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Chapter 1

CVU100 System Overview

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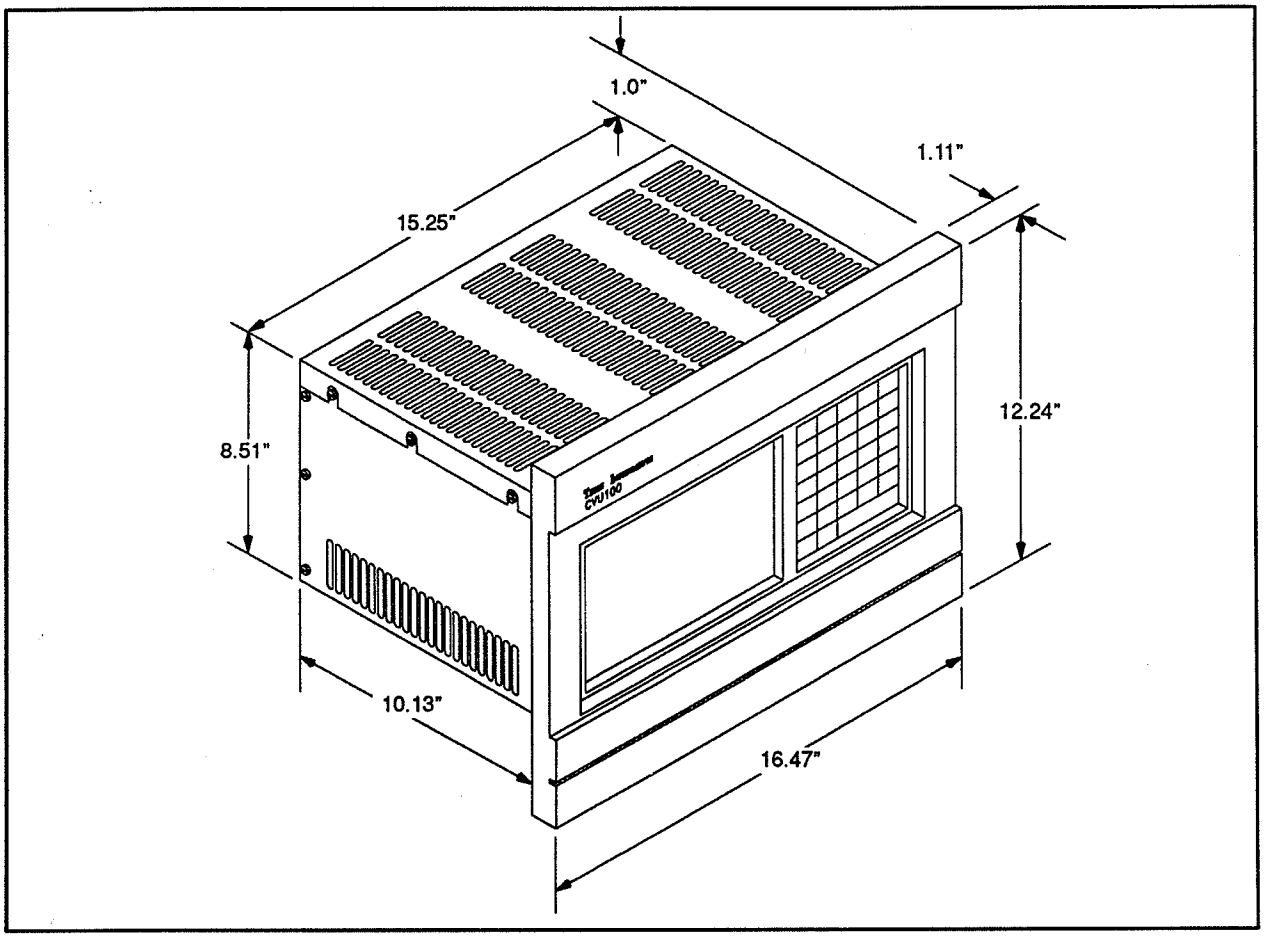
1.1 Hardware Overview

The Control Vision Unit (CVU) is a control and monitoring device. The CVU operator can use Operator Interface Language (OIL) to supervise automated processes that are driven by programmable logic controllers (PLCs). System hardware is designed for easy installation and maximum performance over a wide range of applications.

The CVU100 system unit is based on a hardware platform built to operate in harsh environments. It can be panel mounted in a NEMA enclosure or rack mounted in a 19-inch computer rack with a filler panel. Refer to Figure 1-1 for an illustration of the CVU100. The hardware configuration contains the following components.

- 9-inch amber cathode ray tube (CRT) with 25 rows x 80 columns. The screen displays normal, double, and quad sized characters in a regular or blinking character display.
- Impact-resistant Lexan CRT shield
- Operator keypad (bezel mounted)
- 55K of user memory
- NEMA 4X/12 front bezel
- Controller board
- Communication module that supports Series 305, 405, 500, or 505 PLC memory types. See Section 1.4.

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Figure 1-1 CVU100 System

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1.2 Hardware Features

Hardware features are divided into the following sections.

- Front panel features
- Back panel features
- Interior features

1.2.1 Front Panel Features

Features visible on the front panel are listed below and illustrated in Figure 1-2.

- 9-inch Monitor: Amber cathode ray tube (CRT) with 25 rows x 80 columns. Impact-resistant Lexan CRT shield.
- Operator Keypad: The operator keypad is mounted on the CVU100 bezel. The keypad is used to control the manufacturing process.
- Bezel: The bezel has a gasket to seal it to an NEMA 4X/12 enclosure. This helps protect the CVU100 from harsh factory floor environments.

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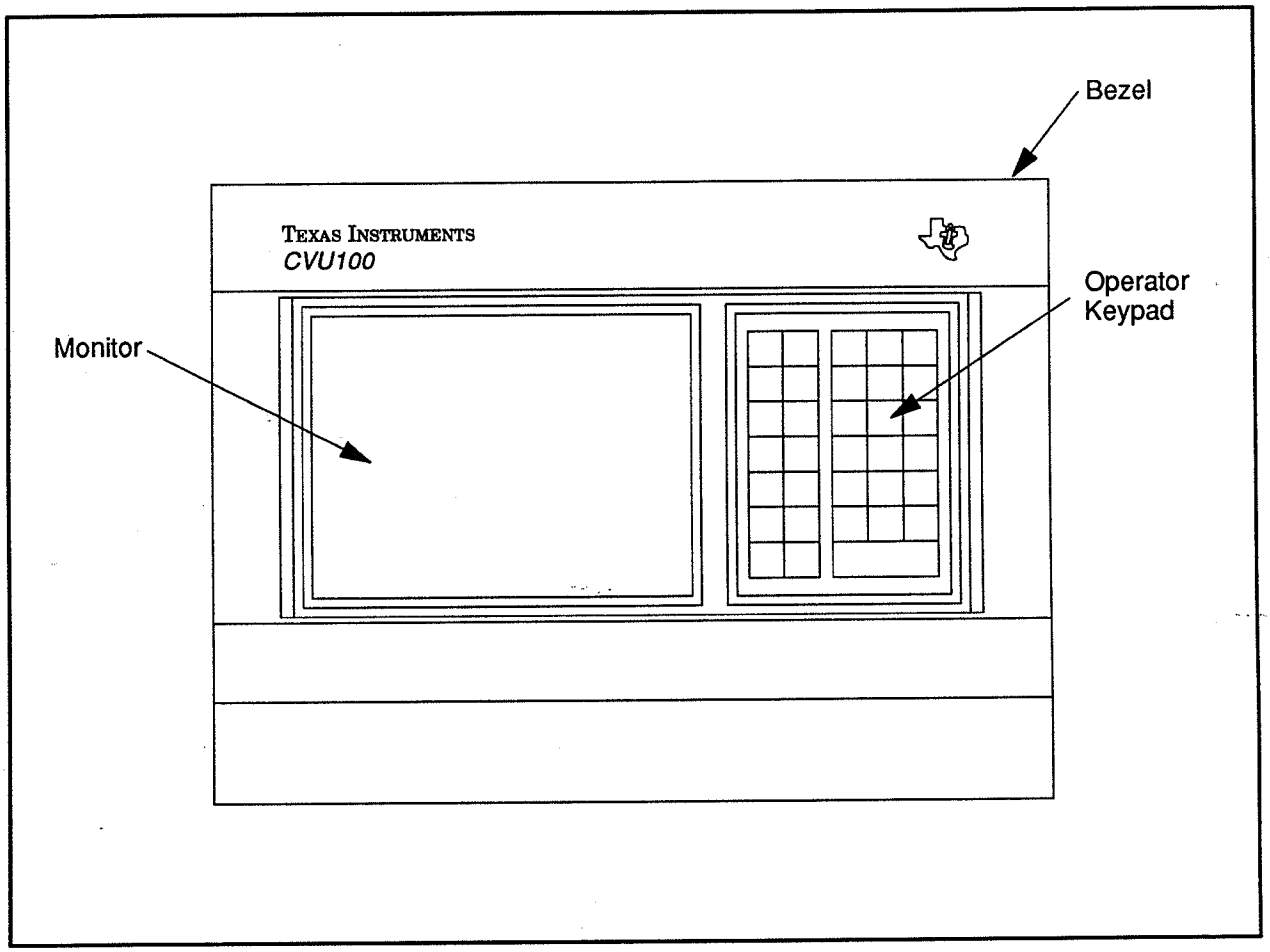


Figure 1-2 Front Panel Features

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1.2.2 Back Panel Features

Features visible on the back panel are listed below. See Figure 1-3 for the CVU100–405, 500/505, and Figure 1-4 for CVU100–305.

