

BINTRAC®

Installation Manual

U.S. Patent No. 7,980,129, Patent No. 8,581,122, Patent No. 8,853,566

BT260




BT200



03/19/2019

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Installation Overview

This section covers the mounting and wiring of the BinTrac system. Anyone responsible for programming and operating the BinTrac system should also read the Operator's Manual.



This symbol means the text has extra importance since it is describing the importance of a feature or explaining a step to which you should pay close attention to avoid problems, or to which safety is a concern.

Components

A BinTrac system consists of a number of basic components:

BinTrac Indicator BT200 (version 3.16)

This is the main unit of the BinTrac system. The BinTrac Indicator communicates with the Smart Summing Boxes to register the weight of material in the bins. The feed level is computed and displayed on the LED bar graph. One bin Indicator can monitor up to four bins.

BinTrac Indicator BT260 (version 3.17 or greater)

The BT260 is an alternate main unit of the BinTrac system. The BT260 features a 6 digit display with an optional 20 pin expansion header for an alert relay interface.

Load Cell Bracket Assembly

Four or more load cell brackets allow the BinTrac Indicator to accurately measure the feed weight in your bins. The Smart Summing Box averages the signals from all brackets to minimize errors that could result from voids (holes) in the feed.

Smart Summing Box

One Smart Summing Box per bin communicates the current weight of the bin to the BinTrac Indicator.

BinTrac Power Supply

This provides the power for the BinTrac system. The power supply converts the line voltage to low voltage.

Remote Radio

A Remote Radio connects to a BinTrac Indicator. It provides wireless communications for a local Herdstar Area Network between the BinTrac Indicator and a Communications Hub.

Communications Hub

A Communications Hub connects the on-site communications service (Dialup, Internet, or Cellular) to the local Herdstar Network allowing BinTrac Indicators to be remotely monitored.

BinTrac Remote Display

A BinTrac Remote Display is a standard BinTrac Indicator configured as a Remote Display. A hardwire cable must connect the Remote display to the BinTrac Indicator.

HouseLink™ Interfaces

Analog, Digital, Proportional, Serial, Ethernet interfaces are available. Refer to the individual installation Manuals when connecting any of the HouseLink interfaces.

Preparation

Before beginning the installation process you need to make sure that the area surrounding each leg is clear of dirt, ice, or any other debris that may cause the bracket assembly to not sit flat. If this is not done it could cause the bin to lift unevenly and give a false reading.

List of Parts to be installed

- MCA-000001/MCA-000301 – BinTrac Indicator
- MLB-xxxxxx – 5k, 6.5k, 10k, 15k, 20k or 30k Bracket Assembly
- MSA-xxxxxx – Smart Summing Box 4, 6 or 8 leg
- ASY-000067 – BinTrac Power Supply

Tools Needed

- 1 – 1 1/8" open-end wrench
- 2 – 3/4" wrenches
- 1/2" Drill
- 1/2" Hammer drill or Hilti cement drill
- 1/2" metal bit
- 1/2" cement bit
- 5/16" self-tapping screws
- 5/16" hex screw tip
- 1/2" cordless drill
- Impact wrench with 1 1/8" and 3/4" sockets (optional)
- Small flat-head screwdriver
- #2 Phillips screwdriver
- Center punch

Supplies Needed

- Tie Wraps (2 per leg)
- Wire Nuts (blue or orange, 4 per bin)
- Communication Wire (4 Cond. 20 – 22 awg, shielded)

Steps to Come

There are several steps to install the BinTrac bin weighing system. To give an overview of the installation process, these steps are outlined below.

- Mount the bracket assembly
- Lift the bin
- Anchor the bin
- Wiring the Smart Summing Box
- Wiring the Power Supply
- Wiring the BinTrac Indicator
- Initial setup
- Wiring a Remote Radio
- Setup and Wiring a Communications Hub
- Wiring a Remote BinTrac Indicator

PLEASE READ THROUGH THE ENTIRE INSTALLATION PROCESS BEFORE ATTEMPTING TO INSTALL A BINTRAC BIN WEIGHING SYSTEM! IF YOU HAVE ANY QUESTIONS, DO NOT HESITATE TO CONTACT HERDSTAR, L.L.C. OR A CERTIFIED DEALER IN YOUR AREA.

Installation

Mount the Bracket assembly

1. Remove all bolts connecting the leg to the footpad. Loosen the original anchor bolt but leave it intact at the bottom of the footpad. The footpad can and should be removed if it is binding or interfering with lifting the leg. (Figure 1)
2. Remove the 1/2" bolts from the C-channel adapter of the bracket assembly and set them aside for now.
3. Adjust the top bolt on the bracket assembly so the C-channel is approximately 3/4" between the top of the C-channel and the bracket.
4. Mark the holes of the C-channel on the leg and drill using 1/2" drill bit. (Figure 2)
5. Put the bolts in from the C-channel side through the leg. P a washer and Nylock nut on each bolt; hand-tighten.
6. Position the bracket assembly so that it is 3/8" away from t bin leg, and the C-channel is centered under the loadcell.

