

**BIN**   
**SENSE**®

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## User Guide

INTRA  GRAIN  
technologies inc.

# BIN-SENSE® LIVE User Guide

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**C**ongratulations on purchasing your BIN-SENSE® system! IntraGrain Technologies Inc.'s mission is to provide quality, cost-effective, innovative solutions for monitoring grain in storage on all sizes of farms and applicable commercial facilities.

BIN-SENSE® was created with the customer in mind and has been designed for easy self-installation. The system consists of sensor cables to be mounted directly inside each bin, as well as Master and Remote unit(s) to collect and transmit information to our website for secure viewing.

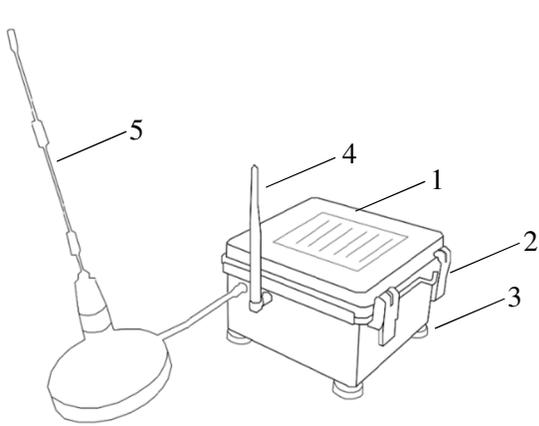
We are proud to offer a system that requires no external power source, allowing it to be used in all remote locations. Information is transmitted wirelessly, enabling you to view temperatures and moisture levels (moisture cables required) in your storage facilities anytime, anywhere via the internet. The collected data updates approximately once per hour and you will be notified via text message and/or email when change exceeds the setting parameters.



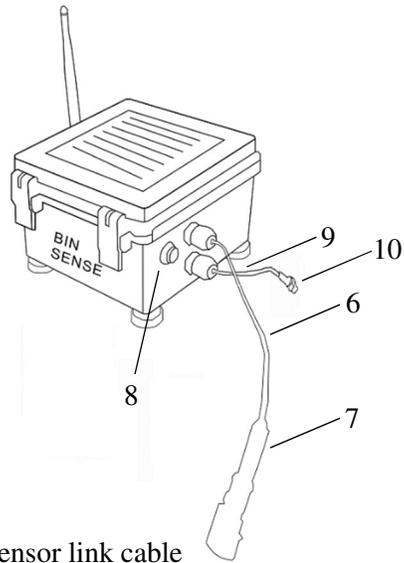
**WARNING:** To avoid injury, read all of the installation instructions carefully before installing or using your BIN-SENSE® system.

# 1.0 BIN-SENSE® LIVE at a Glance

## 1.1 Master Unit Overview

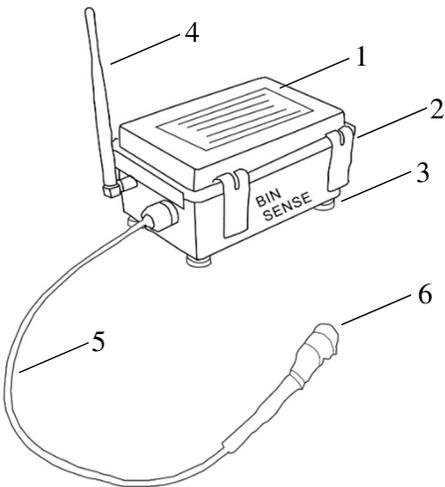


- 1. Solar panel
- 2. Lid latch
- 3. Magnetic mounting feet
- 4. Antenna
- 5. Magnetic mount antenna



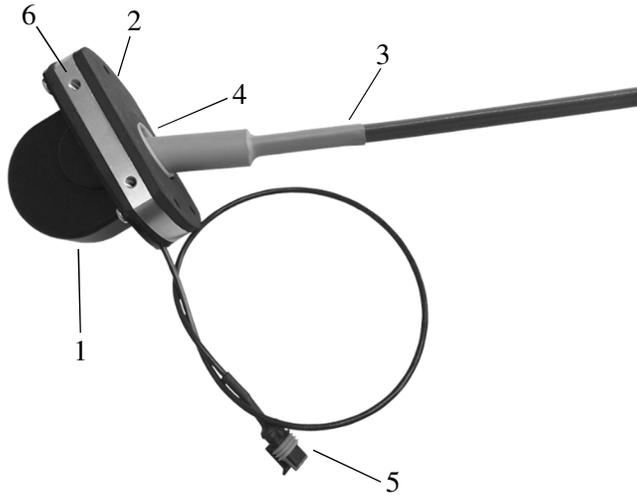
- 6. Sensor link cable
- 7. Sensor link cable connector
- 8. Scan button
- 9. Auxiliary battery link cable (optional)
- 10. Auxiliary battery link cable connector (optional)

## 1.2 Remote Unit Overview



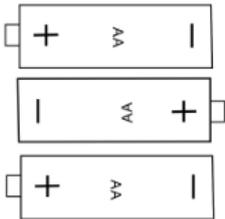
- 1. Solar panel
- 2. Lid latch
- 3. Magnetic mounting feet
- 4. Antenna
- 5. Sensor link cable
- 6. Sensor link cable connector

### 1.3 Cable Overview



1. Cap
2. Cable mount
3. Sensor cable
4. Swivel
5. Connector cable
6. Pre-drilled holes for roof bracket

### 1.4 Accessories



AA Lithium batteries



Serial number label

**MAP:** A personalized map of your farm yard layout which displays the locations of where to install each BIN-SENSE® system component.

Temperature Cable Kit	QTY
Screw Teck 1/4" x 1 1/2"; Base head to roof	4
Cable clip	1
Screw #8 x 3/4" Self tapping for cable clip	1
Screw 1/4" x 3/4" Self tapping steel floor; gal. hex head	4
Screw tapcon 1/4" x 1 3/4"	2
Floor anchor	1
Round steel ring 2" x 1/4"	1
Nylon twine	1

## 2.0 Installation Guide



**WARNING:** Prior to installation of hardware, ensure that your individual login account is set up at [www.intragrain.com](http://www.intragrain.com) (username, password, mobile phone number and email address).

