MODELS 6312 AND 6312+ VIDEO DISPLAY UNIT (VDU)

Installation Manual

47-091 R01

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TABLE OF CONTENTS

CHAPTERS (Continued)

FIGURES

TABLES

PREFACE

This manual provides the information necessary to install the Concurrent Computer Corporation Model 6312 and 6312+ Video Display Units (VDU). It is intended as a guide for the technician responsible for installation.

Chapter 1 contains a section on related documents, a general operational description and a description of features. Chapter 2 describes the unpacking, environmental, and power requirements, installation, and configuration.

Revision R01 includes the Model 6312+ VDU characteristics and installation in addition to the 6312.

CHAPTER 1
GENERAL DESCRIPTION

1.1 INTRODUCTION

This manual describes the installation of Models 6312 and 6312+ Video Display Unit (VDU). Both models are similar in characteristics and installation procedures, therefore references to Model 6312 VDU in this manual apply to both models unless otherwise noted. The 6312 VDU is a two-piece modular unit consisting of the monitor and keyboard assemblies. The 6312 is shown in Figure 1-1. The 6312+ is shown in Figure 1-2.

This chapter describes the Model 6312 VDU operational features and current loop interface (CLI) option.

1.2 RELATED DOCUMENTS

Refer to the documents listed below when using and/or programming the associated interface with the Model 6312 VDU.

- Models 6312 and 6312+ Video Display Unit (VDU) User Guide
- 2-Line and 8-Line Communications Multiplexor (COMM MUX)
  - 2-Line and 8-Line Communications Multiplexor (COMM MUX) Programming Manual
  - 2-Line and 8-Line Communications Multiplexor (COMM MUX) Maintenance Manual
- Multiperipheral Controller (MPC) Manual
- Current Loop Communications Multiplexor (CLCM)
  - Current Loop Communications Multiplexor (CLCM) Programming Manual
  - Current Loop Communications Multiplexor (CLCM) Installation and Maintenance Manual

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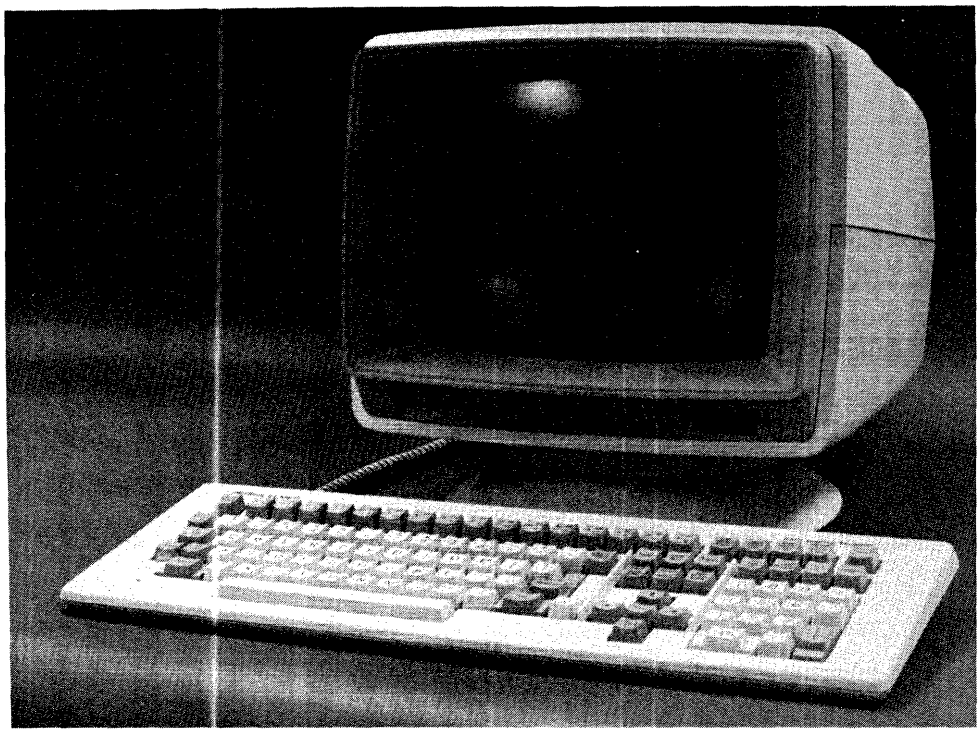

