OWNER'S MANUAL

Model 861
Hand Held Bale Scanner

HARVEST TEC *Equipment and Products for Quality Hay.* ™

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INTRODUCTION

Congratulations on purchasing a Harvest Tec Model 861 bale scanner. (U.S. Patent 7,621,111B2 & U.S. Patent 7,415,924B2) This scanner will allow you to read all the information stored on the RFID tags applied to the bale with the Harvest Tec model 850 tagger. The model 861 will include the bale scanner, antenna, and AC charger.

OVERVIEW

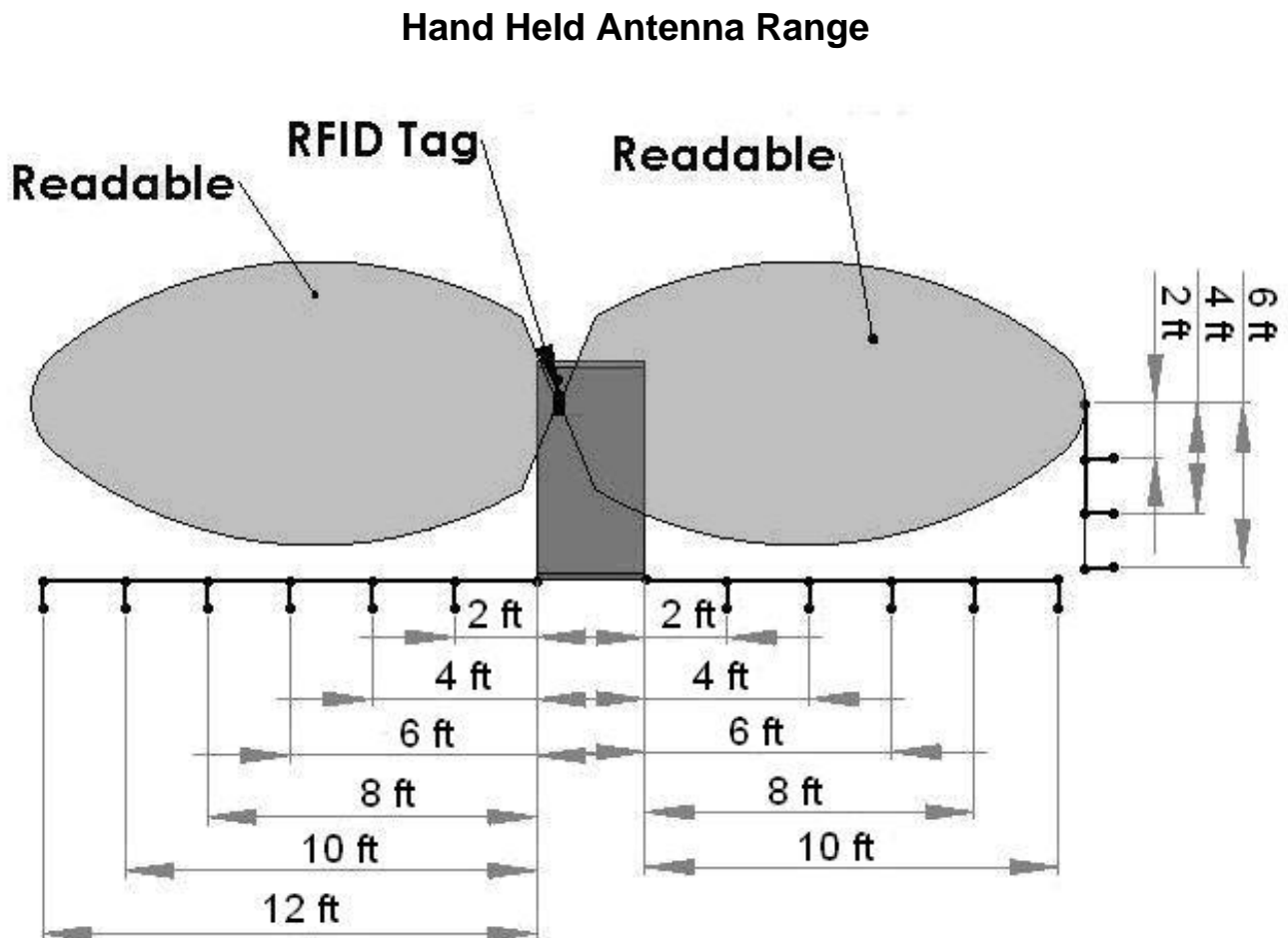The Harvest Tec model 861 Bale Scanner uses RFID to read the information stored on the tags.

