



**CHECK WEIGHER**  
**For The 225 Weight Indicator**  
**Installation, Setup and Operation Manual**



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# INSTALLATION

## Logic Level Output

Your Model 225 indicator has logic level outputs that can be used to control peripheral devices used to signal when the weight is within preset limits. Note that these outputs (defined on the next page) are at logic level and cannot drive external devices directly. Solid-state relays can be used to accept the logic level output from the 225 and in turn, drive the external device.

## Output Cable Installation

1. If the rear panel of the indicator has been removed, proceed to step 2. Otherwise, remove the 14 acorn nuts securing the rear panel to main housing
2. Loosen a gland connector for the cable.
3. Slip the cable through the gland connector and into the enclosure.
4. Remove 2 inches of the cable outer insulation jacket
5. Next, remove 1/4 inch of insulation from each of the wires.
6. Connect each of the wires to the Remote Outputs terminal block (P19).
7. 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.
8. Repeat procedure until all wires are in place.

## AC Output Relay Board(s)

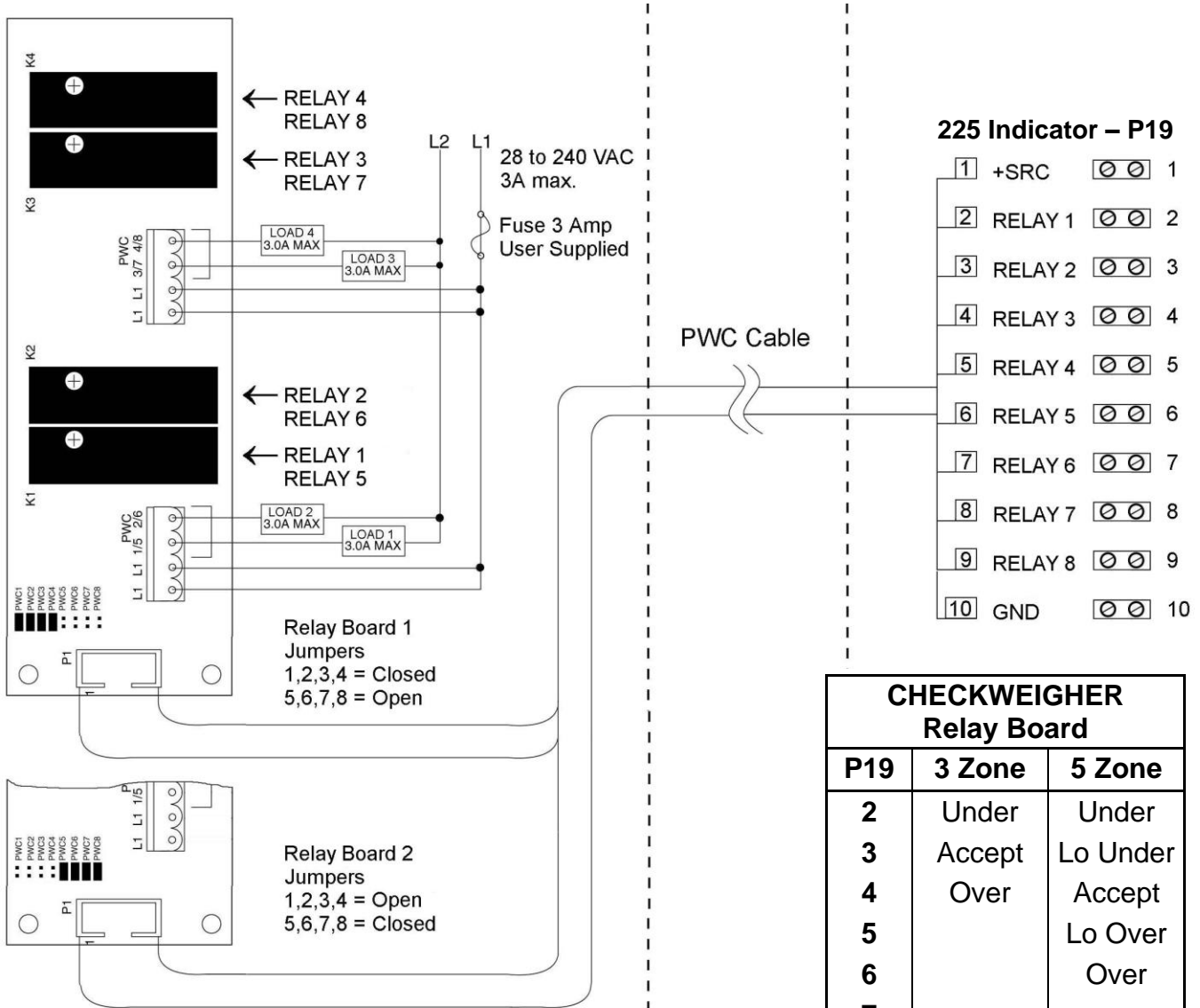
The AC Output Relay Boards are mounted in an external junction box for use with the 225 Indicator. The RB4-ACOUT contains one board and supports four outputs (jumper selectable). The RB8-ACOUT contains two boards and supports eight outputs. The relay board used in both is (Cardinal p/n 8539-C062-0A). Connect the devices to be controlled as shown in Figure No. 1.