### 2.1 Preparations Before Installation

Your BIN-SENSE<sup>®</sup> system includes at least one Master unit and a predetermined number of Remote units (depending on bin size and amount of bins to be monitored). The Master unit(s) and Remote units connect to the temperature sensing cable(s) required in each bin.

Before you begin installation:

- Ensure that the accessories listed in Section 1.4 are included with your system and that you have the tools required (listed below)
- Refer to your **MAP** to determine which bin to install each Master unit, Remote unit and cable

Tools required:

- Drill (preferably cordless)
- #2 Robertson drill bit
- 1 1/2" hole saw
- Philips screwdriver
- Side cutter (for cutting cable ties)
- Pliers (for installing cotter pins in clevis pins when applicable)
- (2) x 9/16" wrenches (for use with roof brackets)
- Hammer drill (for cement floors only)
- 3/16" SDS bit (for cement floors only)
- Weatherproof silicone (optional for improved seal as gaskets are provided)
- Tool belt for carrying tools
- Safety harness and lanyard for tying off



**WARNING:** If screwing into steel or metal please use the self-tapping tek screws provided. If screwing into wood please use the pan head wood screws provided. If screwing into cement please use the cement anchors and pan head wood screws provided.

## 2.2 System Initialization

Use the system initialization steps to establish the connection between Master unit and Remote unit(s) before you install them up to your bin.

1. Gather the Master unit and Remote unit(s) together in a dry, stable location.

**NOTICE:** To maximize the battery lifespan, the **LESS** amount of time in between step b) to step d), the **BETTER**.

2. Open the lids on each Remote unit. Install the AA Lithium batteries (included) in the units, one by one, being cautious of polarity. Fasten the Velcro® battery strap over batteries after installing them (see *Figure 1*). You will see the LED flash in **RED** every second after the batteries are installed.

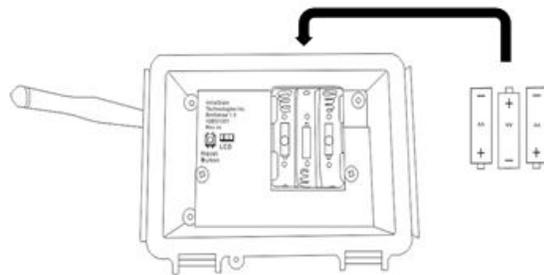


Figure 1

3. Hook up the Master unit battery by connecting the red wire to the red post on the battery inside the unit (see *Figure 2*). You will see **the LED flash rapidly in GREEN** after the battery is connected. **IF USING AN AUXILIARY BATTERY PACK PLEASE REFER TO ENCLOSED INSTRUCTIONS.**

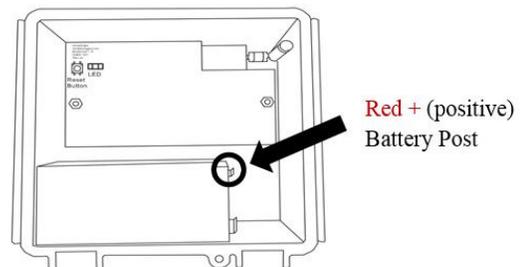


Figure 2

4. Press and release the scan button located on right side of the Master unit. The LED in Master unit will turn off. Next, press and hold scan button for 5 seconds and release (see *Figure 3*). **Green LED** will be solid for a few seconds then turn off.
5. In the next 30 minutes, the LED in every Remote unit will turn off one by one which means they are connected with the Master unit. And within 1 hour, you will receive a text message saying how many Remote units are connected with the Master unit. **The total count of Remote units found will not include the Master unit.**

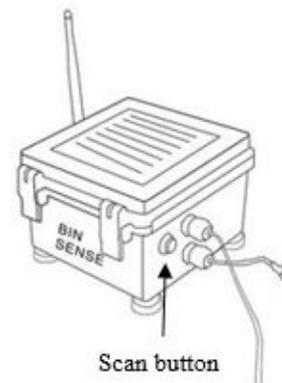


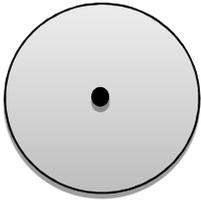
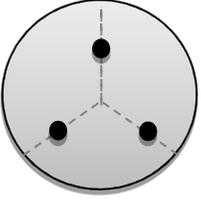
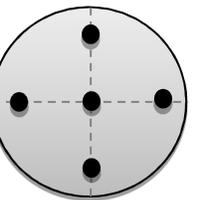
Figure 3

Good work, you have now initialized your BIN-SENSE® system!

- Next, according to your **MAP**, arrange all units and cables beside the bins you are going to install them in. Don't forget your tools!

**IMPORTANT:** It is mandatory that the correct unit and cable(s) are installed on the correct bin. Please refer to your **MAP** and the labels on the units to ensure proper placement. We recommend installing the cable(s) first and then the Master/Remote unit(s) one bin at a time.

### 2.3 Cable Arrangement

Bin Diameter (Feet)	< 24 feet	24 – 35 feet	36 – 41 feet	42 – 47 feet + <sup>1</sup>
Cable position arrangement				
Number of cables recommended	1	3	4	5
Recommended cable support		2 Rib Roof Bracket	4 Rib Roof Bracket	4 Rib Roof Bracket



**CAUTION:** When climbing up a bin, be sure to use approved safety procedures and materials such as ladders and a safety harness. When working above 1.2 metres wear a safety harness or personal protective equipment. An approved tool belt must be worn to keep both hands free when climbing up and down a ladder.



**NOTICE:** For your convenience, we put a separate serial number label in each unit. Peel off the backing and put this in a convenient visual spot on the bin where you install this Master or Remote unit. Make sure the label **matches** the unit where you put it up to the bin. This will help to recognize the location of your unit.

<sup>1</sup> For bins with diameter bigger than 48 feet, please contact us for assistance.

*Master Unit:* Use a backpack to carry the Master unit with you. Use the procedure in Section 2.6 to finish installing the Master unit.