Radio **F**requency **Id**entification (RFID)

The antenna emits radio waves to 'wake up' the microchip in the tag. The tag uses captured energy broadcast by the antenna to power itself up. Once the tag 'wakes up', it responds to the antenna.

Radio waves cannot be seen, so it can be difficult to visualize. Imagine that the antenna is a flashlight and the tag is a mirror. When the flashlight is focused on the mirror, the beam is reflected back to the flashlight. The reflected light is what the antenna sees and it knows how to interpret the 'response' signal.

The frequency being used for the Bale Identification system does not work well around high moisture, and can be totally blocked by metal. Plastics, wood, and glass do not pose any problems to the functionality.

Positioning of the antenna to the tag is critical. The diagram below shows a top down view of the range and distance for the antenna. The antenna always needs to be positioned so the "face" of the tag is towards the antenna.
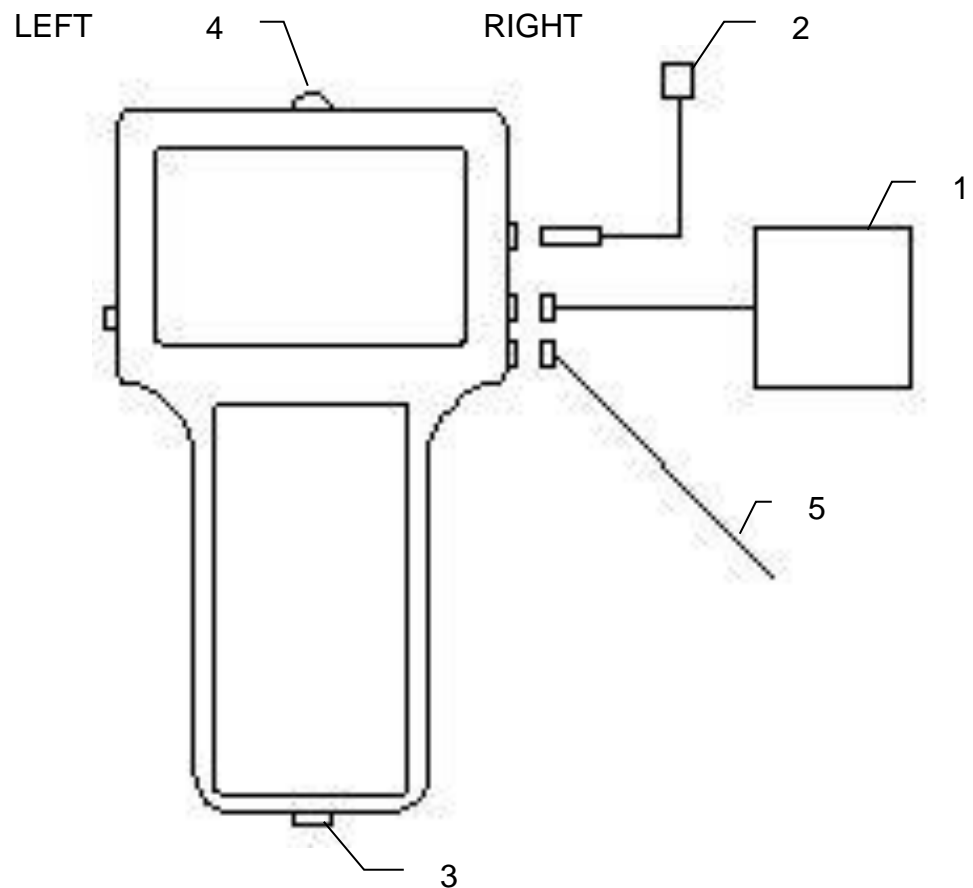
Hand Held Antenna Range

1. INSTALLATION OF ANTENNA FOR HAND HELD MODE

Locate the hand held antenna (006-8601) and attach it using the sliding mount on the back of the scanner. Attach the coaxial cable to the right antenna plug on the scanner (with the screen visible).