The individual relays can be configured to be on (closed) or off (open) at weights under the preset weight then switch at the preset weight from on-to-off or off-to-on by setting the under weight condition to on or off during setup and calibration or setup review.

OUTPUT (closed)	28-240VAC @ 3A maximum for each plug-in relay
CONTROL INPUT	5VDC @ 12mA from the 225 main pc board assembly P8
CONNECTION	Removable plug-in screw terminals for up to 14 AWG wire

**NOTE!** All relays are the normally-open type that will open when power to indicator is lost.

# AC Output Relay Board(s), Cont.



Relay Box Assembly RB4-ACOUT or RB8-ACOUT

Figure No. 1

## Relay Box Cable Wire Number to Relay Number Table

The relay box cable wire numbers correspond to the 225 indicator P19 terminal connections.

CABLE WIRE NUMBER	RELAY NUMBER (Set Proper Jumpers)	CABLE WIRE NUMBER	RELAY NUMBER (Set Proper Jumpers)
1	+SRC (For AC Input Relays)	6	5
2	1	7	6
3	2	8	7
4	3	9	8
5	4	10	GND

# OPTICALLY ISOLATED REMOTE INPUTS

The Model 225 has seven (7) programmable inputs that may be used to remotely (up to 100 feet) initiate various functions within the indicator. These inputs are accessed via a terminal block (P17) on the back of the Main PC board. The 7 inputs are defined on the following page.

**Remember that the input must be connected to GND to initiate the function.**

## Input Cable Installation

1. If the rear panel of the indicator has been removed, proceed to step 2. Otherwise, remove the 14 acorn nuts securing the rear panel to main housing
2. Loosen a gland connector for the cable and slip the cable through the gland connector and into the enclosure.
3. Remove 2 inches of the cable outer insulation jacket and then remove 1/4 inch of insulation from each of the wires.
4. Connect each of the wires to the Remote Input terminal block (P17).
5. 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.
6. Repeat procedure until all wires are in place.

## AC Input Relay Board(s)

The AC Input Relay Board(s) are mounted in an external junction box for use with the 225 Indicator. The RB4-ACIN (115 VAC) or RB4-ACINV (230 VAC) contain one board and supports 4 inputs (jumper selectable). The RB8-ACIN (115 VAC) or RB8-ACINV (230 VAC) contain two boards and supports seven inputs that are jumper selectable. The relay board used in the 115 VAC versions is Cardinal p/n 8200-C324-0A. The 230 VAC version uses relay board Cardinal p/n 8200-C324-1A. Connect the devices as shown in Figure No. 2.