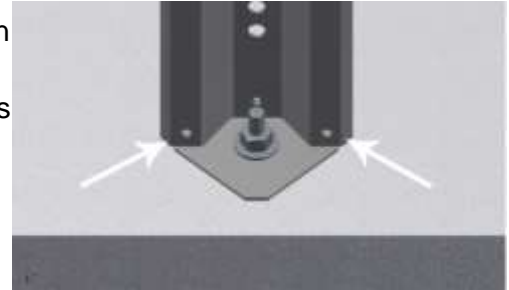


Figure 1: Remove bolts from bin leg



Figure 2: Mark holes of the C-Channel on the legs



Failure to properly align the bracket may cause load cell to fail.

the

7. Hand-tighten the top bolt on the bracket assembly to make sure the bracket is straight and to keep it in place.
8. Tighten C-channel bolts to 33 ft-lbs. of torque. Make sure the bracket does not move during tightening.



IMPORTANT: MOUNT THE BRACKET ASSEMBLY ONE (1) LEG AT A TIME!

DETACHING MORE THAN ONE LEG AT A TIME COULD ALLOW THE BIN TO TIP OVER! INJURY OR DEATH COULD RESULT!

Lift the Bin

9. Place a line using a marker on the top of the bolt. (Figure 3)
10. Tighten all the lifting bolts 1 or 2 full turns at a time until each leg is at 8 turns.
11. There must be a 1/2" (+/- 1/8") gap underneath each leg when lifting is complete. (Figure 4)
12. The top of the C-channel **MUST NOT** be up against the bracket assembly: a clearance of 1/4" (+/- 1/8") must be maintained. (Figure 5)
13. Be sure to check height of each leg and verify the bracket is not touching the leg.

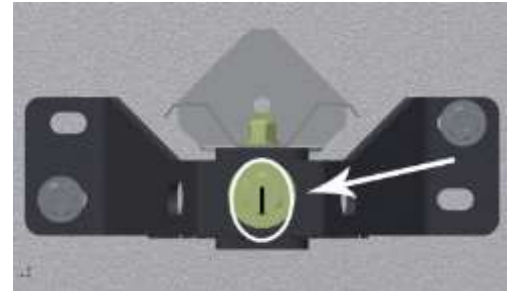


Figure 3: Place a line centered on top of bolt.

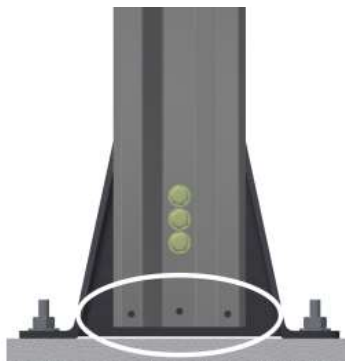


Figure 4: Lift until there is a 1/2" (+/- 1/8") gap.



Figure 5: Leave 1/4" (+/- 1/8") gap between C-channel and bracket.

Anchor the Bin

14. Drill two anchor bolt holes 2 1/4" in. deep in the pad diagonally opposite of each other. (Figure 6)



When anchoring 15K assemblies or greater you will use four (4) anchor bolts.

15. Hammer bolts into cement until they are firmly in place.
16. Tighten the nuts of the anchor bolts using a socket or hammer drill to anchor the bracket assembly. Torque to 55 ft.-lbs.



Figure 6: Drill anchor bolts 2 1/4" deep.



Repeat Steps 1 – 13 for all bin legs before continuing to the next step.

Wiring the Summing Box

In order to get a reading from these load cells, you need to tie them all together into a summing box. One Smart Summing Box per bin is required. Refer to Appendix A for more in depth wiring illustrations.

17. Mount the Smart Summing Box (SSB) on the crossbar under the bin near the front using self-tapping screws where it is easily accessible for maintenance.
18. Run the cable from each load cell over to the summing box.
19. Before plugging the cables in, remove the black plastic lock nut from each cable strain relief. Remove the red plug from each predrilled hole. Pass the cable through the box and then the nut. Be sure to have a drip loop outside the SSB.
20. Plug in the load cells starting in the upper left until all load cells are plugged in.
21. Pass the communication cable through the gray liquid tight strain relief on the right side of the enclosure.
22. Using an appropriate sized wire nut, connect the wires according to the chart in **Figure 7**.
23. Attach the GREEN/YELLOW ground wire to the bin via one of the screws used to attach the SSB.
24. Run the communication wire to the next SSB or to the BinTrac[®] Indicator.