SYSTEM WIRING DIAGRAM

1. Connect the antenna to the scanner port. Attach the antenna to the right port.
2. Connect the AC charging plug on the right side as shown. When the battery is charging the screen charging icon will turn red. When the battery is not charging the icon will be grey.
3. The USB port is located on the bottom of the scanner. Insert a USB drive to upload software or download bale groups.
4. The power button is located on the top of the screen. Press and hold for 1/2 second to power on/off. The green led will be illuminated when the scanner is powered on.
5. Optional foot switch lead for scanning and removing bales. For loader option only. Not included with this kit.

LEFT   4   RIGHT   2

1

5

3

OPERATION INSTRUCTIONS

After the antenna(s) have been attached to the scanner turn it on by holding the button on top of the unit for 1/2 second. When the scanner is operating, the green LED on the button will be illuminated. Press and hold the button for 1/2 second to turn the unit off.

Main Menu

Scan Only In this mode you can quickly scan bale information only. **Bale information cannot be saved here**. If a tag cannot be read in the 'Edit Group' Function, it can be read using this function.
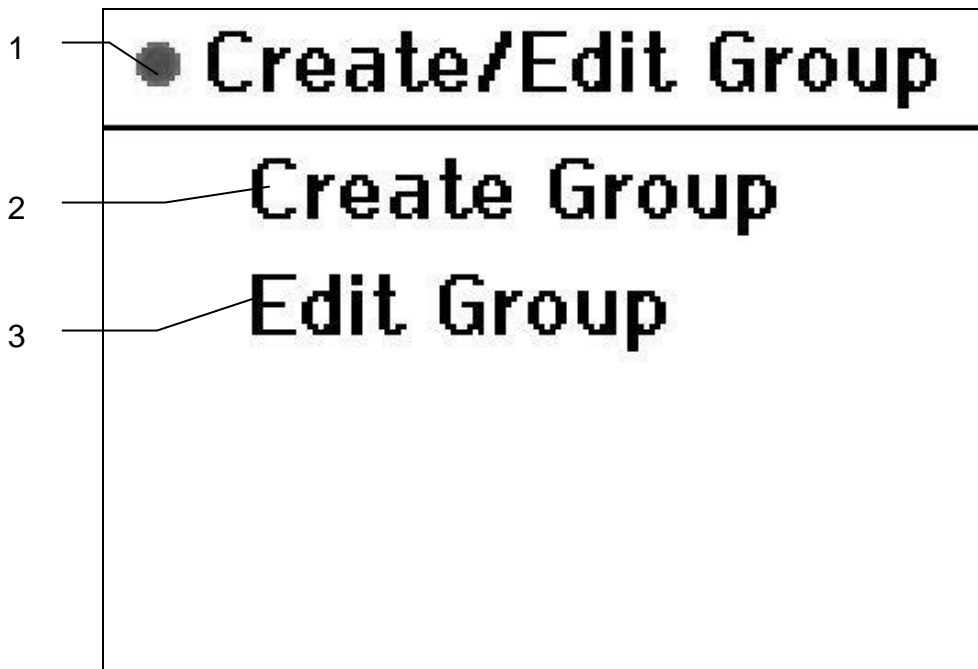
Create/Edit Group In this mode you can create a Group ID, as well as Edit (add or remove bales) from a created group.

Process Group In this mode you can view created groups, download current groups, or clear groups from the system.