*Remote Unit:* Use a backpack to carry the Remote unit with you. Use the procedure in Section 2.6 to finish installing the Remote unit.

*Sensing Cable:* The cable comes out of the package in a loop. This loop is intended to be your shoulder strap. Leave the cable tie on the mating cable and loop the cable on your arm and over your shoulder. Only cut the cable tie after you have mounted the Remote unit to the bin. Once you have reached the top, rest the cable against the ladder so it does not slide off the bin.

#### 2.4 Installing a Single Cable



**CAUTION:** Extreme care and caution must be used when climbing up a bin. Be sure to use approved safety procedures and materials such as ladders and a safety harness. When working above 1.2 metres, wear a safety harness or personal protective equipment. An approved tool belt must be worn to keep both hands free when climbing up and down a ladder.

Accessories needed for installing sensing cables are:

✓ 4 self-tapping screws

✓ Floor anchor kit

✓ Silicone/sealant



Figure 4

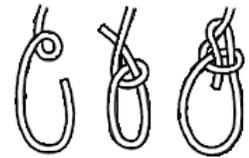


Figure 5

1. Prepare a location for the Sensing Cable that will not be directly in the grain stream of an auger or conveyor.

2. Position the Cable Mounting Cap between two roof ribs, so the two top corners of the cap just touches the ribs, marking a position of the cap to act as a guide for where to drill the cable hole.
3. Drill a vertical 1.5" (37.5 mm) hole within the center of the marked spot.
4. Feed the Sensing Cable through the hole and into the bin. Ensure that the white guide plastic insert is placed inside the hole in order to center the cable in the hole. To avoid kinking, do not over bend the cable.
5. Position the Cable Head so that it lays flat on the top of the bin. The direction of the sensor connector cable extending out of the cap should be on the low side (downward) and the swivel should be positioned on a horizontal plane directly in the center of the hole.
6. Insert the 4 self-tapping screws into the allotted pre-drilled holes. (NOTE: the swivel built into the mounting cap allows the Sensing Cable to rest vertically plumb, naturally).
7. Connect the female end of the Link Cable to the male end of the Connector Cable of the Sensing Cable and run the Link Cable down the bin from the desired Remote/Master unit location. Secure the Link Cable using the clips and screws provided (screwing clips on top of the bin roof ribs is recommended). Ensure a bit of slack is provided for around the roof edge. For use with BIN-SENSE® DIRECT or other handheld monitors use the Link Cable as a Drop Cable to extend to the ground.
8. To install anchor in the bottom of the bin, go inside and using the screws provided, secure the ring and anchor to the floor (or hopper) directly below where the cable enters the bin. For concrete floors, use a 3/16" SDS bit to predrill the holes for the floor anchor, install cement anchors provided and screw down the floor anchor. For wood floors use the 2" long wood screws and 3/4" tek screws for steel.

9. Using the rope and snap link provided, tie one end of the rope to the eyelet on the cable first, and then the other end to the snap link (see *Figure 6*). Ensure that the length is appropriate to connect the floor anchor without being too tight. The cable should only be **snug**.



*Figure 6*

10. Multiple cable bins can connect to one central fastening point. If you choose to use this method you can mount a floor anchor in the middle of the bin and leave enough slack in all the ropes that when the grain fills the bin it will naturally push the cables out to their desired locations.

## 2.5 Installing Multiple Cables (with BRK1 or BRK2)



**CAUTION:** Extreme care and caution must be used when climbing up a bin. Be sure to use approved safety procedures and materials such as ladders and a safety harness. When working above 1.2 metres, wear a safety harness or personal protective equipment. An approved tool belt must be worn to keep both hands free when climbing up and down a ladder.

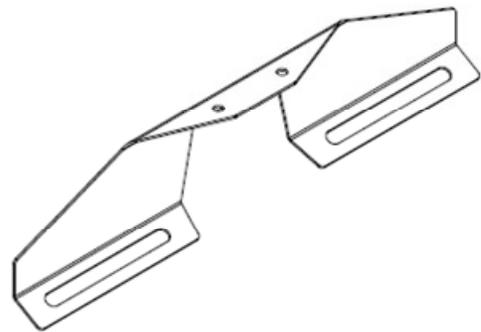
The 2 Rib Roof Bracket (referred to as BRK1) should be used to support Sensing Cable installations where the Sensing Cable is less than 35 feet in length. Please check with the bin manufacturer for approved installation guidelines and procedures. For Sensing Cables 35 feet and longer, it is recommended to use the 4 Rib Roof Bracket. Refer to Section 1.5 for 4 Rib Roof Bracket (BKR2) installation instructions.