INPUT RELAY TYPE IAC-5	90 to 140 VAC @ 6mA maximum for each plug-in relay
INPUT RELAY TYPE IAC-5A	180 to 280 VAC @ 6mA maximum for each plug-in relay
OUTPUT	5VDC @ 12mA from the 225 main pc board assembly P9 12VDC @ 12mA maximum from external source
CONNECTION	Removable plug-in screw terminals for up to 14 AWG wire



**NOTE! AC INPUT RELAYS ARE VOLTAGE DEPENDENT.  
A DIFFERENT RELAY IS REQUIRED FOR 115 VAC AND 230 VAC!**

## AC Input Relay Board(s), Cont.

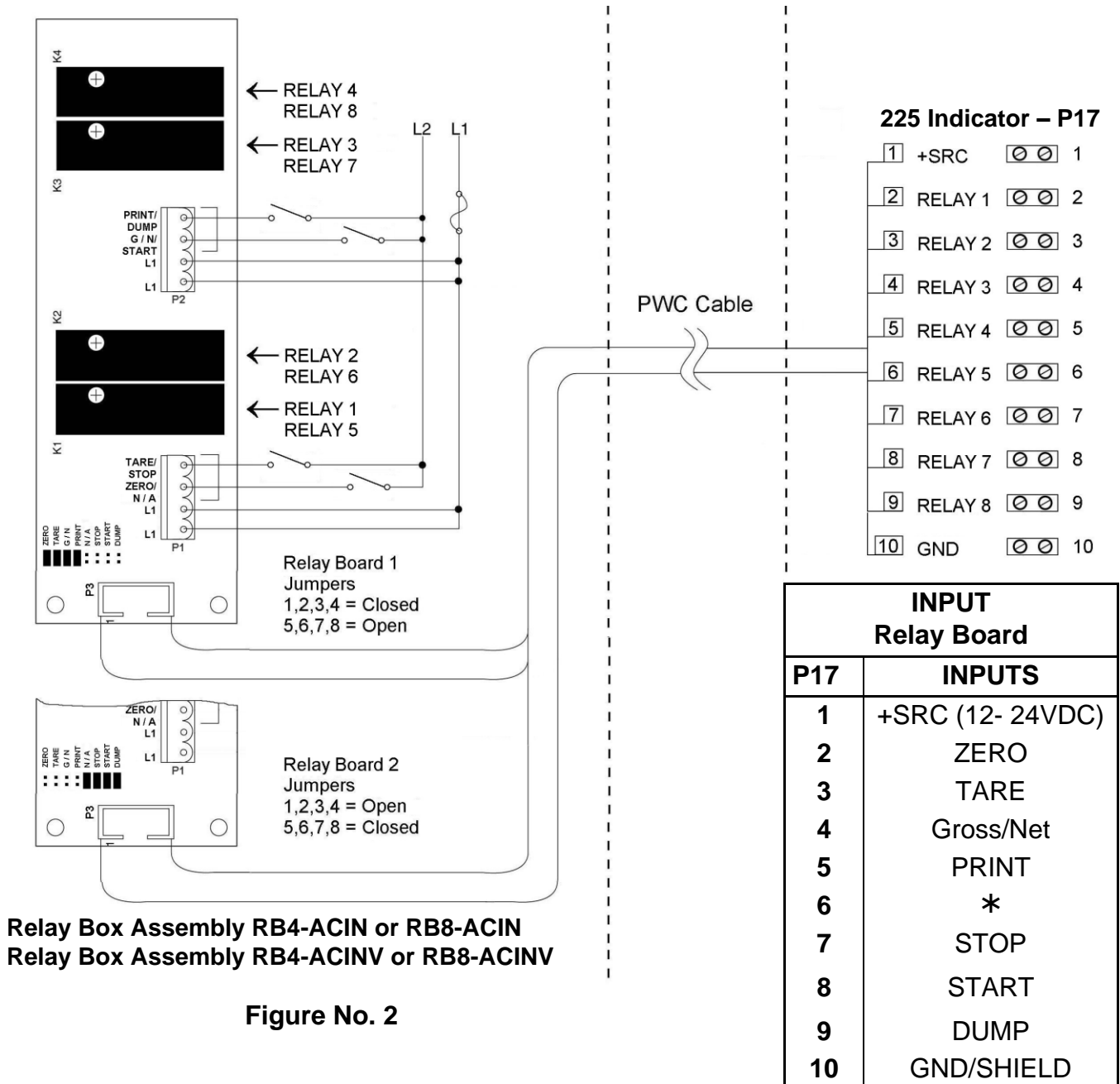


Figure No. 2

## Relay Box Cable Wire Number to Relay Number Table

The relay box cable wire numbers correspond to the 225 indicator P17 terminal connections.

