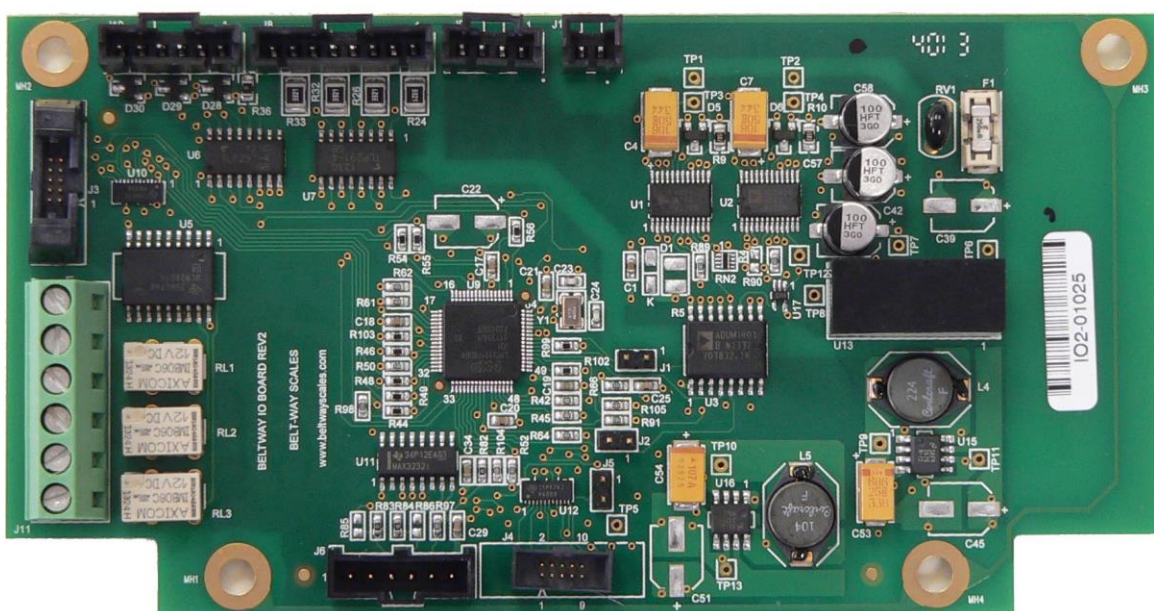


2014

INPUT / OUTPUT BOARD FIELD INSTALLATION MANUAL



Part # BWIOKIT | Board Field Installation Manual

Input / Output Board Field Installation Manual

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Input / Output Board Field Installation Manual

1. Introduction

This manual is intended to help you successfully install the I/O Board Kit as an add-on item in the field. The following instructions will show you a step by step procedure to install the hardware required for the I/O Board.

Wiring and software setup will vary from application to application. The attached wiring diagram and I/O Board contact descriptions should be a guide in selecting the correct wire terminals for your application.

It is critical that you follow all Company and government **SAFETY** procedures when installing this component in the field.

After reading this manual and you require any assistance with the installation, wiring, and setup of the integrator please contact our technical support department.

Belt-Way Scales Inc.

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2. What is in the Box?

The following items are in the box:

1. 1 QTY - I/O Board
2. 4 QTY -Screws
3. 1 QTY - Connector with 6 wires pre-wired to I/O Board.
4. 1 QTY - Ribbon Cable
5. 4 QTY – Cable assemblies (all connector have different amount of pins)
 - 2 pin
 - 4 pin
 - 6 pin
 - 8 pin



3. Tools Needed

The following basic tools will be needed:

- | | |
|--|-----------------|
| 1. 1 QTY – Phillips / Star Head Screw Driver | 3. Lock-Out Tag |
| 2. 1 QTY - Small Flat Head Screw Driver | 4. Correct PPE |

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4. Step By Step Installation Procedure



Before you start:

1. Disconnect power to the integrator at the breaker or disconnect panel.
2. Lock out the supply power while installing the I/O Board.