### 2.5.1 2 Rib Roof Bracket (BRK1) Installation

#### *BRK1 Roof Bracket Kit Accessories*

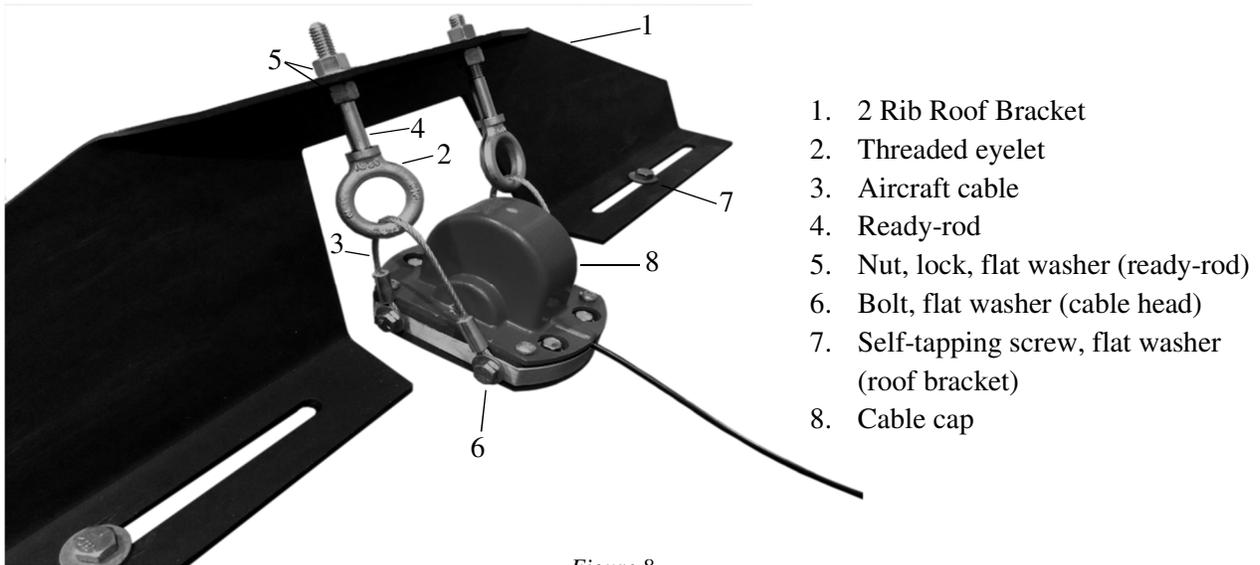
1	2 Rib Roof Bracket	2	3/16" Galvanized aircraft cable (8")
2	3/8" Galvanized ready-rod (8")	4	1/4" x 3/4" Long grade 8 bolt
4	3/8" Galvanized nut	4	1/4" Flat washer
4	3/8" Galvanized lock washer		
4	3/8" Galvanized flat washer	2	1/4" x 1 1/2" Self-tapping screw
2	3/8" Threaded eyelet	2	5/16" Flat washer

1. Attach one aircraft cable loop to each side of the Cable Head with 2 bolts (1/4") and 2 flat washers (1/4") using the pre-drilled holes on each side of the Cable Head.
2. Place the aircraft cable through the threaded eyelet and fasten the other sides of the aircraft cables with the remaining bolts and flat washers (1/4").
3. Position the 2 Rib Roof Bracket (See *Figure 7*) appropriately on the roof ribs. With the roof bracket slotted based resting flush on the roof ribs, ensure the top holes of the bracket are directly aligned over the center of the Cable Cap to properly align with the Cable Head and support the Sensing Cable.



*Figure 7*

4. With the bracket positioned as required, attach it to the roof ribs with self-tapping screws and flat washer (5/16”).
5. Insert the ready-rod into the pre-drilled hole at the top of the bracket with jam nut, lock and flat washer (3/8”). Connect the threaded eyelet and ready-rod until secure.
6. Place 3/8” nut, lock and flat washers on top of the ready-rod and bracket. Tighten the nuts above and below the top flange until all of the slack in the aircraft cable is removed and adjust approximately one further turn to pre-load the bracket (See *Figure 8*).
7. Ensure each aircraft cable is tightened evenly.
8. Make adjustments as needed on the ready-rods to ensure the aircraft cable is snug and the roof bracket is slightly pre-loaded.



*Figure 8*

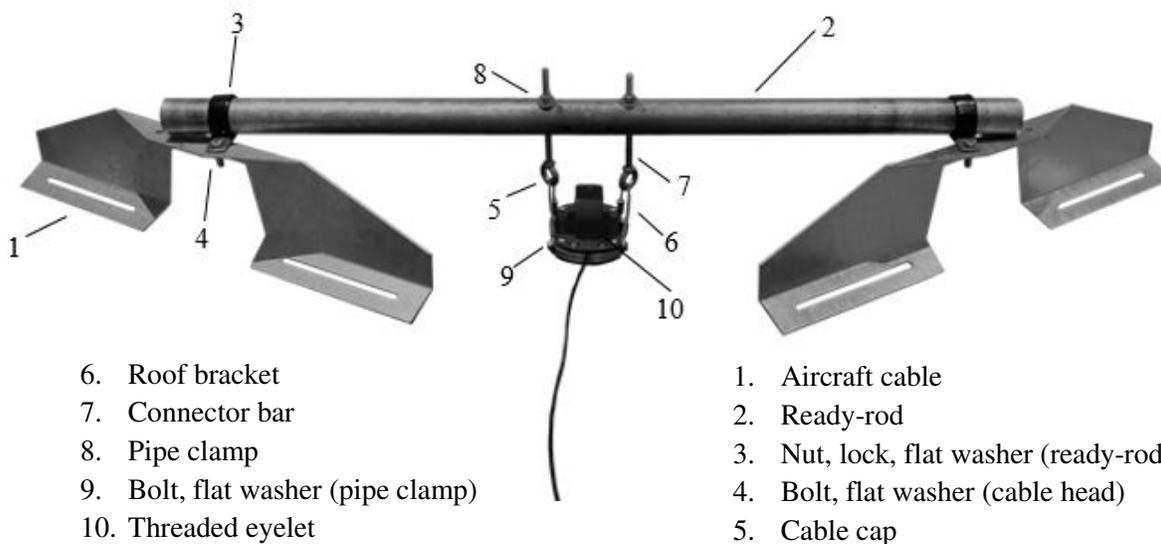
## 2.5.2 4 Rib Roof Bracket (BRK2) Installation

### *BRK2 Roof Bracket Kit Accessories (2 Roof Brackets + 1 Connector Bar)*

2	Roof bracket	2	3/8" Threaded eyelet
1	Connector bar	2	3/8" Galvanized ready-rod (8")
2	Pipe clamp	4	3/8" Galvanized nut
2	3/8" Bolt	4	3/8" Galvanized lock washer
2	3/16" Galvanized aircraft cable (8")	6	3/8" Galvanized flat washer
4	1/4" x 3/4" Long grade 8 bolt	4	1/4" x 1 1/2" Self-tapping screw
4	1/4" Flat washer	4	5/16" Flat washer

1. Once the Sensing Cable is installed, lay connector bar across the roof ribs directly over the Cable Head to mark (preferably with a felt marker) the final position of the brackets.
2. Assemble the two roof brackets with the slotted base resting flush on the roof ribs, using 2 self-tapping and flat washers (5/16") on each bracket.
3. Attach the connector bar to the roof brackets with self-tapping screws and flat washers (3/8").
4. Attach one aircraft cable loop to each side of the Cable Head with 2 bolts (1/4") and 2 flat washers (1/4") using the pre-drilled holes on each side of the Cable Head.
5. Place the aircraft cable through the threaded eyelet and fasten the other sides of the aircraft cables with the remaining bolts and flat washers (1/4").
6. Insert the ready-rod into the pre-drilled hole at the top of the connector bar with jam nut, lock and flat washer (3/8"). Connect the threaded eyelet and ready-rod until secure.
7. Place nut, lock and flat washers (3/8") on top of the ready-rod and connector bar. Tighten the nuts above and below the bar until all of the slack in the aircraft cable is removed and adjust approximately one further turn to pre-load the bracket.
8. Ensure each aircraft cable is tightened evenly.