- Power receptacle: used to connect the system to AC power.
- Keyboard connector: 5-pin socket used to connect a PC/XT® compatible keyboard.
- Fuse cover: used to house the CVU100 fuse. The fuse cover must be removed to have access to the fuse.
- On/off switch: enables and disables operating power to the CVU100. This switch should be off until the CVU100 is configured and connected to a 115VAC or 230VAC power source.
- Computer/Printer (RS-232) port: 25-pin (female) D-type connector used to interface with a programming device or printer (CVU100-500/505 and CVU100-405 only; this port is used as the PLC (RS-232) port when using CVU100-305). Refer to Figure 2-2 for pin-out diagram.
- PLC (RS-232) port: 25-pin (female) D-type connector used to interface with a PLC (CVU100-500/505 and CVU100-405 only; when using CVU100-305, the PLC must be connected to the controller board). Refer to the following figures for the appropriate pin-out diagram.

  CVU100-305: Figure 2-3

  CVU100-405: Figure 2-4

  CVU100-500/505: Figure 2-5 and Figure 2-6

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- PLC (RS-422) port: 37-pin (female) D-type connector that interfaces with a Series 305 PLC. This connector is located on the CVU100-305/RS422 communication adapter and is optional for the CVU100-305. When this connector is installed, the RS-232 port on the controller board is disabled; programming and printer devices must be connected to the RS-232 port on the communication module.

- Cover plate: remove to install a CVU100 305/RS422 communication adapter for the CVU100–305.

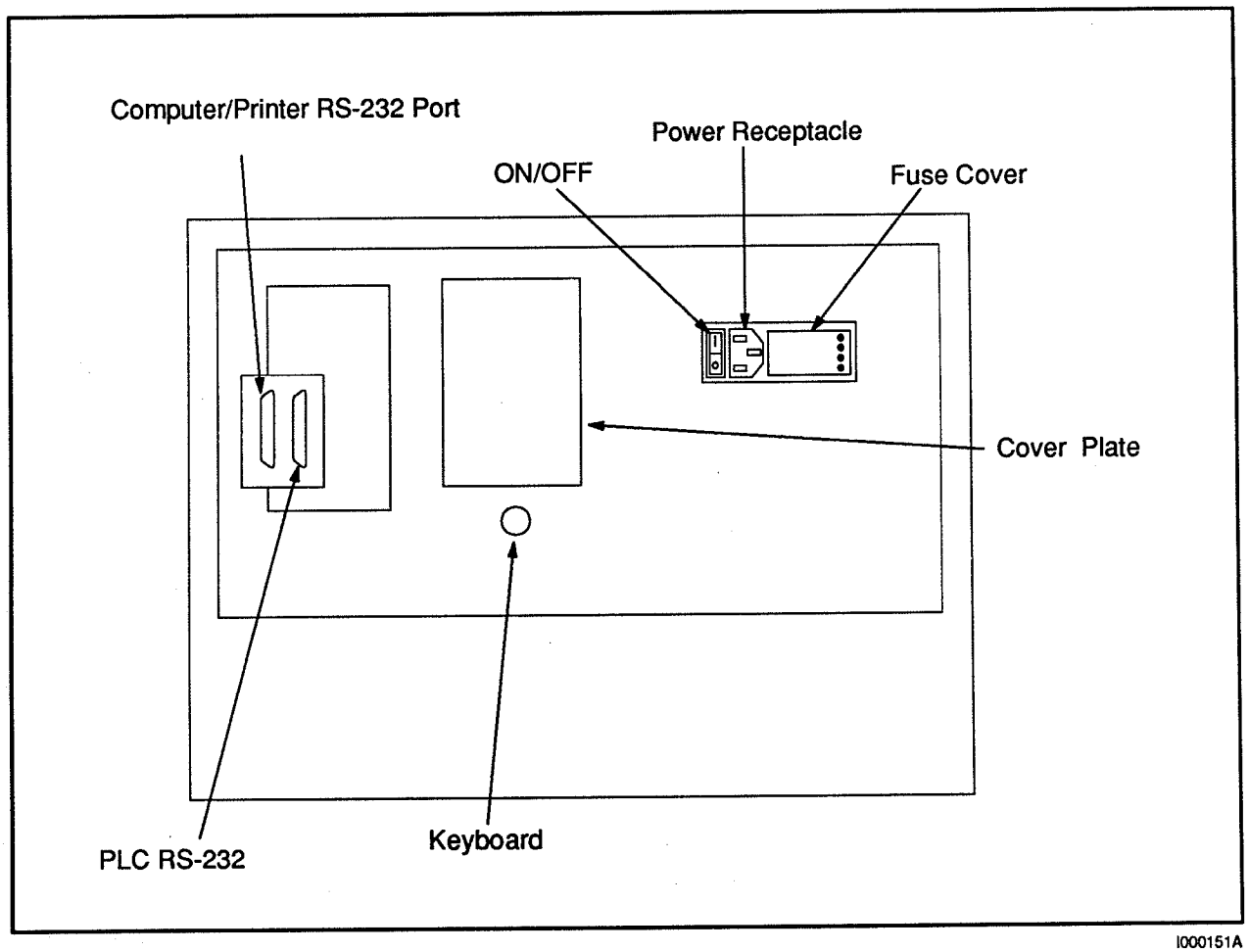


Figure 1-3 CVU100–405, 500/505 Back Panel Features

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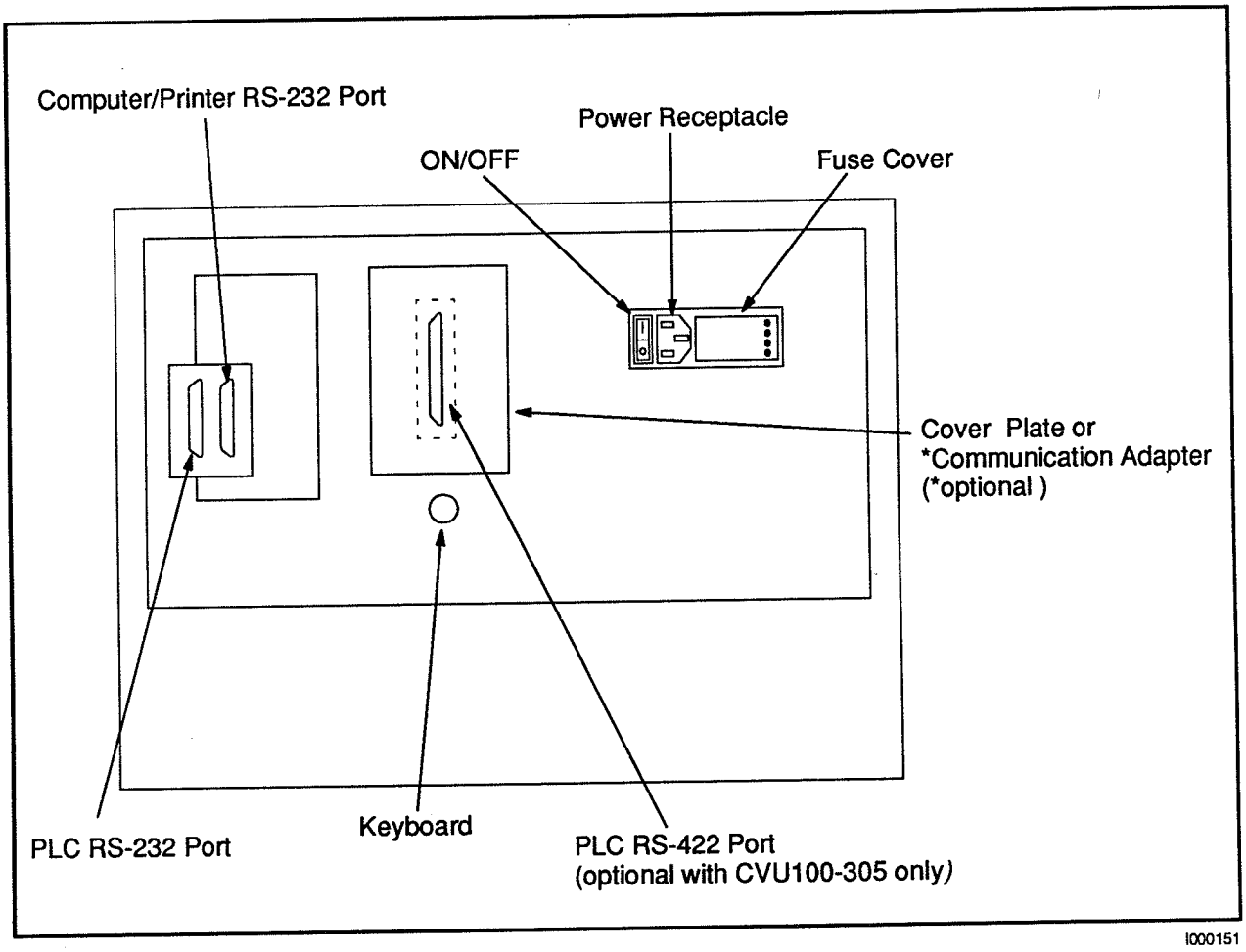


Figure 1-4 CVU100–305 Back Panel Features

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1.2.3 Interior Features

The interior features are listed below and are only visible when the CVU100 cover assembly is removed. See Figure 1-5 for circuit board arrangements.

WARNING

Removing the CVU100 cover assembly involves a potential shock hazard. Do not attempt to remove the cover unless you are thoroughly familiar with precautions required when working around high voltage equipment. Failure to do so may result in serious personal injury.

