



# CARDINAL®



# RD3

## Remote Display

### Installation and Technical Manual



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## PRECAUTIONS

Before using this instrument, read this manual and pay special attention to all "WARNING" symbols:



**IMPORTANT**



**ELECTRICAL  
WARNING**



**STATIC  
SENSITIVE**

## Static Electricity Precaution



**CAUTION!** This device contains static-sensitive circuit cards and components. Improper handling of these devices or printed circuit cards can result in damage to or destruction of the component or card. Such actual and/or consequential damage **IS NOT** covered under warranty and is the responsibility of the device owner. Electronic components must be handled only by qualified electronic technicians who follow the guidelines listed below.



**WARNING!** ALWAYS use a properly grounded wrist strap when handling, removing, or installing electronic circuit cards or components. Make certain that the wrist strap ground lead is securely attached to an adequate ground. If you are uncertain of the quality of the ground, you should consult a licensed electrician.



**ALWAYS** handle printed circuit card assemblies by the outermost edges.

**NEVER** touch components, component leads, or connectors.

**ALWAYS** observe warning labels on static protective bags and packaging and never remove the card or component from the packaging until ready for use.

**ALWAYS** store and transport electronic printed circuit cards and components in anti-static protective bags or packaging.

## FCC Compliance Statement

This equipment generates uses, can radiate radio frequency, and if not installed and used in accordance with the instruction manual, may cause interference to radio communications. It has been designed within the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC rules to provide reasonable protection against such interference when operated in a commercial environment. The operation of this equipment in a residential area may cause interference, in which case the user will be responsible for taking whatever measures necessary to correct the interference.

You may find the booklet “How to Identify and Resolve Radio-TV Interference Problems” prepared by the Federal Communications Commission helpful. It is available from the U.S. Government Printing Office, Washington, D.C. 20402. The stock number is 001-000-00315-4.

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## Disclaimer

While every precaution has been taken in the preparation of this manual, the Seller assumes no responsibility for errors or omissions. Neither is any liability assumed for damages resulting from the use of the information contained herein. All instructions and diagrams have been checked for accuracy and ease of application; however, success and safety in working with tools depend to a great extent upon individual accuracy, skill, and caution. For this reason, the Seller is not able to guarantee the result of any procedure contained herein. Nor can they assume responsibility for any damage to property or injury to persons occasioned from the procedures. Persons engaging in the procedures do so entirely at their own risk.

## INTRODUCTION

Thank you for your purchase of our Cardinal RD3 Remote Display. It was built with Cardinal quality and reliability. This manual will guide you through the installation, and operation of your display. Please read it thoroughly before attempting to install your display. Also, make certain that you pay attention to the warnings that appear in this manual. Failure to read and follow these instructions and warnings may result in damage to the display and/or bodily injury. Please keep this manual handy for future reference.

## SPECIFICATIONS

Character Height:	2 in (51 mm)
Viewing Range:	150 Feet
Viewing Angle:	Viewable in direct sunlight with an angle of +/- 70 degrees
Number of Characters:	Six-digit, 14 segments, 2 in (51 mm) high (display)
Display Type:	2 in BACKLIT LCD
Weigh Units:	lb, kg
Enclosure Type:	NEMA 4X/IP66 Thermoplastic
Dimensions:	9.0 in H x 11.2 in W x 4.3 in D (229 mm H x 284 mm W x 109 mm D)
Weight:	8 lb / 3.6 kg
Data Input:	RS-232 and 20mA Current Loop
Power Requirements:	100 to 240V AC, 47/63 Hz Universal Input
Power Fuse:	1A (located on the power supply)
Operating Temperature:	-10 to 120 °F (-23 to 49 °C)

## FEATURES

- Auto-format feature (automatically selects input protocol).
- Auto-baud detection.

## INDICATOR COMPATIBILITY

Utilizing the Auto-format feature, the RD3 display can be driven by the following Cardinal weight indicators and most other weight indicators from other manufacturers.

### Current Models:

185/185B, 190/190A, 204, 200, 212/212X, and 825  
205, 210, 210FE, 212G/212GX, 225 (with USB)

### Legacy Models

180, 204S, 215, 220, 777 Series, 778 Series, and 788 Series  
Non-USB 205, 210, 210FE, 212/212X, 212G/212GX, 225

## AUTO-FORMAT FEATURE

The RD3 serial interface can automatically select the serial input protocol from the serial output of an indicator in one of the following serial formats:

SMA, Cardinal SB400, Numbers, Rice Lake IQ355, ANDFV,  
WI110, Toledo Short, and Toledo Long

The interface will automatically detect baud rates between 2400 and 19200 baud with the following settings:

Baud rate: 2400 to 19200 (7 or 8 Data Bits)  
Character format: all standard ASCII characters

## SITE PREPARATION

### Electrical Power

The RD3 display has been designed to operate from 100 to 240V AC at 47/63 Hz.



**CAUTION! To avoid electrical hazards and possible damage to the display, DO NOT, under any circumstance, cut, remove, alter, or in any way bypass the power cord-grounding prong.**

- The power for the display should be on a separate circuit from the distribution panel. This circuit should be dedicated to the exclusive use of the display.
- The wiring should conform to national and local electrical codes and ordinances and should be approved by the local inspector to ensure compliance.
- For permanently connected equipment, a readily accessible disconnect device must be provided external to the equipment.
- For pluggable equipment, the socket outlet shall be installed near the equipment and shall be easily accessible
- **It is the responsibility of the customer** to have a qualified electrician install the proper service disconnect that conforms to national electrical codes and local codes and ordinances.

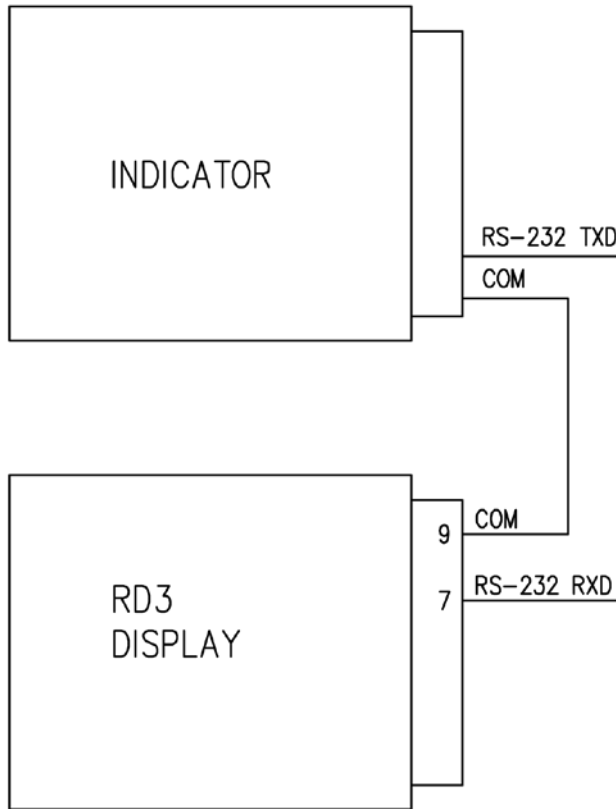
### Electrical Noise Interference

To prevent electrical noise interference, make certain all other wall outlets for use with air conditioning and heating equipment, lighting, or other equipment with heavily inductive loads, such as welders, motors, and solenoids are on circuits separate from the display. Many of these disturbances originate within the building itself and can seriously affect the operation of the display. These sources of disturbances must be identified and steps must be taken to prevent possible adverse effects on the display. Examples of available alternatives include isolation transformers, power regulators, uninterruptible power supplies, or simple line filters.