Figure 1-1 Model 6312 VDU

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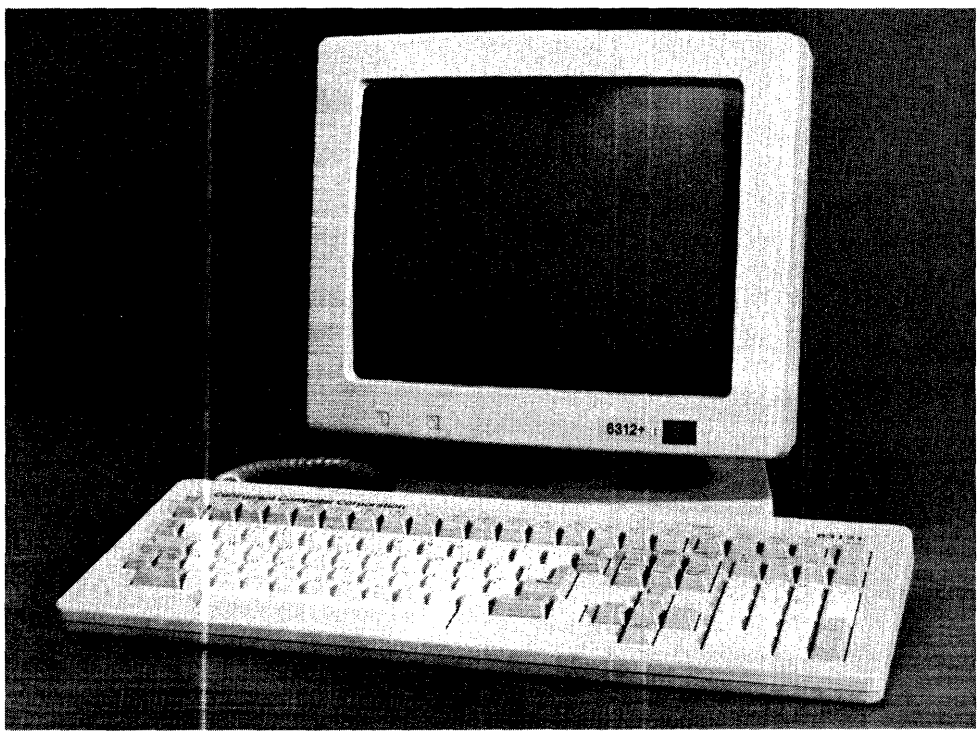

Figure 1-2 Model 6312+ VDU

1.3 OPERATIONAL DESCRIPTION

The Model 6312 VDU has the following features:

- Full 128 ASCII character set
- Memory display configuration:
  - 24 lines by 80 characters used for general-purpose terminal applications
- DIN-standard keyboard (see Section 1.3.2)
- On-line or local modes
- Conversational or block modes
- Program mode
- 12 inch monitor (green or amber) (Model 6312) |

  14 inch monitor (green or amber) (Model 6312+) |
- Protected fields
- Business graphics
- Absolute cursor positioning
- 7-bit data word structure
- Seven communication rates in full-duplex and half-duplex send/receive modes
- RS-232C primary (modem) interface and auxiliary interface ports
- Four print modes:
  - page print
  - line print
  - display and print from host
  - transparent print from host
- Nonvolatile memory for:
  - setup modes
  - programmable function keys
  - answerback memory

1.3.1 Monitor

The Model 6312 monitor has the following features:

- Full screen inverse video
- Visual attributes:
  - blank
  - blink
  - inverse video
  - reduced intensity
  - underline - a combination of blink and blank
- 7 x 11 character matrix (6312)
- 9 x 12 character matrix (6312+)
- Status line/message line
- Message line

1.3.2 Keyboard

The Model 6312 VDU has a low-profile, detachable keyboard shown in Figure 1-3. The 6312+ contains international fonts for seven different countries which are selectable in the configuration mode (see the 6312 User Guide for details). Keycaps are available for each of the fonts. Part numbers are given in Section 2.2.

The Model 6312 keyboard contains the following keys:

- 107 keys in a typewriter layout
- Cursor control: Left, right, up, down, home, return, line feed, tabs (backward and forward)
- Numeric keypad (0-9, comma, period, minus sign, and enter keys)
- 16 Host/user programmable function keys (shiftable to 32)
- Edit keys: Editing from keyboard or host
- Features: 3 key rollover, automatic repeat (selected keys), selectable audible key click