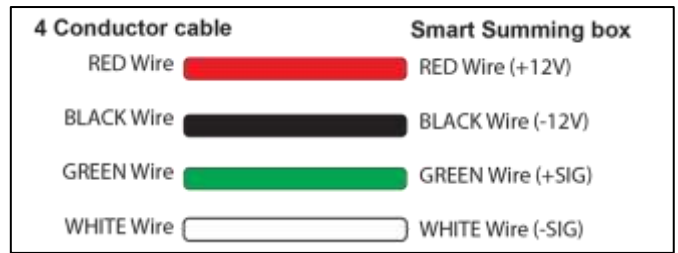
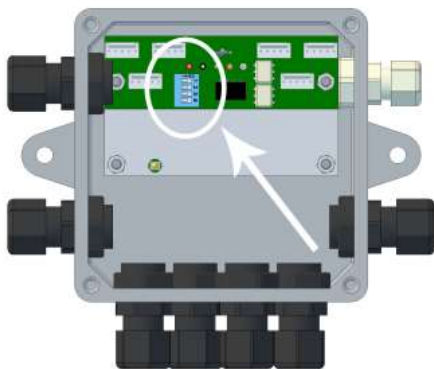


Figure 7: Connect wires following the above chart.



When wiring more than one SSB to a BinTrac[®] Indicator, start from the furthest Smart Summing Box and “daisy chain” the remaining SSB’s until you get to the BinTrac[®] Indicator.

25. Tighten every strain-relief (“dome nuts”) on the box. First tighten the nuts to attach the strain reliefs to the box. Then tighten the dome nut until the cable cannot be pulled out of the box.
26. Set the appropriate bin (A, B, C or D) using the dip switches inside the summing box. (Figure 8)



BIN	S1	S2	S3	S4	Dip Switch Diagram
A	OFF	OFF	OFF	OFF	
B	ON	OFF	OFF	OFF	
C	OFF	ON	OFF	OFF	
D	ON	ON	OFF	OFF	

Figure 8: Set appropriate bin using dipswitch.

Wiring/Installation of the BinTrac® Power Supply (PS17)

27. The BinTrac PS17 power supply is recommended for **INDOOR USE ONLY** and should be mounted in the office, hallway or control room. Mount the PS17 to a wall by inserting and securing two #12 x .75 self-tapping screws through the two mounting hole tabs provided. Make sure the unit is positioned upright so the two mounting tabs are on the sides and the two cable strain relief-grommets are on the bottom side of the unit.
28. The +12VDC output cable needs to be run in conduit or tied to the feed line, or other structure preventing entanglement by a person walking between the bin and building or from equipment being moved in the area.
29. Once the +12VDC cable is routed from the Power Supply to the BinTrac® Indicator and has been tied up out of the way, cut off any excess cable and wire accordingly.



The PS17 operates under standard 115 VAC input voltage. The selector switch (circled in figure 9) is preset from the factory for 115VAC operation. If 230VAC setting is required (international markets) set the RED internal selector switch to 230 position.

Be sure power is disconnected before servicing the PS17 or replacing the 0.5A fuse. Consult your State and Local electrical codes before installation or service.

The input power supply cord is meant to serve as a disconnect service, therefore the PS17 power supply unit must be mounted near the socket-outlet intended to provide power to the unit. The outlet must remain easily accessible.

The 12VDC output cable supplied is 50 ft long 18AWG. After routing of cable from the PS17 to the BinTrac® Indicator, cut off any excess cable and wire accordingly.

BLACK	-12VDC (GND)
WHITE	+12VDC



Figure 9: Red toggle switch changes from 115V to 230V.

Wiring the BinTrac® BT200 Indicator

30. Locate the terminal block in the BinTrac® Indicator labeled 'BINS'.
31. Insert the wires into the terminal block where RED is +12V, GREEN is +SIG, WHITE is -SIG and BLACK is -12V. (Figure 10)
32. Connect the wires from the BinTrac® power supply to the terminal block labeled 'PWR' where WHITE is +12V and BLACK is -12V.

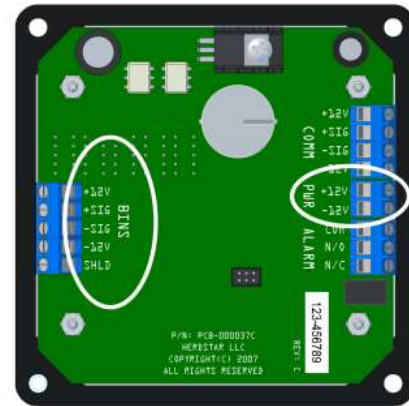


Figure 10: Insert wires in appropriate terminal block.

