

BINTRAC®

Bin Scale System Troubleshooting Guide



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Overview

This guide covers the trouble shooting of the BinTrac system. Anyone responsible for programming and operating the BinTrac system should also read the BinTrac Installation and BinTrac 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

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

Load Cell Bracket

Four or more load cell brackets allow the BinTrac Monitor to accurately measure the feed level in your bins. The summing box averages the signals from all brackets to minimize errors that could result from voids (holes) in the feed.

Smart Summing Box

The Smart Summing Box sums the readings of the loadcells connected to it and communicates this summed value to the BinTrac Indicator. The Smart Summing Box has built in surge and lightning protection for the loadcells at the expense of itself.

BinTrac Power Supply

This provides the power for the BinTrac system. The power supply converts the line voltage to 12VDC.

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.

Base Radio

A Base Radio connects to a Communications Hub. It provides wireless communications for a local HerdStar Area Network between the Communications Hub and Remote Radios.

Communications Hub

A Communications Hub connects the on-site communications service (Dialup, DSL, 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.

RS-232 Interface

A RS-232 interface converts HerdStar's proprietary communications interface to a commonly used RS-232. This provides a means for a PC or other serial type device to interface with the BinTrac System.

Identifying Problem

Clearly identify the device causing a problem before replacement of parts.

- Is BinTrac Indicator blank?
- Is the BinTrac Indicator displaying an inaccurate weight reading?
- Is the BinTrac Indicator displaying an Error message? See Error Messages
- BinTrac Indicator not reporting to BinTrac.com
- Site not reporting to BinTrac.com

BinTrac Indicator Blank

BinTrac Indicator weight display and tank level indicators are all off. This can be caused by loss of power to the unit, disconnected or broken wires, or damaged equipment.

- **Reset Problem**
 - A brown out condition can sometimes cause a problem with reset and startup of an Indicator. Disconnect power to the devices with 20 seconds delay before reapplying the power.
- **Loss of Power**
 - Inspect the electrical outlet for the BinTrac Power Supply. Ensure it is making a good electrical connection.
 - Verify the breaker or GFI for the electrical outlet is not tripped.
- **Measure Input Voltage from BinTrac Power Supply**
 - Disconnect +12 and -12 PWR wires within BinTrac Indicator and measure input power. Input power should read between 11.5 to 12.5 VDC. If no voltage is detected, BinTrac Power Supply may be defective.
- **Inspect all cabling between power supply, indicator, and smart summing boxes has not been damaged.**
- **Disconnect components until defective component is located that is shorting power.**
 - Disconnect Smart Summing Boxes and cycle power
 - A damaged BinTrac Indicator Disconnect +12 and -12 PWR connects in BinTrac Indicator and measure Smart Summing Boxes Verify the electrical outlet the BinTrac Power Supply is plugged into is in good condition.

Inaccurate Weight Readings

Inaccurate weight readings, large fluctuating readings, weight not changing, or “Error” message, can be caused by obstructions and binding, incorrect user programmed settings, a problem within the Smart Summing Box, or a problem with a loadcell.

Binding and Obstructions

Slow weight shifts or not returning to zero is frequently symptoms of a binding or obstruction problem.

- *Check for binding of brackets and/or bin legs. Ensure there is approximately 1/4” clearance between the leg and the bracket.*



- *Check for loose bolts. Inspect bolts connecting bracket to bin leg and C-Channel to loadcell.*
- *Check for material under the bin leg. Small rocks between the bin leg and the concrete can cause inaccurate readings.*

Incorrect user programmed settings

Scale appears to be functioning properly although weight readings not correct can be the result of incorrect user programmed settings.

- *Confirm Rated Output – should match the average Output recorded on each loadcell.*
- *Confirm Capacity – equals the total capacity of all loadcell summed together.*

Smart Summing Box

Small fluctuations in weight can be caused by a problem with the Smart Summing Box.