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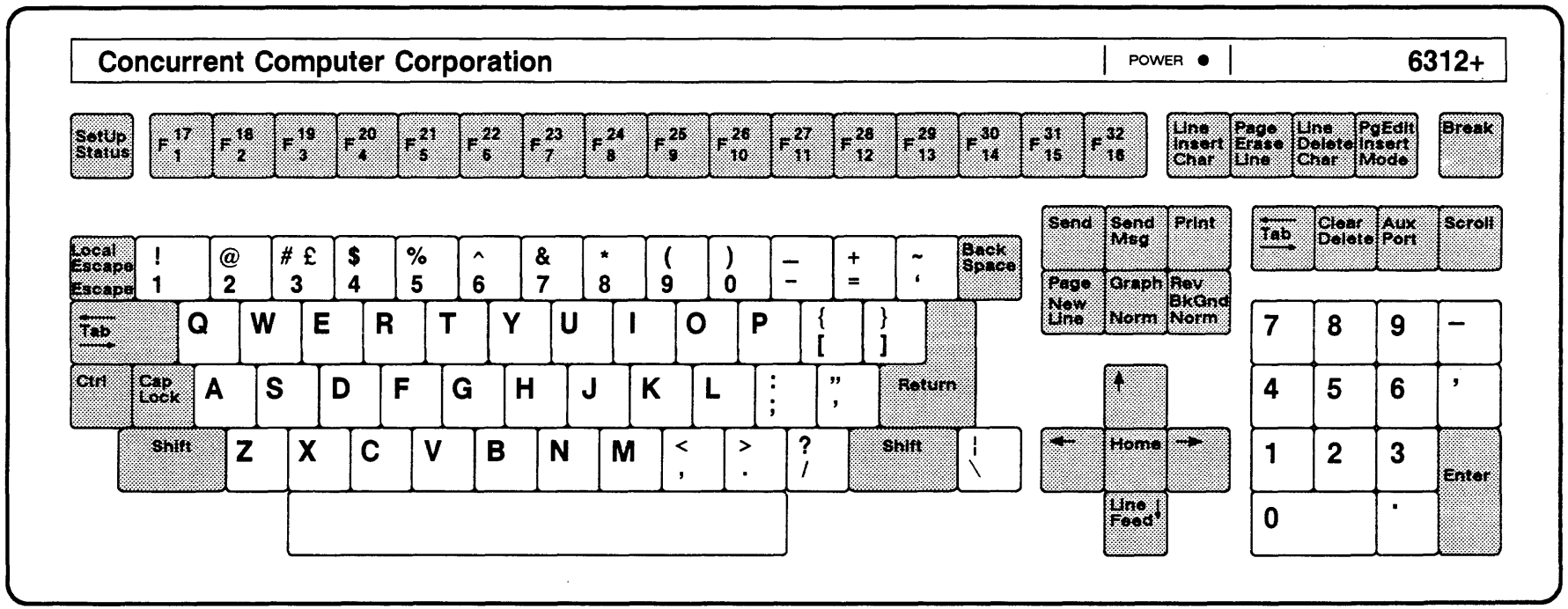

Figure 1-3 Model 6312+ VDU Keyboard

1.3.3 RS-232C Primary (Modem) Port

This port handles the bidirectional flow of data between the Model 6312 VDU and the host computer.

1.3.4 RS-232C Auxiliary Port

This port allows the use of a receive-only printer. The port is bidirectional for flow control handshaking.

1.3.5 Programmable Function Keys

The Model 6312 VDU has 16 programmable function keys (shiftable to 32). The information user- or host-programmed into these keys is stored in nonvolatile memory.

1.4 CURRENT LOOP ADAPTER (OPTION ON MODEL 6312 ONLY)

The optional current loop adapter provides a means of communicating with the Model 6312 VDU using the current loop mode. This adapter converts the RS-232C line signal transmitted by the Model 6312 VDU to a 17mA or 0mA loop signal for data transmission over the interconnecting cable. Section 2.6 contains installation information for this option.

CHAPTER 2
INSTALLATION PROCEDURES

2.1 INTRODUCTION

The Model 6312 Video Display Unit (VDU) can be used on systems configured with one of the following:

- 2-line and 8-line communications multiplexor (COMM MUX),
- current loop communications multiplexor (CLCM)(except 6312+),
- multiperipheral controller (MPC).

See Section 1.2 for reference documents to be used for programming and/or using a system configured with the Model 6312 VDU with one of the above multiplexors or MPC.

2.2 PART NUMBERS

Part numbers for the Model 6312 VDU are listed in Tables 2-1 and 2-2. Table 2-1 contains the cabling and hardware part numbers for connection to a host computer. Table 2-2 contains only VDU part numbers. Table 2-3 contains part numbers for International keycaps used with the 6312+.

