
Introduction

Chapter Objective

The information in this chapter will enable you to:

- ❑ Understand the product's basic functions & features

Product Description

The RP240 is designed to operate as an operator interface for Compumotor's Extended X (the SX Indexer/Drive, ZX Indexer/Drive, and Model 500 Indexer) and 6000 Series products (6200 Indexer and 6250 Servo Controller). The RP240 operates strictly as a dumb terminal. No programming of any kind can be accomplished using the RP240. The RP240 is controlled by commands available in the Extended X and 6000 Series command sets. The commands allow the programmer to create a program (within the Extended X or 6000 Series product) to prompt an operator for numeric information, read function keys, display variables and text, and control the 8 LEDs located on the RP240.

If the RP240 is not used with the SX, ZX, Model 500, 6200, or 6250, ASCII command strings sent directly to the RP240 can be used to control the functions contained within the RP240 (refer to *Chapter ⑥ Direct Control of the RP240*).

RP240 Features

- ❑ Operates directly with Compumotor's SX and ZX Indexer/Drives, and the Model 500 Indexer
- ❑ Operates directly with Compumotor's stand-alone 6000 Series products (6200 and 6250)
- ❑ Can be used with any controller capable of transmitting ASCII strings across RS-232C
- ❑ Screw terminal connections for easy wiring
- ❑ Optional NEMA specification ratings (standard RP240 is NEMA 12, optional RP240-NEMA4 meets NEMA 4 & NEMA 12 specifications when panel mounted.)
- ❑ Adjustable contrast for the LCD display
- ❑ Eight independent LEDs
- ❑ Numeric and function key data entry
- ❑ Uses less than 100 mA of current at 5VDC

C H A P T E R ②

Getting Started

Chapter Objectives

The information in this chapter will enable you to:

- Verify that each component of your system has been delivered safely
- Become familiar with system components and their interrelationships

What You Should Have

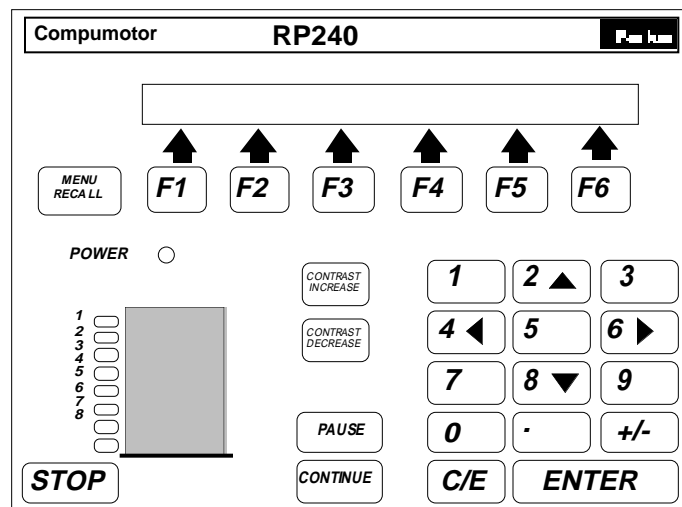
Inspect your RP240 shipment upon receipt for damage to its shipping container. Report any damage to the shipping company as soon as possible. Parker Compumotor cannot be held responsible for damage incurred in shipment. The items listed in the table below should be present and in good condition.

	RP240	RP240-NEMA4
Description	Part #	Part #
RP240 Main Unit	RP-240	RP-240 NEMA4
Gasket	58-009135-01	58-013341-01
RP240 User Guide	88-012156-01	88-012156-01

CAUTION

Do not use sharp objects such as pencils, screw drivers, etc. on the front panel it will cause permanent damage to the membrane and will void the warranty.