Wiring for the BinTrac® BT260 Indicator

1. Locate the terminal block in the BinTrac® BT260 Indicator labeled 'BINS'.
2. Insert the wires into the terminal block where RED is +12V OUT, GREEN is +COM IN, WHITE is -COM IN and BLACK is -12V OUT. (Figure 11A)
3. Connect the wires from the BinTrac® power supply to the terminal block labeled '12V IN +/-' where WHITE is +12V IN and BLACK is -12V IN. (Figure 11A)
4. The 12V OUT and COM OUT labeling can be used to connect radios, remote displays or other peripheral devices i.e. HouseLink Interfaces (Figure 11B)

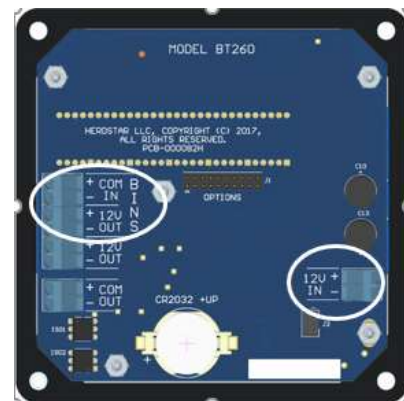


Figure 11A: Insert wires in terminal block labeled BINS and 12V IN from the power supply.

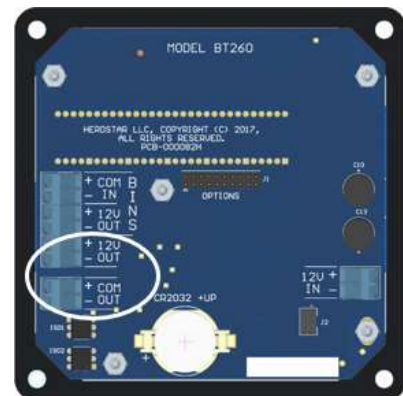


Figure 11B: Insert wires from peripheral devices into terminal block labeled 12VOUT and COM OUT

Initial Setup for the BinTrac® Indicator

Below is standard BinTrac BT200 Indicator (v 3.16) setup. For (v 3.17) setup, the changes are noted. For more advanced instructions, please see the BinTrac Operation Manual.

1. Hold BIN key for 10 seconds until SETUP appears. For v3.17, SETUP will only flash and then show the BIN menu. To access the SETUP menu simply press the UP arrow.
2. Press DOWN arrow until 'BIN' appears.
3. Press BIN key to go to 'A'. Press DOWN arrow to enable (solid light) or disable (flashing light) the bins. Use the same procedure to enable/disable bins B, C or D depending upon your configuration.
4. Once the bins are configured, use the DOWN arrow to go to "L.C. CAP". The amount is the load cell capacity multiplied by the # of bin legs. Press bin key to modify the first enabled bin. Use the UP or DOWN arrows to change the weight until set properly. Use the same procedure for the remaining active bins.

EXAMPLE: A 6 legged bin with 10k load cells equals 60,000.

5. Next, use the DOWN arrow to go to 'FULL'.
6. Press bin key to modify the first enabled bin. The 'FULL' number is the amount the bin will hold. Use the UP or DOWN arrows to change the weight until set properly. Use the same procedure for the remaining active bins.

EXAMPLE: a 9 ton bin will have a 'FULL' number of 18,000.

7. If the bin is empty, exit the setup menu and press and hold the DOWN arrow and the UP arrow until the bin reads '0'.



The settings above are in lbs. but can be changed to kg by simply entering the metric value.
EXAMPLE: 60,000 lbs. = 27,216 kg.

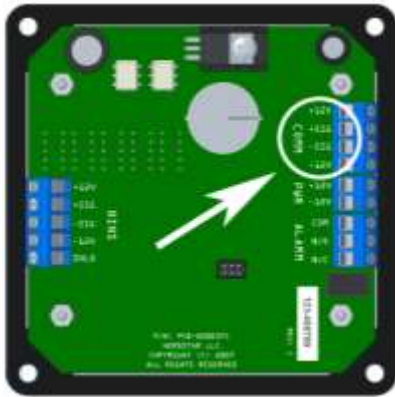
Optional Alert Relay interface for the BinTrac® Indicator

Shown below is an optional Alert relay interface for triggering an indicator light or audible alert when feed levels get above or below the level you set. The output relay has both normally open and normally closed contacts low voltage loads. For using this feature see more advanced instructions in the BinTrac Operation Manual.



Wiring a Remote Radio into BinTrac Indicator

1. A Remote Radio is wired to the BinTrac (BT200 / BT260) Indicator when a local wireless network is used. The Radio is wired into the BinTrac Indicator port labeled COMM. (Figure 12)



BinTrac BT200 Indicator (COMM)	Wire Color
+12V	Green
+SIG	White
-SIG	Red
-12V	Black

Figure 12: BT200 Remote Radio wiring



BinTrac BT260 Indicator	Wire Color
+12V OUT	Green
+COM OUT	White
-COM OUT	Red
-12VOUT	Black

Figure 13: BT260 Remote Radio wiring

Wiring a Remote Radio continued

2. After the Base Radio is installed and powered, test the communications connection and signal strength by pressing the TEST button on each of the Remote Radios. Two lights should be on solid for an adequate communications connection.