STEP 1

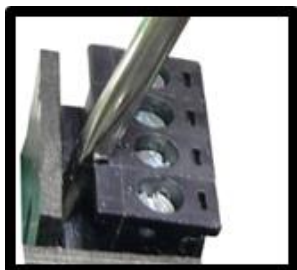


Open the box

Step 2

(A) IF 110-220 VAC power Supply is INSTALLED

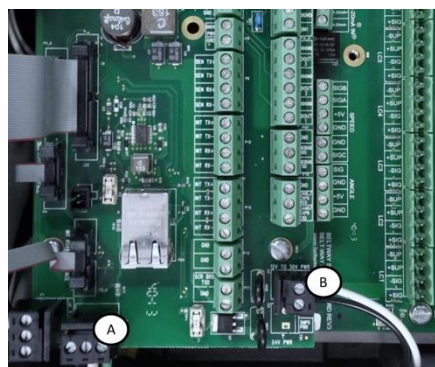
- Remove the AC Supply power Connector inside the Integrator.



When removing the connector use the screw driver as shown above to avoid pin damage.

(B) IF 10-30 VDC power Supply is connected

- Remove the DC supply Power Connector inside the Integrator.



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STEP 3



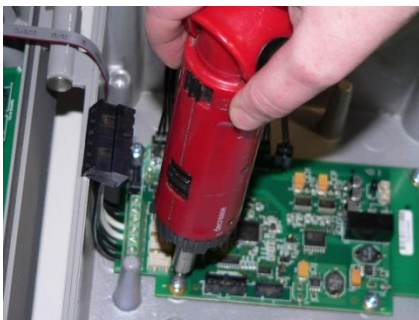
1. Remove the 4 screws that hold the Shield Plate and board stack as a unit.
2. The Terminal board and Sensor Board will remain bolted to the Shield Plate.

STEP 4



1. Remove the board stack

STEP 5



1. The wiring supplied should already be attached to the board when shipped.
2. Please check that all terminals are tight.
3. Place the supplied I/O Board on the mounting supports inside the box at the top and install mounting screws.

STEP 6



1. Position the shield plate (incl. board stack) back inside the box.
2. Route the cable assemblies around the board stack to the top.
3. Remove the Door Shield plate and plug ribbon cables into processor board.

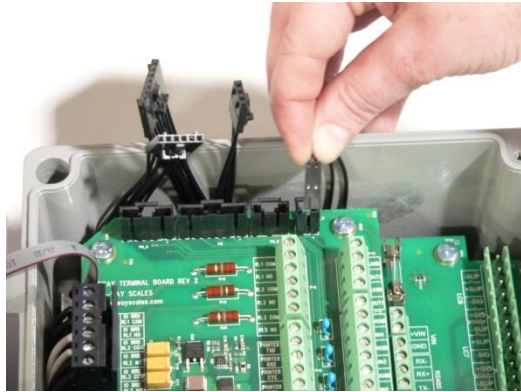
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STEP 7



1. Install and tighten 4 mounting screws for the shield plate and board stack.

STEP 8



1. Plug in the cable assembly connectors from the I/O Board.
NOTE: Each connector is a different size so they cannot be mixed up.
2. Plug in the 6 pin connector for the I/O Board (Relays)

STEP 9



1. Replace the Door Shield with the 4 screws you removed earlier.

STEP 10



Using the wiring diagrams and terminal descriptions at the end of this manual wire up the terminals for the I/O board located on the terminal Board

STEP 11

Close the integrator door

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5. Integrator I/O Setup Instruction Guide

The following information will help you decide how to setup the Integrator for your application needs:



I/O Board

(IO board wiring diagram is located at the back of the manual)



Assign Inputs

Assign any one of the listed input functions to any of the 4 digital inputs. The digital inputs are optically isolated and accept 5-30 VDC.

Input options are listed below:

1. **Print Ticket** - Prints a ticket if a printer is connected to the integrator.
2. **Print then Clear** - Prints a ticket first and then resets the Accumulated Weight to zero.
3. **Enter Load** - Used with legacy remote start stop stations.
4. **PID Rate = Zero** - Momentarily stops PID loop from calculating.
5. **Zero Calibration** - Initiates the dynamic Zero Calibration.
6. **Error Acknowledge** - Acknowledge and clear an error condition.



Assign Outputs

Assign any one of the listed output functions to any of the 3 digital outputs. The digital outputs are optically isolated with a maximum of 30 VDC, 100 mA sinking.