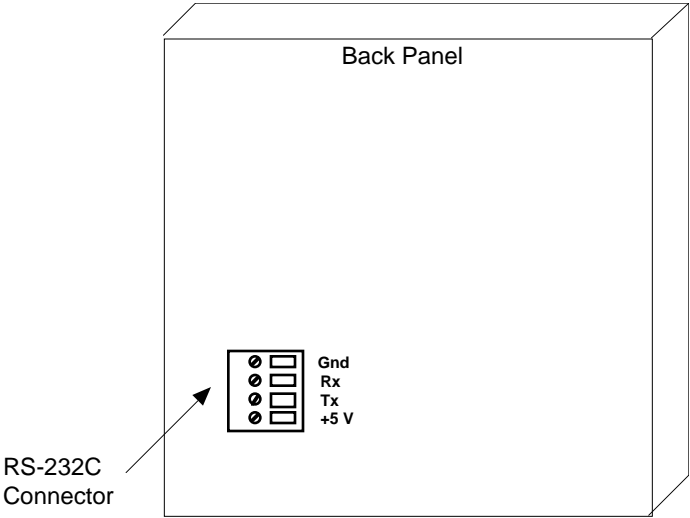
Basic System Configuration



Wiring Connections

The following figure illustrates the RS-232C and power; connector. This connector is located on the back of the RP240.

👉 Helpful Hint:
RP240 Back Panel




Installation

Chapter Objectives

The information in this chapter will enable you to:

- Mount the RP240 properly
- Wire the RP240 correctly
- Verify that the complete system is installed properly

Environmental Considerations

 **Helpful Hint:**
For more on NEMA standards, contact the *National Electrical Manufacturers Association*, 2101 L Street Northwest, Washington, D.C. 20037. Ask for NEMA Standards Publication No. 250 Enclosures for Electrical Equipment.

The RP240 is designed to be mounted to a door, on a panel front, desk, or carried by hand. The RP240-NEMA4 is designed to be flush mounted in a door. Both the RP240 and RP240-NEMA4 are designed to work in temperatures up to 122°F (50°C). NEMA 12 specifications are achieved when the RP240 is door or panel mounted using the provided gasket. NEMA 4 specifications are achieved when the RP240-NEMA4 is door or panel mounted using the provided gasket. NEMA Type 12 enclosures provide a degree of protection against dust, falling dirt, and dripping non corrosive liquids. NEMA Type 4 enclosures provide a degree of protection against windblown dust and rain, splashing water, and hose-directed water.

Electrical Noise

Minimize the potential for electrical noise before installing the RP240 rather than attempting to solve such problems after installation. You can prevent electrical noise by observing the following installation precautions:

- Do not put high-voltage wires and low-level signals in the same conduit
- Do not expose wiring (shield all wires)
- Ensure that all components are properly grounded

Airborne Contaminants

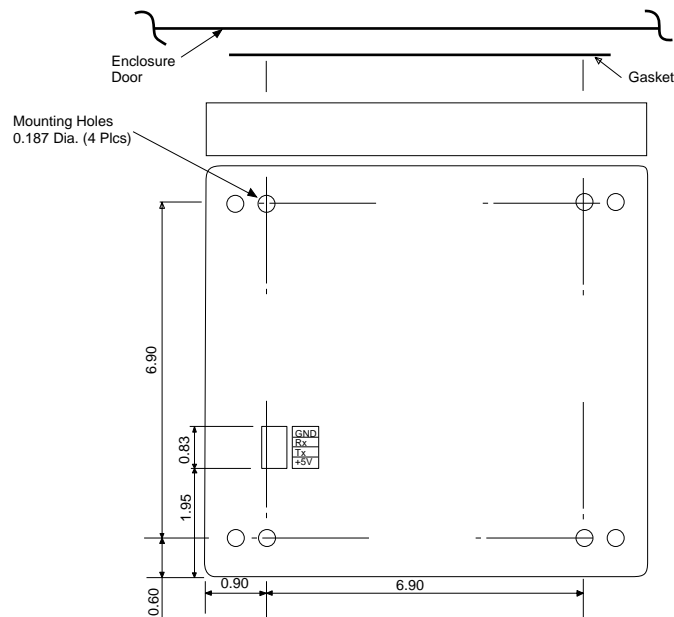
Contaminants that may come in contact with the RP240 should be carefully controlled. Particulate contaminants, especially electrically conductive ones (such as metal shavings), can damage the RP240.