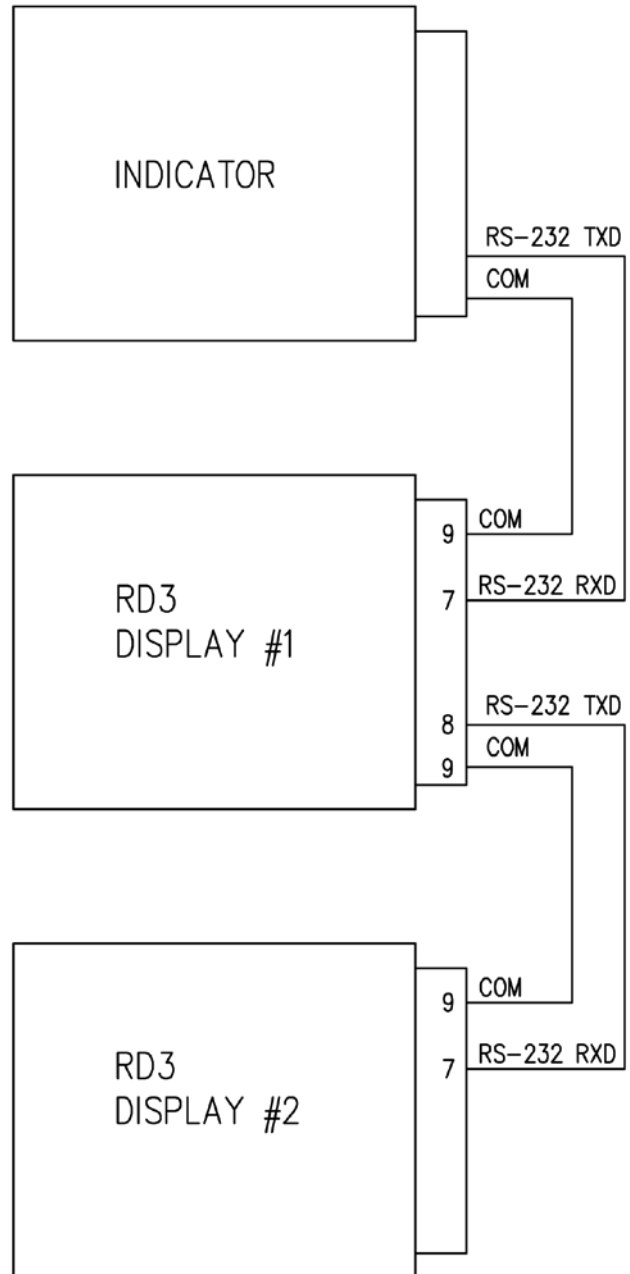
# SINGLE AND MULTIPLE DISPLAY

The RD3 display has been designed to echo received characters (from a single weight indicator) to other RD3 displays allowing the same weight data to be shown on multiple displays. Typical applications might consist of back-to-back displays or displays placed at each end of the scale.

The figures below are typical installations consisting of a single indicator to a single display (Figure No. 1), a single indicator to two displays (Figure No. 2), and a single indicator with two or more displays (Figure No. 3).

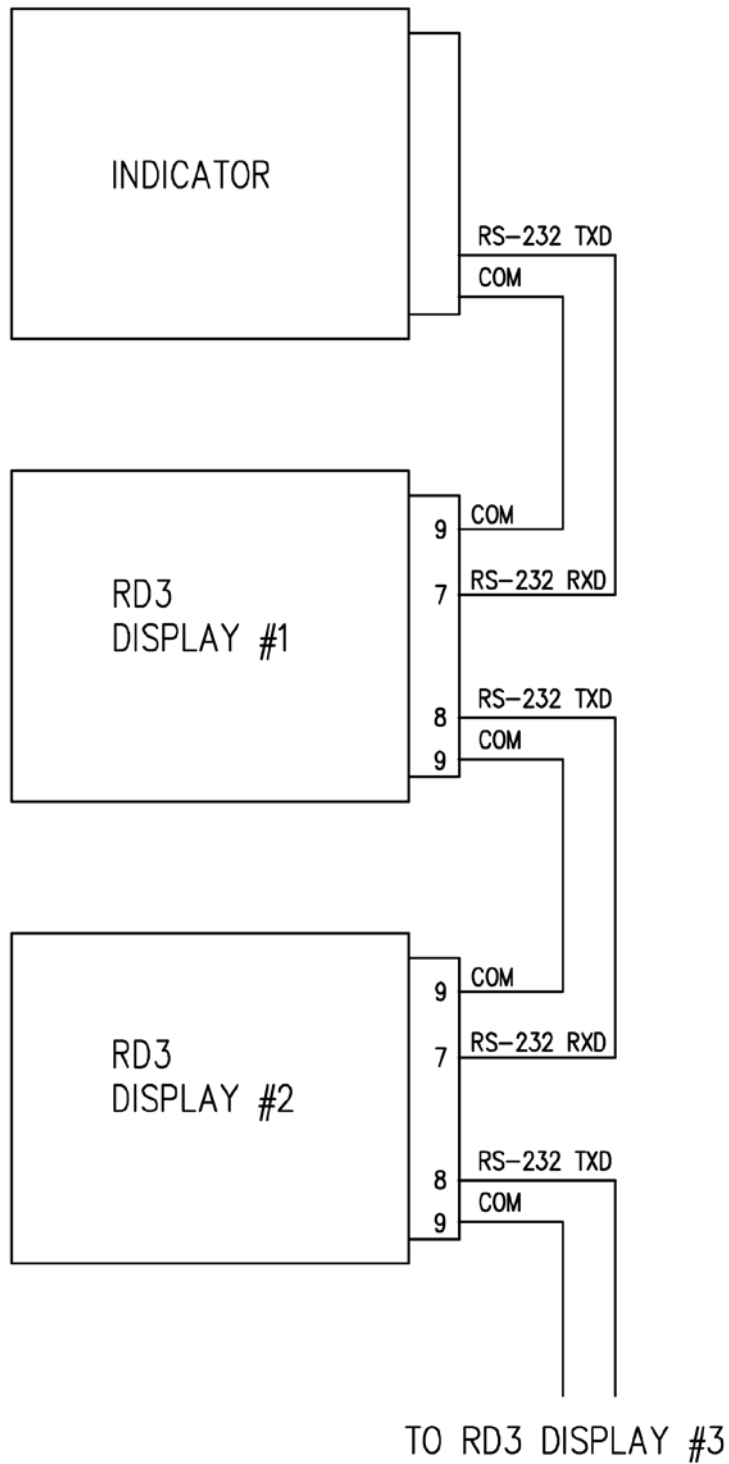


**Figure No. 1 – One RD3 Display**



**Figure No. 2 – Two RD3 Displays**

# SINGLE AND MULTIPLE DISPLAY, CONT.



**Figure No. 3 – Multiple RD3 Displays**



# INSTALLATION

## Unpacking

Before beginning the installation of your RD3 Display, make certain that it has been received in good condition. Carefully remove it from the shipping carton and inspect it for any evidence of damage (such as exterior dents or scratches) that may have taken place during shipment. Keep the carton and packing material for return shipment if it should become necessary. It is the responsibility of the purchaser to file all claims for any damages or losses incurred during transit.

## Mounting the RD3 Display

The RD3 Display includes a two-piece bracket that is used to mount it on a wall or other flat vertical surface using a quick-detach bracket. Note that the Display Bracket is installed on the RD3 at the factory.

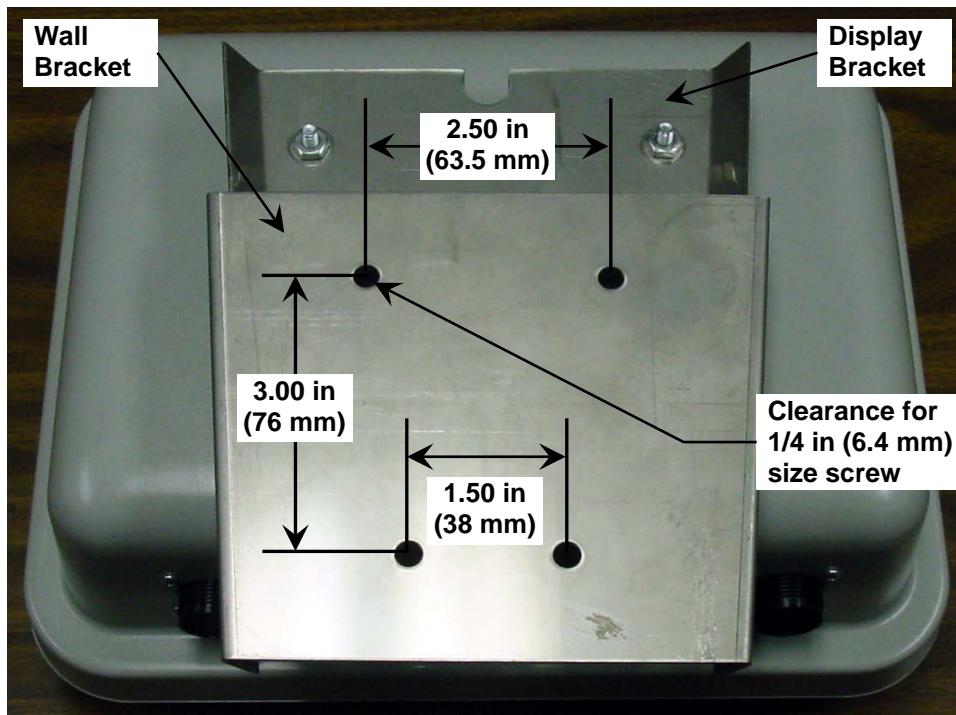


Figure No. 4

## Installing the Wall Bracket

Refer to Figure No. 4 for a layout of the wall bracket mounting holes.