- Communication module
- Controller board

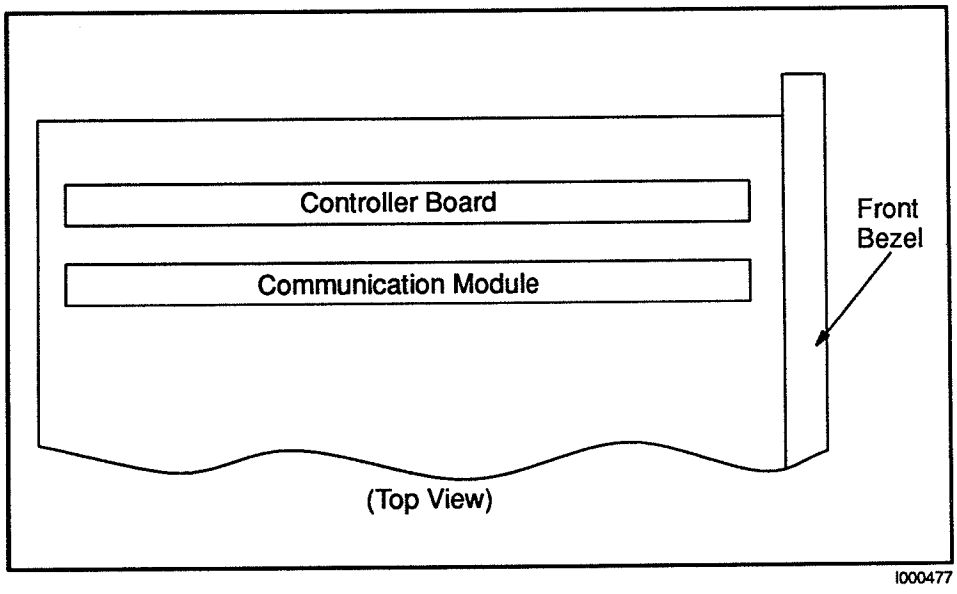


Figure 1-5 Circuit Board Interior Features

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1.3 Specifications

Table 1-1 CVU100 System Hardware Specifications

Characteristic	Specification
Overall Dimensions: Height Width Depth	 12.24 inches (311 mm) 16.47 inches (418 mm) 11.24 inches (286 mm)
Weight	21.0 lbs. (9.52 kg)
Mounting	Panel or rack (requires filler adapters)
Power requirements	115 (90–132)VAC at 47–63Hz 230 (180–264)VAC at 47–63Hz
Power consumption	37 watts
Temperature	OPERATING CONDITIONS 0° to 50° C (32° to 122° F) STORAGE CONDITIONS –40° to 65° C (–40° to 149° F)
Humidity	5 to 80% relative, non-condensing
Vibration (5 to 2kHz)	OPERATING CONDITIONS 0.006 inches peak-to-peak, 1.0g maximum STORAGE CONDITIONS 0.015 inches peak-to-peak, 2.5g maximum
Agency listings	UL listed, CSA certified (pending)

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1.4 Communication Modules

Communication modules are located inside the CVU100. See Paragraph 1.2.3. The purpose of the communication module in the following CVU models are listed below.

- CVU100-500/505. Provide access and/or modify a data table area on a Series 500 and 505 Programmable Logic Controllers (PLC) using the Operator Interface Language (OIL). Interfaces by "Direct Connect."
- CVU100-405. Provide access and/or modify a data table area on a Series 405 Programmable Logic Controllers (PLC) using the Operator Interface Language (OIL). Interfaces by "Direct Connect."
- CVU100-305. Provide access and/or modify a data table area on a Series 305 Programmable Logic Controllers (PLC) using the Operator Interface Language (OIL). Interfaces by "Direct Connect."

When a communication module is installed in the CVU100, the CVU100 understands the English-like Operator Interface Language (OIL) and the few special command sequences it needs to exchange information with your system's PLC. In addition, the terminal gains battery-backed memory, allowing permanent program storage, screen memory, OIL, and Time-of-day Clock.

The communication board is designed for easy installation. Each communication board is shipped a the 55K battery-backed CMOS screen program memory that is sufficient for nearly all applications.

Screen programs, also referred to as stored screens or screens, are a flexible means to format the screen displays (what the picture on the terminal actually looks like) for a specific application.

A single screen program can be used to format several complete screen displays, or several different screen programs can format portions of a single screen display. There need not be a one-to-one relationship between screen displays and screen programs. The simplest screen program consists of a sequence of displayable characters. When such a screen program is run, the characters stored in the program are displayed on the screen.

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A program utility feature allows full screen editing, screen executing, screen copying, and screen transmission capabilities. The 55K CMOS RAM provides up to 255 program blocks. A program consists of sequences of displayable text and graphic characters combined with commands from the OIL.

OIL is an easy-to-use programming language, designed to simplify the creation and enhancement of screen displays for industrial applications. OIL has the capability to set character attributes, position the cursor, draw boxes and lines, manipulate data registers, clear a line or the screen, execute other program blocks from within a program, make decisions, repeat an operation, and more.

The terminal is versatile because a program block can do more than display previously entered data and figures on the screen. While running, a program block reads data directly from the serial ports, data registers, the keypad, or the keyboard. It arranges this data and displays it on the screen. This allows the terminal data to constantly update the screen.

In addition, executing a program block writes data to the serial port. A program block is initiated from the keypad or keyboard, from the programmable controller, or from another program block.

Five hundred 16-bit data registers are provided to hold data such as current process variable values, set points, valve position, and/or motor speed (up to 9999 extra registers can be selected from the configuration menu). These additional registers hold the information for presentation to an operator. Also, registers hold the operator input data that replaces thumb wheel switches and push buttons.

The data register architecture includes several dedicated registers that provide time and date data from the on-board clock/calendar, and the status of all the keypad, keyboard, and serial port data buffers.

With the communication module installed, the PLC interface occurs through the option card port. This leaves the terminal serial port available for printer, tape drive, or computer link.

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Chapter 2

Site Preparation and Installation

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2.1 Preparing the Site

2.1.1 Selecting the Site

Consider the following items when you select a location for the CVU.

- Carefully arrange the physical layout of the CVU to provide comfortable and efficient employee workspace.
- Power and communication cables exit the rear panel of the system unit; they must not create a potential hazard by lying across pathways or access-ways.
- Avoid areas that have high levels of ambient electromagnetic fields. This type of interference can be caused by nearby equipment used in industrial, medical, power generation, radio broadcasting, or radar operations. Ask site engineering personnel to help in identifying these problem areas.

  Protect the CVU system unit from corrosive chemicals, toxic gases, and other contaminants.

2.1.2 AC Power Ground

Your system unit comes equipped with a standard 3-conductor AC power cord that is 1.8 m (6 ft) in length. To complete the protective ground circuit for operational and safety reasons, prepare a three-wire grounded receptacle for the power cord plug. The National Electrical Code and local codes and ordinances specify proper requirements for the AC receptacle. Meeting these standards provides adequate grounding for the AC portion of the system.

In systems using serial communication boards and serial printers, protective ground is tied directly to the computer chassis. With this arrangement which is used by the CVU system, protective ground and the CVU chassis then have a direct path to earth ground through the AC cord.

WARNING

Do not attempt to use a receptacle or extension cord that does not fit a three-conductor plug. Do not cut the grounding prong from the plug. Any attempt to operate the CVU system without an adequate ground may result in personal injury, damage to the CVU, or loss of data.

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2.1.3 Signal Ground

Signal ground is the common reference potential for all interface circuits except protective ground. In the CVU system, signal ground and protective ground are tied together inside the chassis. To prevent ground loops, this is done at one point only.

2.1.4 Grounding External Devices

When attaching an external device such as a printer to the system unit, maintain the single point ground circuit inside the system unit. To do this, make sure the external device signal ground and protective grounds are not tied together inside the external device.

When installing a printer, refer to the printer manual as required. If printer signal and protective grounds are tied together and the jumpers (straps) are identified, remove them.

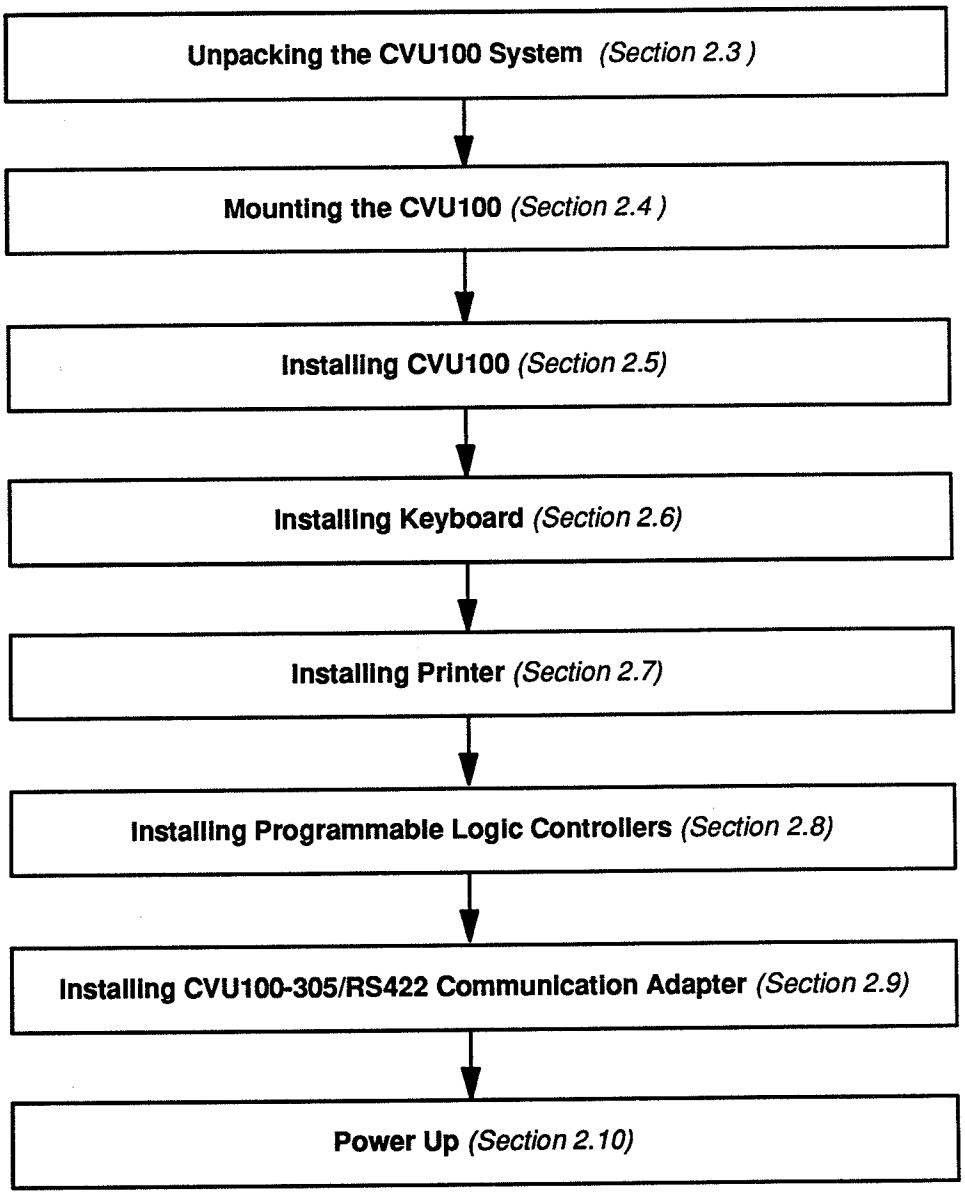
If a manual is not available, you can check the printer grounding arrangement using an ohmmeter. Measure resistance between pins 1 (chassis ground) and 7 (signal ground) on the printer. A shorted reading of 0 ohms indicates signal ground is tied to chassis protective ground; try to find and remove the ground strap. An open or very high reading indicates the signal and chassis grounds on the printer are not tied together and your system is set up properly.