- *Inspect for moisture and or foreign material.*
- *Inspect for loose wires and connections.*

Loadcell

Wild fluctuating weights, or a weight that does not change, or “Error” are common indications of a loadcell problem.

- *Inspect loadcell connections within Smart Summing Box. A wire that is not seated properly within the loadcell connector can cause misreadings.*
- *Check for cut or pinched loadcell wires.*
- *See “**Loadcell Troubleshooting Procedures**”*

BinTrac Error Messages

no.bin

This error message indicates that the BinTrac Indicator is not communicating with the Smart Summing Box of the indicated bin.

- *Disable bins that do not have an associated Smart Summing Box and bin.*
- *Verify wiring between Smart Summing Box and BinTrac Indicator is correct and has not been damaged.*
- *Verify Smart Summing Box has been programmed as the correct bin.*
 - *Verify Smart Summing Box dip switch settings are set for their selected bin (A,B,C,or D).*
 - *Verify that two Smart Summing Boxes are not programmed as the same bin as this will cause no.bin error for both.*
- *Inspect Smart Summing Box for flashing light.*
 - *A steady flashing light indicates the Smart Summing Box has power and is operating correctly.*
 - *An irregular flashing light indicates the Smart Summing Box has power but is unable to communicate with the BinTrac Indicator.*
 - *Confirm all wires are tight and secure.*
 - *Confirm dipswitches are set correctly.*
 - *No Light indicates the Smart Summing Box does not have adequate power or has been damaged.*
 - *Confirm all wires are tight and secure.*
 - *Verify 12VDC is available to the Smart Summing Box.*
 - *Locate a shorted loadcell that could be shorting power within Smart Summing Box.*
- *If more than a single bin is displaying no.bin, isolate the problem Smart Summing Box by removing all connects except to a single Smart Summing Box.*

Error

This error message indicates the weight reading exceeds the five digit display. This can be caused by invalid programmed settings, a loadcell not correctly plugged into its connector in the summing box, a defective loadcell causing a large weight reading, or a defective summing box.

- *Confirm all settings are correct.*
- *Open summing box and inspect loadcell connections.*
 - *Verify connector is properly aligned with its associated header.*
 - *Verify wires are properly seated in connector.*
 - *Check Loadcells*
 - *Check Summing Box*

o-LoAd

This error message indicates the weight reading of the bin exceeds 125% of its rated capacity.

- *Check for binding of brackets*
- *Bin has been overloaded, remove material from bin and inspect for yielding.*

no.con

This error message indicates that this device has been programmed as a Remote Display device and is unable to communicate with the BinTrac Indicator.

- *Verify that this indicator is intended to be a Remote Display as configured in Setup Configuration.*
- *Verify wiring is correct between BinTrac Indicator and BinTrac Remote Display.*

no.PUL

This error message indicates that the BinTrac Indicator has been programmed for a PULSE output and is unable to communicate with the HouseLink WP.

- *If this system does not have a HouseLink WP, set the programmable PULSE parameter within the "Intr" configuration settings to "0" for disabling this feature.*
- *Verify HouseLink WP configuration dipswitches are properly set.*
- *Inspect wiring between BinTrac Indicator and HouseLink WP and other Smart Summing Boxes are correct.*

BinTrac Indicator Not Communicating with BinTrac.com

- *Verify BinTrac Indicator is powered and functioning.*
- *Verify Remote Radio is powered and In-Range annunciated.*

Site Note Communicating with BinTrac.com

- *Check CommHub Power*
- *Check Base Radio*
- *Check Site Communications*
 - *Check Phone Line*
 - *Check Cellular Unit*
 - *Check Internet*

Loadcell Troubleshooting Procedures

The procedures below outline the steps for identifying and locating a defective loadcell. Procedure 1 is most commonly used and quickest, although Procedure 2

1. Check for cut loadcell cables.
2. Check connections in summing box.
3. Check for debris under bin legs.
4. Check for binding between bracket and bin legs.