TABLE 2-1 MODEL 6312 VDU AND HARDWARE PART NUMBERS
(Part numbers marked with * are for the 6312+)

PART NUMBER	DESCRIPTION
02-880 F01 52-045 F01*	Model 6312 - 115VAC, 50/60Hz, green screen, standard keyboard
02-880 F02 52-045 F02*	Model 6312 - 115VAC, 50/60Hz, amber screen, standard keyboard
02-880 F03 52-045 F03*	Model 6312 - 230VAC, 50/60Hz, green screen, standard keyboard
02-880 F04 52-045 F04*	Model 6312 - 230VAC, 50/60Hz, amber screen, standard keyboard

TABLE 2-2 MODEL 6312 VDU PART NUMBERS
(Part numbers for the 6312+ are marked with an *)

PART NUMBER	DESCRIPTION
27-158 F01 27-198 F01*	Terminal - 115VAC, RS-232C communication line interface, green screen
27-158 F02 27-198 F02*	Terminal - 115VAC, RS-232C communication line interface, amber screen
27-158 F03	Terminal - 230VAC, RS-232C communication line interface, green screen
27-158 F04	Terminal - 230VAC, RS-232C communication line interface, amber screen

(For 230VAC version of the 6312+ see Section 2.5.1)

TABLE 2-3 INTERNATIONAL KEYCAP PART NUMBERS

PART NUMBER	KEYCAP COUNTRY
52-046	France
52-047	Sweden
52-048	Germany
52-050	Spain
52-051	Denmark

2.3 UNPACKING

The Model 6312 VDU is inspected, tested, and carefully packaged prior to shipment with all cables and connectors required for setup. Read and follow the procedures listed below before unpacking the terminal.

- Inspect each carton for any special unpacking or handling instructions.
- Carefully remove each component from its carton.
- Inspect all components for physical damage. Section 2.3.1 contains initial inspection procedures.

2.3.1 Initial Inspection

Perform the visual and mechanical inspection as listed in Table 2-4 immediately after placing the terminal at the operating location.

- Verify that each item on the sales order packing list has been included in the shipment.
- Verify that the serial numbers correspond to those shown on the invoice.
- Check the monitor and keyboard assemblies using Table 2-4 as a guide.
- Inspect for dust or any foreign material that can impair electrical contact when cable connections are made. Vacuum or brush lightly to remove any dust or foreign material.

TABLE 2-4 INITIAL INSPECTION

INSPECTION	CHECK
Visual	1. On Display Module: a. panel surfaces for damage such as dents, paint scratches, cracks, and warps b. connectors for damaged pins c. screen for cracks or scratches.
	2. On Keyboard Module: a. panel surfaces for damage such as dents, paint scratches, cracks, and warps b. cable and connector for any damage c. keytops for cracks and scratches d. placards for cracks and scratches.
	3. On the 6312 (not 6312+), to access the internal components, remove the monitor top cover (see note) and proceed as follows: a. check that all boards and connectors are firmly seated and that there are no loose components. b. check that all fuses are firmly seated.
	4. To access internal components on the 6312+, remove the two screws on the back of the monitor (see Figure 2-2) and pull the printed circuit board out for examination. Insure that there are no loose components.
Mechanical	All operating switches, controls, and keyboard keyswitches for smooth operation.

NOTE

To remove the monitor assembly top on the 6312, remove the two screws located under the plastic tabs shown in Figure 2-1.

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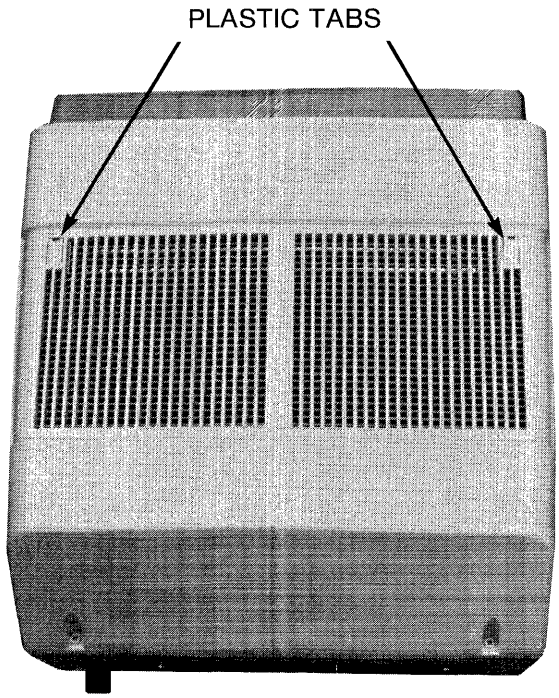

Figure 2-1 Model 6312 Monitor (Top View)

2.4 ENVIRONMENTAL REQUIREMENTS

The Model 6312 VDU operates satisfactorily in an environment that is controlled for the comfort of operating personnel. The range of environmental conditions is listed in Table 2-5.