Failure to follow these grounding instructions can cause extraneous or missing characters, parity errors, or component damage to the system. Always follow the instructions in your printer manual. For additional information on attaching a printer, contact your supplier or call Texas Instruments at (615) 461–2501.

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2.2 Installing the System

The following chart identifies the tasks for installing the CVU100 System.



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2.3 Unpacking and Inventory

The CVU100 System arrives in one large carton. The carton contains the following items:

- Power cable
- CVU100 Installation and Hardware Manual
- CVU100 Programming Reference Manual

As you remove the Texas Instruments CVU100 from its shipping carton, follow these guidelines.

Examine the carton for signs of damage. If damage is apparent, note its nature and follow procedures specified at your facility for handling damaged shipments.

WARNING

Use care when unpacking and handling the CVU100 equipment. The system unit contains a cathode ray tube (CRT) that is under high vacuum. Do not subject the CRT to sudden harsh impact. Failure to exercise care can cause an implosion and possible serious injury to nearby personnel.

Open the carton from the top. Pull out the fitted foam packs and set them aside. Carefully remove the equipment and set it on a table or work surface. Retain the shipping cartons and foam packs for future moves or service returns.

Inspect all items included in the carton. Look for hidden damage. Hidden damage occurs even when there is no damage to the shipping carton. If a problem is discovered, follow procedures used by your facility for reporting and filing claims with the carrier.

Store carton and all packing material in a clean, dry, storage area for possible future use.

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2.4 Mounting the CVU100

The CVU100 is designed to be installed in an NEMA Type 4X or NEMA Type 12 enclosures. It can be mounted in a standard 19-inch rack, which requires filler panel, or on an equipment enclosure panel.

2.4.1 Panel Mounting

Figure 2-1 illustrates how a panel should be cut and drilled to panel mount the CVU100 on the NEMA enclosure door. The 0.25 inch holes in the panel accommodates the 10-32 studs located on the back side of the front panel.

In order to have access to the back panel connectors when the NEMA enclosure door is shut, you must install NEMA approved connectors on the NEMA enclosure door. The CVU100 back panel connectors are connected to the connectors on the NEMA enclosure door by adapter cables.

2.4.2 Rack Mounting

Figure 2-1 illustrates the location of 12 studs on the back side of the front panel. The studs are threaded and should be installed in a rack that is not threaded. If the rack has threaded holes, they must be drilled out with a #3 (0.213 inch) bit.

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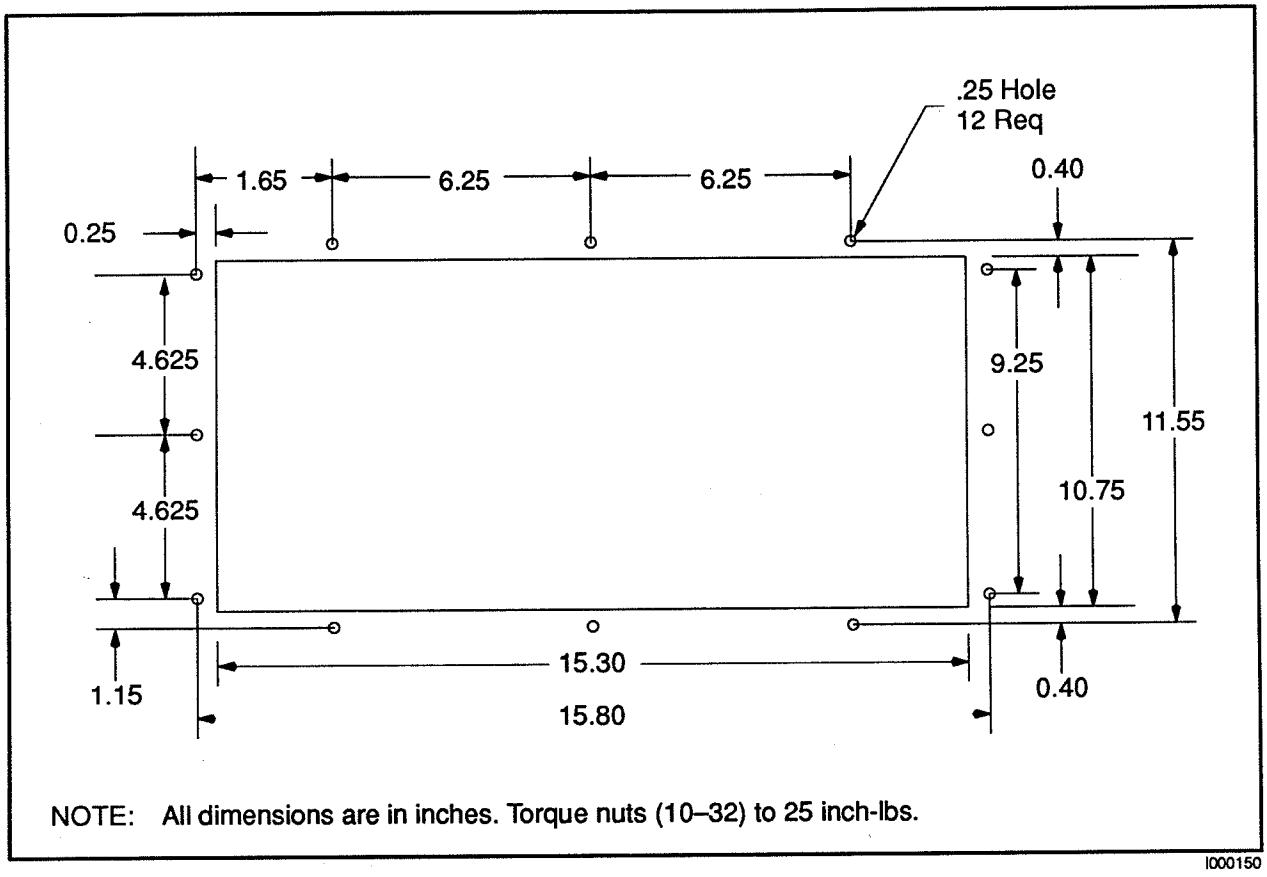
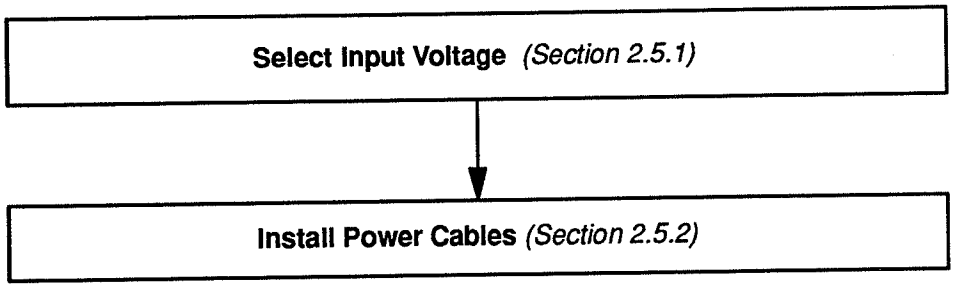


Figure 2-1 Mounting Dimensions

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2.5 Installing the CVU100

The following chart identifies the tasks for installing the CVU100.



2.5.1 Selecting Input Voltage

The CVU100 operates on 115VAC or 230VAC power sources. The input power module is self-sensing and requires no selection when using either voltage source. The input voltage source must be between 85–260VAC at 48–62Hz.

2.5.2 Installing a Power Cable

Use the following steps to install the power cable.

1. Ensure that the CVU100 is turned off. See Figure 1-3 and Figure 1-4 or the on/off switch locations. The bottom side of the switch marked O should be in the down position.
2. Attach the female end of the AC cord to the male power receptacle on the CVU100 back panel. See Figure 1-3 and Figure 1-4 for the power receptacle locations.
3. Plug the male end of the AC cord into an appropriate AC receptacle. Ensure that the AC line meets requirements defined in Chapter 2, Preparing the Site.

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2.6 Installing PC/XT Compatible Keyboard

The CVU100 has an integral operator keypad mounted in the front bezel. A PC/XT compatible keyboard can be connected to the CVU100. The operator keypad or keyboard is used to control the manufacturing process and the PC/XT keyboard is used to access the setup menu.

CAUTION

Always turn the system unit off when installing or replacing a keyboard. Failure to do so may cause damage to the system or result in faulty CVU operation.

Use the following steps to install a keyboard.

1. Ensure that the CVU100 is turned off. See Figure 1-3 and Figure 1-4 for the on/off switch locations. The bottom side of the switch marked O should be in the down position.
2. Place keyboard in front of the CVU100 or in another convenient location.
3. Plug the 5-pin, male, DIN connector on the keyboard cable into the female keyboard connector on the back panel of the CVU100. See Figure 1-3 and Figure 1-4 for the keyboard connector locations.

NOTE: The male keyboard connector must be plugged into the corresponding NEMA connector if the CVU100 is panel-mounted. Refer to Paragraph 2.4.1.