A solid state relay may be required to connect the output to a 110 / 220 VAC PLC input card.

Output Options are listed below:

1. **Pulsed Output** - Generates a pulse for each accumulated weight unit.

Pressing Enter will take you to the next setup screen where you must program the **Weight per Pulse** and **Pulse on Time** values.

- **Weight per Pulse**

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This can be set to **.1, 1.0, 10 or 100** of the selected Weight Units. For example, if the Weight unit is Tons and the Weight per Pulse is set to **.1**, a pulse will occur each time **0.1** Tons is accumulated.



Please note that small pulse values (.1 or 1.0) will not work with small Weight units (Lbs or Kgs) as an excessive number of pulses will be created!

- **Pulse on Time** controls how long the pulse remains on. The value is in **milliseconds**. This must be programmed properly so the control system can count each pulse.
- 2. **Quadrature Wave** - Allows a pulsed output to count positive or negative weight. This requires a second output to be programmed as the **Pulsed Output** channel.
- 3. **Error Alarm** - The alarm output will turn on when an error condition occurs.

Pressing the **ENTER** key will allow you to choose the error you wish to monitor with the output.

1. **Load Cell** - Activates when any load cell malfunctions.
2. **Angle Sensor** - Activates when the angle sensor malfunctions.
3. **Communications** - Activates when there is any communication error.
4. **Negative Rate** - Activates when the rate drops below the Negative Rate Limit.



The Negative Rate Limit is programmed in the [Admin / Settings](#) menu.

5. **Any Error** - Activates when any of the previously mentioned errors occur.
6. **Min/Max Speed** - Activates when the speed is above or below the programmed.

Pressing **Enter** takes you to the setup screen where you must program the **Min** or **Speed Setpoints**

- **Min Speed Output** (Turns on when speed is below setpoint) or
- **Max Speed Output** (turns on when speed is above setpoint).

7. **Min/Max Rate** - Activates when the rate is above or below the programmed.

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Pressing **Enter** takes you to the setup screen where you must program the **Min** or **Max Rate Setpoint**

- **Min Rate Output** (Turns on when rate is below setpoint) or
- **Max Rate Output** (turns on when rate is above setpoint).

8. **Batching / Loadout** - Activates when a batch is complete.

9. **Zero Calibration** - Activates when a Zero Calibration is in progress. Be sure to assign an input to initiate the Zero Calibration.



Assign Relays

Any one of the previously listed output functions can be assigned to any of the 3 relay outputs.



The relays can accept a direct connection to a 100 / 240 VAC input.



All digital output options EXCEPT the pulsed output are available as relay outputs.



Analog Outputs

Selection choices are **4-20 mA** or **0-20 mA** output. This output is used by a PLC system to monitor scale flow rate (tons per hour etc.) or to automatically control a material feed device in blending, rate control or load control applications if configured to do so.

1. **Analog 1 Function** –

Output **Default - Unassigned**

Selection choices available are:

- **0-20 mA**
0 mA is the mA output when the scale rate is 0 (Tph, Kg's / Hr)
20 mA is the maximum output when the scale rate exceeds the **Max Rate** value.
- **4-20 mA**
4 mA is the mA output when the scale rate is 0 (Tph, Kg's / Hr)
20 mA is the maximum output when the scale rate exceeds the **Max Rate** value.

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2. Analog 1 Setpoint

Default - 100%

The setpoint determines what portion of the 4-20 mA output is sent to the PLC or feed device. 100% sends the entire value, 50% sends half the value, 10% sends one tenth of the value, etc.

The value should remain at 100% when the output is simply monitored by a control system. It should be programmed to the required value when the scale is used for blending.

3. Analog 1 Max Rate - The Max Rate establishes the 20 mA level for the analog output. **The default is 500.**



The Max Rate MUST equal the PLC 20 mA value to make the scale and rate readings match.

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6. Wire Terminals

The relays are NOT available to be used for Pulse output (Totalizing Tons). Please use an external solid state Relay for this Purpose.

(Belt-Way Part # REL0015)

All Analog, digital Inputs & Outputs are isolated for external Sources.
There is No channel to channel isolation.