9. Make adjustments as needed on the ready-rods to ensure the aircraft cable is snug and the connector bar is slightly pre-loaded (See *Figure 9*).



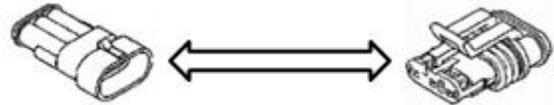
*Figure 9*

### 2.6 Installing Master and Remote Units

1. **Choose the proper position:** The Master and Remote units are equipped with solar panels to maximize their battery life. To ensure the solar panels are exposed to the most sunlight during the day, each Master and Remote units should be mounted on the **south** facing part of the roof.
2. **Carry to the top:** Refer to your map to see where to install each Master and Remote unit(s). Carry your each unit to the top of the bin one by one.
3. **MOUNT IN THE CORRECT ORIENTATION:** For Remote Units mount with the antenna, and sensor link cable facing the ground. For Master Units mount with the BIN-SENSE® logo facing the ground, and hinge side facing the lid/opening of the bin.
4. **Mount the units:** The Master and Remote units are equipped with strong magnetic feet. To install them on top of the bin, simply set the Master or Remote unit on the desired position and the magnetic force will hold the unit in that position.

5. **Positioning the antenna:** The Master unit is equipped with two types of antennas. Antenna #1 is fixed on the enclosure and Antenna #2 is connected with a wire antenna. Antenna #2 has a magnetic base for ease of installation. To optimize communication with Remote units, Antenna #2 should be placed where there is the best line of sight to the other Remote units. Antenna # 1 routinely will communicate with all the Remote units that it can see. It is best to place Antenna #2 where it will be able to see the units that Antenna #1 possibly cannot see.

6. **Connect with cable:** On each bin, join the mating cable on the Master or Remote unit with the sensor mating cable on the cable mount (see *Figure 10*). An extension cable may be require if the mating cable is too short. Fasten the loose cables down with a strap to ensure they will not move or rub against the bin.



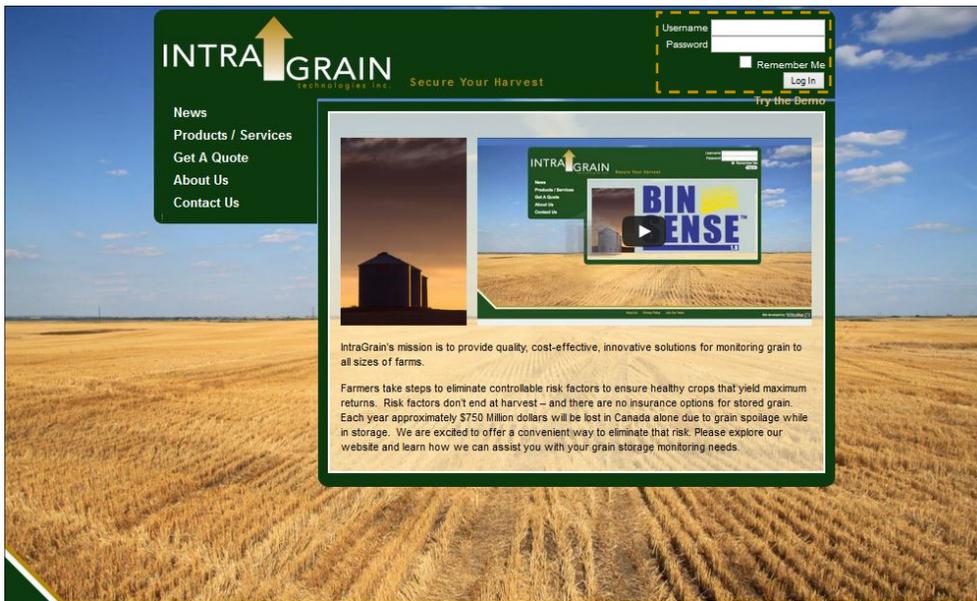
*Figure 10*

7. **Send a message to yourself:** To ensure that your BIN-SENSE® system recognizes all Remote units, press and hold the scan button for **5 seconds** on the Master unit. After holding the button for 5 seconds you will receive a text message indicating the details of how many Remote units were found. In some cases the system can take up to one hour to confirm the identification of all Remote units before sending the message.

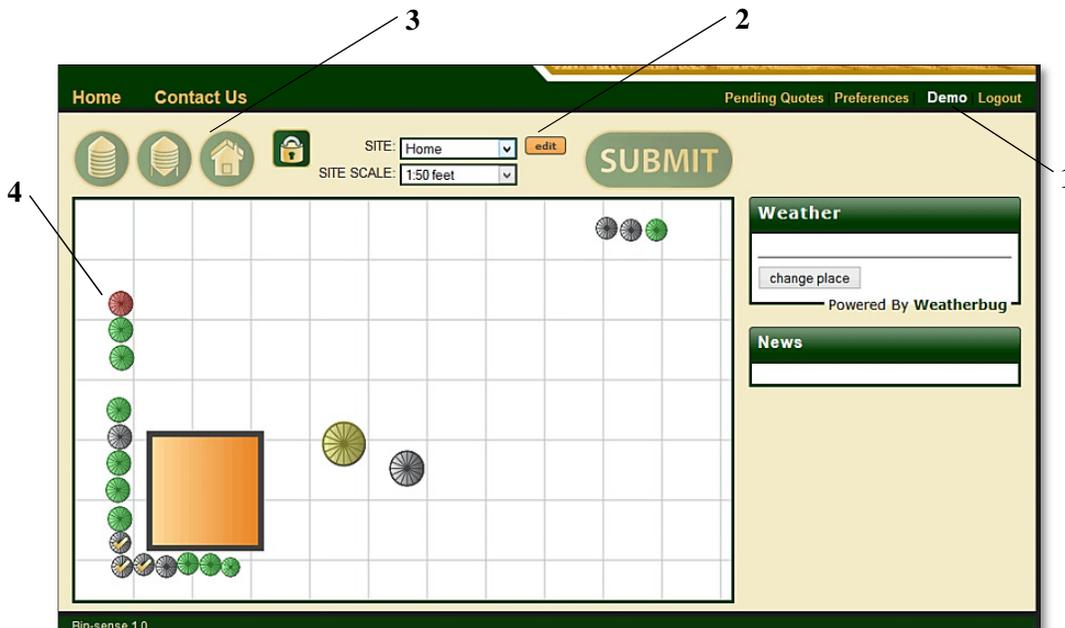
### 3.0 Using Your BIN-SENSE® LIVE System Online