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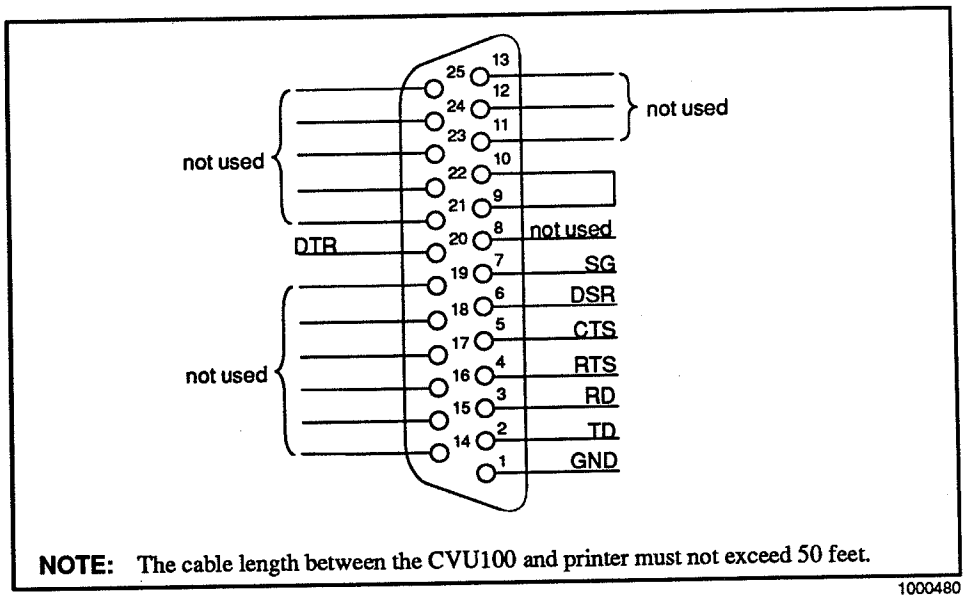
2.7 Installing a Printer

The CVU System can output data to printers. Printed copies can be produced by using the computer/printer (RS-232) port (CVU100-405 and CVU100-505/505 only; when using CVU100-305, the printer must be connected to the communication module) on the CVU100 back panel. See Figure 2-2 for CVU100 pin-out diagram for printer connection.

NOTE: The printer connector must be plugged into the corresponding NEMA connector if the CVU100 is panel mounted. Refer to Section 2.4.1.

Use the following steps to install a printer.

1. Ensure that the CVU100 is turned off. See Figure 1-3 and Figure 1-4 for the on/off switch locations. The bottom side of the switch marked O should be in the down position.
2. Plug the 25-pin male connector on the printer cable onto the peripheral (RS-232) port on the CVU100 back panel. See Figure 1-3 and Figure 1-4 for the peripheral port locations.
3. Plug the remaining printer cable connector to the appropriate port on the printer. Refer to printer documentation.



NOTE: The cable length between the CVU100 and printer must not exceed 50 feet.

1000480

Figure 2-2 CVU100 Printer Connection

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2.8 Installing Programmable Logic Controllers

This section provides information to connect the following programmable logic controllers (PLCs) to the CVU100.

- Series 305 PLC; see Figure 2-3 for pin-out diagram.
- Series 405 PLC; see Figure 2-4 for pin-out diagram.
- Series 500 and 505 PLCs; see Figure 2-5 for pin-out diagram.
- Series 545 PLC; see Figure 2-6 for pin-out diagram

Use the following steps to install a PLC.

1. Ensure that the CVU100 is turned off. See Figure 1-3 for the on/off switch location. The bottom side of the switch marked O should be in the down position.
2. Plug the 25-pin connector on the programming cable into the PLC (RS-232) port for the CVU100-500/505 and CVU100-405. See the following note for the CVU100-305. See Figure 1-3 and Figure 1-4 for the programming port locations.

NOTE: When using CVU100-305, the PLC must be connected to the controller board for RS-232 protocol and to the communication adapter for RS-422 protocol. Refer to Section 2.9 for additional information on using RS-422 protocol.

---

3. Plug the remaining programming cable connector to the appropriate port on the PLC. Refer to PLC documentation.

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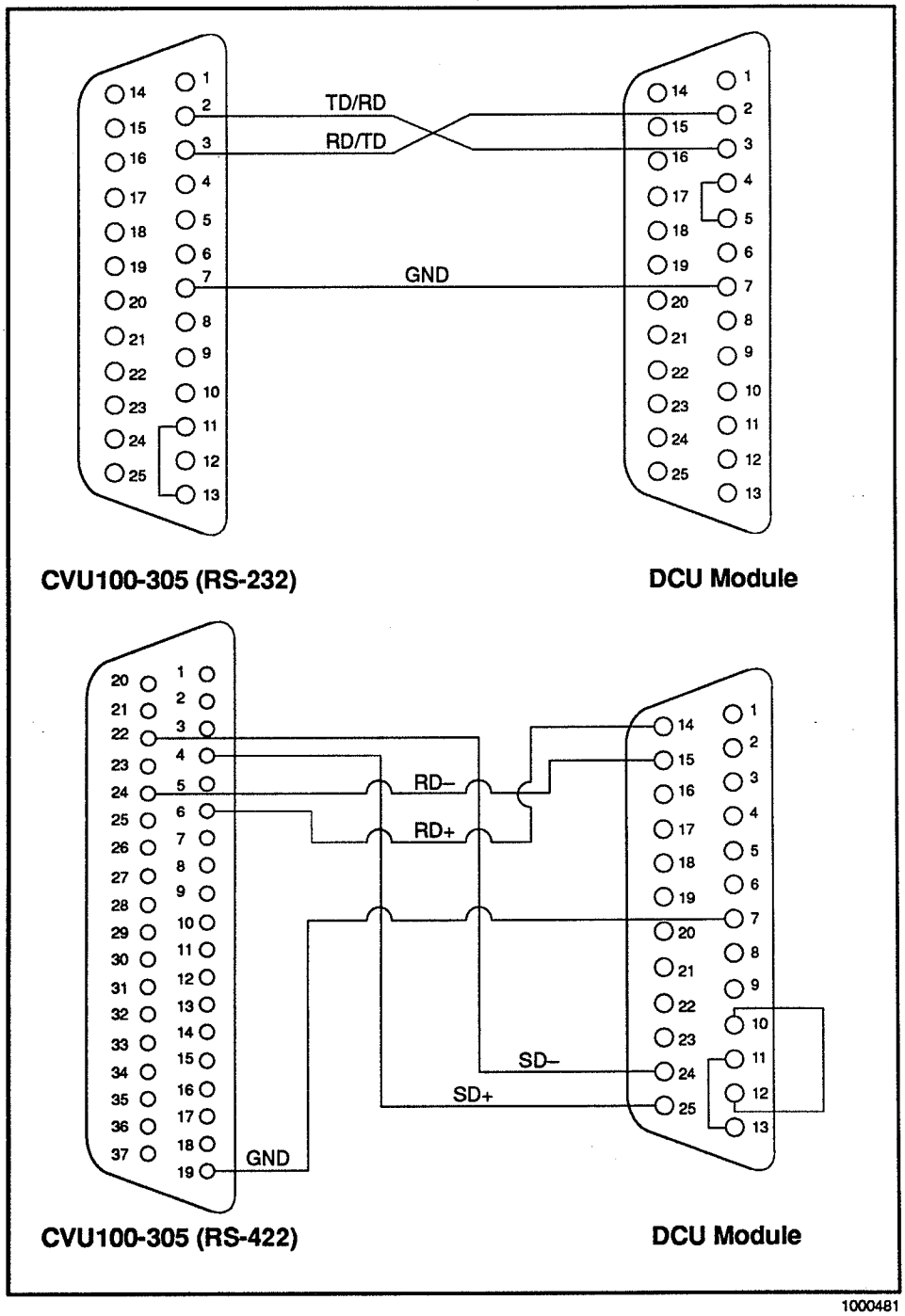


Figure 2-3 Series 305 PLC/CVU100 Wiring Diagram

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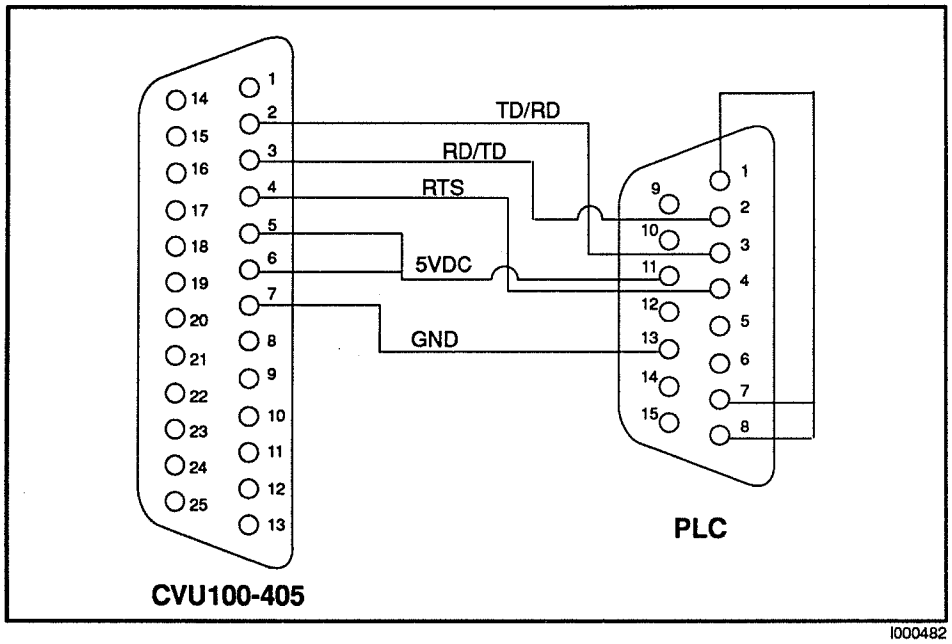


