PM400/PM300 OPERATOR'S MANUAL

DICKEY-john

PM400/PM300 OPERATOR'S MANUAL

DICKEY-john

DICKEY-john

1 <u>INTRODUCTION</u>

The DICKEY-john PM400 and PM300 Planter Monitors offer features to monitor up to 36 and 16 rows, respectively. The units can monitor seed or fertilizer rows, 2 hopper levels, and a frequency input (shaft, fan, or flow). The monitors are compatible with DICKEY-john seed, flow, hopper level, and gear sensors. The units store all configuration data in nonvolatile memory, retaining information even when disconnected from power. Figure 1 shows the consoles.

The PM400 and PM300 are designed to meet the custom needs of individual users. The display is configurable to output a comprehensive set of planter output parameters, but the user selects which parameters and the number of parameters they want to monitor. If the user prefers to monitor population and field area alone – those two parameters will be displayed in a large, highly readable font. If the user desires more parameters, simply select them in the easy to navigate set-up. In any case, the user is in control of the data they need to view. Similarly, row information can be viewed in a bar graph, gauge, or symbol form. The information can be selected to be large (for ease of viewing), or smaller (for viewing the entire planter). Auto-scrolling and arrow key override is used so the user stay in control of the real-time information they need to see.

Figure 1.   PM400 and PM300

DICKEY-john

Figure 2.   User-definable display examples
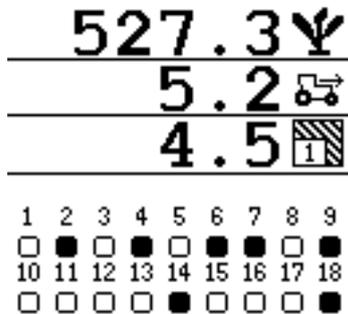
Graphic mode average population, speed, and field 1 output with row symbols
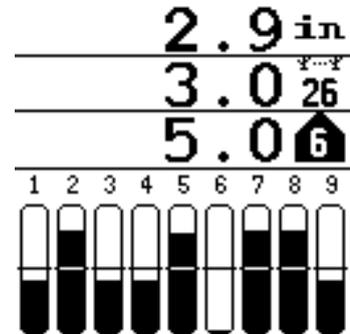
Text mode average spacing, spacing scan and min/max/avg spacing output with bar graph
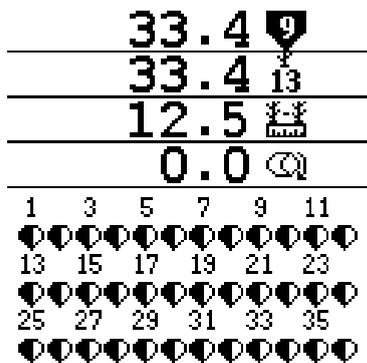
Min/max/avg population, population row scan, avg seed spacing, & shaft speed with gauges
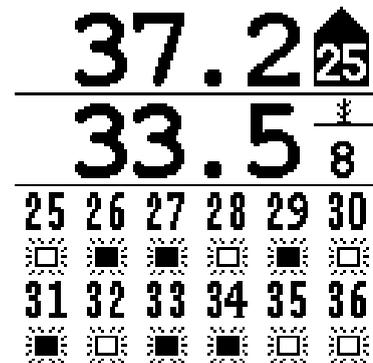
Min/max/avg population and row scan with blinking row symbols
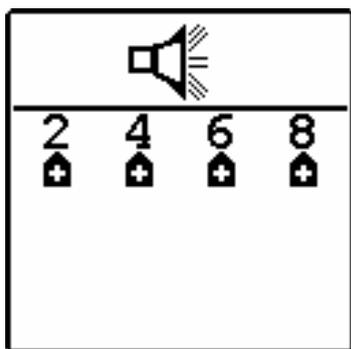
Rows 2, 4, 6, 8 (above limit) alarm screen

Row scan and average spacing with blinking symbols and row 1 hi alarm (alarm cancel returned user to operate screen)

DICKEY-john

2 <u>SPECIFICATIONS</u>

- ? **Power:** 10-16 VDC, 0.5 A maximum (8.0 A maximum with 16 seed sensors)

- ? **Operating temperature range:** -20?C to 70?C

- ? **Storage temperature range:** -40?C to 85?C

- ? **Size:** 18.4 by 18.4 by 18.0 cm (7.3 by 7.3 by 7.1 inches)

- ? **Weight:** 6.8 kg (15 lbs.) for 16-row PM400 system

- ? **Harnessing:** The PM400 and PM300 include integrated harnesses to supply the unit's power (fused), ground speed input, and sensor inputs (to hitch). The connectors are compatible with existing DICKEY-john harnessing. DICKEY-john can supply the custom harnessing required for sensor inputs.