#### 3.1 Logging In

1. Using your preferred web browser, go to [www.intragrain.com](http://www.intragrain.com)
2. Input *username* and *password* in the top right corner of website. Click “Log in”.



3. A successful log in page includes the following:



Safe temperature

Potentially harmful temperature<sup>15</sup>

Harmful temperature detected

Not currently monitored

1. Username and display
2. Site and scale
3. Request additional monitoring hardware
4. You farm layout
4. Edit bin details



1. Bin details (after any changes, be sure to click “Save Changes”)
2. Sensor location in the bin
3. Temperature graph (can be altered to specific time frames)
4. Edit the inventory level of the bin
5. Add a note for a specific date

### Terminology

Don't Notify Me: Select this option to stop all alerts to mobile devices

CGC Storage Guidelines: Safe storage guidelines as determined by the Canadian Grain Commission

Temperature Threshold: Set a specific temperature at which you want to be alerted at

Rise in Temperature per Week: Set this to alert you if your grain has increased in temperature by the value

Mute Sensor: The sensor will not monitor grain temperature

Unmute Sensor: The sensor will monitor grain temperature

Disable Sensor: The sensor will not send any covered/exposed alerts. It will still monitor temperature

### *3.2 Alerts (Text Messaging and Email)*

Once the BIN-SENSE® system detects a potential problem in your bin, it will automatically send a text message to your cell phone and an email. In addition to receiving a message you will be able to control basic functions by replying to the alerts with specified text responses. You can also manage your alerts through your online IntraGrain account. The following are examples alerts that you could receive.

#### *Breach of Threshold*

BIN-SENSE Threshold Alert: Bin 1 Sensor 2 in yard Home is now 30C.

#### *Breach of CGC Safe Guidelines*

BIN-SENSE CGC Alert: Bin 2 Sensor 3 in yard Home is now 25C.

#### *Breach Rate of Increase*

BIN-SENSE ROI Alert: Bin 1 Sensor 3 in yard Home has increased to 28C.

#### *Bin Being Emptied*

BIN-SENSE Alert: Sensors in yard Home Bin 1 are potentially exposed. If running FAN reply f, if emptying bin, reply m to mute sensors.

#### *Bins Being Filled*

BIN-SENSE Alert: Sensors in yard Home Bin 3 are potentially covered. To begin monitoring covered sensors reply b to this message.

#### *Initialization*

BIN-SENSE update: 4 Remote units have been initialized, with 5 cable(s) attached.

### *3.3 Mobile Browser Bookmark*

Our mobile browser application allows you to access your yard details from your Smart phone or tablet. With your device simply go to [www.intragrain.com](http://www.intragrain.com) and log in with your username and password. **Note: Check “Remember Me” to save your password and ID in your web browser.**

The next screen will allow you to be able to see all of your monitored bins, as well as the specific details you have inputted for each bin. It will also show the most recent temperature, the trend of the temperature and the approximate percentage of inventory stored in that bin.

This page can be set to you home page as an app icon if you wish to do so. Simply click the option button on your device and select “set to home screen”. The shortcut to the page will now be alongside your other app icons.

## 4.0 Troubleshooting

Please refer to the troubleshooting guide below for answers to some frequently asked questions. You may also contact your local retailer for service and support.

### 4.1 Troubleshooting

Problem	Cause	Solution
I hold the scan button for 5 second, why have I not gotten text message on my cellphone?	Your login account needs to be setup at <a href="http://www.intragrain.com">www.intragrain.com</a>	Setup your account at <a href="http://www.intragrain.com">www.intragrain.com</a> and ensure the cell phone number is correct.
	The Master unit is not powered up	Connect the battery to the Master unit. See page 7.
	System is updating, which may cause a delay of up to one hour to send message.	Wait for one hour
I received this message: “Low battery” on bin #1	The battery for the Remote/Master unit in that bin is low on power	Replace the battery as soon as possible. See page 20.
Too many alarm texts/emails, I want to turn off alarms for certain time period.	Temperature changes in bin(s), or bin being emptied.	Login and change your preferences at <a href="http://www.intragrain.com">www.intragrain.com</a>
I can’t login at <a href="http://www.intragrain.com">www.intragrain.com</a> to my own yard site?	Your login account needs to be setup at <a href="http://www.intragrain.com">www.intragrain.com</a>	Setup your account on our website and make sure the cellphone number is correct.
	Invalid username/password	Input correct username/password. See page 14. Call or email IntraGrain.
I can’t see the history of the temperature data on my computer	Double check that the time range is input correctly	See page 15, (H diagram)for detail of where to choose time range.
When I login, there is no temperature display in one bin.	The Master/Remote unit is not connected with the temperature cable	Reconnect the cable.
	The bin is turned off.	Click to view bin and click the “ON” button
The bin being monitored when I login is not the	The Remote/Master unit installed does not match up with your MAP.	Double check that the unit installed on the bin is in right

one with the Remote on my farm site		position according to the MAP. Contact IntraGrain to notify of the discrepancy.
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## 4.2 LED Diagnosis

### 4.2.1 LED Introduction

The BIN-SENSE® Master and Remote units are equipped with colour LED lights which are located on the top left of the circuit board. It is capable to display three colours: red, green and orange. The changing colour patterns indicate the status of the Master or Remote unit.