Figure 2-4 Series 405 PLC/CVU100 Wiring Diagram

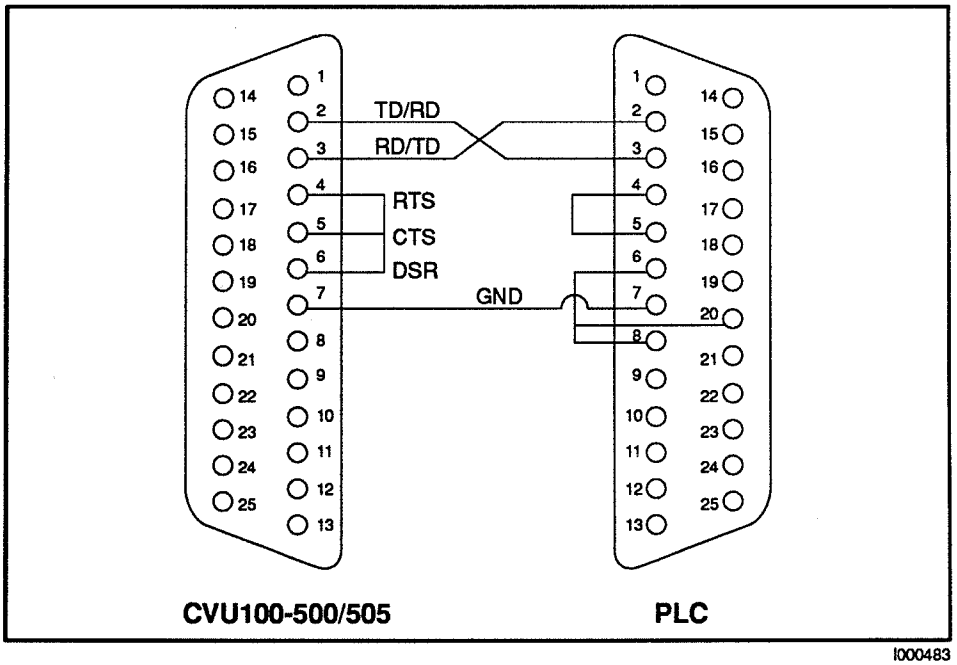


Figure 2-5 Series 500 & 505 PLC/CVU100 Wiring Diagram
(except 545 PLC)

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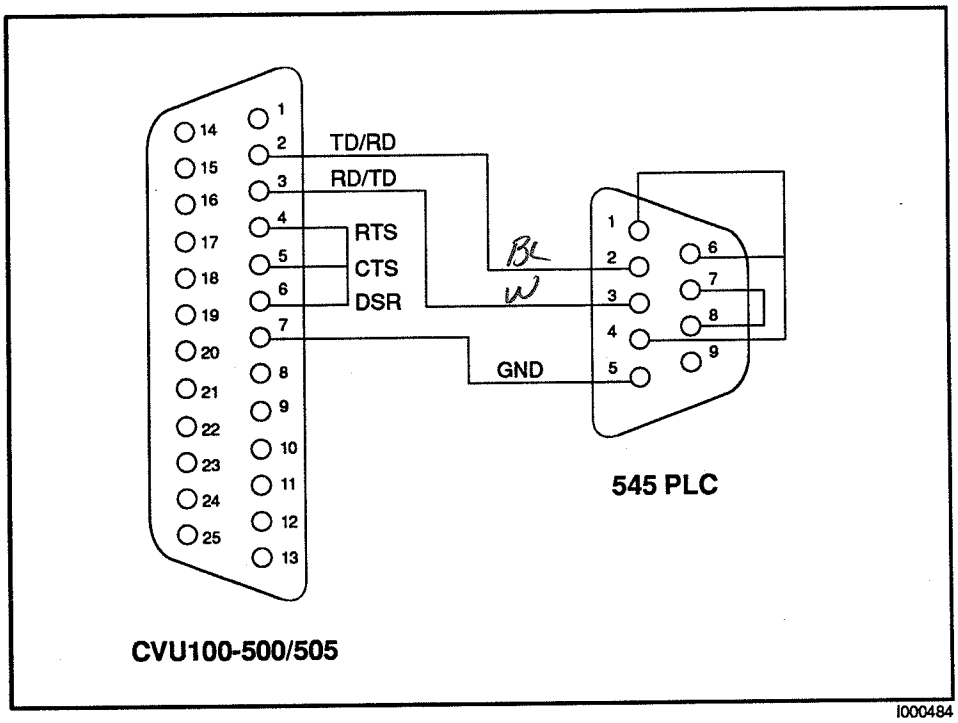


Figure 2-6 545 PLC/CVU100 Wiring Diagram

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2.9 Installing CVU100-305/RS422 Communication Adapter

The CVU100-305 has a standard RS-232 communication protocol. Communicating in RS-422 protocol is an option only available when using the CVU100-305. If RS-422 protocol is desired, a CVU100-305/RS422 communication adapter must be installed.

Use the following procedures to install a CVU100-305/RS422 communication adapter.

1. Ensure that the CVU100 is turned off. See Figure 1-3 for the on/off switch location. The bottom side of the switch marked O should be in the down position.

2. Use a flat-blade screwdriver to remove four screws, and washers used to secure the cover plate to the CVU100 back panel. Refer to Figure 2-7.

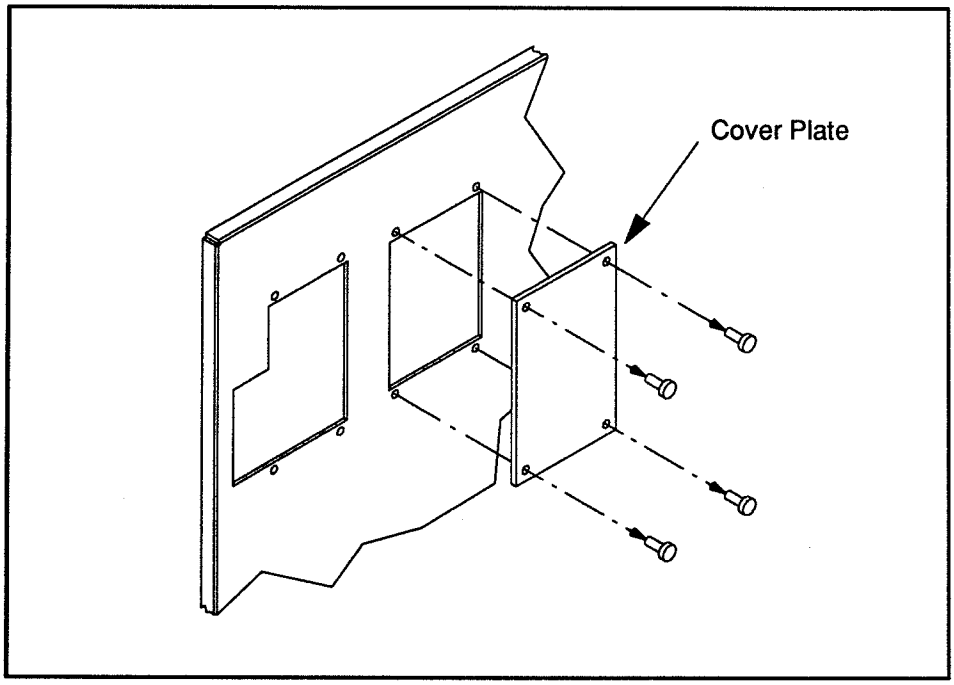


Figure 2-7 Removing Cover Plate

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3. Install the CVU100-305/RS422 communication adapter to the CVU100 with four screws and washers. Refer to Figure 2-8.

4. Use a flat-blade screwdriver to remove six screws used to fasten the CVU100 cover assembly. See Figure 3-1 for screw locations.

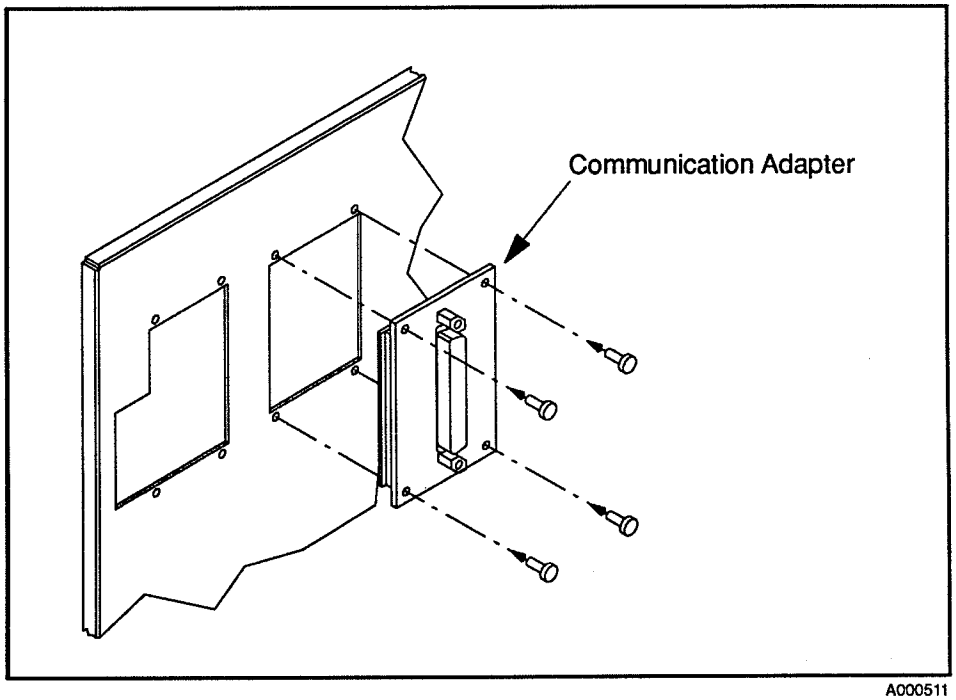


Figure 2-8 Installing Adapter

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5. Attach power cable connectors (6-pin straight) to connector P3 on the communication adapter and connector P9 on the controller board. Refer to Figure 2-9.

6. Attach data cable connectors (20-pin header) to connector P1 on the communication adapter and connector P10 on the controller board. Refer to Figure 2-9.