System Mounting

RP240 Door Mount

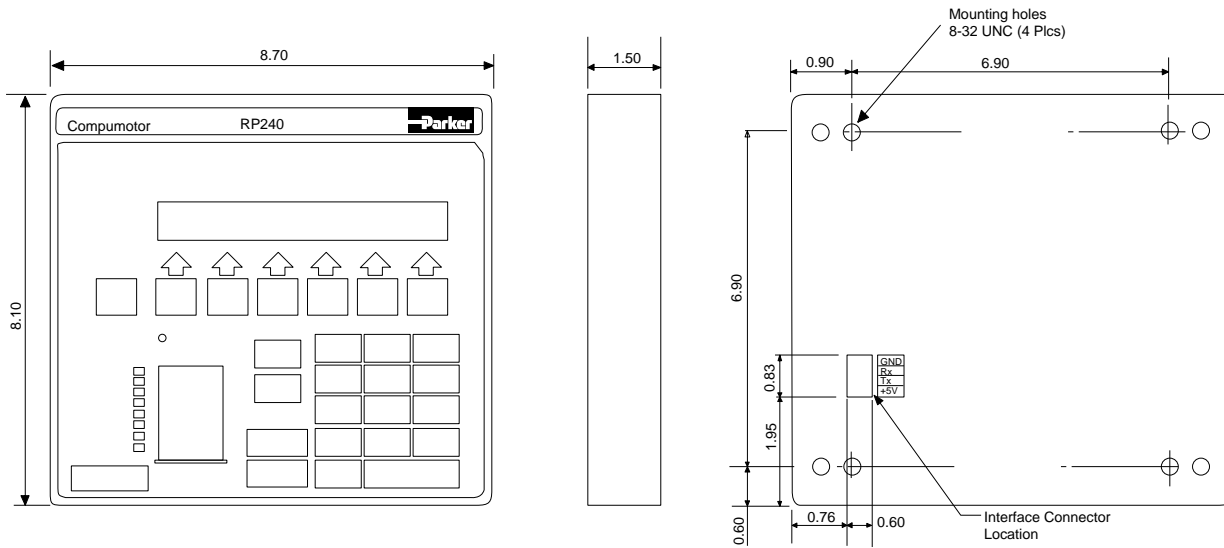
To mount the RP240 operator panel to the door of an enclosure, or on a panel, follow the steps below.

- ① Drill four holes as shown in the following figure
- ② Remove the bayonet mounts (screws and standoffs) and rubber feet from the back of the operator panel (save the screws for mounting).
- ③ Put one screw through the door.
- ④ Put the gasket (provided) on the screw.
- ⑤ Put the operator panel onto the screw and tighten.
- ⑥ Align the panel and gasket and insert the remaining three screws.
- ⑦ Connect the 4 wires between the operator panel and the Extended X or 6000 Series product. See *RP240 Connections* later in this chapter.



RP240 Dimensions

The following figure shows the dimensional drawing for the RP240. Mounting holes and their dimensions are given.