### 4.2.2 How to Activate LED Status Display

Each individual Master and Remote unit can perform the LED status by utilizing the user button on the top left corner of the circuit board (see *Figure 11*). To display the status, first make sure that the unit is connected to its sensor cable(s) and then use the following methods

#### a. LED Status Display in Remote Unit (see *Figure 11*):

1. Press the user button when the Remote unit is connected with batteries; **OR**
2. Press and hold the user button for 5 seconds to wake up and restart the Remote; **OR**
3. Restart the Remote unit by pulling out a battery and replacing it

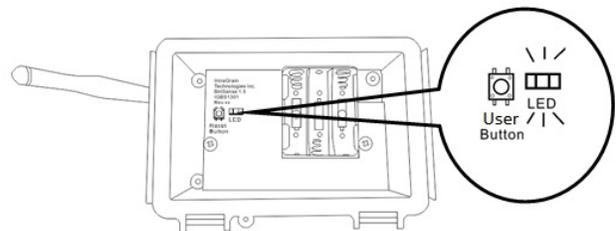


Figure 11

**CAUTION:** If using method 2 or 3, the Remote will lose connection with Master unit. To reconnect it with the Master unit, leave the Remote unit connected with batteries, and **PRESS** the scan button on Master unit. It will take around 1 hour for this Remote to reconnect with the Master unit.

#### b. LED Status Display in Master Unit (see *Figure 12*):

1. Tap the user button and it will start display the connected cable status; **OR**
2. Press and hold the user button for 3 seconds and then the Master will display the number of Remote unit connected.

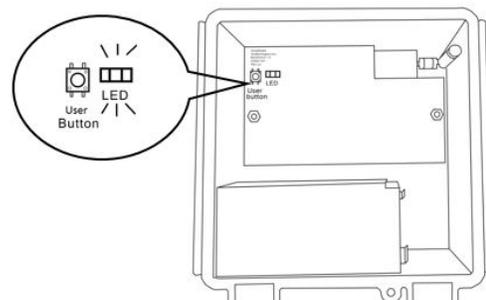
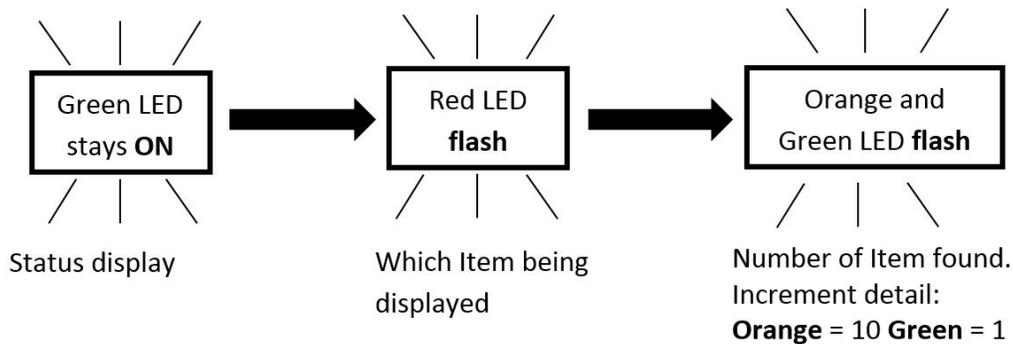


Figure 12

**IMPORTANT:** It is recommended that the Master unit LED status display should be viewed by a certified BIN-SENSE® installer.<sup>2</sup>

#### 4.2.3 LED Colour Code

As described below (see *Figure 13*), when status display starts, the green LED will turn on only once to represent the beginning of the procedure. The LED will then flash **red** to represent the status that will be displayed. After the red flash(es), **orange** and **green** will flash to display the number of items found.



*Figure 13*

When the display status starts, count the number of flashes for each colour and use the following instructions to decode:

1. **RED** LED flash(es) represents which item status is being displayed

Red LED Flash Count	Description of Hardware Scanned
1	Temperature cables
2	Temperature sensors
3	Humidity sensors
4	Fan controllers
5	Connected Remote units (Master only)
6	Radio channel setting

**Note:** If there is no item attached to the Master or Remote unit, the red LED will flash continuously.

<sup>2</sup> Wait time for LED to begin depends on the call-in time of the Master unit. This wait time can range from immediate response up to (15 minutes + [number of Remotes in system x 32 seconds]).

2. **GREEN** and **ORANGE** flash(es) represent the number of items being scanned

**Incremental detail**  
**Orange flash count once = 10 items**  
**Green flash count once = 1 item**

**Example:** The **red** LED blinks five times, the **orange** LED blinks once, and the **green** LED blinks 4 times. This means that the Master is connected to 14 Remotes (Red x 5 = connected Remote units, [Orange x 1 = 10 units + Green x 4 = 4 units] = 14 Remotes).

For you convenience, use the following table to record the flash(es) of each LED colour.

Red LED Count	Orange LED Count	Green LED Count
1		
2		
3		
4		
5		
6		

### 4.3 Replacing Unit Batteries

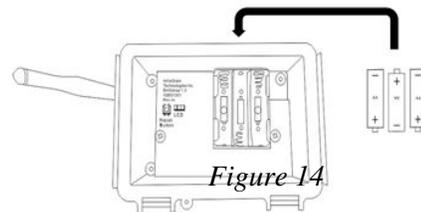
The batteries that are included with your BIN-SENSE® system can maintain the Remote and Master units for approximately 24 months. When batteries are running low, you will receive a message stating which bin has a low battery. In that situation, we recommend you to replace your battery. It is also a good idea to change out all the batteries in Remote units that are on similar sized bins at the same time.

These batteries can be purchased from IntraGrain or you may wish to purchase them yourself elsewhere. If you choose to purchase yourself, please be sure to get the exact same type of batteries as stated above. Failure to do so can result in a greatly reduced battery life or damage to electronics.