CABLE WIRE NUMBER	RELAY NUMBER (Set Proper Jumpers)	CABLE WIRE NUMBER	RELAY NUMBER (Set Proper Jumpers)
1	+SRC (For AC Input Relays)	6	5
2	1	7	6
3	2	8	7
4	3	9	8
5	4	10	GND



# MAIN PCB



**CAUTION!** This board 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.

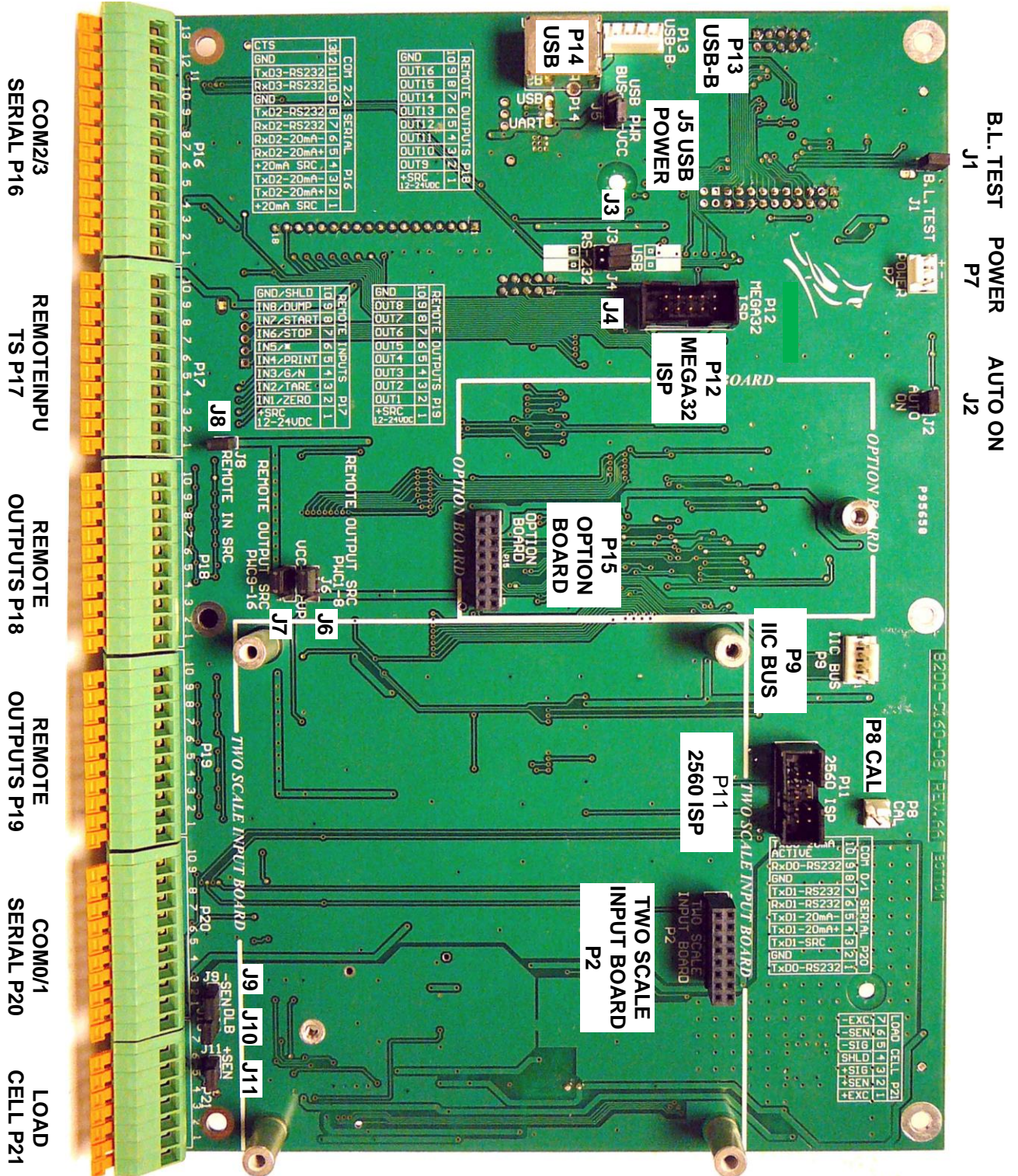


Figure No. 3

# MAIN PC BOARD, CONT.

## Main PCB Jumpers

### J1 (TEST) – B.L. TEST

When installed, this jumper will turn the backlight on, ignoring the `BACK LITE=` setting.

### J2 (AUTO ON) – AUTO-ON

When installed, this jumper will cause the indicator to power on automatically whenever power is applied to the power input connector. If power is lost momentarily and then reapplied, the indicator will turn on without pressing the **ON** key.

### J3 AND J4 – RS-232/USB PORT

These jumpers control whether COM3 is RS-232 and uses Serial I/O P16 (pins 10, 11, and 12) or USB and uses the USB-B header, P13 or USB-B port, P14.

### J6 (PWC1-8) and J7 (PWC9-16) – REMOTE OUTPUT SRC (SOURCE)

When installed, these jumpers allow the 225 indicator to supply (source) 5 VDC (VCC) or 15VDC (VP) to a solid-state relay or other load of 200 ohms or greater. To operate from the 5 VDC (VCC) or 15VDC (VP) source, the positive connection from the relays must be connected to P18 (P19) pins 2 through 9 and the negative wire from the relays to P18 (P19) pin 10 (GND). See Figure No. 3 for the location of connector P18 and P19.

For completely isolated outputs, J6 (J7) must be open (on one pin only or removed) and the user must provide 5 to 24 VDC to P18 (P19) pin 1 (+SRC) and a ground return to the load. The load must still be 200 ohms or greater and P18 (P19) pin 10 (GND) is not connected.