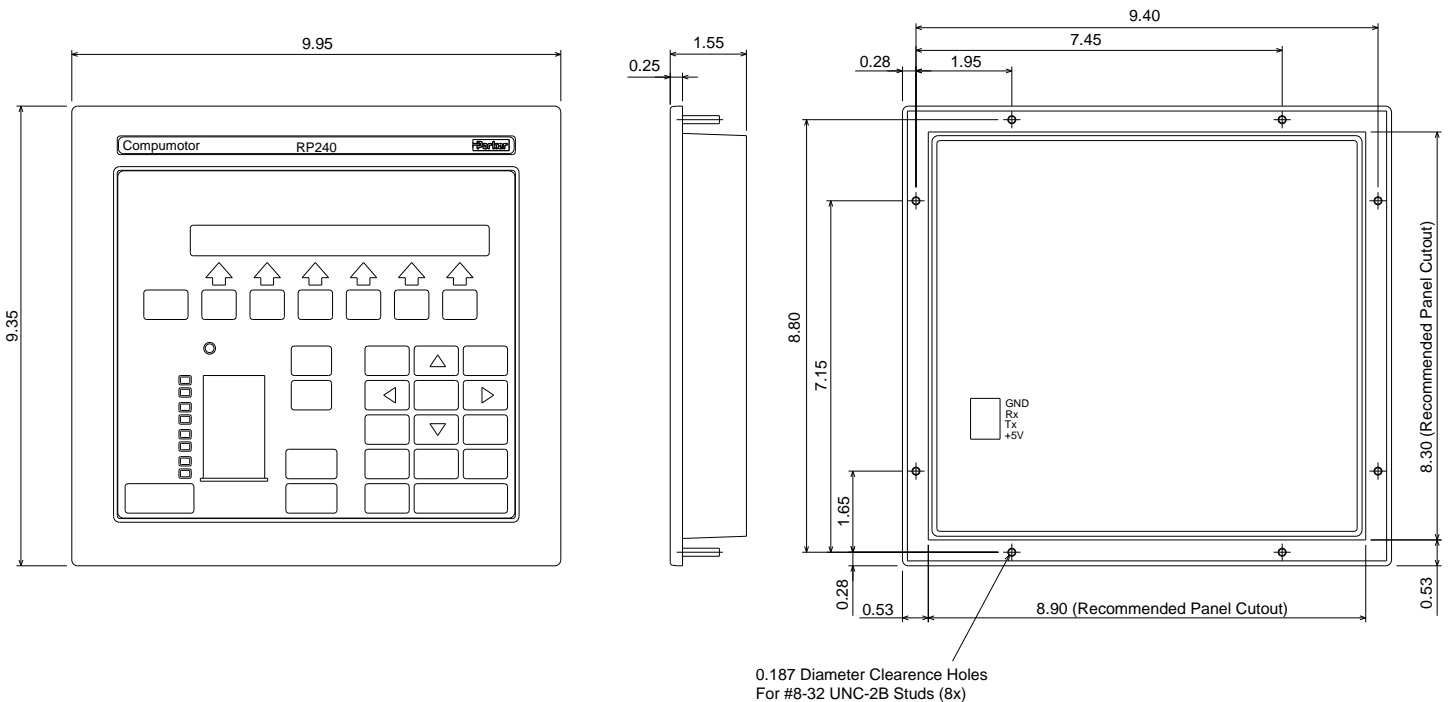


RP240-NEMA4 Door Mount

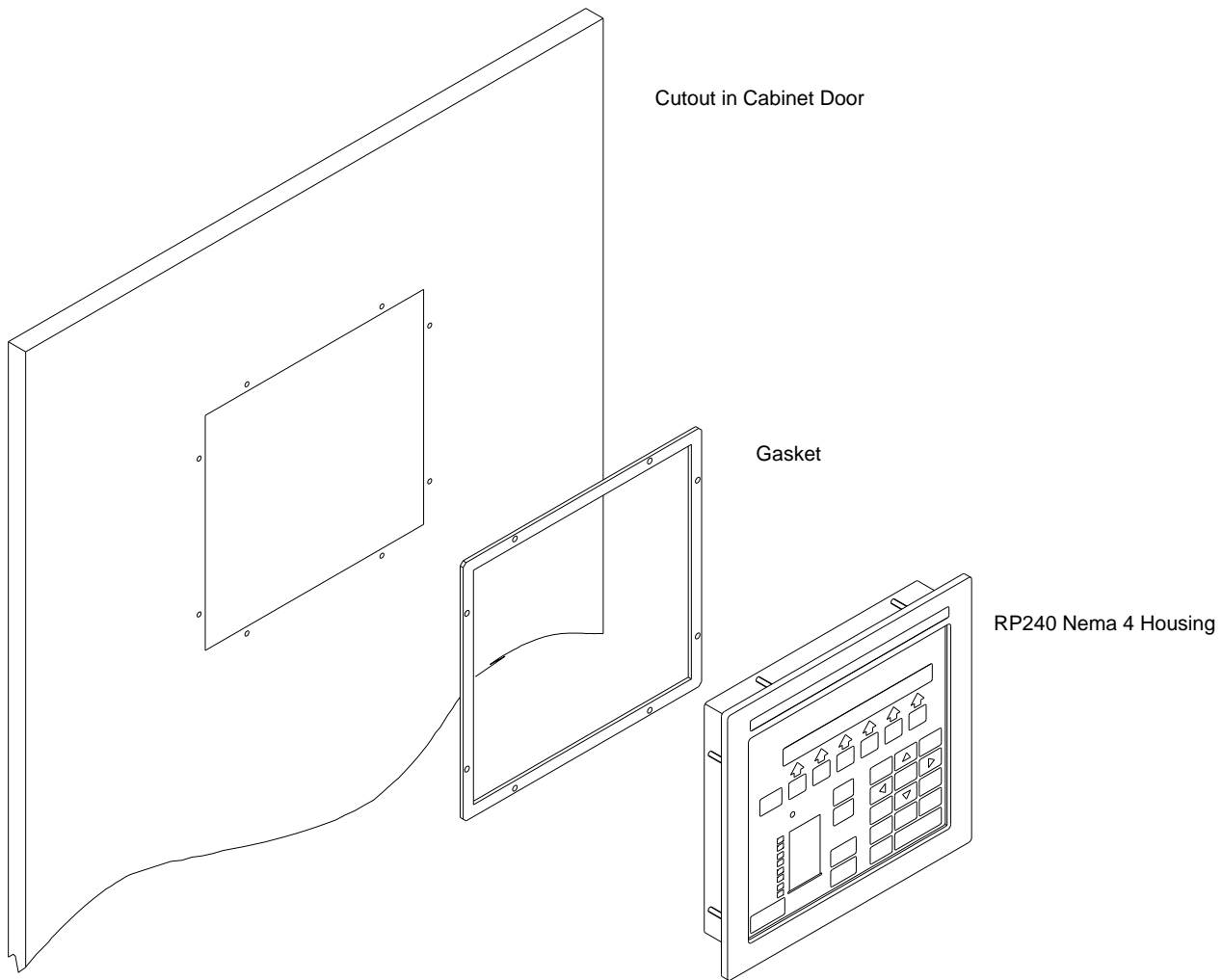
To mount the RP240-NEMA4 operator panel through the door of an enclosure, or in a panel, follow the steps below.