1. Make certain the mounting surface is strong enough to support the display and that the mounting location is where the display can easily be viewed.
2. Position the wall bracket with the wider end at the top, and using the wall bracket as a template, mark the mounting hole locations and drill the holes.
3. Install the screws through the wall bracket and securely tighten.
4. Insert the narrow end of the display bracket into the wide end of the mounted wall bracket and pull it down into place.

# SERIAL CABLE INSTALLATION

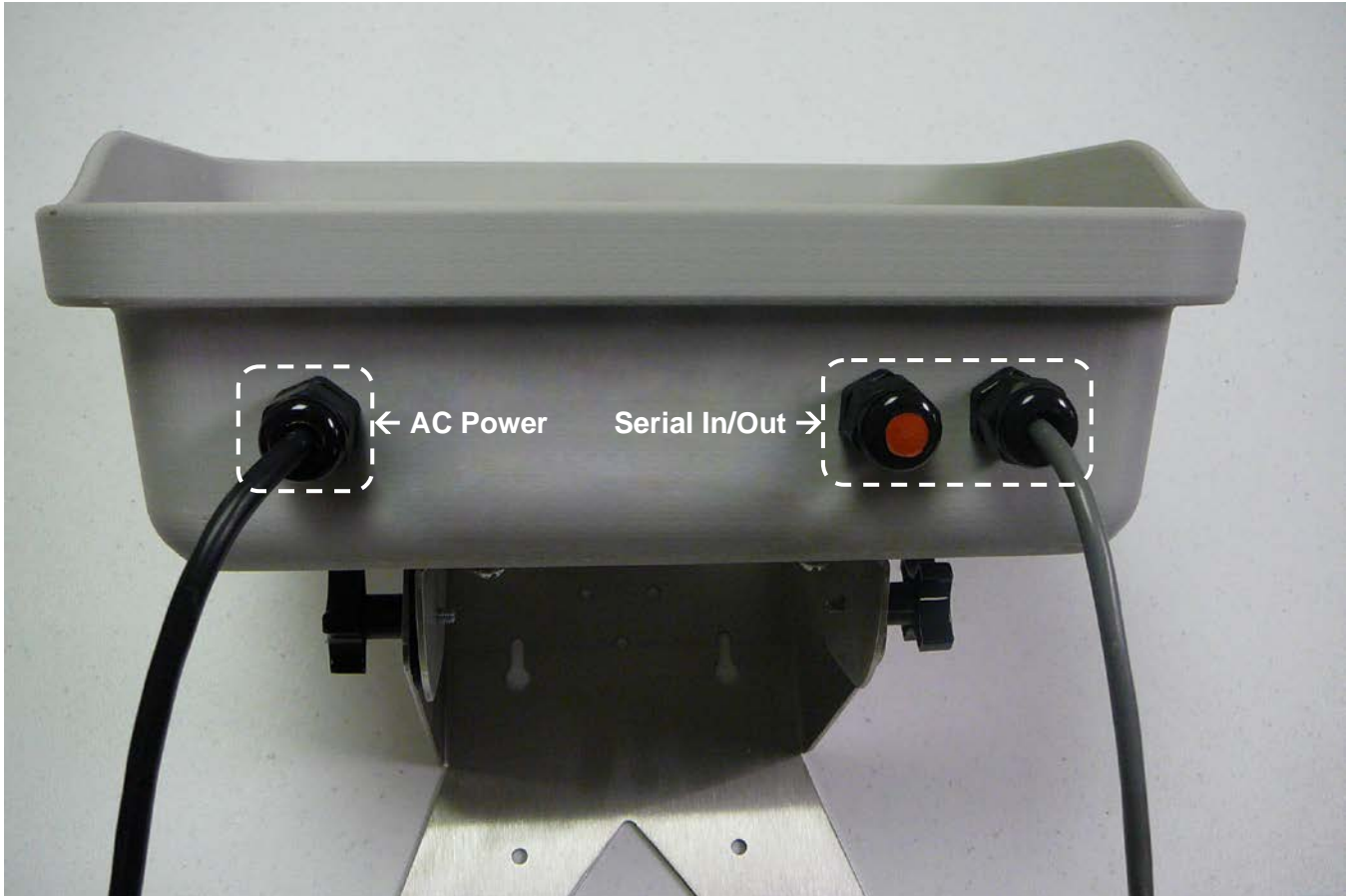


Figure No. 5

## Cable Installation

1. Remove the 12 screws securing the front panel to the main housing.
2. Referring to Figure No. 5, choose a gland connector for the serial cable, loosen it, and remove the rubber plug.
3. Slip the single cable through the gland connector and into the enclosure.
4. Remove approximately 3 inches of the outer insulation jacket from the cable then remove 1/4 inch of insulation from each of the wires.
5. Referring to the labels on the circuit board) for terminal connections, connect each of the wires to terminal block P4. Refer to Figure No. 9 for the terminal block location
6. To terminate a wire, use a small flat-blade screwdriver and press down on the release bar for the terminal. Insert the wire into the terminal opening. Remove the screwdriver, allowing the release bar to return to its original position, locking the wire in place.
7. Repeat the procedure until all wires are in place.
8. After all, terminations have been made, remove any excess cable from the enclosure, and securely tighten the cable gland connector. Finger-tighten only! **DO NOT USE TOOLS!**

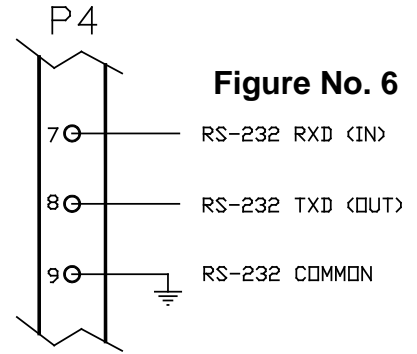
# SERIAL CABLE INSTALLATION, CONT.



**CAUTION!** This device contains static sensitive components. Improper handling can result in damage to or destruction of the components or board. Such actual and/or consequential damage IS NOT covered under warranty.

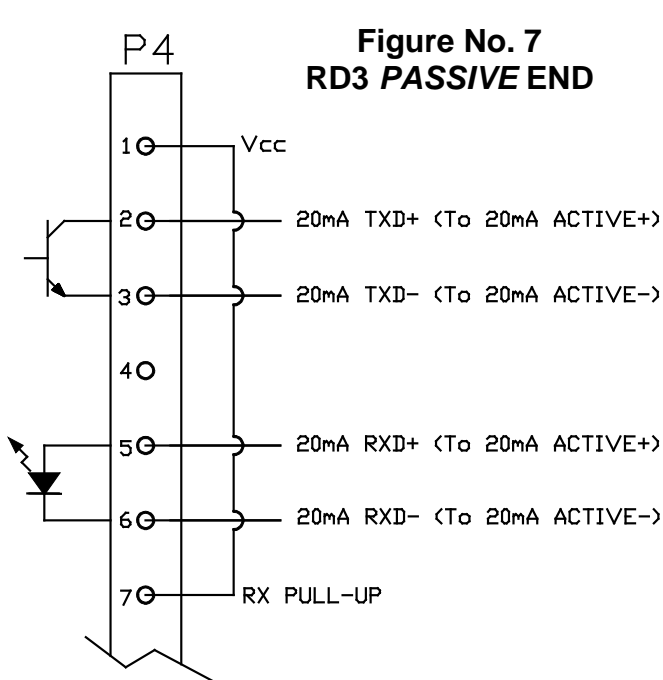
## RS-232 Wiring

1. Refer to Figure No. 9 for the location of the terminal block.
2. For RS-232 connections, refer to Figure No. 6 (or the circuit board) for the terminal connections and connect each wire to the terminal block.