### J8 (REMOTE IN) – REMOTE IN SRC (SOURCE)

When installed, this jumper allows the 225 indicator to supply (source) 5 VDC to a remote input circuit. Connecting P17 pins 1 through 9 to P17 pin 10 (GND) through a switch will cause the selected action. See Figure No. 3 for connector P17 location.

For completely isolated inputs, J8 must be open (on one pin only or removed) and the user must provide 5 to 24 VDC to P17 pin 1 (+SRC) and a ground return to the switch connected to P17 pin 2 through 9. Note that P17 pin 10 (GND) is not connected.

### J9 (-SEN) and J11 (+SEN) – SENSE JUMPERS

If the sense leads are NOT used, you must install jumpers at J9 and J11 (near the P20 and P21 terminal blocks). These jumpers connect the sense leads to the excitation leads. If sense leads ARE used (as in motor truck scales), these jumpers should be open (on one pin only or removed).

### J10 (DLB) – DEAD LOAD BOOST JUMPER

For very low dead loads (less than 10% of the combined load cell capacity), connect J8, the DLB (dead load boost) jumper on the printed circuit board.



## MAIN PC BOARD, CONT.

### P8 (CAL) – CALIBRATION INHIBIT JUMPER

When installed, this jumper inhibits (prevents) calibration of the 225 indicator.

When removed, CAL will be shown on the display (to indicate calibration is allowed) and calibration of the 225 indicator can be performed.

## RE-INSTALLING THE REAR PANEL

After all terminations have been made,

1. Remove the excess cable from the instrument enclosure and securely tighten each of the cable gland connectors.
  - Do not over-tighten these connectors but make certain they are snug.
  - **DO NOT USE TOOLS!** Finger-tighten only!
2. Ensure any unused gland connectors are plugged and replace the rear panel.
3. Secure the rear panel with the 14 acorn nuts removed earlier.
4. Follow a diagonal pattern when tightening the acorn nuts.