#### 4.3.1 Replacing Remote Batteries

**Batteries used in Remote units: 3 AA lithium ion batteries.**

1. Open the lids on each Remote unit. Install the AA lithium batteries in the units, one by one, being cautious of polarity (see *Figure 14*). Fasten the Velcro battery strap over the batteries after



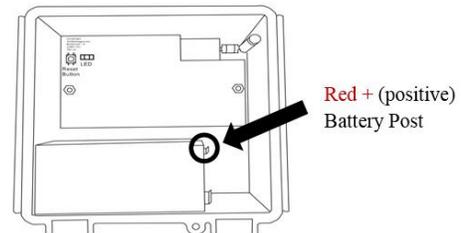
installing them. You will see the **LED flash RED** every second after the batteries are installed.

2. Press and hold the scan button on the right side of the Master unit for 5 seconds (see *Figure 15*).

#### 4.3.2 Replacing Master Battery

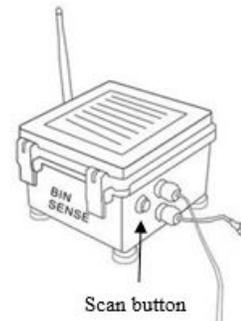
**Batteries used in Master unit: 1 – 6 volt 9 amp/hour VRLA (voltage regulated lead acid) battery.**

1. To replace the battery on the Master unit, remove the wire leads from the battery, starting with the **red wire first** (see *Figure 16*). Remove the old battery and replace with new battery.



*Figure 15*

2. Reconnect the black wire (-) terminal first, then red (+).
3. When the wires are reconnected press and release the scan button or press and hold the scan button for 5 seconds (to receive a text message update on the status of your units) (see *Figure 17*). In some cases it may take a few hours before all of the units are reporting again.



*Figure 17*

**Always ensure you recycle or dispose of batteries correctly in accordance with local laws and regulations.**

#### 4.4 Maintenance

The following maintenance and care tips will help the BIN-SENSE® system last longer and operate more efficiently.

1. The solar panel attached on the top of the Master unit assists with battery life. For longer battery results, place the solar panel in direct sunlight and keep the solar panel surface clean at all times.
2. Avoid unnecessary stress on the mating cables.

3. Properly and securely attach the lids on Master and Remote units.

**Note:** When unloading grain from a monitored bin and when grain is low enough, unhook the cable from the floor mount and attach it to the door or another location to keep from getting in the way of the auger, sweeps, vacs etc.

## 5.0 Product Warranty Statement

- 5.1 **Definitions.** For the purposes of this Instruction Manual, the following terms shall have the following meanings ascribed to them:
  - a. **Equipment:** means any hardware, device or equipment provided by IntraGrain in association with the BIN-SENSE® System.
  - b. **IntraGrain Data:** means any proprietary information, documents, records, materials or data provided to or accessible to the User through the use of the IntraGrain Service.
  - c. **IntraGrain Service:** means the BIN-SENSE® equipment and service and the IntraGrain website and user interfaces, including all features and functionalities and all content and software associated therewith.
  - d. **User:** means the purchaser or any user of the IntraGrain Service.
- 5.2 **Limited Warranty.** IntraGrain warrants, for a period of twelve months from the date of purchase, the Equipment shall be free of defects in materials and workmanship under normal use. During the warranty period, IntraGrain shall, at its option, repair or replace any defective components or products upon return of the product at the User's expense to IntraGrain, at no charge for labour or materials. Any replacement and/or repaired parts are warranted for the remainder of the original warranty or ninety (90) days, whichever is longer. The User must promptly notify IntraGrain in writing that there is defect in material or workmanship, such written notice to be received prior to the expiration of the warranty period. There is no warranty on any software products provided to the User on a license basis in association with the BIN-SENSE® System. The User is solely responsible for the proper selection, installation, operation and maintenance of any Equipment purchased from IntraGrain.
- 5.3 **Limitations of Warranty.** This warranty only applies to the functioning of the Equipment, and specifically only to defects in parts and workmanship relating to normal use. It does not cover: (a) damage incurred in shipping or handling; (b) damage caused by disaster such as fire, flood, wind, earthquake or lightning; (c) damage due to causes beyond the control of IntraGrain such as excessive voltage, mechanical shock or water damage; (d) damage caused by unauthorized attachment, alterations, modifications or foreign objects by the User or any third party; (e) defects caused by failure to properly install or to provide a suitable installation environment for the Equipment; (f) damage caused by use or misuse of the Equipment for purposes other

than those for which it was designed; (g) damage from improper maintenance; or (h) damage arising out of any other abuse, mishandling or improper application of the Equipment.

- 5.4 **GENERAL WARRANTY DISCLAIMER.** OTHER THAN AS EXPRESSLY SET FORTH IN THIS AGREEMENT, INTRAGRAIN MAKES NO REPRESENTATIONS, WARRANTIES OR COVENANTS TO ANY PERSON OR ENTITY WITH RESPECT TO THE EQUIPMENT OR THE INTRAGRAIN SERVICE. EXCEPT AS SET FORTH ABOVE, THE INTRAGRAIN SERVICE IS PROVIDED ON AN “AS-IS” AND “AS AVAILABLE” BASIS. INTRAGRAIN DOES NOT GIVE ANY WARRANTIES, GUARANTEES, REPRESENTATIONS OR CONDITIONS, WHETHER EXPRESS, IMPLIED, STATUTORY OR OTHERWISE (INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTY OF MERCHANTABILITY, FUNCTIONALITY OF THE EQUIPMENT OR THE INTRAGRAIN SERVICE, FITNESS FOR A PARTICULAR PURPOSE (INCLUDING THE PREVENTION OF HEATED, SPOILED OR OTHERWISE UNMARKETABLE GRAIN), ACCURACY OF DATA, COMPLIANCE WITH ANY DESCRIPTION, OR NON-INFRINGEMENT OF THIRD PARTY RIGHTS) WITH RESPECT TO ANY EQUIPMENT AND THE INTRAGRAIN SERVICE AND ALL SUCH WARRANTIES ARE HEREBY DISCLAIMED TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW.
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## **6.0 Contact Us**

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