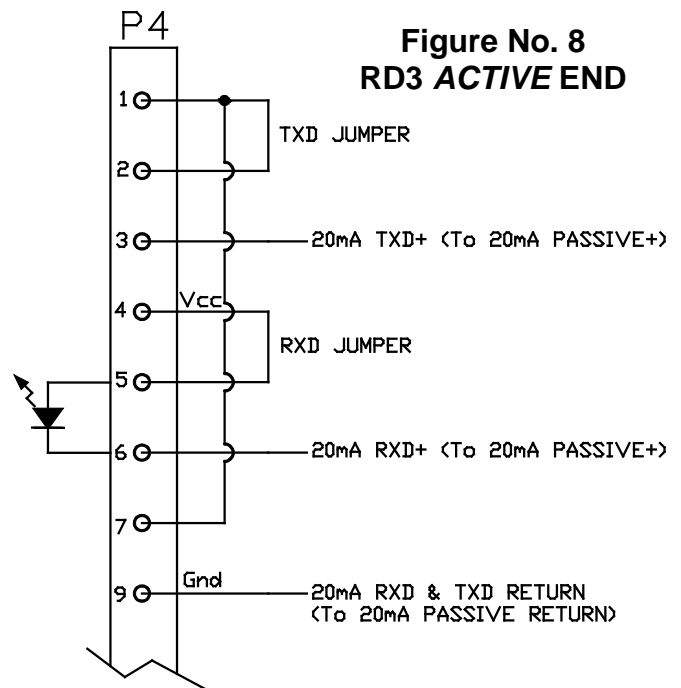


## 20mA Current Loop Wiring

1. Refer to Figure No. 9 for the location of the terminal block.
2. For *PASSIVE* connections, refer to Figure No. 7, the table below, or the circuit board for the terminal connections and connect each wire to the terminal block.
3. For *ACTIVE* connections, refer to Figure No. 8, the table below, or the circuit board for the terminal connections and connect each wire to the terminal block.