7. Re-install the cover assembly with six screws. See Figure 3-1.

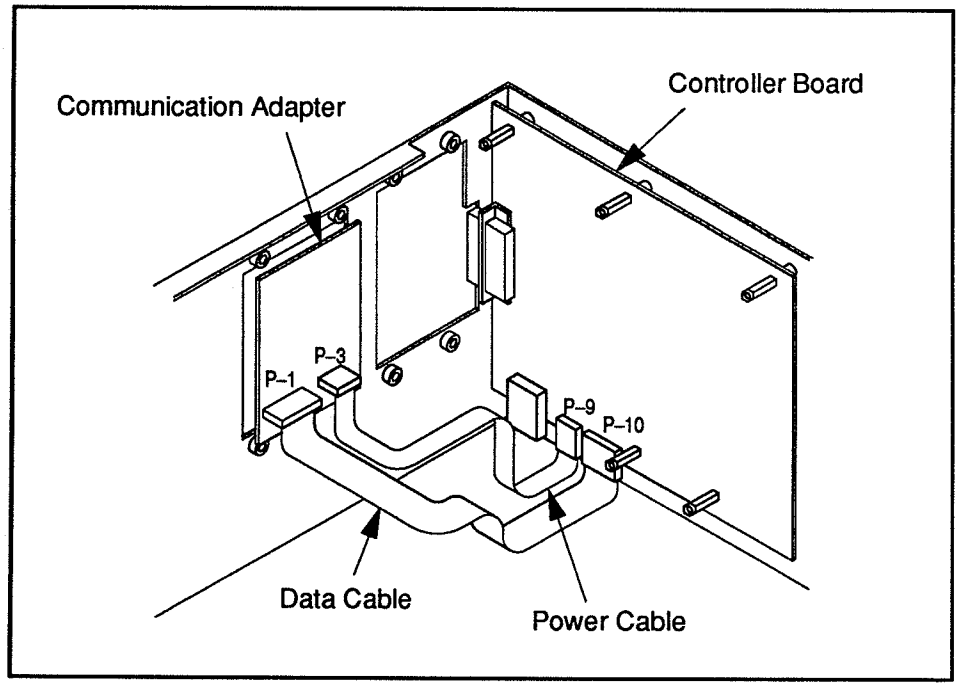


Figure 2-9 Installing Adapter Cables

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2.10 Power-Up

2.10.1 Procedure

The CVU100 is turned on by setting the power switch to on; refer to Figure 1-3 and Figure 1-4 for the power switch location. The video display will require a brief warm-up period (about 10 seconds). The cursor will appear in the top left corner of the screen. The terminal is now in Operating Mode.

2.10.2 Operating Mode

The CVU100 is always in one of two modes: Operating Mode or Set-up Mode. It is in Operating Mode whenever a menu or prompt is not being displayed on the screen. It automatically enters Operating Mode when it is powered-up. The CVU100 must be in the Operating Mode to receive any commands over the serial port. However, to configure the terminal, the Set-up Mode must be used.

To exit the Operating Mode, do any of the following.

- On the keyboard, press F10 F10 , or
- On the keypad, press F1 and 4 simultaneously

Neither of these will work if the password has been enabled. See the *CVU100 Programming Reference Manual* for more information.

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Chapter 3

Removal and Replacement Procedures

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3.1 General Service Considerations

Before reaching this point, you should have either gone through some logical troubleshooting steps and selected a probable faulty component or have an obvious defect that simply requires replacing the unit. Procedures are determined by operating guidelines that have been established for the site.

CAUTION

Do not attempt extensive repair of the CVU equipment without sufficient experience working with sensitive electronic circuits. When servicing or replacing circuit boards, you must use a properly grounded work environment. This includes floor mats, workbench surface, and wrist straps. Failure to follow these instructions may result in additional damage to the system.

CAUTION

When servicing the CVU100, do not use parts from other CVU models to repair a CVU100. In addition to an entirely new hardware design, keyboard and other signaling schemes have been changed. Failure to observe this warning may cause major damage to the system. If in doubt, check with your distributor or call Texas Instruments at (615) 461-2501.

WARNING

Removing the CVU100 cover assembly involves potential shock hazard. Do not attempt to remove cover unless you are thoroughly familiar with precautions required when working around high voltage equipment. Failure to do so may result in serious personal injury.

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3.2 Replacing the CVU100

3.2.1 Tools

To work on the CVU, you will need some (or all) of the tools listed below.

- Medium-sized flat-blade screwdriver
- 1/4-inch hex wrench
- Antistatic environment, including grounded floor mats, workbench surface, and wrist strap.

3.2.2 Procedure

Use the following steps to replace the CVU100.

1. Follow site guidelines for steps required to switchover, save data, etc., assuming the unit can still perform these tasks.
2. Ensure that the CVU100 is turned off. See Figure 1-3 and Figure 1-4 for the on/off switch locations. The bottom side of the switch marked O should be pressed in the down position.
3. Disconnect all external cables from the unit.
4. Unmount and remove the CVU100.

NOTE: If you are going to repair the unit prior to re-installation, proceed to the appropriate removal and replacement procedure. If a spare CVU100 is available and you wish to replace the entire CVU100, follow the remaining steps.

---

5. Re-mount the CVU100. Refer to Chapter 3 for procedures.
6. Re-attach all previously disconnected cables. Refer to Chapter 3 for procedures.
7. Re-start the system. Refer to Chapter 3 for procedures.

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3.3 Replacing Vertically Mounted Circuit Boards

Procedures in this sections are used to replace the following circuit boards. Refer to Figure 1-5 for the circuit board arrangement in the chassis.

- Communication module
- Controller board

CAUTION

When servicing or replacing circuit boards, you must use a properly grounded work environment. This includes floor mats, workbench surface, and wrist straps. Failure to follow these instructions may result in additional damage to the system.

3.3.1 Communication Module

Use the following steps to replace the communication module. Refer to Figure 1-5 for board location in chassis.

1. Place the CVU100 on a level workspace.
2. Ensure that the CVU100 is turned off. See Figure 1-3 and Figure 1-4 for the on/off switch locations. The bottom side of the switch marked O should be pressed in the down position.
3. Disconnect cable from the board's external connector.
4. Use a flat-blade screwdriver to loosen six screws used to fasten the CVU100 cover assembly. See Figure 3-1 for screw locations.
5. Use a flat-blade screwdriver to remove seven screws and washers. See Figure 3-2.

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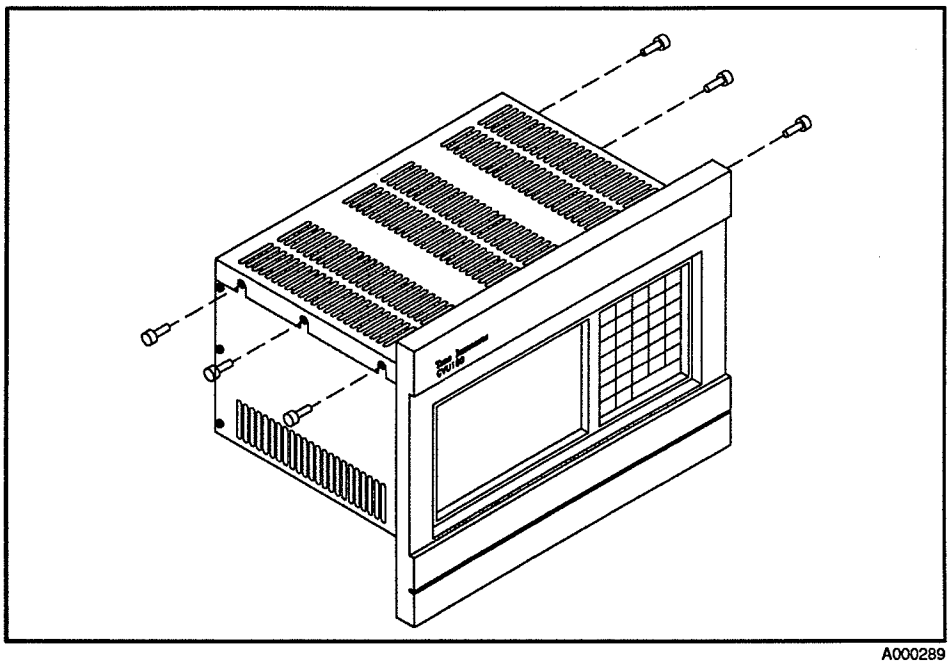


Figure 3-1 Removing CVU100 Cover Assembly

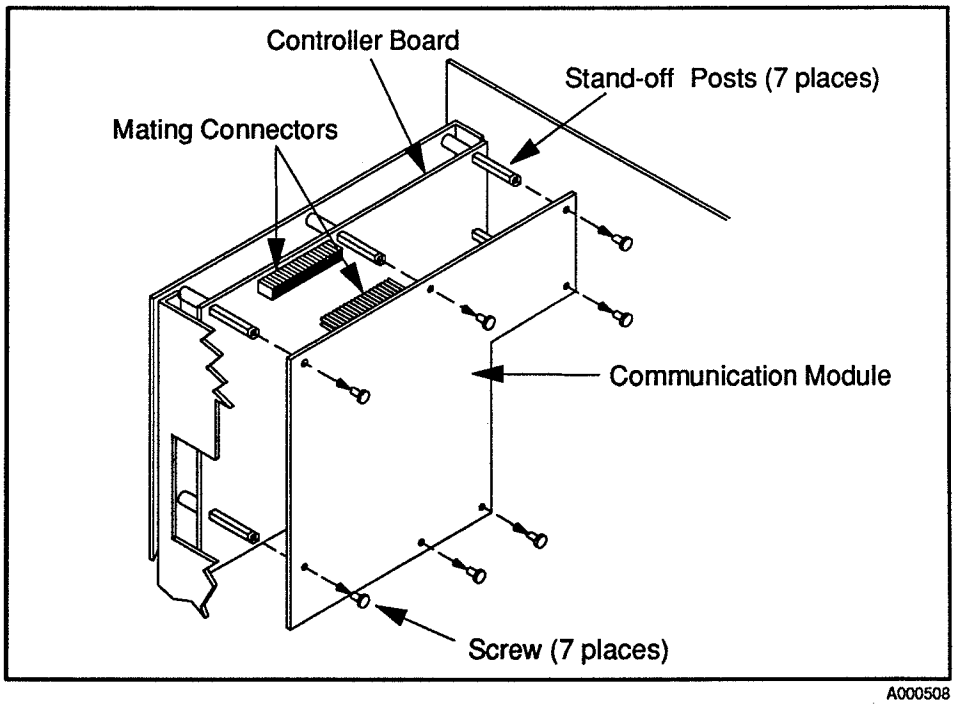


Figure 3-2 Replacing Circuit Boards

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6. Grasp the communication module. Remove the communication module by pulling it away from the controller board until the mating side connectors are separated. See Figure 3-2.