TABLE 2-5 ENVIRONMENTAL REQUIREMENTS

ENVIRONMENTAL CONDITION	LIMITS	
	OPERATING	STORAGE
Temperature	5° to 40° C (40° to 100° F)	-40° to +65° C (-35° to +140° F)
Humidity (noncondensing)	10% to 85%	10% to 90%

2.4.1 Site

Since no special mounting provisions are required for the Model 6312 VDU, it can be used in a typical office environment.

Allow ample time for temperature adjustment when the Model 6312 VDU is moved to a warmer environment. This change could produce internal condensation, which could impair its operation.

The floor covering should not produce electrostatic charges that could impair the operation of the VDU.

2.4.2 Mounting

The Model 6312 VDU is designed to be placed on a desk or table. The monitor requires a minumum space of 14 inches (35.6cm) wide, 13 inches (33cm) high and 15 inches (38cm) deep. The keyboard requires an area 21 inches (53.4cm) wide and 8 inches (20.3cm) deep.

2.5 POWER REQUIREMENTS

A standard, 3-pronged 115V (230V) AC power outlet is required for the Model 6312 VDU. Table 2-6 lists the AC power requirements.

TABLE 2-6 MODEL 6312 AC POWER REQUIREMENTS
(part numbers marked with an * are for the 6312+)

PART NUMBERS	AC REQUIREMENTS
27-198 F01*	
27-158 F01	115VAC, 50/60Hz, 50 watts
27-198 F02*	
27-158 F02	115VAC, 50/60Hz, 50 watts
27-158 F03	230VAC, 50/60Hz, 50 watts
27-158 F04	230VAC, 50/60Hz, 50 watts

(for 230VAC Model 6312+, see Section 2.5.1)

2.5.1 Converting The Model 6312+ for 230VAC Power

The standard version of the Model 6312+ VDU is 115VAC, 50/60Hz. Conversion for 230VAC, 50/60Hz requires a conversion kit, part number (17-477F04). This kit contains a new power cord and fuse.

After installing the power cord and fuse at the rear of the monitor, set the switch located on the bottom of the monitor to the 230VAC position. The VDU is then converted for 230VAC.

2.6 RS-232C INTERFACE

The Model 6312 VDU has two EIA type connectors, RS-232C communication and RS-232C printer ports located on the rear of the monitor unit assembly shown in Figure 2-2. These ports provide the interface connections between the VDU and the host computer.

2.6.1 Cabling

The connections are made with on-site cables and adapter 26-401 shown in Figure 2-3.

The pin-out signals for the printer and modem connectors are listed in Tables 2-7 and 2-8, respectively.

TABLE 2-7 PRINTER RS-232C EIA CONNECTOR (FEMALE)

PIN	TYPE: INPUT	TYPE: OUTPUT	MNEMONIC	DESCRIPTION
1	-	-	GND	Chassis ground
2	X	-	PR RX	Printer serial Data input
3	-	X	PR TX	Printer serial Data output
7	-	-	GND	Logic ground
20	X	-	PR DTR	Printer data transmit ready

TABLE 2-8 COMMUNICATIONS (MODEM) RS-232C EIA CONNECTOR

PIN	TYPE		MNEMONIC	DESCRIPTION
	INPUT	OUTPUT		
1	-	-	GND	Chassis ground
2	-	X	TX DATA	Serial transmitted data output
3	X	-	RX DATA	Serial received data
4	-	X	RTS	Request to send
5	X	-	CTS	Clear to send
6	X	-	DSR	Data set ready
7	-	-	SIG GND	Logic ground
20	-	X	DTR	Data terminal ready
23	-	X	+12V	+12VDC power (switch selectable)