**Figure No. 7**  
**RD3 PASSIVE END**



**Figure No. 8**  
**RD3 ACTIVE END**



**IMPORTANT!** A jumper must be installed between P4 terminals 1 and 7 to enable 20mA current loop operation.

## SERIAL CABLE INSTALLATION, CONT.

### CURRENT Cardinal Indicators 20mA Current Loop Connections

#### 185/185B (Serial RS-232 Only)

RS-232 ONLY	RD3
P6, TX	P4, 7
P6, GND	P4, 9

#### 190/190A (with 190-RS232 Option Card)

CARD (PASSIVE)	RD3
P4,6	P4,6
P4,7	P4,9
	JUMPER P4,4 to P4,5
	JUMPER P4, 1 to P4, 7

#### 200

PORT 1	RD3
P3, 3	P4, 5
P3, 4	P4, 6
	JUMPER P4, 1 to P4, 7

PORT 2	RD3
P3, 6	P4, 5
P3, 7	P4, 6
	JUMPER P4, 1 to P4, 7

#### 205, 210, 210FE, 212/212X, 212G/212GX

PORT 0 (ACTIVE)	RD3
P13, 5	P4, 5
P13, 6	P4, 6
JUMPER P13, 5 to P13, 12	JUMPER P4, 1 to P4, 7
JUMPER P13, 7 to P13, 10	

PORT 0 (PASSIVE)	RD3
P13, 6	P4, 6
P13, 7	P4, 9
JUMPER P13, 7 to P13, 10	JUMPER P4, 4 to P4, 5
	JUMPER P4, 1 to P4, 7

PORT 1 (ACTIVE)	RD3
P13, 1	P4, 5
P13, 8	P4, 6
JUMPER P13, 9 to P13, 10	JUMPER P4, 1 to P4, 7

PORT 1 (PASSIVE)	RD3
P13, 8	P4, 6
P13, 9	P4, 9
	JUMPER P4, 4 to P4, 5
	JUMPER P4, 1 to P4, 7

## SERIAL CABLE INSTALLATION, CONT.

### CURRENT Cardinal Indicators 20mA Current Loop Connections

225

PORT 0 (ACTIVE)	RD3
P20, 10	P4, 5
P20, 8	P4, 6
	JUMPER P4, 1 to P4, 7

PORT 1 (ACTIVE)	RD3
P20, 3	P4, 5
P20, 4	P4, 6
JUMPER P20, 5 to P20, 8	JUMPER P4, 1 to P4, 7

PORT 1 (PASSIVE)	RD3
P20, 4	P4, 6
P20, 5	P4, 9
	JUMPER P4, 4 to P4, 5
	JUMPER P4, 1 to P4, 7

PORT 2 (ACTIVE)	RD3
P16, 1	P4, 5
P16, 2	P4, 6
JUMPER P16, 3 to P16, 9	JUMPER P4, 1 to P4, 7

PORT 2 (PASSIVE)	RD3
P16, 2	P4, 6
P16, 3	P4, 9
	JUMPER P4, 4 to P4, 5
	JUMPER P4, 1 to P4, 7

825

PORT 2 (ACTIVE)	RD3
P21, 2	P4, 5
P21, 5	P4, 6
J3 INSTALLED J7 SHUNT:20mA	JUMPER P4, 1 to P4, 7

PORT 2 (PASSIVE)	RD3
P21, 1	P4, 6
P21, 2	P4, 9
J3 REMOVED J7 SHUNT:20mA	JUMPER P4, 4 to P4, 5
	JUMPER P4, 1 to P4, 7

## SERIAL CABLE INSTALLATION, CONT.

### LEGACY Cardinal Indicators 20mA Current Loop Connections 205, 210, 210FE, 212/212X, 212G/212GX (without USB)

PORT 1	RD3
P11, 3	P4, 5
P11, 4	P4, 6
	JUMPER P4, 1 to P4, 7

PORT 2	RD3
P11, 6	P4, 5
P11, 7	P4, 6
	JUMPER P4, 1 to P4, 7

#### 215

PORT 1	RD3
P11, 3	P4, 5
P11, 4	P4, 6
	JUMPER P4, 1 to P4, 7

PORT 2	RD3
P11, 6	P4, 5
P11, 7	P4, 6
	JUMPER P4, 1 to P4, 7

#### 220

PORT 1 (ACTIVE)	RD3
P10, 1	P4, 5
P10, 2	P4, 6
JUMPER P10, 3 to P10, 10	JUMPER P4, 1 to P4, 7

PORT 1 (PASSIVE)	RD3
P10, 2	P4, 6
P10, 3	P4, 9
	JUMPER P4, 4 to P4, 5
	JUMPER P4, 1 to P4, 7

PORT 2	RD3
P10, 11	P4, 5
P10, 10	P4, 6
	JUMPER P4, 1 to P4, 7

## SERIAL CABLE INSTALLATION, CONT.

### LEGACY Cardinal Indicators 20mA Current Loop Connections 225 (without USB)

PORT 1 (ACTIVE)	RD3
P14, 3	P4, 5
P14, 4	P4, 6
JUMPER P14, 5 to P14, 8	JUMPER P4, 1 to P4, 7

PORT 1 (PASSIVE)	RD3
P14, 4	P4, 6
P14, 5	P4, 9
	JUMPER P4, 4 to P4, 5
	JUMPER P4, 1 to P4, 7

PORT 2 (ACTIVE)	RD3
P18, 1	P4, 5
P18, 2	P4, 6
JUMPER P18, 3 to P18, 9	JUMPER P4, 1 to P4, 7

PORT 2 (PASSIVE)	RD3
P18, 2	P4, 6
P18, 3	P4, 9
	JUMPER P4, 4 to P4, 5
	JUMPER P4, 1 to P4, 7

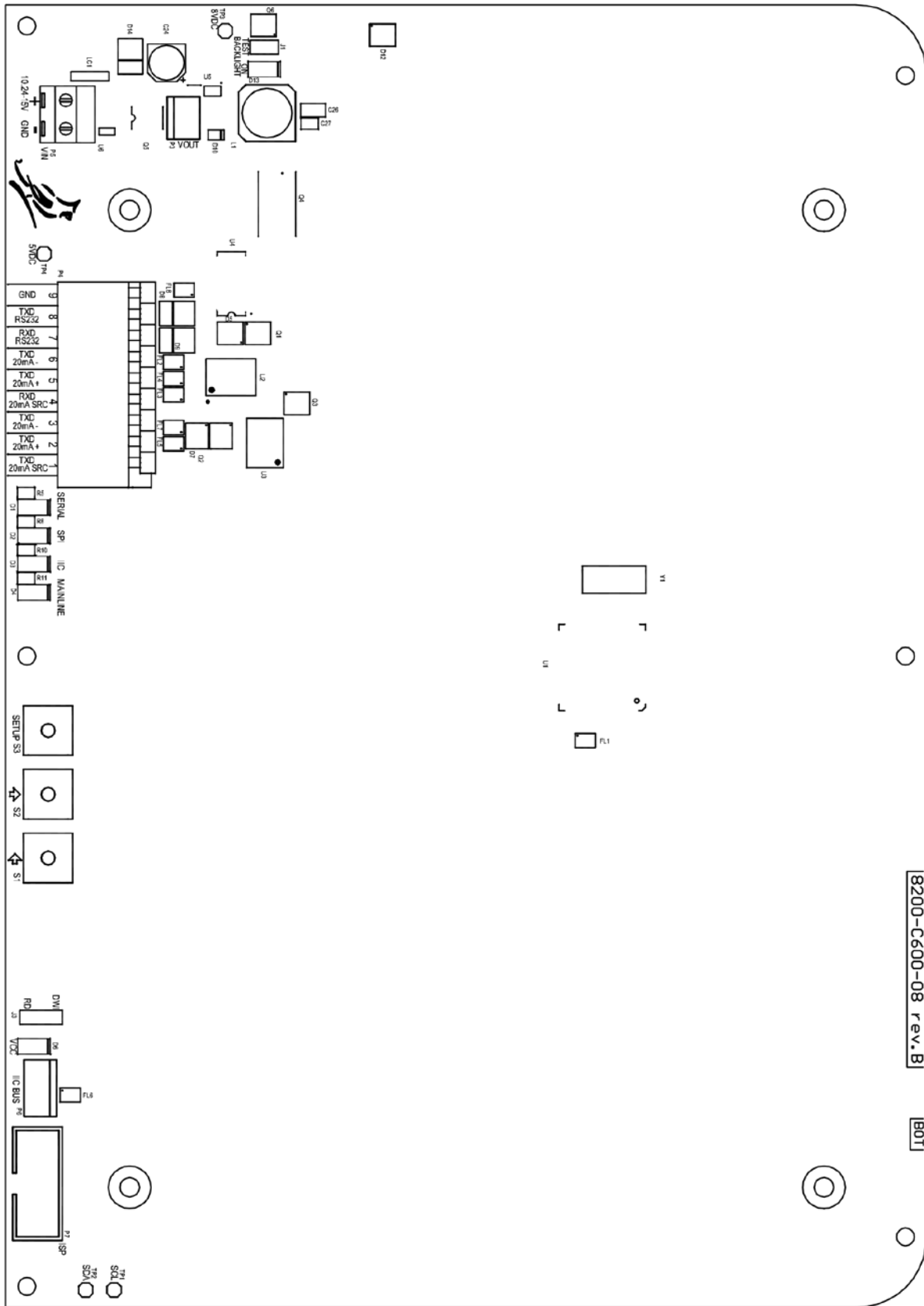
PORT 3 (ACTIVE)	RD3
P18, 12	P4, 5
P18, 13	P4, 6
	JUMPER P4, 1 to P4, 7

### 778C

(PASSIVE)	RD3
COMA, 11	P4, 6
COMA, 23	P4, 9
	JUMPER P4, 4 to P4, 5
	JUMPER P4, 1 to P4, 7

(ACTIVE)	RD3
COMA, 10	P4, 5
COMA, 11	P4, 6
JUMPER COMA, 23 to COMA, 24	JUMPER P4, 1 to P4, 7

# DISPLAY BOARD



8200-C600-08 rev. B

B01

Figure No. 9



# DISPLAY BOARD, CONT.

## Jumpers

- J1 = BL TEST** – Back Light Test jumper. (Jumper must be OFF or on one (1) pin for normal operation)
- J3 = DWI / RD** – Operation mode selection jumper. (Jumper must be on pins 2 and 3 (RD) for Remote Display)

## Switches

- S3 = (SETUP)**. Press to begin Setup mode. While in setup, press to advance to the next setup option.
- S2 = (Up Arrow ↑)**. This switch has a dual purpose. If pressed while in setup, it will increment the current value by 1.
- S1 = (Left Arrow ←)**. This switch also has a dual purpose. If pressed while in setup, it will step back to the previous option.

## Status LED's

- D22 = BACKLIGHT ON** – Turned on to indicate display backlight is ON. D22 is turned off when the display backlight is OFF.
- D23 = MAIN LINE** – Display board microprocessor code is executing
- D24 = IIC** – Serial communication from 210 board (212 only) active
- D25 = SPI** – LCD display data is being sent to LCD
- D26 = SERIAL** – Serial data from DWI is present
- D27 = VCC** – 5VDC power is on

## Connectors

- P3 = VOUT** – *For Factory Use Only*
- P4** = 9 terminal connector for serial cable connections (refer to the table below)
- P5 = VIN** – Power Input Connector (10.5 to 14VDC)
- P6 = IIC Bus** – *For Factory Use Only*
- P7 = ISP** – In-System Programming connector

**P4 Serial Terminal Connector Table**

Circuit Board Label	Terminal	Function
TxD-20mA (SRC)	1	Source (SRC) voltage for active 20mA Transmitter
TxD-20mA +	2	20mA Transmitter Output (+)
TxD-20mA -	3	20mA Transmitter Output (-)
RxD-20mA (SRC)	4	Source (SRC) voltage for active 20mA Receiver
RxD-20mA +	5	20mA Receiver Input (+)
RxD-20mA -	6	20mA Receiver Input (-)
RxD-RS232	7	RS232 Receiver Input
TxD-RS232	8	RS232 Transmitter Output
GND	9	Ground

# SETUP AND CONFIGURATION

The RD3 display has been pre-configured at the factory and should not require configuration for use in most applications. If the factory settings do not meet the requirements of your application, the following describes the steps to configure the display.

The setup mode switch is located on the back of the display board. You may gain access to it by removing the 12 screws securing the front panel to the rear housing. Refer to Figure No. 10, for the location of the **SETUP** switch.

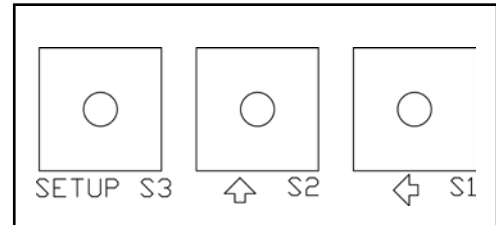


Figure No. 10

- When a prompt is displayed, press the **SETUP** switch to retain the current value and proceed to the next prompt.
- To change a setting, press the **Up Arrow** ↑ switch to scroll through and select a new value.
- Press the **Left Arrow** ← switch to "back up" to the previous prompt.

## Enter Setup Mode

1. With the front panel removed and the display ON, press and release the **SETUP** switch.
2. The display will change to show *SETUP*.
3. Press the **SETUP** switch again.
4. The display will change to show *TYPE = \_* and the current value.

### *TYPE =* (Serial Format)

This option allows you to manually select a serial format and override the Auto-format feature by setting *TYPE =* to a number listed below. Note that the factory default value is 0 (Auto-format is enabled).

If the value displayed is acceptable, press the **SETUP** switch again. Otherwise, press the **Up Arrow** ↑ switch to scroll through and select a new value and then press the **SETUP** switch to save it and proceed to the next prompt. Values from 0 to 8 may be selected.

- |                     |                  |
|---------------------|------------------|
| 0 = Auto-format     | 5 = ANDFV        |
| 1 = SMA             | 6 = WI110        |
| 2 = Cardinal SB400  | 7 = Toledo Short |
| 3 = Numbers         | 8 = Toledo Long  |
| 4 = Rice Lake IQ355 |                  |

### ***bRud* = (Serial Port Baud Rate)**

This option allows you to manually select a baud rate and override the Auto-baud feature by setting *bRud* to a number listed below. Note that the factory default value is 0 (Auto-baud is enabled).

If the value displayed is acceptable, press the **SETUP** switch again. Otherwise, press the **Up Arrow** ↑ switch to scroll through and select a new value and then press the **SETUP** switch to save it and proceed to the next prompt. Values from 0 to 5 may be selected.

<b>0</b> = Auto-baud	<b>1</b> = 2400	<b>2</b> = 4800
<b>3</b> = 9600	<b>4</b> = 19,200	<b>5</b> = 38,400

### ***dAtA* = (Serial Port Data Bits)**

This option allows you to manually select 7 or 8 data bits for the serial port data format. Note that if Auto-format is enabled (*TYPE=0*), the *DATA=* setting is ignored.