Setup Menu In this mode you can set your alarms on or off and adjust the alarm ranges. The contrast control and software version is also found in this mode.
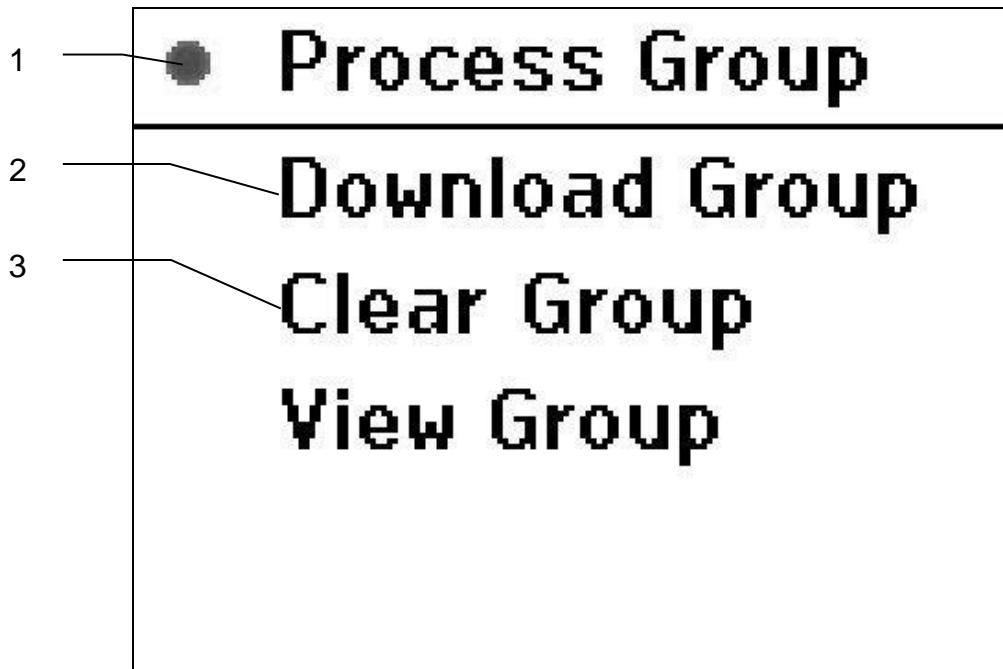
Creating and Editing Bale GroupS

From the Main Menu screen highlight **Create/Edit Group** using the up and down arrows and press accept. The following screen will appear:

1. The top circle will be colored grey when running on battery power. The circle color will change to red when the battery is charging.
2. Highlight the **Create Group** and press Accept. In this screen use the up and down keys to scroll through the alphabet to name your Group ID. Use the left and right keys to move the cursor. When done, press Accept.
3. To add/remove bales from an already created group, highlight **Edit Group** and push Accept. A new screen will appear asking which group to edit. Highlight the desired group and push the Accept button. Bales can now be added or removed from the selected group, but only if they are scanned. Bales are automatically saved to the selected group. If a particular bale needs to be removed from a group, it will have to be separated from the other bales and the Remove button will have to be pressed to remove it from the group.
4. Press the Back or Menu button to get to the Main Menu Screen.

Downloading, Clearing, or Viewing Bale Groups

From the Main Menu screen, highlight **Process Group** using the up and down arrows, upon pressing the Accept button, the following screen will appear:

1 —— ● Process Group

2 —— Download Group

3 —— Clear Group

View Group

1. The top circle will be colored grey when running on battery power. The circle color will change to red when the battery is charging.
2. To download groups to a USB drive, highlight the **Download Group** and press Accept. To download a group, inset your USB drive into the bottom port of the scanner and highlight the group(s) that you want to download. Press the up or down keys to highlight an individual group. Push the Scan key to select/unselect individual groups for download. Multiple groups can be highlighted by selecting them individually. Press the right arrow to select all groups and press the left arrow to deselect all groups. Press the Accept button to download the groups onto the USB. After the download is complete you will be prompted with a Clear Groups? message. Press Accept to clear and erase the groups or back to do leave the groups on the scanner.

```
●        Group ID
Current
Group 1
Stack 2
Stack 3
→:Select All    Scan  : Select Group
←:Deselect All  Accept: Process
```

3. To clear groups out of the scanner highlight **Clear Group** and press Accept. Highlight the group(s) that you want to clear by using the up and down arrows. Press the right arrow to select all groups and press the left arrow to unselect all groups. Use the Scan button to select individual groups. Press the Accept button to clear the selected groups. The screen then prompt you to verify that you would like to clear these selected groups. Press Accept to clear or Back to leave the groups on the scanner.