# SETUP

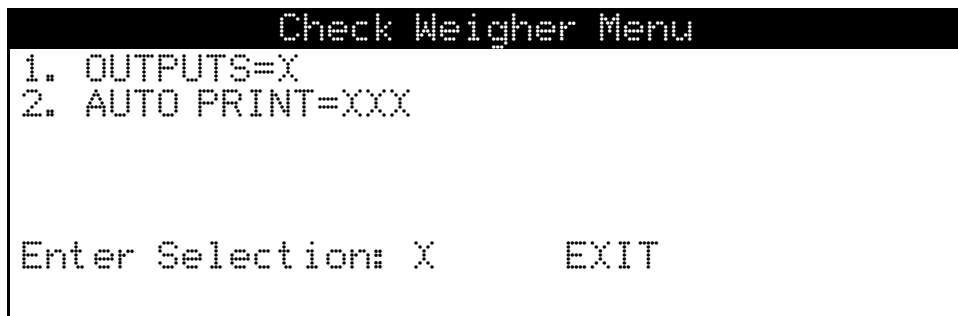
## Check Weigher (Mode of Operation = 4)

When selected, the Check Weigher will compare the displayed weight with preset values and display the results as under, accept, or over. The checkweighing operation features are selected in the Check Weigher Menu. To access the setup menus:

1. Press the **SHIFT** key and then the **RED SQUARE** navigation key.
2. The display will change to show the **SETUP/REVIEW MENU**.
3. Press the **1** key and then the **ENTER** key.
4. The display will change to show **SETUP MENU #1**.

With **SETUP MENU #1** displayed the current setting for the **10. MODE OF OP=X** parameter will be shown. Press the **1** and **0** keys and then the **ENTER** key. The display will change to show the **Mode Of Operation Menu**. Press the **4** key and then the **ENTER** key to select **4. Check Weigher**. The display will change to show the **Check Weigher Menu**.

The Check Weigher Menu shows the selections for the Check Weigher setup parameters.



### 1. OUTPUTS=X – NUMBER OF CHECK WEIGHER OUTPUTS

The display will show **OUTPUTS=X**, where X is the current value. If the setting displayed is acceptable, continue to **2. AUTO PRINT=XXX**.

To change the current setting, press the **1** key and then the **ENTER** key. **OUTPUTS=X** will be displayed at the bottom of the display. Using the numeric keys, enter the new setting and then press the **ENTER** key to save it. Allowable values are 3 or 5.

When **OUTPUTS=3** is selected, the check weigher will compare the displayed weight with either high and low preset values. When **OUTPUTS=5** is selected, the check weigher will compare the displayed weight with high, high-accept, low-accept and low preset values.

## SETUP, CONT.

### OUTPUTS=3

If the check weigher feature is configured for a three-zone weight comparison, (OUTPUTS=3), the indicator will make a comparison of the displayed weight with a high and low preset value. The results of that comparison will be indicated as Over, Under or Accept.

#### OUTPUTS=3

Low State before cutoff (Relay\* Open)

PWC1	UNDER
PWC2	ACCEPT
PWC3	OVER

### OUTPUTS=5

If the check weigher feature is configured for the five-zone weight comparison, OUTPUTS=5, the indicator will make a comparison of the displayed weight with the high, high-accept, low-accept and low preset values. The results of this comparison will be indicated as Over, High-Accept, Accept, Low-Accept or Under.

#### OUTPUTS=5

Low State before cutoff (Relay\* Open)

PWC1	UNDER
PWC2	UNDER ACCEPT
PWC3	ACCEPT
PWC4	ACCEPT OVER
PWC5	OVER

\* The relay state is based on using Cardinal Scale relays (p/n 6850-1013). If using relays other than those supplied by Cardinal Scale, refer to the relay manufacturers specifications.