If the value displayed is acceptable, press the **SETUP** switch again. Otherwise, press the **Up Arrow** ↑ switch to toggle to the other value and then press the **SETUP** switch to save it.

<b>0</b> = 7 Data bits	<b>1</b> = 8 Data bits
------------------------	------------------------

### ***LtE* = (Backlight Turn-On Level)**

This option allows you to set the Light Sensor Reading at which LCD Backlight will turn ON

If the value displayed is acceptable, press the **SETUP** switch again. Otherwise, press the **Up Arrow** ↑ switch to toggle to the other value and then press the **SETUP** switch to save it.

<b><i>LtE=0</i></b> Backlight always ON	<b><i>LtE=99</i></b> Backlight always OFF	<b><i>LtE=XX</i></b> The level that the backlight turns ON
--	--	--

### ***Lt* = (Light Sensor Reading)**

Current LCD Light Sensor Reading (where XX is the current value) **NOTE!** This value is not adjustable.

### **Setup Complete**

Press the **SETUP** switch to save the settings. Setup and configuration have been completed. The RD3 will reset. Follow the instructions on the next page to re-install the front panel and proceed with normal operations.

## RE-INSTALLING THE FRONT PANEL

After all the terminations have been made, changes to setup have been completed, and the display brightness set to the desired level, it's time to re-install the front panel.

1. Gently pull any excess cable (AC power and serial) from the enclosure.
2. Securely tighten the cable gland connectors.
  - Do not over-tighten the connectors but make certain they are snug.
  - **DO NOT USE TOOLS!** Finger-tighten only!
  - Ensure that any unused gland connectors are plugged.
3. Make certain no cables or wires are exposed between the rear housing and front panel.
4. Place the front panel onto the rear housing.
5. Secure with the 12 screws removed earlier.
6. Follow a diagonal pattern when tightening the screws.

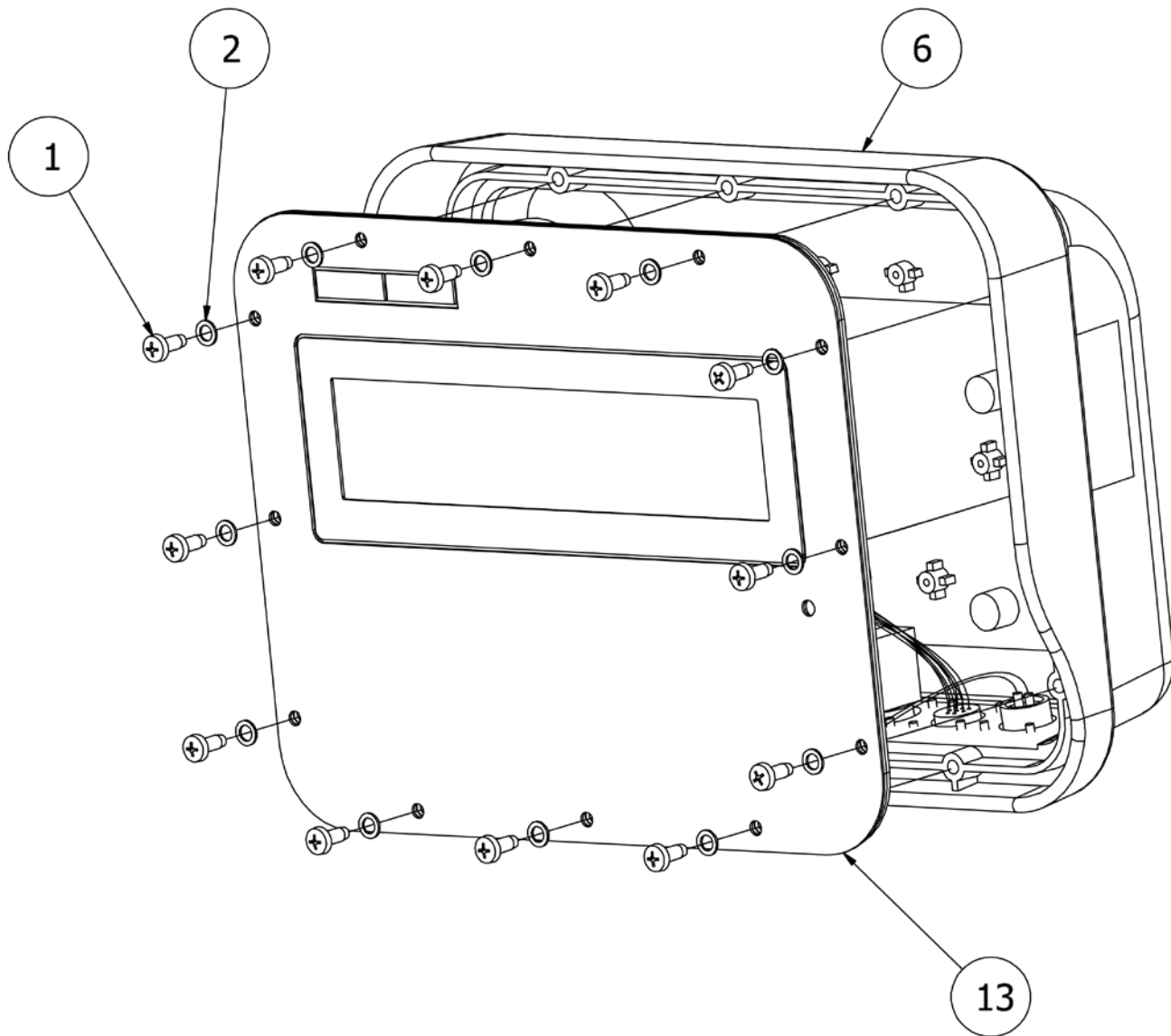
## ERROR AND STATUS DISPLAYS

The RD3 Remote Display is equipped with software that tests various portions of its circuitry and verifies proper operation. Should a problem be detected, a message will be displayed. The following lists the messages displayed and their meaning:

Display	Meaning
<i>Auto-b</i>	This will be displayed for a maximum of 4 seconds when the display is configured for Auto-baud detection. Note that while detecting the baud rate, the intensity of the digits will increase to full brightness.
<i>Error1</i> <i>Error2</i>	The auto-baud feature could not detect the baud rate of the indicator. Verify baud rate of the indicator serial port is set for 2400 to 19200 baud and try again. If an error continues, manually set the baud rate of the display and indicator.
<i>AutoFo</i>	This will be displayed for a maximum of 3 seconds when the display is configured for Auto-format.
<i>Error3</i>	The auto-format feature was unable to automatically select a serial input protocol. Verify indicator serial output is one of the eight serial formats listed in Setup and Configuration and try again. If an error continues, manually set the serial format of the display and indicator.
<i>noData</i>	On some indicators, the serial output will stop when displaying an error code or if in an "input" mode. When the serial input to the display stops for any reason, after 3 seconds this message will be displayed. <ul style="list-style-type: none"> <li>• Correct error condition on the indicator.</li> <li>• Cancel or complete the input operation on the indicator.</li> </ul> This message could also indicate the serial connection between the indicator and the display has been lost. <ul style="list-style-type: none"> <li>• Check for a broken, loose, or disconnected serial cable between the indicator and the display.</li> </ul>