4. To View Groups already created, highlight **View Group** using the up and down arrows and press Accept. A **Group ID** screen will appear.

```
●       Group ID          ●      Group Info

Current                          Individual Bales
MM DAIRY                         Group Totals
THOMPSON
LOT 37A
```

5. To view information from a **Group ID** highlight one of the Group ID names and press the Accept key. The **Group Info** screen will then be displayed. Select Individual Bales or Group Totals. To select use the up and down keys and press Accept when the name is highlighted.
   a. If Individual Bales is selected the **Bale** screen will display. Use the right and left keys to scroll through the information. If more than four bales are in the Group ID then use the up and down keys scroll through the bales.
   b. If Group Totals is selected the **Group Totals** screen will display. This screen will display the total information for all bales in the selected Group ID.

```
● BALE      Avg. MC%     ●    Group Totals
1                  22    Average MC%          21
2                  21    High MC%             28
3                  20    Avg Bale Wt (Lbs)  1200
4                  22    Total Wt (Tons)      9.8
Pg 1/2      Total:5      Pres. (Lbs)         13.5
                        Total Bales          130
```

6. Press the Back or Menu button to get to the Main Menu Screen.

Reading and saving bales

From the Main Menu screen, highlight **Create/Edit Group** using the up and down arrows and press the Accept button.   Either create a Group ID using the **Create Group** function or edit an existing group using the **Edit Group** function.

1 ⟍

● Group ID
Current
MM DAIRY
THOMPSON
LOT 37A

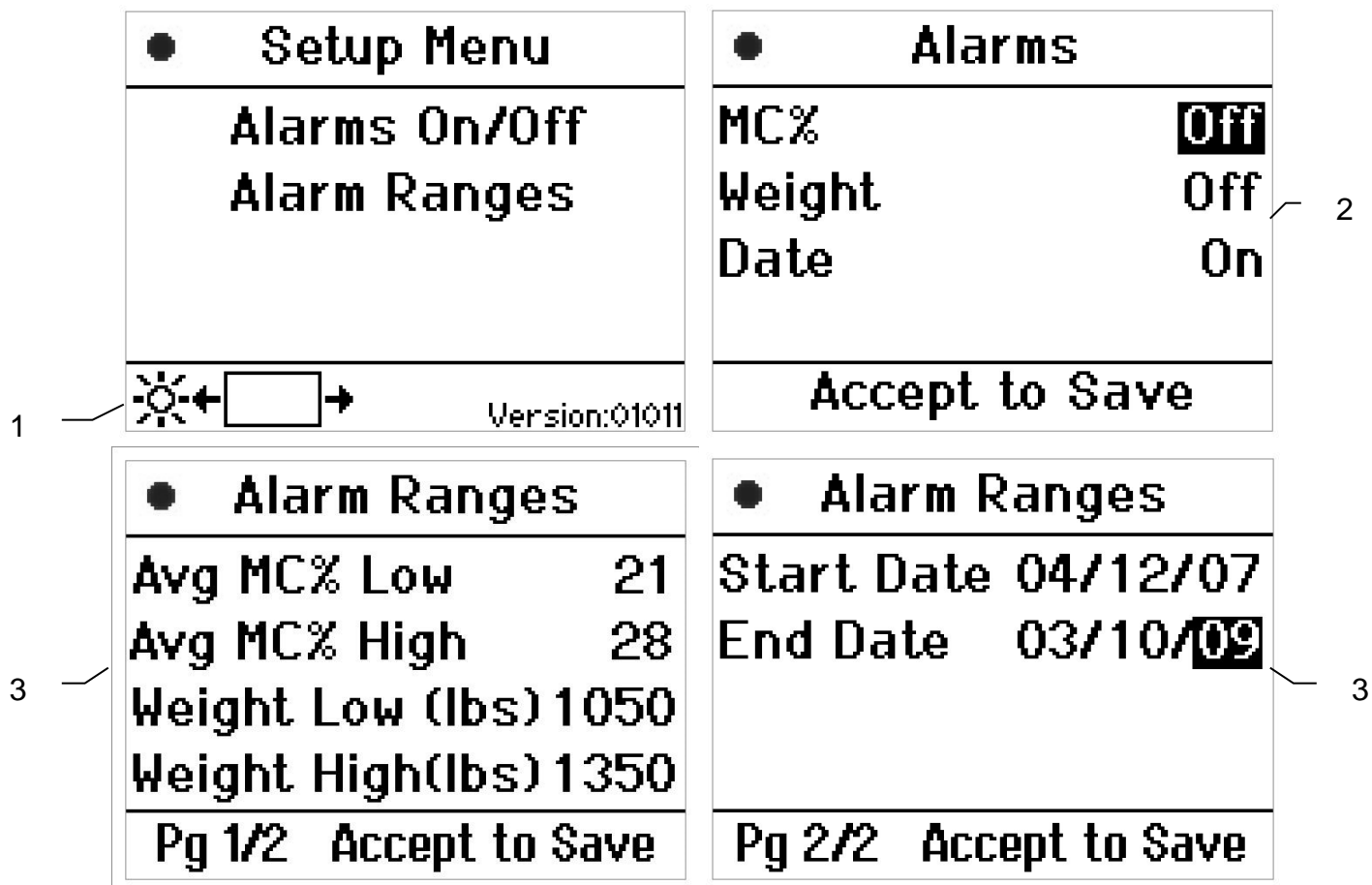| ● BALE	Avg. MC%
1	22
2	21
3	20
4	22
Pg 1/2	Total:5

