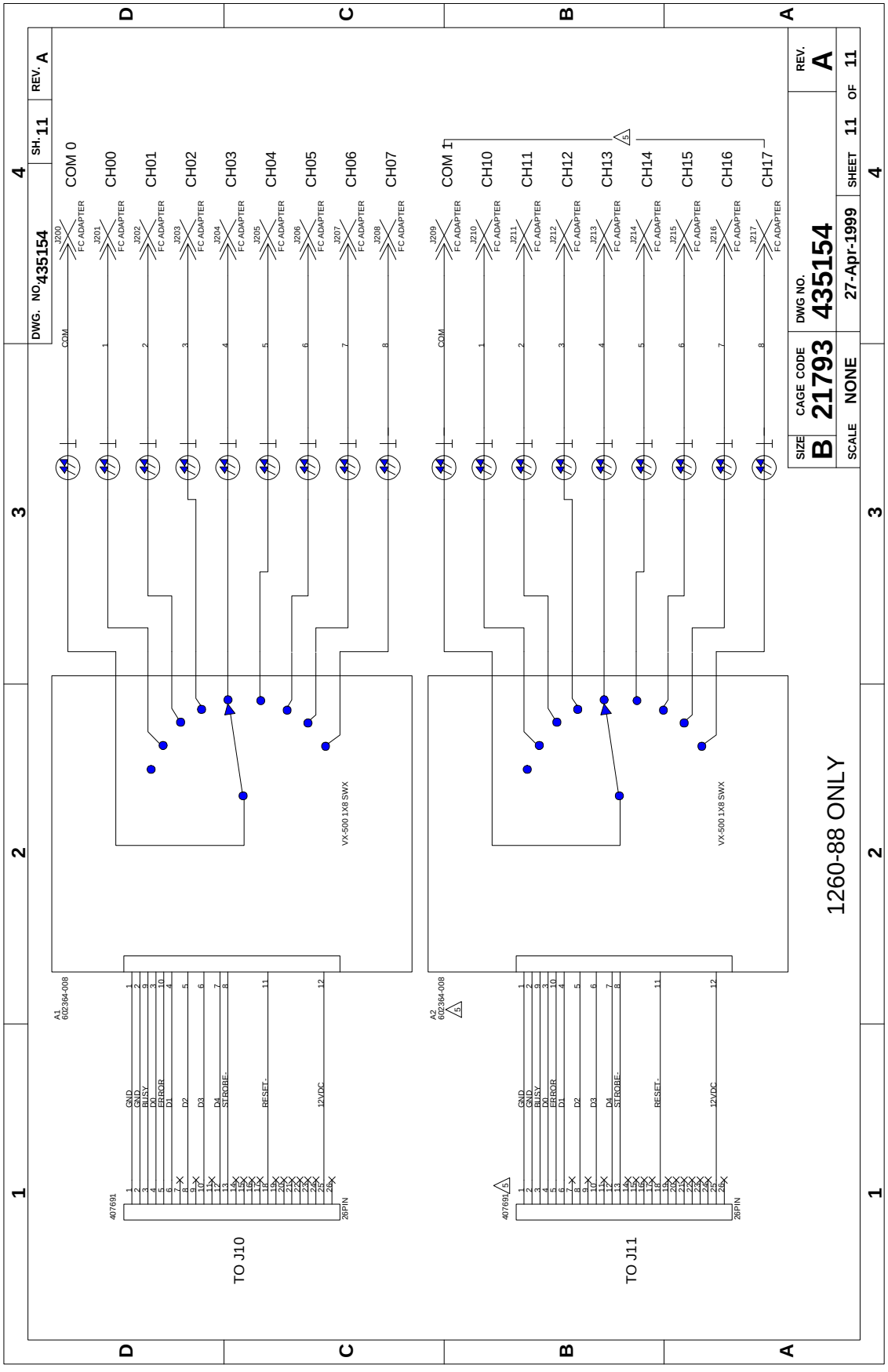

SWITCH VOLTAGE SELECTOR
VXI / OPTION 01 CONNECTORS
DWG. NO. 435154
SH. 6
REV. A
SIZE B
CAGE CODE 21793
DWG NO. 435154
REV. A
SCALE NONE
27-Apr-1999
SHEET 6 OF 11
P1C
VXI_CONN_P1
P2C
VXI_CONN_P2
J3C
96_PIN_J3
J4C
96_PIN_J4
SW2
SW3
SW DIP-6
FEEDTHRU L4
FEEDTHRU L1
SIGNAL GROUND
+12V
+5VRAW
GND
VCC
+5V
TP1
TP2