# PART IDENTIFICATION

## Final Assembly

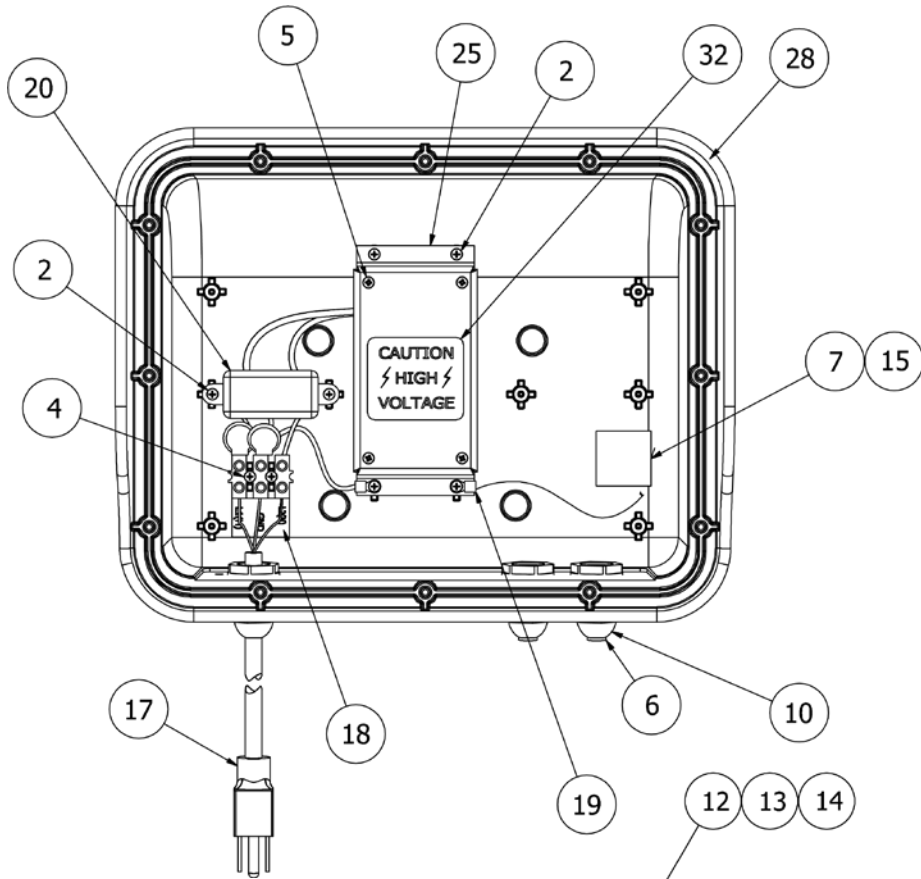


ITEM #	QTY.	PART NUMBER	DESCRIPTION
1	12	6021-1289	SCW PAN-HEAD PLASTIC THD. ROLLING, #10x1/2, PHIL. DR. BLACK OXIDE
2	12	6024-0141	WASHER FLAT .345 OD, 0.218 ID, 0.032 THK NYLON
6	1	8200-D629-2A	REAR SUB-ASSEMBLY: RD3
13	1	8200-D630-3A	FRONT SUB-ASSEMBLY: RD3
*	3	6980-0014	CABLE TIE 4" WHITE

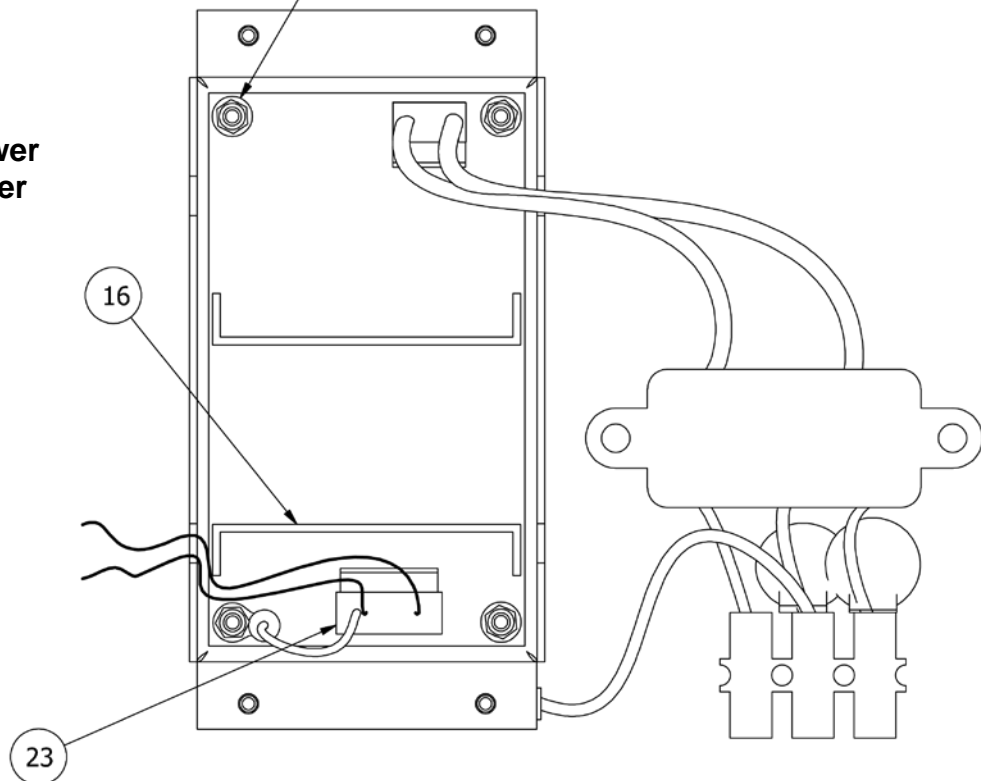
\* Not Shown

# PART IDENTIFICATION, CONT.

## Rear Sub-Assembly



**Backside of Power Supply and Cover**



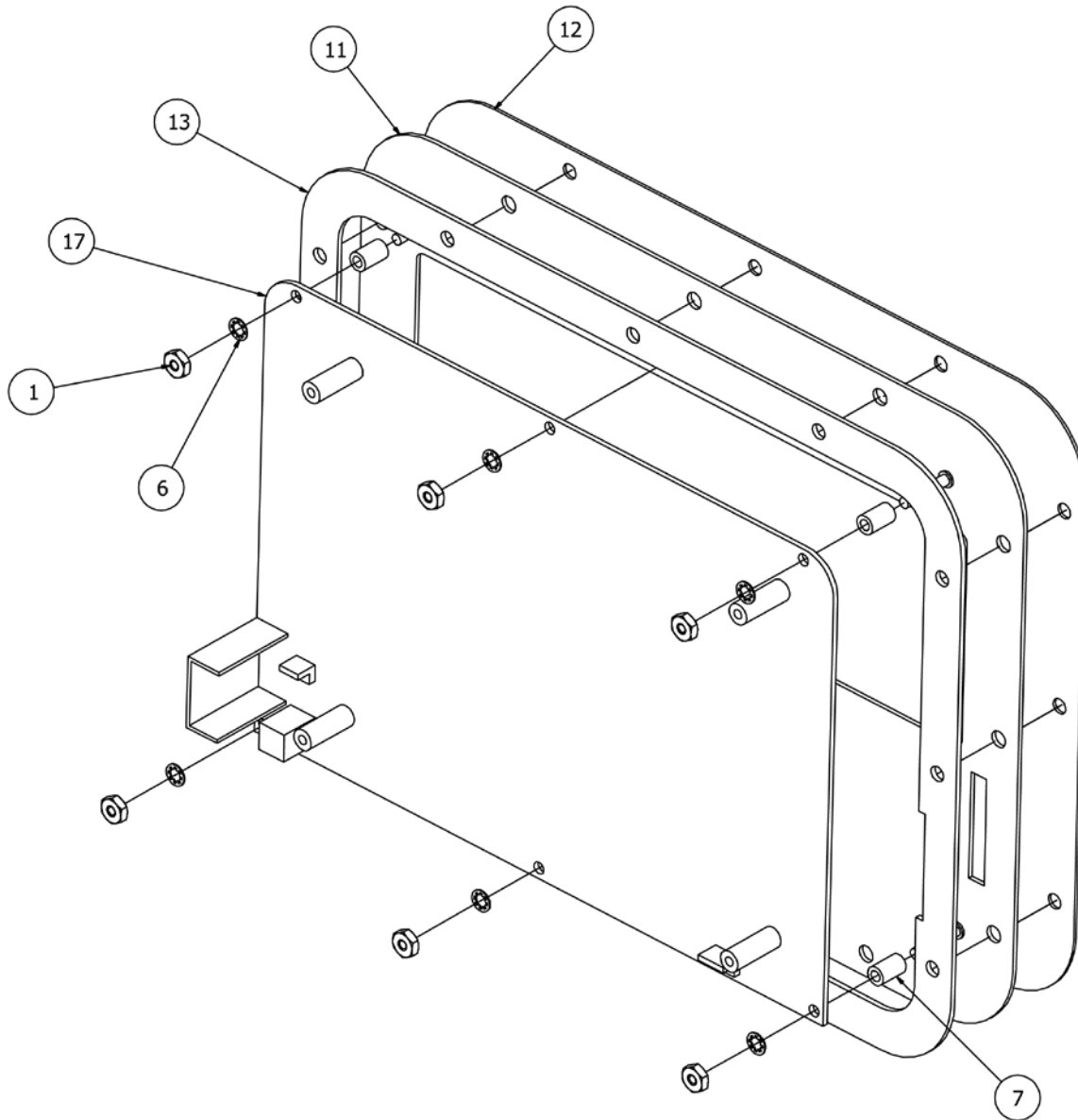
## PART IDENTIFICATION, CONT.