⟋ 2

1. To begin bale reading (scanning), select a **Group ID** by highlighting and pressing Accept. If you select Current, all the information will be stored in the group Current until the next Group ID is made. The information from Current will then be moved to that Group ID and Current information will be cleared.
2. Once a group is selected, the **Bale** screen will display. Press the Scan key to read the information on the tag. The screen will display all of tags found during the scan period. **The bales will automatically be saved to the selected group**. If more than four tags are found use the up and down buttons to see the information. Use the left and right buttons to scroll between all of the different screens. If the bale is not desired, the Remove button will have to be pressed to remove the currently displayed bale(s) from the group. If more than one bale is scanned and the operator does not know which bale is which, it will require the bales be separated until the desired bale is found. At this point, the operator would press the Remove button and the bale displayed on the screen would be removed from the group.
3. Different Colors are used to Display the bale status
    a. Blue =Bale(s) saved to selected group
    b. Red = Bale(s) removed from selected group/not saved
    c. Black Border Around Bale = Bale Outside Alarm Range(s)
    d. Black border with Inverse Red = Bale and Value Outside Alarm Range(s)

Read only function

1. The operator can choose to only view the bale information and not to save. This is how the **Scan Only** function is used. This mode will allow the user to view the information on the tag if it is not viewable in the **Edit Group** screen. Different colors are used to identify tags and how the scanner handles them. A listing of the color code is below:
    a. Red = Good
    b. Green = Old Tags (Before Harvest Tec update – March 1, 2010)
    c. Orange = Incomplete Tag Data
    d. Black Border Around Bale = Bale Outside Alarm Range(s)
    e. Black border with Inverse Red = Bale and Value Outside Alarm Range(s)

2. **Setting system alarms and screen backlight brightness**

From the Main Menu screen, highlight **Setup Menu** using the up and down arrows and press Accept. The following screen (**Setup Menu**) will appear.

1. Use the left and right keys to adjust the screen backlight brightness. The black line inside the box is a visual aid to determine the brightness. To access the alarm(s) screens press the up and down keys, highlight the selected alarm(s) screen, and press the Accept key.
2. The Alarms On/Off screen allows you to turn on and off the three different alarm settings. Use the up and down keys to select them and the left and right keys to turn on/off. Press the Accept key to save the changes made.
3. The Alarm Ranges screen allows you to set the ranges for the alarms. Use the up and down keys to highlight the selected ranges and the left and right to change for all the figures except the date. To change the Start Date/End date use the down key to scroll through the month, date, and year and the left and right key to change the figures.
4. After the alarms have been set and turned on when scanning a tag(s), if any of the tags are out of the alarm range the screen will notify you and the out of range value will be displayed in a red box surrounding the value that is out of range and a black border surrounding the entire bale.