- ① Cut an 8.3 inch vertical by 8.9 inch horizontal hole in the door of the enclosure or panel as shown on the following page.
- ② Drill eight holes in the locations shown.
- ③ Place the gasket (provided) on the RP240-NEMA4.
- ④ Put the operator panel through the door and tighten the eight nuts provided.
- ⑤ Connect the 4 wires between the operator panel and the Extended X (SX, ZX, or Model 500) or the 6000 Series (6200 or 6250) product.

The following figure shows the dimensional drawing for the RP240-NEMA4. Mounting studs and the required diameter clearance holes are given.



0.187 Diameter Clearance Holes
For #8-32 UNC-2B Studs (8x)



Wiring Guidelines

Helpful Hint:
All earth ground connections must be continuous and permanent. Compumotor recommends a single-point grounding setup.

Proper grounding of electrical equipment is essential to ensure the safety of personnel. You can reduce the effects of electrical noise due to electromagnetic interference (EMI) by proper grounding. All Compumotor equipment should be properly grounded. A good source of information on grounding requirements is the *National Electrical Code* published by the National Fire Protection Association of Boston, MA. In general, all components and enclosures must be connected to earth ground through a grounding electrode conductor to provide a low impedance path for ground fault or noise-induced currents.

RP240 Connections

The RP240 operator panel is connected to the Extended X (SX, ZX, or Model 500) and 6000 Series (6200 or 6250) products by means of a four wire shielded cable (user supplied). For cable lengths up to 50 feet long, Compumotor recommends using 20 AWG wire. Cable lengths longer than 50 feet are not recommended. This in accordance with the Electronic Industries Association (EIA) recommendations for RS-232C at 9600 baud.

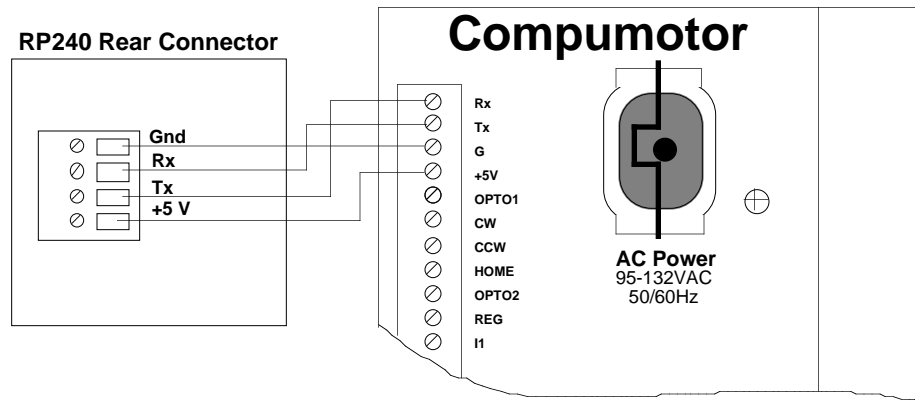
To wire the RP240 to a 6000 Series product (6200 or 6250), connect the +5VDC connection on the RP240 to the +5VDC source on the 6000 Series connector labeled RP240. Connect the RP240 ground connection to the ground on the 6000 Series connector labeled RP240. Connect the RP240 Receive Data (Rx) terminal to the controller's Transmit Data (Tx) terminal, and the RP240 Transmit Data (Tx) terminal to the controller's Receive Data (Rx) terminal. Make all connections on the 6000 Series connector labeled RP240.