7. Place the module in an anti-static bag or other appropriate storage device before returning for repair.

8. Refer to Figure 3-3 and Table 3-1 to verify the jumper settings on the board. All configurable jumpers are preset by the factory before shipping.

Note: Do not change the jumper setting.

9. Align the side connector on the new board with the side connector on the controller board.

10. Apply pressure to the communication module to securely mate the side connector with the side connector on the controller board.

11. Re-install the seven screws to secure the communication module. See Figure 3-2.

12. Re-install the cover assembly with six screws. See Figure 3-1.

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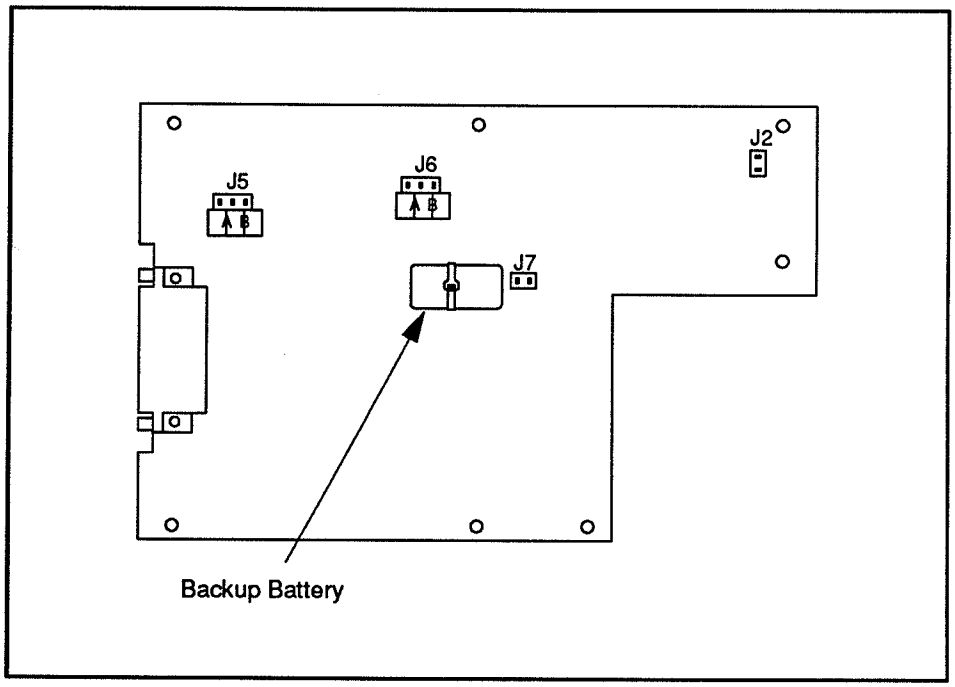


Figure 3-3 Jumper Locations

Table 3-1 Configurable Jumper Settings

Jumper Number	Configuration
J1	not configurable
J2	IN
J3 and J4	not configurable
J5	B
J6	A
J7	IN
J8 through J17	not configurable

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3.3.2 Controller Board

Use the following steps to replace the controller board. Refer to Figure 1-5 for board location in chassis.

NOTE: The communication module must be remove before removing the controller board. Refer to Section 3.3.1 for procedures.

---

1. Place the CVU100 on a level workspace.
2. Ensure that the CVU100 is turned off. See Figure 1-3 and Figure 1-4 for the on/off switch locations. The bottom side of the switch marked O should be pressed in the down position.
3. Disconnect cable from the board's external connector.
4. Use a flat-blade screwdriver to remove six screws used to fasten the CVU100 cover assembly. See Figure 3-1 for screw locations.
5. Disconnect all cables (if present) from board's internal connectors.
6. Use a 1/4-inch hex wrench to remove seven stand-off posts that holds the board in place. See Figure 3-2.
7. Remove board and place in an anti-static bag or other appropriate storage device before returning for repair.

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8. Refer to Figure 3-4 to verify switch S1 setting and location on the board.

NOTE: This switch is a keyboard selection switch. It is preset by the factory to allow the CVU100 to operate a PC/XT compatible keyboard. Do not change the setting on switch S1.

9. Place the new board in position and re-install the seven stand-off posts. See Figure 3-2 and Figure 1-4 .

10. Re-install the cover assembly with six screws. See Figure 3-1 and Figure 1-4.

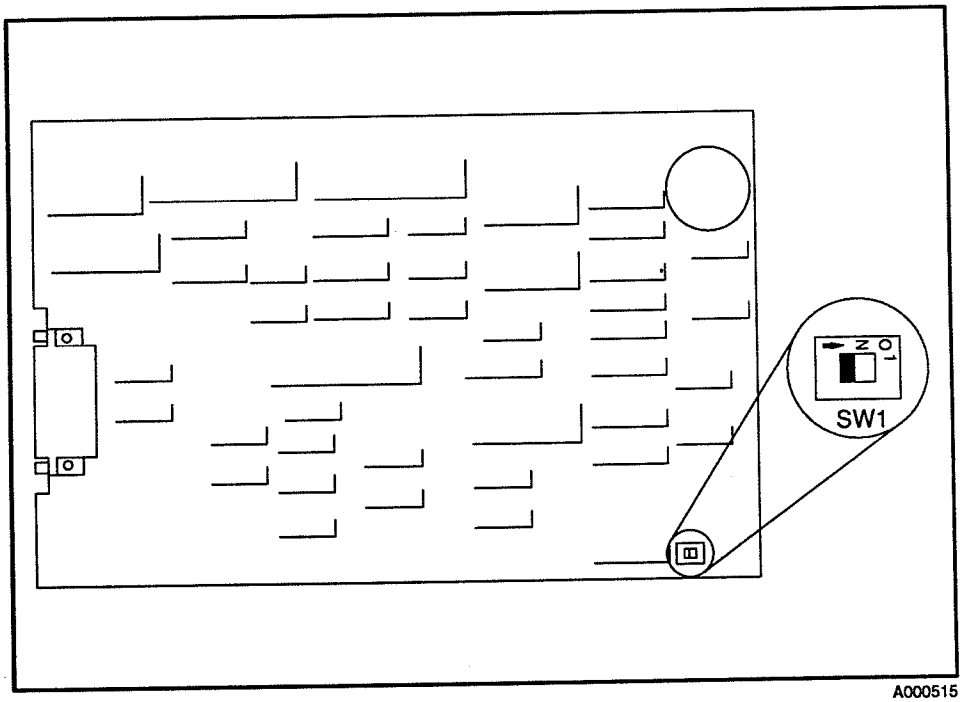


Figure 3-4 Switch S1 Location

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3.4 Replacing the Fuse

The fuse is located inside a fuse holder/access cover. See Figure 1-3 for the fuse location. Use the following steps to replace the fuse.

1. Ensure that the CVU100 is turned off. See Figure 1-3 for the on/off switch location. The bottom side of the switch marked O should be pressed in the down position.
2. Pry the fuse holder/access cover open with a flat-blade screwdriver.
3. Remove the fuse and replace with a 3/4A slow-blow fuse. See Figure 3-5.
4. Install the fuse holder/access cover back into position.

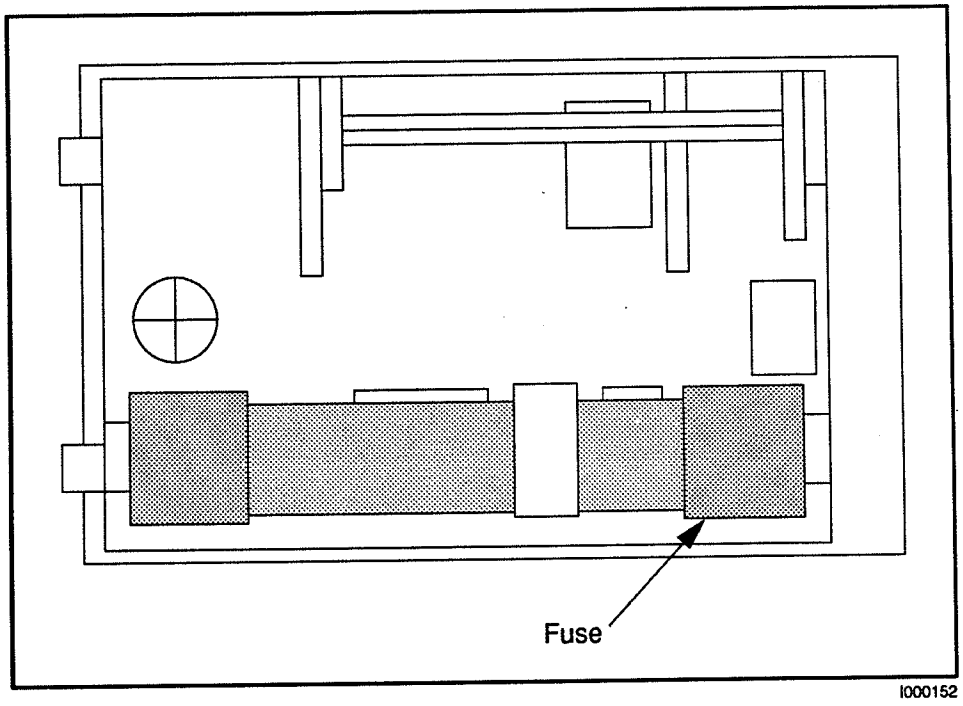


Figure 3-5 Replacing the Fuse

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