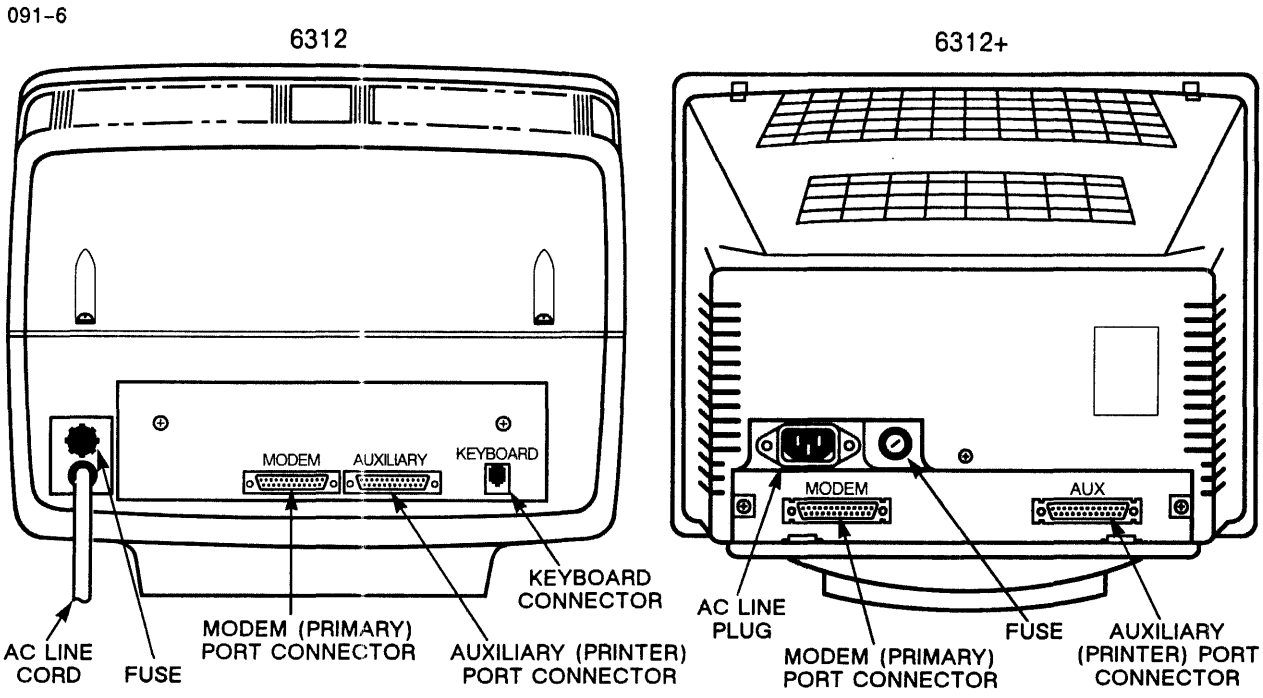

Figure 2-2 Model 6312 and 6312+ VDU (Rear View)

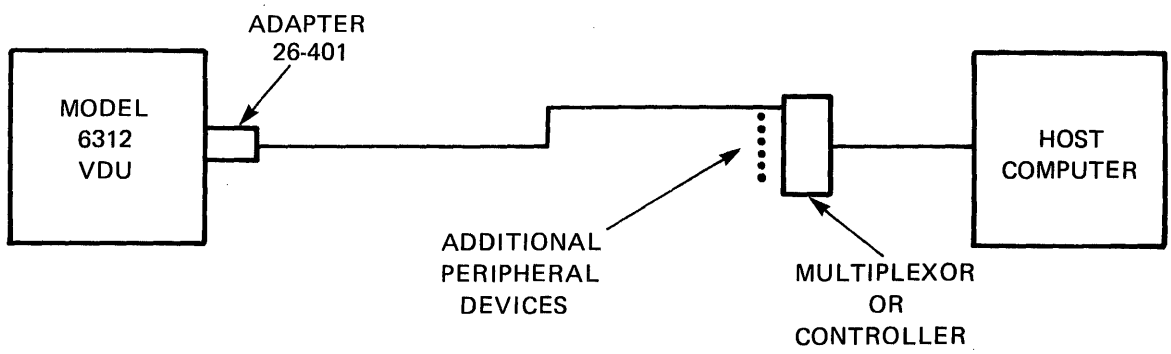

Figure 2-3 RS-232C Interface Cabling Block Diagram

2.7 CURRENT LOOP ADAPTER (6312 only)

The current loop adapter is available only on the 6312 VDU and is NOT available on the 6312+. The current loop adapter (27-157) is a means of communicating with the Model 6312 VDU using the current loop method. This function converts the RS-232C line signal transmitted by the terminal to a 17mA or 0mA current loop signal for transmission over the interconnecting cable and vice versa. The current loop adapter satisfactorily operates in a noise free environment at a baud rate of 9600 and cable lengths up to 1,000 feet.