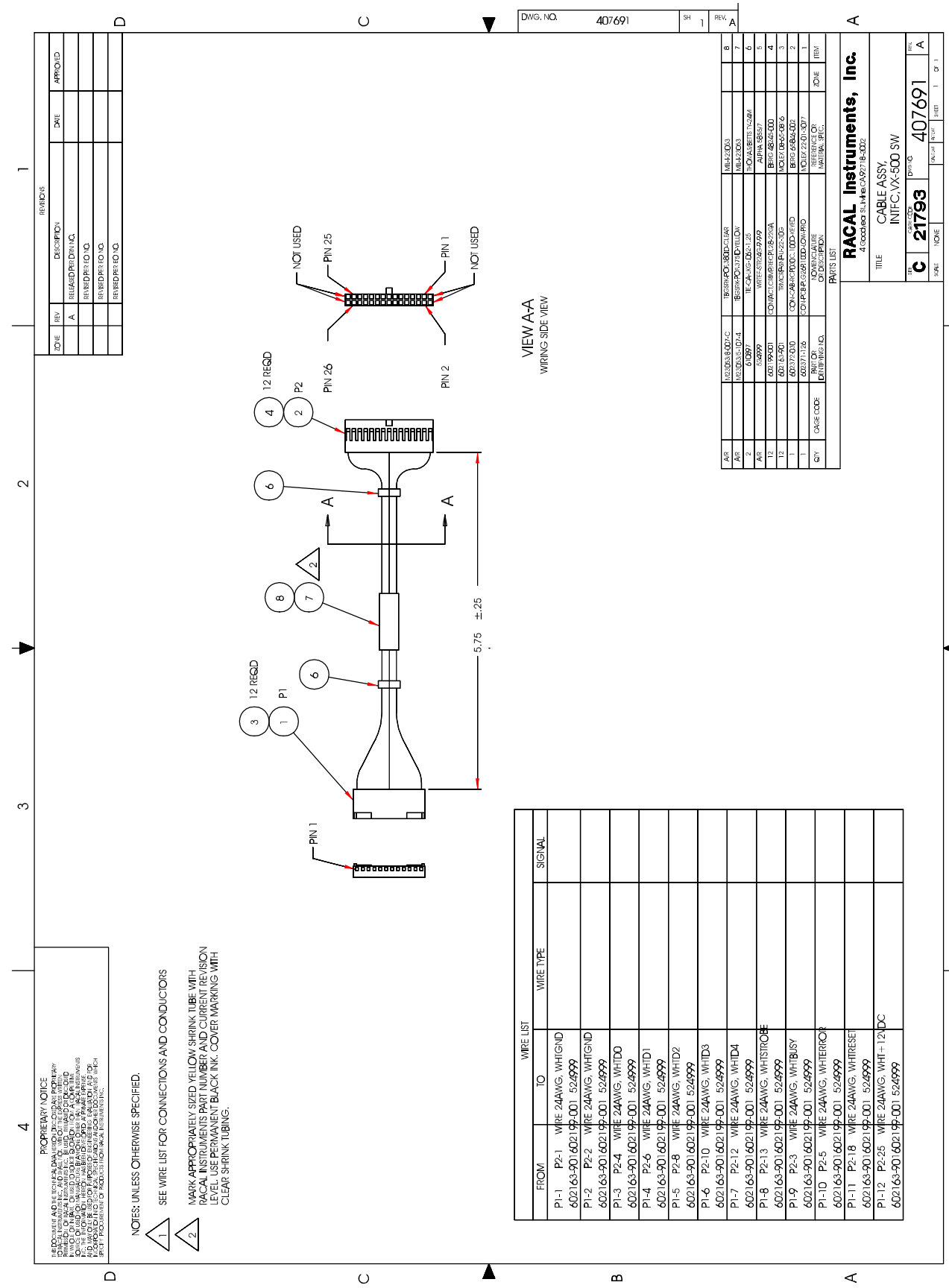

SWITCH DATA REGISTERS
SWITCH STATUS REGISTER
SWITCH STROBE REGISTER
74HCT166
74HCT273
SIZE B
CAGE CODE 21793
DWG NO. 435154
REV. A
SCALE NONE
27-Apr-1999
SHEET 7 OF 11
DWG. NO. 435154
SH. 7
REV. A