**NOTE! When power to the indicator is lost, the output returns to a Low State condition.**

## 2. AUTO PRINT=XXX – AUTOMATIC PRINT

The automatic print feature will cause an optional printer to print when the weight is in the ACCEPT range and STABLE. STABLE is defined by the STABLE= and STEL CNT= parameters settings in the SCALE 1 SETUP MENU #1.

The display will show AUTO PRINT=XXX where XXX is the current value. If the setting displayed is acceptable, continue to the next section.

To change the current setting, press the **2** key and then the **ENTER** key.

AUTO PRNT=XXX will be displayed at the bottom of the display. Using the **YES** or **NO** key, select the new setting and then press the **ENTER** key to save it.

#### AUTO PRNT=YES

Automatic Print Enabled

#### AUTO PRNT=NO

Automatic Print Disabled

# OPERATION

If the check weigher feature is configured for a 3-zone weight comparison, the indicator will make a comparison of the displayed weight with a high (OVER) and low (UNDER) preset value. The results of that comparison will be indicated as UNDER, ACCEPT, or OVER.

If the check weigher feature is configured for the 5-zone weight comparison, the indicator will make a comparison of the displayed weight with the UNDER, LOW OK, HIGH OK, and OVER preset values. The results of this comparison will be indicated as UNDER, UNDER ACCEPT, ACCEPT, ACCEPT OVER, or OVER.

## RELAY CONTROL OUTPUTS

### OUTPUTS=3

Low State before cutoff (Relay\* Open)

PWC1	UNDER
PWC2	ACCEPT
PWC3	OVER

### OUTPUTS=5

Low State before cutoff (Relay\* Open)


PWC1	UNDER
PWC2	UNDER ACCEPT
PWC3	ACCEPT
PWC4	ACCEPT OVER
PWC5	OVER

### Enter the Preset values for a 3 zone Check Weigher using the following procedure:

1. With the indicator in the Gross or Net Weight mode, press the **PRESET** key.
2. The display will show `UNDER=XXXXXX`, where XXXXXX is the current value of the under preset.
3. If the displayed value is acceptable, press the **ENTER** key to save it. Otherwise use the numeric keys to enter a new value and then press the **ENTER** key to save it.
4. The display will show `OVER=XXXXXX` where XXXXXX is the current value of the over preset
5. If the displayed value is acceptable, press the **ENTER** key to save it. Otherwise use the numeric keys to enter a new value and then press the **ENTER** key to save it. Note that the over value must be greater than the under value.
6. After the over preset value is entered, the 225 will return to normal operation.

## OPERATION, CONT.

**Enter the Preset values for a 5 zone Checkweigher using the following procedure:**

1. With the indicator in the Gross Weight mode (Gross annunciator,  on the display), press the **PRESET** key.
2. The display will show `UNDER=XXXXXX`, where XXXXXX is the current value of the under preset.
3. If the displayed value is acceptable, press the **ENTER** key to save it. Otherwise use the numeric keys to enter a new value and then press the **ENTER** key to save it.
4. The display will show `LOW OK=XXXXXX`, where XXXXXX is the current value of the low accept preset.
5. If the displayed value is acceptable, press the **ENTER** key to save it. Otherwise use the numeric keys to enter a new value and then press the **ENTER** key to save it. Note that this value must be greater than the under value.
6. The display will show `HIGH OK=XXXXXX`, where XXXXXX is the current value of the high accept preset.
7. If the displayed value is acceptable, press the **ENTER** key to save it. Otherwise use the numeric keys to enter a new value and then press the **ENTER** key to save it. Note that this value must be greater than the under value, but less than the over value.
8. The display will show `OVER=XXXXXX`, where XXXXXX is the current value of the over preset
9. If the displayed value is acceptable, press the **ENTER** key to save it. Otherwise use the numeric keys to enter a new value and then press the **ENTER** key to save it. Note that the over value must be greater than the high accept value.
7. After the over preset value is entered, the 225 will return to normal operation.

**NOTE! Remember that the check weigher function operates on the absolute value of the weight ignoring the polarity.**