Part number 02-878 FXX contains the part numbers of all necessary hardware and cables required to configure the Model 6312 VDU for current loop. The four functional variations (cable length) are listed in Table 2-9.

TABLE 2-9 CURRENT LOOP EXPANSION

PART NUMBER	CABLE LENGTH
02-878 F01	100ft
02-878 F02	250ft
02-878 F03	500ft
02-878 F04	1,000ft

The current source in the adapter cannot vary more than +/- 2mA for cable lengths up to 1,000ft. Table 2-10 contains current loop characteristics.

TABLE 2-10 CURRENT LOOP CHARACTERISTIC

LOGIC	PARITY	LINE CURRENT
1	Mark	17mA
0	Space	0mA

The current loop adapter can be set for current source selection for both the send and receive signal lines. The standard setup is active-send and passive-receive modes. Active is defined as line current being supplied from the adapter and passive line current is supplied from the host interface.

2.7.1 Installation

The current loop adapter is contained on a 2.0in by 2.5in printed circuit (PC) board, which is installed into the female connector J5, located on the logic board as shown in Figure 2-4. Section 2.3.1 contains information on removal of the monitor assembly cover.

Table 2-11 lists the connector pins and their respective functions.

TABLE 2-11 CURRENT LOOP ADAPTER CONNECTOR PINS

PIN	SIGNAL LINE
1	Chassis ground
7	Logic ground
15	Receive (+)
17	Receive (-)
24,19	Send (+)
25	Send (-)

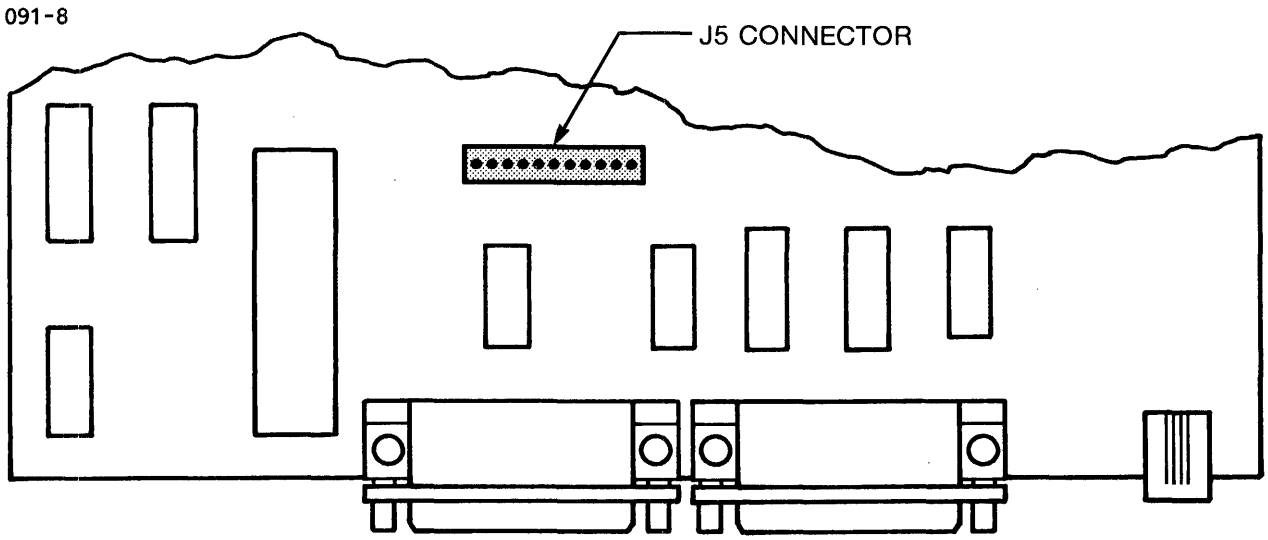

Figure 2-4 Current Loop Adapter Installation (6312 only)

2.7.2 Cabling

When the Model 6312 is configured for current loop as shown in Figure 2-5 and cabling of a different length is necessary for connection to the host computer, use the cables listed in Table 2-12.