DECOUPLING CAPACITORS
+5V
C122 .01
C121 .01
C120 .01
C119 .01
C118 .01
C117 .01
C116 .01
C113 .01
C110 .01
C108 .01
C106 .01
C105 .01
C104 .01
C102 .01
C101 .01
C100 .01
DWG. NO. 435154
SH. 8
REV. A
SIZE B
CAGE CODE 21793
SCALE NONE
DWG NO. 435154
27-Apr-1999
SHEET 8 OF 11
REV. A


TO OPTICAL SWITCH 1
TO OPTICAL SWITCH 0
DWG. NO 435154
SH. 9
REV. A
SIZE B
CAGE CODE 21793
SCALE NONE
DWG NO. 435154
27-Apr-1999
SHEET 9 OF 11
REV. A
U7A 74AHCT00
U7B 74AHCT00
U7C 74AHCT00
U7D 74AHCT00
JP3 2P-JUMP
JP4 2P-JUMP
D1 Bi-LED
D2 Bi-LED
J10 26PIN
J11 26PIN
F1 1.1 A
F2 1.1 A
F3 1.1 A
F4 1.1 A
BUSY_0
ERROR_0
BUSY_1
ERROR_1
SWX0_D0..7
SWX1_D0..7
SWXRESET
LSTROBE0
LSTROBE1
TP3
TP4


DWG. NO. 435154
SH. 10
REV. A
SIZE B
CAGE CODE 21793
DWG NO. 435154
REV. A
SCALE NONE
27-Apr-1999
SHEET 10 OF 11
COM 0
CH00
CH01
CH02
CH03
COM 1
CH10
CH11
CH12
CH13
FC ADAPTER
VX500 1X4 SWX
VX-500 1X4 SWX
A1 602364-004
A2 602364-004
407691
26PIN
GND
BUSY
D0
ERROR
D1
D2
D3
D4
STROBE-
RESET-
12VDC
TO J10
TO J11
1260-84 ONLY


DWG. NO 435154
SH. 11
REV. A
COM 0
CH00
CH01
CH02
CH03
CH04
CH05
CH06
CH07
COM 1
CH10
CH11
CH12
CH13
CH14
CH15
CH16
CH17
FC ADAPTER
VX-500 1X8 SWX
A1 602364-008
A2 602364-008
407691
26PIN
GND
BUSY
ERROR
D1
D2
D3
D4
STROBE-
RESET-
12VDC
TO J10
TO J11
1260-88 ONLY
SIZE B
CAGE CODE 21793
SCALE NONE
DWG NO. 435154
27-Apr-1999
SHEET 11 OF 11
REV. A