Quick Loadcell Inspection Procedure

1. Record/Note Current Weight Reading on BinTrac Indicator.
2. Disconnect a single loadcell from Smart Summing Box.
3. Observe for change in weight display. If weight change is significant and/or more stable, note this loadcell as possible defect.
4. Reconnect loadcell if symptoms did not change.
5. Repeat for remaining loadcells.
6. Replace loadcell that when disconnected provides the most accurate reading or proceed to Comprehensive Loadcell Inspection Procedure.

Comprehensive Loadcell Inspection Procedure

1. Record/Note Current Weight Reading on BinTrac Indicator
2. Disconnect all but number one loadcell within summing box.
3. Record weight reading.
4. Disconnect loadcell and connect next loadcell and repeat for all remaining loadcells.
5. Review weight readings.
6. Variations in readings can be caused by offset loading within bin, improper lifting screw tension.
 - a. Inspect loading within bin matches loadcell reading variations.
 - b. Examine bracket assembly and lifting screw tension.
 - i. If reading is low and others beside it are high, tighten screw slightly.
 - ii. If reading is high and others beside it are low, loosen screw slightly.
 - iii. If reading is out of range, replace loadcell.
 - iv. Repeat individual readings inspection and adjustments return to Step 2.
7. Reconnect all loadcells except for known defective one.
8. Repeat procedure if weight reading is not accurate.

Loadcell Replacement Procedure

Preparation:

1. Identify defective loadcell
2. Trace defective loadcell cable back to summing box and mark strainrelief.
3. Open Summing Box and unplug defective loadcell.
4. Verify weight reading is corrected with loadcell unplugged.
5. Temporarily plug replacement loadcell into recently removed loadcell connector.
6. Weight reading may be shifted depending on the weight within the bin, but still should be a displayable reading.
7. Unplug replacement loadcell and proceed to loadcell removal.

Loadcell Removal:

1. Place shims under defective loadcell bin leg.
2. Free loadcell cable from bracket and bin leg cutting cable ties.
3. Disconnect loadcell from within Summing Box if not done within Preparation.
4. Remove inside nut of cable liquid-tight strain relief.
5. Remove loadcell cable including liquid-tight strain relief from summing box.
6. Mark Position of A-Frame Lifting Bolt with marker.
7. Count and record the number of turns needed to remove lifting bolt from top of loadcell.
8. Remove bolts connecting C-Channel to bin leg.
9. Remove Loadcell and C-Channel Assembly from A-Frame bracket.
10. Remove bolt connecting C-Channel to Loadcell. Loctite has been used on this bolt which may require extra force in its removal.

Replacement:

1. Thread Loadcell cable through the left (viewing from the front) A-Frame slotted bracket opening and route with other cables up to Summing Box.
2. Remove mounting nut from liquid-tight strain relief and separate it from the cable, removing it over the loadcell connector plug.
3. Place loadcell connector plug through enclosure opening and place liquid-tight mounting nut back over plug and tighten.
4. Plug Loadcell into Summing Box and verify readings are not out of range as was done in Preparation.
5. Partially thread C-Channel bolt through C-Channel into loadcell .
6. Apply Loctite to C-Channel bolt.
7. Continue threading C-Channel bolt until end of bolt is flush with inside opening of loadcell (just fully treaded).
8. Place Loadcell C-Channel Assembly into A-Frame bracket.
9. Bolt legs to C-Channel making sure nuts have been securely tightened.
10. Thread Lifting Bolt into top of Loadcell tightening the same number of turns as when removed. As loadcell begins carrying weight, loadcell may want to turn.
11. A block may be required to prevent loadcell from turning and pinching cable against bracket.
12. Verify weight is correct.
13. Remove shims from under bin leg.
14. Make a drip loop on the outside of the A-Frame bracket slotted opening with the loadcell cable.
15. Using cable ties, tie remaining loadcell cable to bin leg and other cables.