TABLE 2-12 CURRENT LOOP CABLES

CABLE	
NUMBER	LENGTH
17-718 F01	100ft
17-718 F02	250ft
17-718 F03	500ft
17-718 F04	1,000ft

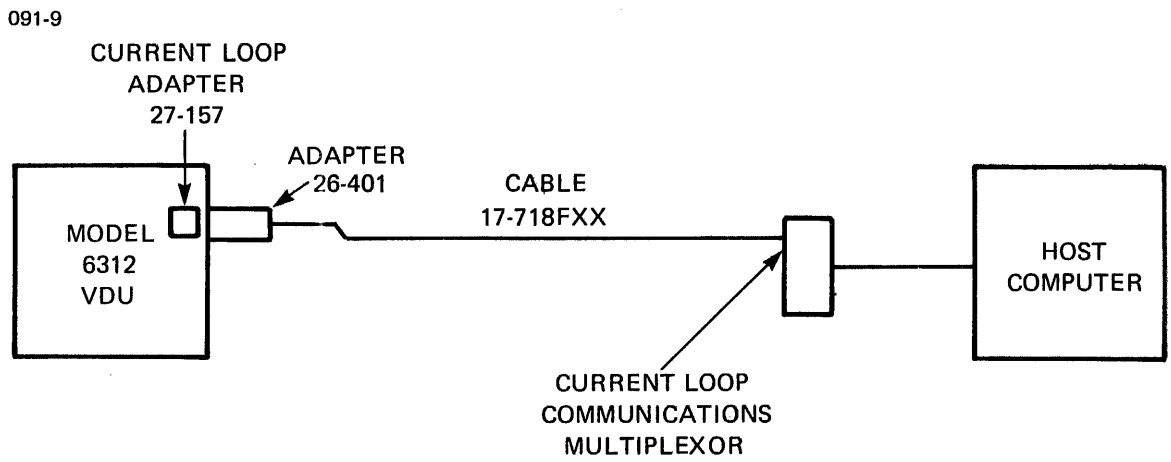

Figure 2-5 Current Loop Interface Cabling Block Diagram

2.8 SETUP

When the Model 6312 VDU has been placed on a table or desk, the coiled expandable cable connects the keyboard assembly to the monitor assembly. This coiled cable with keyed connectors connects to the rear of both assemblies as shown in Figures 2-2 and 2-6.

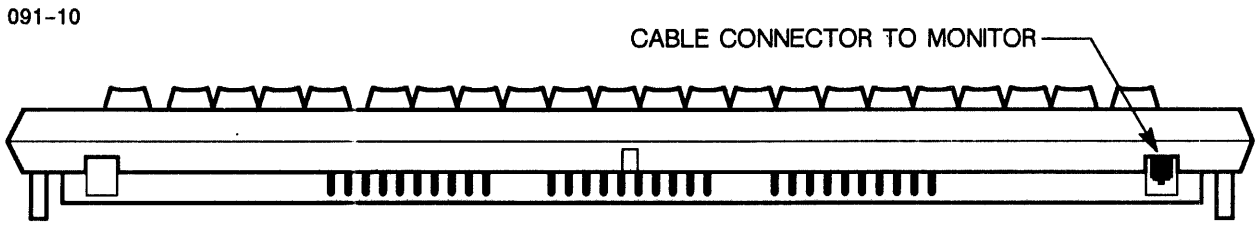

Figure 2-6 Model 6312 VDU Keyboard (Rear View)

2.9 DATA TRANSMISSION

The Model 6312 VDU operates in either the conversation mode (character-by-character) or in the block mode for transmission of data to the host computer.

Primary (modem) port communications are via a bidirectional RS-232C or optional current loop interface. Auxiliary port communications are bidirectional via RS-232C interfacing.

Data communications take place whenever the Model 6312 VDU is in the on-line mode. When receiving data, the Model 6312 VDU has an X-ON/X-OFF or data terminal ready (DTR) busy indication feature that is used to command the host to suspend transmission to prevent data loss.

2.9.1 Conversation Mode

When the Model 6312 VDU is in the conversation mode, the data entered on the keyboard is immediately sent to the host computer (character-by-character) depending upon the duplex mode setup. This is done in one of two ways:

- immediately acted on and displayed on the screen, or
- acted on and displayed as the characters are echoed back from the host computer.

2.9.2 Block Mode

Data entered on the keyboard is processed and displayed on the Model 6312 VDU before being transmitted to the host computer by various SEND commands. See the Model 6312 User Guide for information on the SEND commands that are available on the terminal.

2.9.3 Handshake Protocol

The Model 6312 VDU has the ability to signal the host computer of a potential data loss due to the input buffers (1,024 characters) being nearly full or when the terminal is unable to accept data. The type of signal depends upon the handshake mode selection. See the Model 6312 User Guide for information on handshake mode settings.

INDEX

V,W,X,Y,Z

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