DWG. NO. 407691
SH 1
REV. A
REVISIONS
ZONE REV DESCRIPTION DATE APPROVED
A RELEASED PER ECO NO.
REVISED PER ECO NO.
REVISED PER ECO NO.
REVISED PER ECO NO.
PROPRIETARY NOTICE
NOTES: UNLESS OTHERWISE SPECIFIED.
1 SEE WIRE LIST FOR CONNECTIONS AND CONDUCTORS
2 MARK APPROPRIATELY SIZED YELLOW SHRINK TUBE WITH RACAL INSTRUMENTS PART NUMBER AND CURRENT REVISION LEVEL. USE PERMANENT BLACK INK. COVER MARKING WITH CLEAR SHRINK TUBING.
WIRE LIST
FROM TO WIRE TYPE SIGNAL
P1-1 P2-1 WIRE 24AWG, WHT/GND
602163-901 602199-001 524999
P1-2 P2-2 WIRE 24AWG, WHT/GND
602163-901 602199-001 524999
P1-3 P2-4 WIRE 24AWG, WHT/D0
602163-901 602199-001 524999
P1-4 P2-6 WIRE 24AWG, WHT/D1
602163-901 602199-001 524999
P1-5 P2-8 WIRE 24AWG, WHT/D2
602163-901 602199-001 524999
P1-6 P2-10 WIRE 24AWG, WHT/D3
602163-901 602199-001 524999
P1-7 P2-12 WIRE 24AWG, WHT/D4
602163-901 602199-001 524999
P1-8 P2-13 WIRE 24AWG, WHT/STROBE
602163-901 602199-001 524999
P1-9 P2-3 WIRE 24AWG, WHT/BUSY
602163-901 602199-001 524999
P1-10 P2-5 WIRE 24AWG, WHT/ERROR
602163-901 602199-001 524999
P1-11 P2-18 WIRE 24AWG, WHT/RESET
602163-901 602199-001 524999
P1-12 P2-25 WIRE 24AWG, WHT +12VDC
602163-901 602199-001 524999
VIEW A-A
WIRING SIDE VIEW
12 REQ'D
P2
PIN 26
PIN 2
NOT USED
PIN 25
PIN 1
NOT USED
12 REQ'D
P1
PIN 1
5.75 ±.25
PARTS LIST
ITEM ZONE QTY CAGE CODE PART NO. OR IDENTIFYING NO. DESCRIPTION OR SPECIFICATION MANUFACTURER'S NAME & ADDRESS
8 MB-J-2/DG3 MB-J-2/DG3
7 AR MS3106A28-21S-24BM TYCO/AMP/DEUTSCH
6 2 TE-CA-MS-DC-1.25 TE-CA-MS-DC-1.25
5 AR 540999 WIRE-STRIP/AG-24/0.5 ALPHA-1855/7
4 12 601-199-001 CONTACT,CRIMP,PIN,18-24GA BEMC-0824-000
3 12 601-163-901 TRANSITION,PLUG,25P MCDD1-0824-000
2 1 602-037-010 CON-25M-CRIMP,DD-SHELL BEMC-0-0824-002
1 1 602-037-126 CONN-PLUG,25P,CRIMP,D-SUB MOLEX 22-01-3077
QTY CAGE CODE PART NO. OR IDENTIFYING NO. DESCRIPTION OR SPECIFICATION MANUFACTURER'S NAME & ADDRESS ZONE ITEM
RACAL Instruments, Inc.
4 Goodyear St, Irvine CA 92718-2002
TITLE CABLE ASSY, INTFC, VX-500 SW
SIZE C CAGE CODE 21793 DWG NO. 407691 REV A
SCALE NONE WEIGHT SHEET 1 OF 1
960337 REV. F

Chapter 5
PARTS LIST

407692-001	Final Assy, 1260-84A-1	5-3
407692-002	Final Assy, 1260-84B-1	5-4
405148	PCB Assy, L-BUS Jumper	5-5
405154	PCB Assy, 1260-84/88	5-6
407691	Cable Assy, Interface	5-7

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RACAL INSTRUMENTS INC.

Assembly 407692-001 1260-84A-1, 1 1x4 OPT SW, 1SL Date 4/30/99 Revision A

#	Component	Description	U/M	Qty Reqd	Ref
2	231588-014	ICMEM-27C2 56-15-U8 4-PLCCP	EA	1.00000	U84
3	405154	PCB ASSY, 1260-84/88	EA	1.00000	
4	407680	SHIP KIT,1260-84	EA	1.00000	
5	407691	CABLE ASSY,INTFC,VX-500 SW	EA	1.00000	W/A1
6	456722	COVER, LEFT, VXI , MOD-ADDR	EA	1.00000	
7	456772	PANEL, FRONT, 1S-S-1x4	EA	1.00000	
8	456773	PANEL,RIGHT, 88-1	EA	1.00000	
9	456775	BRKT, STRAIN RELIEF, LOWER, 1W	EA	1.00000	
10	456776	BRKT, STRAIN RELIEF, UPPER, 1W	EA	1.00000	
11	456786	PLATE, SWITCH MOUNTING	EA	1.00000	
15	602362	CONN,FIBER OPTIC,FC ADAPTER	EA	5.00000	J200-J204
16	602364-004	SWITCH, OPTICAL, 1x4, SGL MODE	EA	1.00000	A1
17	611263	STSO4B. 062P. 775L.250	EA	1.00000	
18	611264	HAN DLE-EXT-BOT	EA	1.00000	
19	611265	HAN DLE-EXT-TOP	EA	1.00000	
20	611266	MOUNTING HDW, HANDLE	EA	.50000	
23	615541	S1M-PFL1H004-40X.250	EA	17.00000	
24	615556	S1M-PFL1H006-32X.250	EA	4.00000	
25	616252	53M-PPANHOO4-40X. 312	EA	5.00000	
26	616405	S1MPFL9-M2 5x0. 45X12	EA	2.00000	
30	910634	SPONGE, PRESSURE, SENSITIVE	FT	.00001	
31	920962	LOCTITE-242-MED STR	EA	.00001	
32	921059	LABEL-CAUTION- STAT IC	EA	1.00000	
33	921148-001	LABEL SET,VXI	EA	1.00000	
34	921309	LABEL,VXI SWTCH IDENT.	EA	1.00000	

RACAL INSTRUMENTS INC.