Signal Strength Test

- Press Test Button
- 1 LED = POOR
- 2 LED = MARGINAL
- 3 LED = GOOD
- 4 LED = EXCELLENT

Setup and Wiring a Communications Hub

The Communications Hub provides a central point to connect the site BinTrac System using Internet, Cellular or Dialup. Multiple devices can be connected to the Communications Hub, either directly or via a Base Radio.

1. A BinTrac Indicator can be directly wired to the Communications Hub via the BinTrac COMM port to the Communications Hub CONSOLE/ROUTER port. When a Wireless network is used, connect a Base Radio to the BASE RADIO port on the Communications Hub using cable supplied by Herdstar. These molded end cables are available in lengths of 4', 12', 25', 50' and 100'.
2. Connect the local site communications as follows. Connect to the connect to the SERIAL PORT if a Cellular Service or Internet service is used.



Communications Service	Connected Device	Communication Hub Port
Internet	Lantronix® Serial to Ethernet	SERIAL
Cellular	Wireless modem	SERIAL

Figure 14: Communication Hub Port

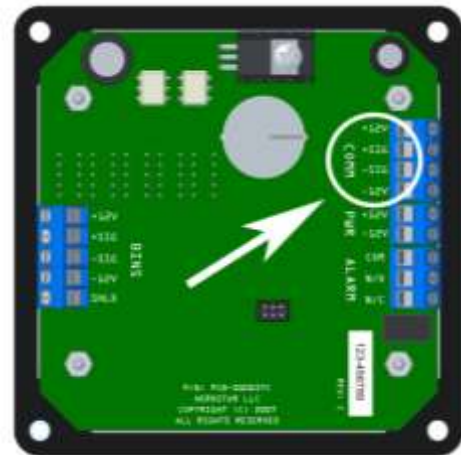
Setup and Wiring a BinTrac Indicator as a Remote Indicator

A Remote Display is a BinTrac Indicator (BT200 / BT260) programmed as a Remote Display which displays the same weight data as the local BinTrac Indicator. The Remote Display receives all its settings with the exception of enabled Bins from the local BinTrac Indicator. Calibration and Zero must be done on the local indicator. Follow the steps below to setup a Remote Display.

1. Connect the wiring between the Remote Display and the BinTrac Indicator. Power can be supplied to the Remote Display or from the BinTrac Indicator.

BinTrac Indicator BT200	BinTrac Indicator (BT200) programmed as Remote Display
BINS +12V	COMM +12V
BINS +SIG	COMM +SIG
BINS -SIG	COMM -SIG
BINS -12V	COMM -12V

Figure 15: BT200 Connection to COMM port on BT200 Remote indicator

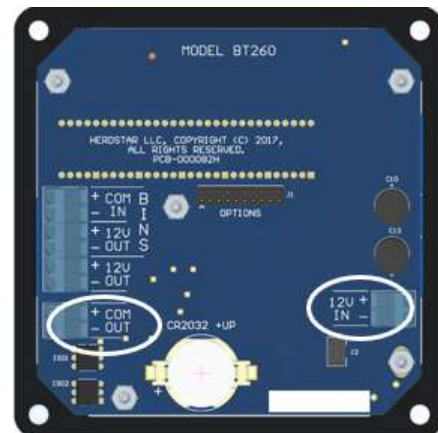


BinTrac Indicator BT260	BinTrac Indicator (BT200) programmed as Remote Display
BINS +12V OUT	COMM +12V
BINS +COM IN	COMM +SIG
BINS -COM IN	COMM -SIG
BINS -12V OUT	COMM -12V

Figure 16: BT260 Connection to COMM port on BT200 remote indicator

BinTrac Indicator BT200	BinTrac Indicator (BT260) programmed as Remote Display
BINS +12V	12V IN+
BINS +SIG	+COM OUT
BINS -SIG	-COM OUT
BINS -12V	12V IN-

Figure 17: BT200 Connection to 12V IN and COM OUT port on BT260 remote indicator



BinTrac Indicator BT260	BinTrac Indicator (BT260) programmed as Remote Display
BINS +12V OUT	12V IN+
BINS +COM IN	+COM OUT
BINS -COM IN	-COM OUT
BINS -12V OUT	12V IN-

Figure 18: BT260 Connection to 12V IN and COM OUT port on BT260 Remote indicator

Setup and Wiring a BinTrac Remote Indicator *CONTINUED*

2. Configure BinTrac Indicator (BT200/BT260) for communications interface with a Remote display. Enable Peripheral Device Communications (BIN D LED) in SETUP Configuration menu.