### Rear Sub-Assembly, Cont.

ITEM #	QTY.	PART NUMBER	DESCRIPTION
2	6	6021-1286	SCW PAN-HEAD THREAD CUTTING TYPE 25, #4x1/4, PHIL. DR. Z-PLATE
4	2	6021-1160	SCW PAN-HEAD. THREAD CUTTING #4x.625
5	4	6021-2018	SCW PAN-HEAD. MACHINE-SCW 04-40X.875
6	2	6540-1104	HOLE PLUG, 0.343" x 0.187" x 1" LG, SILICONE RUBBER
7	1	6560-0064	DESICCANT, 1"X1"BAG, FOR VOL. UP TO 1 CU. FT
10	3	6610-2248	CONN GLAND .187-.312 GRIP
12	3	6680-0026	WASHER LOCK INT TOOTH #4 TYPE A Z-PL
13	4	6680-0138	SPACER # 6 x .187 NYLON
14	4	6680-1107	SPACER # 4-40 x .750 3/16 HEX ALU.
15	3/4"	6710-1017	TAPE DBL SIDED 1.0" WIDE 45 MIL THICK
16	1	6800-1032	POWER SUPPLY, UNIVERSAL IN, 15VDC / 1.4 A
17	1	6980-1030	POWER CORD 18/3 SVT BLK: NEMA 5-15P ROJ 2", STRIP 1/4"
18	1	8200-B104-08	LABEL: AC POWER TERM. BLOCK
19	1	8200-B212-0A	CABLE: GROUND 205/210
20	1	8200-B237-0A	CABLE: AC POWER W/FILTER 205/210 DW1
23	1	8200-B636-0A	CABLE: POWER SUPPLY OUTPUT
25	1	8200-C615-08	POWER SUPPLY COVER
28	1	8200-D608-38	ENCLOSURE: PLASTIC, RD3
32	1	8510-C346-0I	LABEL: WARNING HIGH VOLTAGE

## PART IDENTIFICATION, CONT.

### Front Sub-Assembly



ITEM #	QTY.	PART NUMBER	DESCRIPTION
1	6	6013-0039	NUT #6-32 HEX Z/P
6	6	6680-0004	WASHER LOCK INT TOOTH #6 TYPE A Z-PL
7	6	6680-0131	SPACER # 6 x .400 NYLON
11	1	8200-C609-0A	FRONT PLATE
12	1	8200-C611-08	OVERLAY: RD3
13	1	8200-C618-08	GASKET
17	1	8200-D600-2A	PCB ASS'Y RD3 2" REMOTE DISPLAY



# STATEMENT OF LIMITED WARRANTY

## WARRANTY TERMS

Cardinal Scale Manufacturing Company warrants the equipment we manufacture against defects in material and workmanship. The length and terms and conditions of these warranties vary with the type of product and are summarized below:

PRODUCT TYPE	TERM	MATERIAL AND WORKMANSHIP	LIGHTNING DAMAGE See note 9	WATER DAMAGE See note 7	CORROSION See note 4	ON-SITE LABOR	LIMITATIONS AND REQUIREMENTS
<b>WEIGHT INDICATORS</b>	90 DAY REPLACEMENT ----- 1 YEAR PARTS	YES	YES	YES	YES	NO	1, 2, 3, 5, 6 A, B, C, D
<b>LOAD CELLS</b> (Excluding Hydraulic)	1 YEAR	YES	YES	YES	YES	NO	1, 2, 3, 5, 6 A, B, C, D
<b>HYDRAULIC LOAD CELLS</b> (When purchased with Guardian Vehicle Scale)	LIFETIME	YES	YES	YES	YES	90 DAYS	1, 5, 6, 8 A, B, C, D
<b>HYDRAULIC LOAD CELLS</b> (When purchased separately)	10 YEARS	YES	YES	YES	YES	NO	1, 5, 6, 8, 9 A, B, C, D
<b>VEHICLE SCALE</b> (Deck and Below Excl. PSC Series)	5 YEARS	YES	YES	YES	YES	90 DAYS	1, 2, 3, 5, 6 A, B, C, D, E
<b>LSC SCALE</b> (Deck and Below)	3 YEARS	YES	YES	YES	YES	90 DAYS	1, 2, 3, 5, 6, 11 A, B, C, D
<b>GUARDIAN FLOOR SCALES</b>	10 YEARS	YES	YES	YES	YES	NO	1, 2, 3, 5, 6, 9, 10 A, B, C, D
<b>ALL OTHER CARDINAL PRODUCTS</b>	1 YEAR	YES	YES	YES	YES	NO	1, 2, 5, 6 A, B, C, D, E
<b>REPLACEMENT PARTS</b>	90 DAYS	YES	YES	YES	YES	NO	1, 2, 4, 5, 6 A, B, C, D
<b>SWIM AND 760 SERIES VEHICLE SCALES</b>	1 YEAR	YES	YES	YES	YES	90 DAYS	1, 2, 5, 6 A, B, C, D
<b>SOFTWARE</b>	90 DAYS	YES	N/A	N/A	N/A	NO	1, 6 B, C, D
<b>CONVEYOR BELT SCALES</b> (including Belt-Way)	1 YEAR	YES	YES	YES	YES	NO	1, 2, 3, 5, 6 A, B, C, D, E, F



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04/24  
Printed in USA  
315-WARRANTY-CAR-M

## APPLICABLE LIMITATIONS AND REQUIREMENTS

1. This warranty applies only to the original purchaser. The warranty does not apply to equipment that has been tampered with, defaced, damaged, or had repairs or modifications not authorized by Cardinal or has had the serial number altered, defaced or removed.
2. This warranty is not applicable to equipment that has not been grounded in accordance with Cardinal's recommendations.
3. This equipment must be installed and continuously maintained by an authorized Cardinal / Belt-Way dealer.
4. Applies only to components constructed from stainless steel.
5. This warranty does not apply to equipment damaged in transit. Claims for such damage must be made with the responsible freight carrier in accordance with freight carrier regulations.
6. Warranty term begins with date of shipment from Cardinal.
7. Only if device is rated NEMA 4 or better or IP equivalent.
8. Lifetime warranty applies to damages resulting from water, lightning, and voltage transients and applies only to the hydraulic load cell structure itself (does not include pressure transducers, rubber seals, o-rings, and associated wiring).
9. 10-Year prorated warranty on hydraulic load cells.
10. 1-Year warranty for scale structure.
11. PSC models' warranty coverage applies only to agricultural installations on farms up to 3,000 acres (LSC models not limited in this manner).
12. Load cell kits MUST be installed in accordance with Cardinal Scale instructions. Failure to follow these instructions will void the warranty.

## EXCLUSIONS

- A.) This warranty does not include replacement of consumable or expendable parts. The warranty does not apply to any item that has been damaged due to unusual wear, abuse, improper line voltage, overloading, theft, fire, water, prolonged storage or exposure while in purchaser's possession or acts of God unless otherwise stated herein.
- B.) This warranty does not apply to peripheral equipment not manufactured by Cardinal. This equipment will normally be covered by the equipment manufacturer's warranty.
- C.) This warranty sets forth the extent of our liability for breach of any warranty or deficiency in connection with the sale or use of our product. Cardinal will not be liable for consequential damages of any nature, including but not limited to loss of profit, delays or expenses, whether based on tort or contract. Cardinal reserves the right to incorporate improvements in material and design without notice and is not obligated to incorporate said improvements in equipment previously manufactured.
- D.) This warranty is in lieu of all other warranties expressed or implied including any warranty that extends beyond the description of the product including any warranty of merchantability or fitness for a particular purpose. This warranty covers only those Cardinal products installed in the forty-eight contiguous United States and Canada.
- E.) This warranty does not cover paint coatings due to the variety of environmental conditions.
- F.) Do not cut load cell cables on load cells returned for credit or warranty replacement. Cutting the cable will void the warranty.
- G.) Software is warranted only for performance of the functions listed in the software manual and/or the Cardinal proposal.
- H.) The software warranty does not cover hardware. Warranties on hardware are provided from the hardware vendor only.
- I.) The software warranty does not cover interfacing issues to non-Cardinal supplied hardware.
- J.) The software warranty does not include automatic software upgrades unless purchased separately.



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