Assembly 407692-002 1260-84B-1, 2 1x4 OPT SW, 1SL Date 4/30/99 Revision A

#	Component	Description	U/M	Qty Reqd	Ref
1	210155	DILED-002.2V00.01A-RED/GRN	EA	1.00000	D2
2	231588-014	ICMEM-27C2 56-15-U8 4-PLCCP	EA	1.00000	U84
3	405154	PCB ASSY,1260-84/88	EA	1.00000	
4	407680	SHIP KIT,1260-84	EA	1.00000	
5	407691	CABLE ASSY,INTFC,VX-500 SW	EA	2.00000	W/A1, A2
6	456722	COVER, LEFT, VXI , MOD-ADDR	EA	1.00000	
7	456771	PANEL, FRONT, 1S-D-1x4	EA	1.00000	
8	456773	PANEL,RIGHT, 88-1	EA	1.00000	
9	456775	BRKT, STRAIN RELIEF, LOWER, 1W	EA	1.00000	
10	456776	BRKT, STRAIN RELIEF, UPPER, 1W	EA	1.00000	
11	456786	PLATE, SWITCH MOUNTING	EA	1.00000	
13	601195	PLUG-JUMPER-0. 1 CTR	EA	1.00000	W/JP1
15	602362	CONN,FIBER OPTIC,FC ADAPTER	EA	10.00000	J200-J209
16	602364-004	SWITCH,OPTICAL, 1x4,SGL MODE	EA	2.00000	A1, A2
17	611263	STSO4B. 062P. 775L.250	EA	1.00000	
18	611264	HAN DLE-EXT -BOT	EA	1.00000	
19	611265	HAN DLE-EXT-TOP	EA	1.00000	
20	611266	MOUNTING HDW, HANDLE	EA	.50000	
23	615541	SlM-PFL1H004-40X.250	EA	17.00000	
24	615556	S1M-PFL1H006-32X.250	EA	8.00000	
25	616252	53M-PPANHOO4-40X. 312	EA	5.00000	
26	616405	SlMPFL9-M2 . 5x0 . 45X12	EA	2.00000	
30	910634	SPONGE, PRESSURE, SENSITIVE	FT	.00001	
31	920962	LOCTITE-242-MED STR	EA	.00001	
32	921059	LABEL-CAUTION-STATIC	EA	1.00000	
33	921148-001	LABEL SET,VXI	EA	1.00000	
34	921309	LABEL,VXI SWTCH IDENT.	EA	1.00000	

RACAL INSTRUMENTS INC.

Assembly 405148 PCB ASSY, L-BUS JUMPER Date 1/28/99 Revision A

#	Component	Description	U/M	Qty Reqd	Ref
	415148	PCB, L-BUS JUMPER	EA	1.00000	-
	601675-001	CON-PCB-PLG096P. 100D	EA	1.00000	P2
	611263	STS04B. 062P. 775L.250	EA	1.00000	-
2	435148	SCHEMATIC, L-BUS JUMPER	EA		-

RACAL INSTRUMENTS INC.