Setup Configuration:




SETUP: Configure Bin LEDS; Flashing (Disabled) or Solid On (Enabled)

-  BIN A - Enable Remote Display
-  BIN B - Enable PC Serial Communications and Command Set
-  BIN C - Enable Weight Broadcast. Transmits once every 5 seconds.
-  **BIN D - Enable Peripheral Device Communications**

3. Configure second BinTrac Indicator (BT200/BT260) as a Remote Display. Enable Remote Display (BIN A LED) in the SETUP Configuration menu.

Setup Configuration:

SETUP: Configure Bin LEDS; Flashing (Disabled) or Solid On (Enabled)

-  **BIN A - Enable Remote Display**
-  BIN B - Enable PC Serial Communications and Command Set
-  BIN C - Enable Weight Broadcast. Transmits once every 5 seconds.
-  BIN D - Enable Peripheral Device Communications

Herdstar Bintrac® Product Warranty

Herdstar LLC. (“**Herdstar**”) warrants to original purchaser (“**Buyer**”) that goods manufactured solely by Herdstar LLC. (“**Products**”) will be free from defects in material or workmanship under normal and intended use and service for a period of one year from delivery date of the Products. Used and/or refurbished parts sold shall carry a 90 day warranty on material and workmanship. All warranty claims must be submitted within ten (10) days of discovery of defects within the warranty period, or shall be deemed waived. Furthermore, Herdstar LLC warrants the load cell (“Load cell” is defined as the s-shaped component and any cabling and connectors) against lightning damage for 12 months or the term of any extended warranty.

In the event of a defect in any Products constituting a breach of the warranty provided herein, Herdstar LLC. will at its option either (i) repair or replace such Product free of charge, or (ii) in lieu of repair or replacement, refund to Buyer the original purchase price less the reasonable value of Buyer’s use of the Products. Herdstar LLC. shall furnish to Buyer instructions for the disposition of the defective goods. Herdstar LLC shall have the option of requiring the return of the defective goods, transportation prepaid, and proof that the goods were not used, installed or altered or subject to misuse or abuse to establish the claim. No goods shall be returned to Herdstar LLC. without its prior consent. The acceptance of any goods returned to Herdstar LLC shall not be deemed an admission that the goods are defective or in breach of any warranty, and if Herdstar LLC determines that the goods are not defective they may be returned to Buyer at Buyer’s expense. This warranty sets forth Buyer’s sole and exclusive remedies for any defect in the goods. The rights and obligation under this warranty may not be assigned or delegated to a third party by Buyer without the prior written permission of Herdstar LLC. Neither Buyer nor any other person may modify or expand the warranty provided herein, waive any of the limitations, or make any different or additional warranties with respect to the Products. Any statements to the contrary are hereby rendered null and void unless expressly agreed to in writing by an authorized officer of Herdstar LLC.