COMMON QUESTIONS ABOUT THE 861

1. **How do I turn the system on/off?**
   Press and hold the power button on top of the scanner. A green light will illuminate when the power is on.

2. **How do I charge the battery?**
   Insert one of the power cords into the right side of the scanner and lock in place with a quarter turn. The charging icon on the screen will then illuminate red.

3. **Why did the screen turn off?**
   After 5 minutes of no buttons being pressed the scanner will go into power saving mode. Press any of the soft keys to turn the screen back on.

4. **How many scans can be done with a full battery charge?**
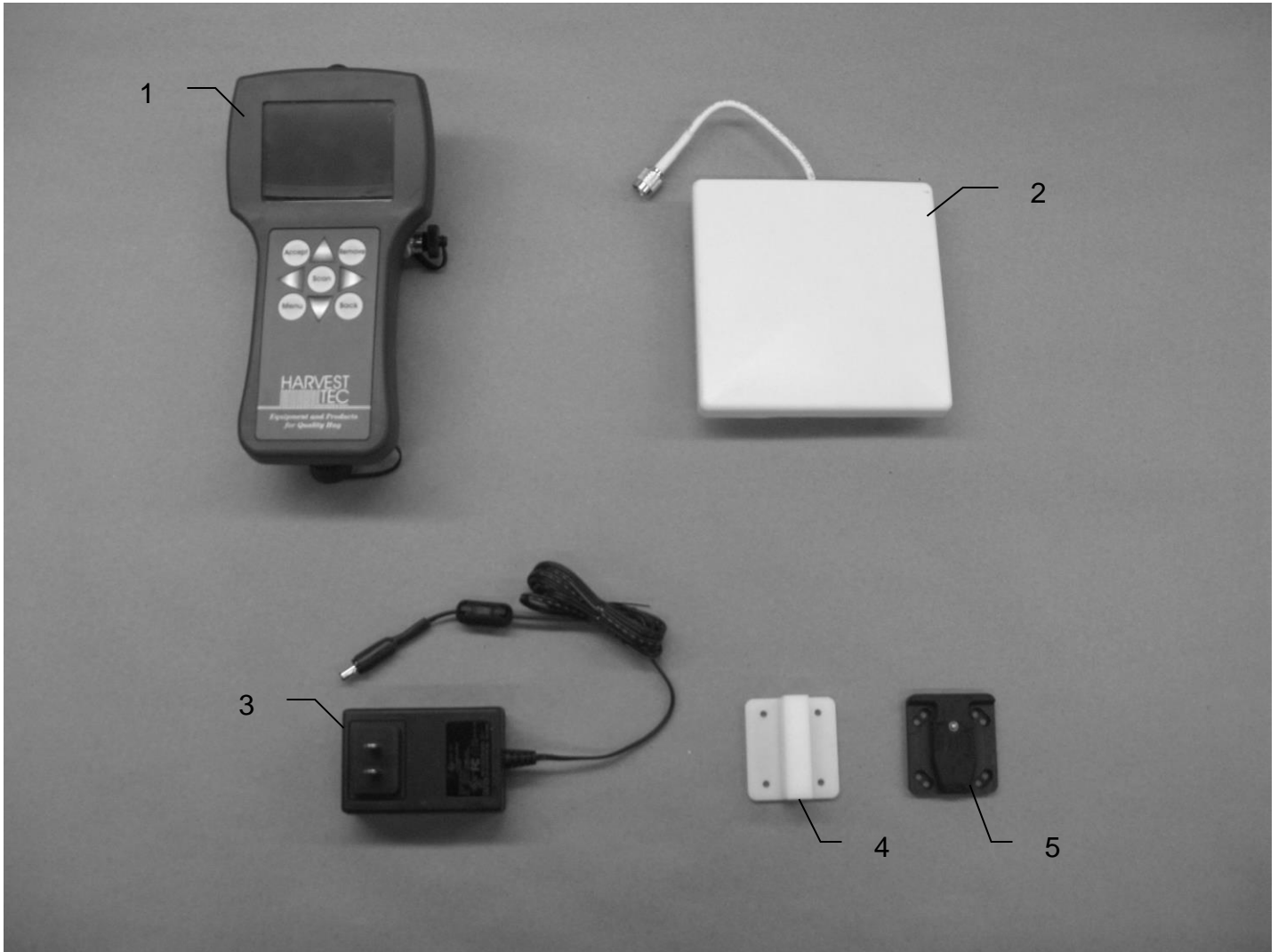   With a full battery charge around 300 scans can be performed before charging the battery.