To wire the RP240 to an Extended X product, connect the +5VDC connection on the RP240 to a +5VDC source capable of supplying 100 mA of current. You must supply 5VDC $\pm 2\%$ to pin 1 of the RP240. You can use the 5VDC power supplies on the SX, ZX, or Model 500 provided there is enough current remaining. Current levels are shown in the table below. Current levels are shown in the table below.

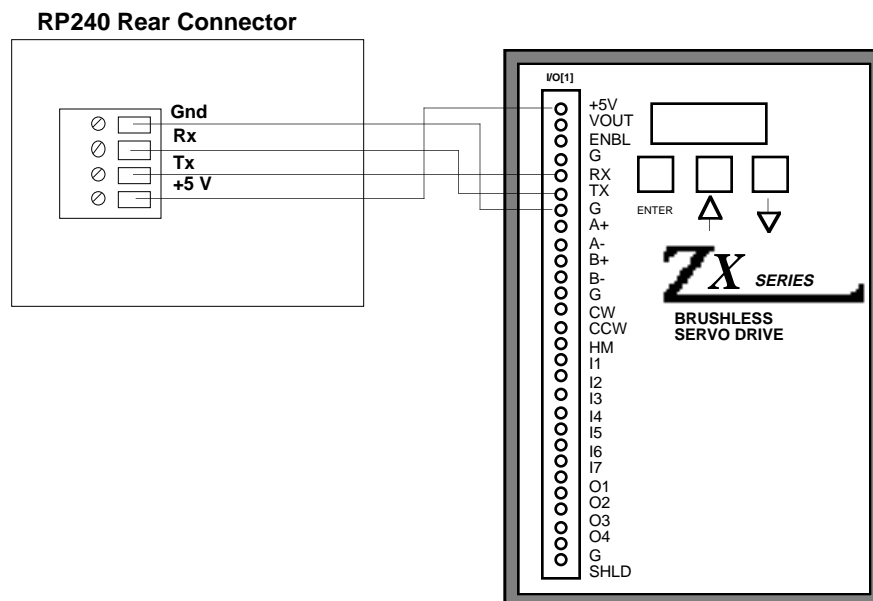
	Available	Current Requirements		
		Encoder	I/O	RP240
SX	250 mA	150 mA	10 mA each	100 mA
ZX	500 mA	150 mA	0 mA	100 mA
500	500 mA	150 mA	0 mA	100 mA

Connect the RP240 ground connection to the ground of the +5VDC power supply. Connect the RP240 Receive Data (Rx) to the controller's Transmit Data (Tx), and the RP240 Transmit Data (Tx) to the controller's Receive Data (Rx). Connect the RP240 only after you have programmed the controller for operation with the RP240.