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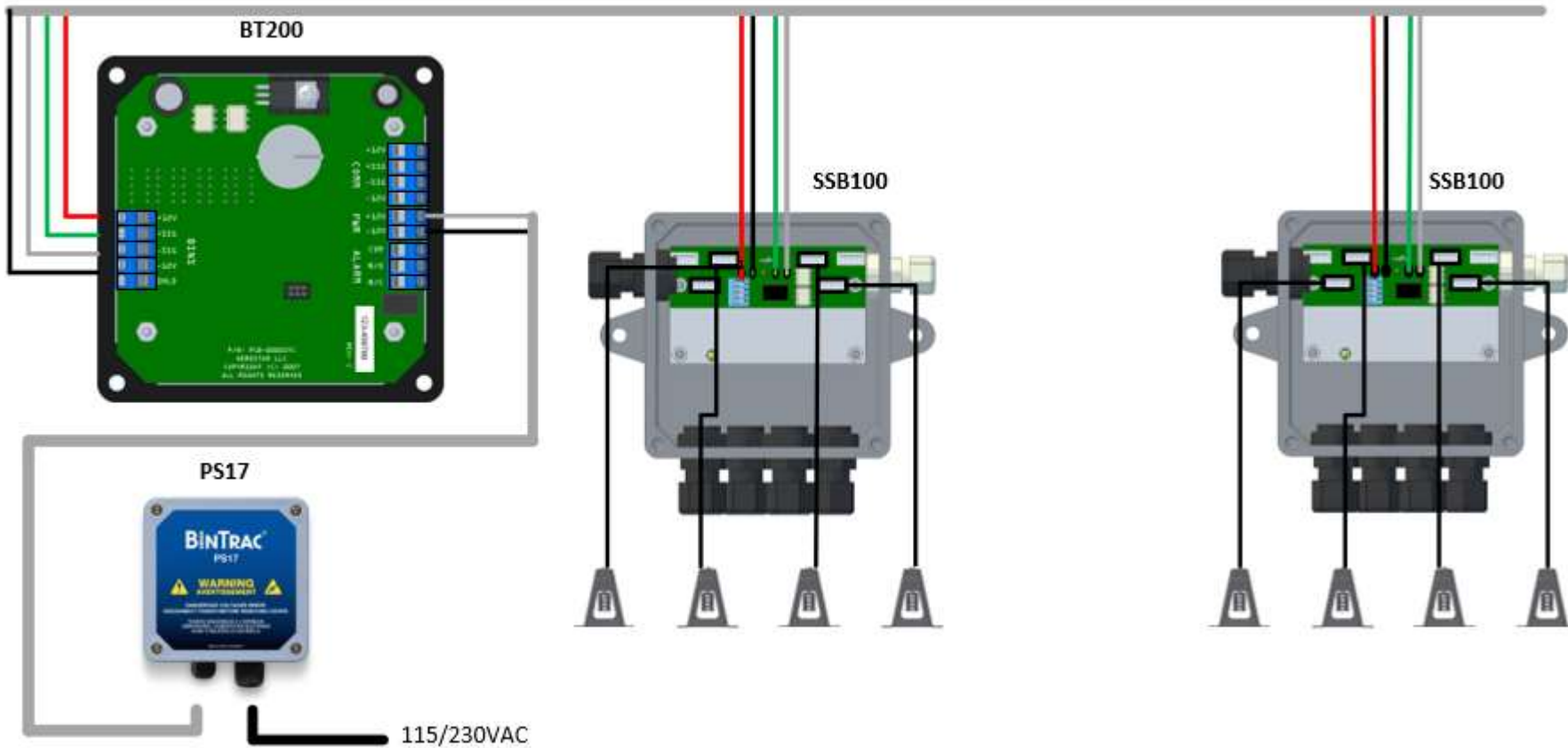
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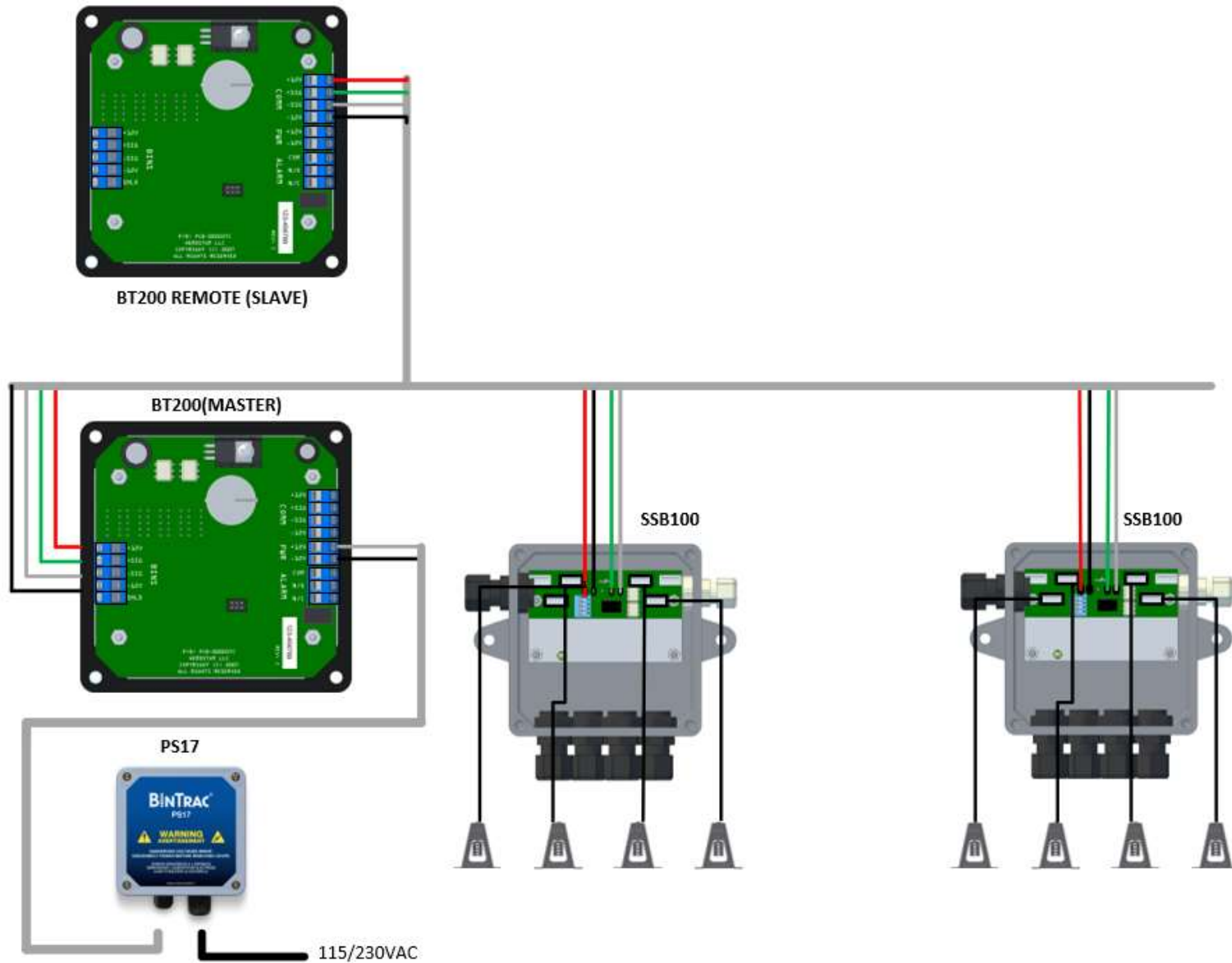
BinTrac[®] Installation Drawings