Assembly 405154 PCB ASSY, 1260-84/88 Date 5/20/99 Revision B

#	Component	Description	U/M	Qty Regd	Ref
1	R-21-1801	CPCH2-0010 . 0N0050V20	EA	22.00000	CS, 6, 100-102 104-106, 108, 110, 113, 116-122,137-140
2	050000-102	RSCH2-001. 00K. 06W005	EA	23.00000	R1, 2, 4, 6-25
3	050000-221	RSCH1-220 . OOH. 06W005	EA	2.00000	R3, 5
4	050000-223	RSCH2-022 .00K. 06W005	EA	4.00000	R26, 27,28,29
5	080114	RSNW2-015. OOOK16PO8R	EA	1.00000	Z127
8	080120	RSNW2-010 . OOOK16P15R	EA	1.00000	Z128
9	100164	CPFT1-0800 . 0P0050v	EA	2.00000	Ll, 4
10	110126	CPTA3-0006. 8U0035V20	EA	6.00000	Cl, 2, 3, 4, 7, 9
13	130198	CPCH2-0150 . 0N0035V10	EA	1.00000	C103
14	210155	DILED-002 . 2V00 . O1A-RED/GRN	EA	1.00000	Dl
17	231093	ICLIN-LM339 COMP	EA	1.00000	U57
18	231096	ICINT-2 6L532---RCVR	EA	2.00000	U73, 74
19	231119	ICDIG-74HC299---SHFT	EA	1.00000	U82
20	231120	ICDIG-7 4HCT1 66-SHFT	EA	5.00000	Ul, 2, 4, 60, 88
22	231125	ICINT-2 6L531---DRVR	EA	1.00000	U75
23	231130	ICDIG-7 4HCT273-FLOP	EA	3.00000	U3, 5,6
24	231131	ICDIG-74HCT164-SHFT	EA	2.00000	U61, 62
25	231135	ICDIG-74HCT8 5	EA	1.00000	U56
26	231147	ICDIG-7 4HC2 53D--MUX	EA	2.00000	U71, 77
27	231152-004	ICPLA-16L8Q-25-U70-PLCCP	EA	1.00000	U70
28	231153-002	ICPLA-16R4-U53-PLCCP	EA	1.00000	U53
29	231154	ICMEM-22V10-U52-PAL	EA	1.00000	U7 6
32	231386	ICDIG-74L5161----	EA	3.00000	U85, 86, 87
33	231445	ICDIG-74HCT138--SQIC	EA	1.00000	U54
37	231596	ICDIG-74AHCTOO--SOIC	EA	1.00000	U7
40	310193	CKF1-SH005. 00U10. 1%I	EA	2.00000	L2, 3
42	401951	PCB ASSY,L-BUS JUMPER,P4	EA	1.00000	W/J4
43	401951-003	PCB ASSY,BUS GRANT,JUMPER,P3	EA	1.00000	W/J3
44	415154-001	PCB, 1260-8XX	EA	1.00000	
45	435154	SCHEMATIC, 1260-84/88	EA		
48	601197	POST-TEST-. 025 SQ	EA	4.00000	TP1, TP2, TP3, TP4
49	601208-010	CON-PCB-PLG02SD. 100S	EA	2.00000	JP1, JP2
50	601675	CON-PCB-PLGO96S. 100T	EA	2.00000	P1, P2
51	601925	CON-PCB-RCP96SD. 100T	EA	2.00000	J3, J4
52	601969	SWITCH, DIP-6 POS, LOW	EA	3.00000	SWl-3
53	602068-032	CON-SKT-RCPO32S. 050S	EA	1.00000	W/U84
54	602166	CON-PCB-PLG026S. 100D	EA	2.00000	J1O, Jil
60	611258-001	STSO4T. 062P. 170L.218	EA	5.00000	
67	921421	FUSE-01. 100A-030V	EA	2.00000	F3, 4

RACAL INSTRUMENTS INC.

Assembly 407691 CABLE ASSY, INTFC, VX-500 SW Date 4/15/99 Revision B

#	Component	Description	U/M	Qty Reqd	Ref
.	M23053/5-107-4	TBGSRK-POF. 3751D-YELLOW	FT	.00001	-
.	524999	WRTEF-STR24G-9-9-9 WHT	FT	.00001	-
.	602163-012	CON-CAB-PLG0I2C.I00S	EA	1.00000	-
.	602163-901	TRMCRP-SNP-U-F22-30G	EA	12.00000	-
.	602199-001	CONTACT, CRIMP, RECPT, 28-22GA	EA	12.00000	-
.	602372-030	CON-CAB-RCPO3OC. 100D-KEYED	EA	1.00000	-
.	610897	TIE-CA-LKG-. 062-1.25	EA	2.00000	-
8	M23053/8-007-C	TBGSRK-POF.3801D-CLEAR	FT	.00001	-

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Chapter 6
PRODUCT SUPPORT

Product 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. 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 1260-84 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) RACAL-ATE, (800) 722-2528,
(949) 859-8999; FAX: (949) 859-7139

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Tel: +44 (0) 1628 604455; FAX: +44 (0) 1628 662017

Racal Systems Electronique S.A.
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Tel: +33 (1) 3923 2222; FAX: +33 (1) 3923 2225

Racal Systems Elettronica s.r.l.
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Wan, Hong Kong, PRC
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