5. **How do I update the software on the scanner?**
   Insert a USB into the bottom of the unit with the appropriate software. Then, before turning on the unit, press and hold a button on the keypad while turning the unit on. Once the unit is powered on, stop pressing the buttons. The display should read 'Checking for Updates' on a white screen. If an update is found on the USB drive, the screen will change to 'Updating Firmware'. Once the process is complete, the unit should boot into the main menu.

TROUBLE SHOOTING CHECKS:

PROBLEM	POSSIBLE CAUSE	SOLUTION
During a scan screen goes to Main Menu	1. Low battery.	1. Insert battery charging plug into scanner and try to scan again.
Scanner says "No Antenna Found"	1. Bad connections on antenna.	1. Check all connections and try another scan.
Scanner says "USB Download Failed"	1. Bad connection at USB port. 2. USB format incorrect.	1. Verify USB is in the port. 2. Try a different USB drive.

PARTS BREAKDOWN FOR MODEL 861

Ref	Description	Part#	Qty
1	Bale scanner	006-5674	1
2	Hand held antenna	006-8601	1
3	AC charger	006-8600AC	1
4	Antenna adapter	001-8600AM	1
5	Antenna mount	006-8600M	1

NOTES:

Harvest Tec, LLC. Warranty and Liability Agreement.

Harvest Tec, LLC. will repair or replace components that are found to be defective within 12 months from the date of manufacture. Under no circumstances does this warranty cover any components which in the opinion of Harvest Tec, LLC. have been subjected to negligent use, misuse, alteration, accident, or if repairs have been made with parts other than those manufactured and obtainable from Harvest Tec, LLC.

Our obligation under this warranty is limited to repairing or replacing free of charge to the original purchaser any part that in our judgment shows evidence of defective or improper workmanship, provided the part is returned to Harvest Tec, LLC. within 30 days of the failure. Parts must be returned through the selling dealer and distributor, transportation charges prepaid.

This warranty shall not be interpreted to render Harvest Tec, LLC. liable for injury or damages of any kind, direct, consequential, or contingent, to persons or property. Furthermore, this warranty does not extend to loss of crop, losses caused by delays or any expense prospective profits or for any other reason. Harvest Tec, LLC. shall not be liable for any recovery greater in amount than the cost or repair of defects in workmanship.

There are no warranties, either expressed or implied, of merchantability or fitness for particular purpose intended or fitness for any other reason.

This warranty cannot guarantee that existing conditions beyond the control of Harvest Tec, LLC. will not affect our ability to obtain materials or manufacture necessary replacement parts.

Harvest Tec, LLC. reserves the right to make design changes, improve design, or change specifications, at any time without any contingent obligation to purchasers of machines and parts previously sold.

Revised 6/22

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Federal Communications Commission (FCC) Statement:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. **Class A Device Statement:** (Section 15.105(a) of the FCC Rules) This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at the operators own expense. **Caution: Changes or modifications not expressly approved by Harvest Tec can void the user's authority to operate the equipment.**

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Harvest Tec Bale ID System    [Canadian flag]
FC  Model #: 006-5673/4
    FCC ID:  XGF0406091126
    IC CN:  8404A-0406091126
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Industry Canada (IC) Compliance Statement:

This Class A digital apparatus meets the requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.