- ✓ *BinTrac Basic Installation*
- ✓ *BinTrac with Remote Display*
- ✓ *BinTrac Commhub Hardwired*
- ✓ *BinTrac Commhub with Radios*

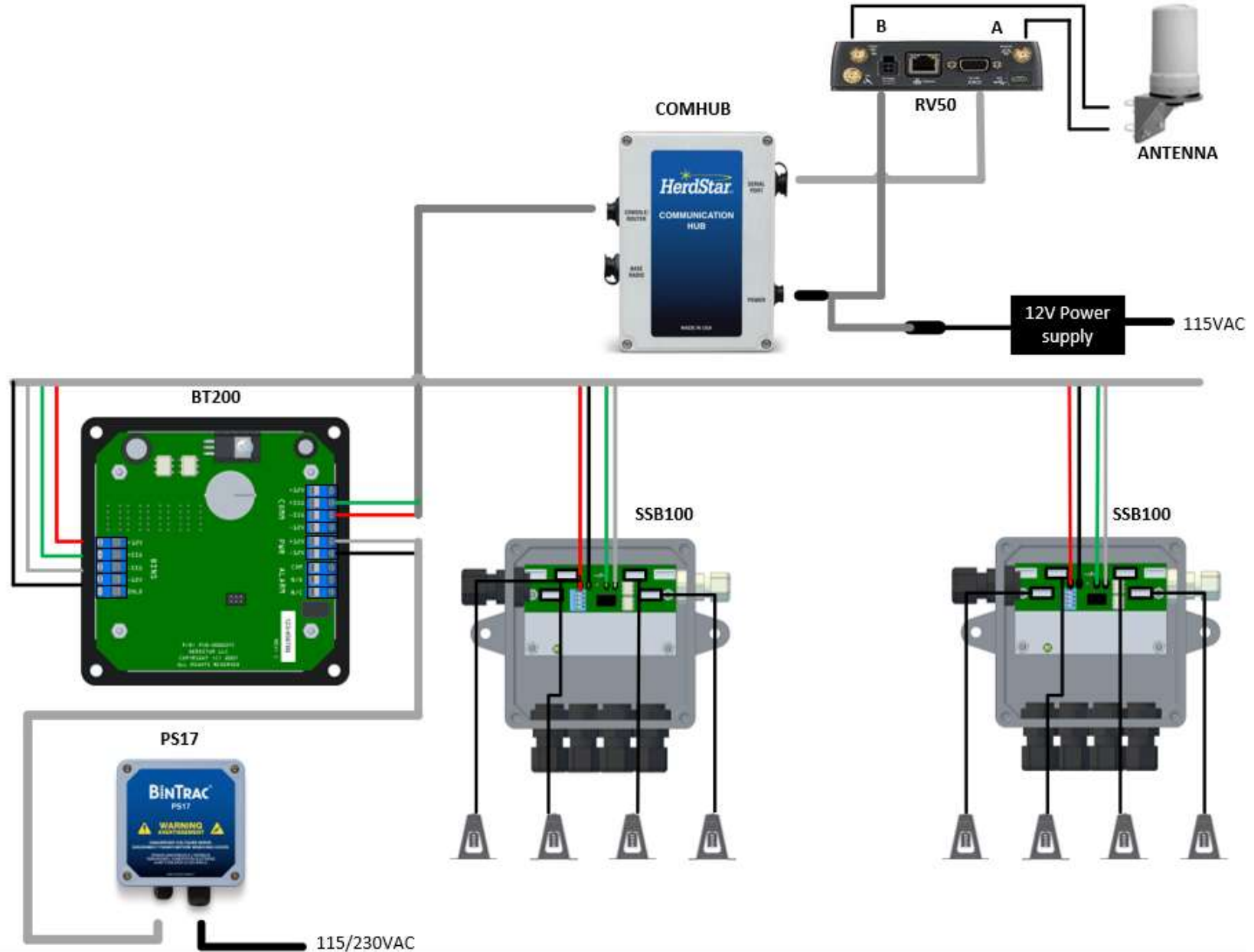
BinTrac[®] Basic Installation



BinTrac[®] Installation with Remote Display



BinTrac[®] with Commhub Hardwired



BinTrac® Commhub with Radios