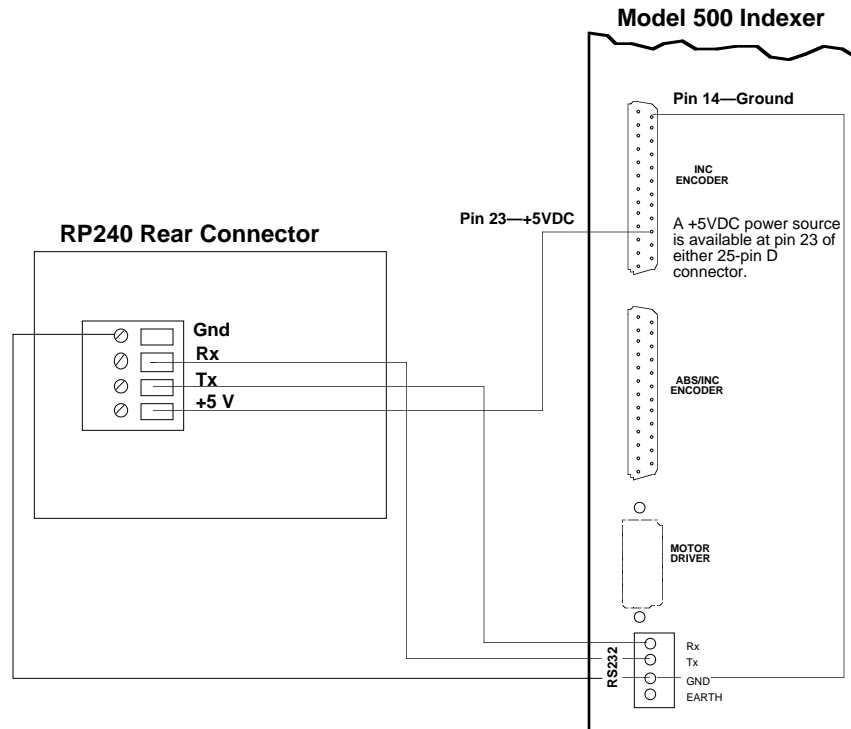
RP240 to SX Wiring Diagram



RP240 to ZX Wiring Diagram



RP240 to Model 500 Wiring Diagram



RP240 Connector Pin Out

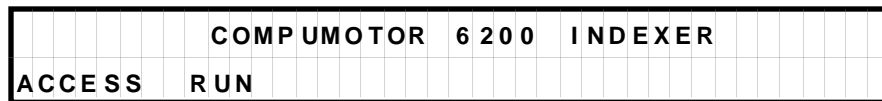
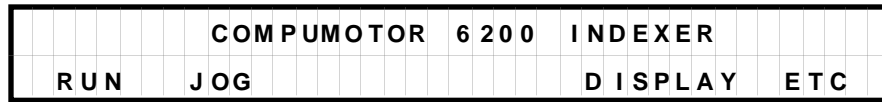
The following table provides the pin out for the RP240 connector.

Pin	In/Out	Function	Description
1	In	Ground	Logic Ground
2	In	Receive (Rx)	RS-232C Receive Data input
3	Out	Transmit (Tx)	RS-232C Transmit Data output
4	In	+5VDC	Input Power (100 mA minimum)


Installation Verification

6000 Series

To verify the operation of the RP240 and the 6000 Series product to which it is connected, apply power to the 6000 Series product. The RP240 display should look similar to one of the following screens. If you are using an Extended X product, go to the next section.



Using the RP240 With An Extended X Language Product

 **Helpful Hint:**
If you are using the RP240 with a 6000 Series product, skip this section.

Before continuing with this section, you should be familiar with the Extended X Language product you will be using. An understanding of programming sequences is important. Download the following program to Sequence #100 in the Extended X Language product.

<u>Command</u>	<u>Description</u>
>XE100	Erase sequence #100
>XD100	Begin definition of sequence #100
DCLR0	Clear all lines of the RP240 display
DPC100	Cursor to line 1, column 0
DTXTTHIS_IS_A_QUICK_DEMO	Display text at current cursor location
VAR1=FUN	Wait for function key
DLED11111111	Turn on all LEDs
DCLR0	Clear all lines of RP240 display
DPC100	Cursor to line 1, column 0
DTXTTHE_LEDS_WILL_TURN_OFF_IN_5_SECONDS	Display text
T5	Wait 5 seconds
DLED00000000	Turn off all LEDs
DCLR0	Clear all lines of RP240 display
XT	End sequence definition
>	

Attach the RP240 after you have downloaded the above sequence correctly. Cycle power. The following is displayed.



A rectangular display area with a grid background. The text "THIS IS A QUICK DEMO" is displayed in a monospaced font, centered horizontally and vertically within the grid.

Press any function key to continue. After pressing any function key, all the LEDs on the RP240 will turn on and the display will read as shown below.



A rectangular display area with a grid background. The text "THE LEDS WILL TURN OFF IN 5 SECONDS" is displayed in a monospaced font, centered horizontally and vertically within the grid.

After 5 seconds, all the LEDs on the RP240 will turn off and the display will be cleared.