- ? **Sensors:** Compatible with existing DICKEY-john sensors

- ? **Mounting:** Rear attached horizontal or vertical mounting bracket. Optional three-axis adjustable mounting bracket

- ? **Contrast adjustment:** Automatic temperature compensation for contrast

- ? **Back light adjustment:** Three settings for full sun, daytime, or night time use

- ? **CE certified**

- ? **Dust and moisture resistant**

DICKEY-john

3 <u>MAJOR FEATURES</u>

Major features of the PM400 and PM300 include the following:

- ? Planter monitoring of 36 and 16 rows, respectively
- ? Monitoring of ground speed, 2 hopper levels, 1 frequency (fan, shaft, or flow)
- ? Easy and flexible configuration
- ? User definable viewing of 2, 3, or 4 functions (all can be selected)
  - ? Average Population
  - ? Average Seed Spacing
  - ? Average Seeds per Distance (m/ft)
  - ? Population Row Scan
  - ? Seed Spacing Row Scan
  - ? Seed per Distance Row Scan
  - ? Minimum, Maximum, Average Row Population
  - ? Minimum, Maximum, Average Row Spacing
  - ? Minimum, Maximum, Average Spacing per Distance
  - ? Field Area 1
  - ? Field Area 2
  - ? Total Area 3
  - ? Ground Speed
  - ? Fan, Shaft, or Flow Frequency
- ? User definable row information
  - ? Bar Graph
  - ? Wiper Gauge
  - ? Symbols
  - ? Symbols flashing proportional to seeding rates
- ? User definable font sizes for ease of reading
- ? Graphical or text based output labels
- ? Back lit graphical display for night time use
- ? 3 level back light intensity adjustment
- ? Large, concise error messages on display with audible alarm
- ? Large, tactile keys
- ? English or metric units
- ? Laminated help card
- ? Compatible with DICKEY-john sensors
- ? Plug-in replacement for other DICKEY-john monitors
- ? Optional support of RS-232 based data logging
- ? Horizontal and vertical mounting (Optional 3D adjustment bracket)

DICKEY-john

4 QUICK START GUIDE

Three inputs are required for monitor operation. These include the number of rows, row spacing, and a ground speed constant. Selecting a pre-programmed planter configuration provides easy set-up of planter row width, number of rows, implement width, and row types.
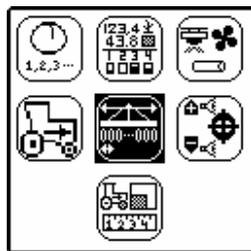
PLANTER CONFIGURATION

To program the PLANTER configuration,
depress ENTER and the MENU will be displayed.
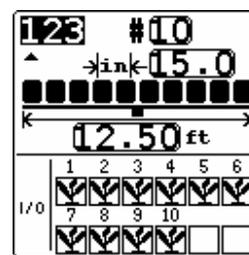
Select the PLANTER icon, and depress enter.
The PLANTER configuration screen will be shown.

The PM300/400 can store three (3) planter configurations for users with split row planters or multiple planters and seeders. Many users will only program a single configuration (1). Select a planter configuration number (1, 2, or 3) by moving the selection carrot (up arrow). Use the ARROW keys to highlight the number of rows. Depress ENTER to modify the number of rows. Use the ARROW keys to select digits, increment, and decrement values. Depress ENTER to accept the new number. Enter the row spacing in the same manner. Once the new values are entered, depress ESCAPE to return to the MENU and ESCAPE again to return to the MAIN SCREEN.

GROUND SPEED CONFIGURATION

To select the GROUND SPEED screen,
depress ENTER and the MENU will be displayed.
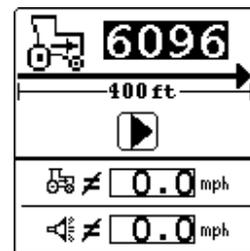
Select the GROUND SPEED icon, and depress enter.
The GROUND SPEED configuration screen will be shown.

TO PERFORM A NEW CALIBRATION

Highlight the START soft key (⬢) using the ARROW keys. Depress ENTER to start the 400 foot calibration. After the calibration is started, the button will change to a STOP (⬢) soft key. Drive 400 feet and stop the vehicle. Depress ENTER to STOP the calibration. The new calibration factor will be shown in the window. Depress ENTER to accept this value or ESCAPE to reject the value. Depress ESCAPE to return to the MENU and ESCAPE again to return to the MAIN SCREEN.

DICKEY-john

MANUAL GROUND SPEED CONSTANT ENTRY

Use the ARROW keys to highlight the manual ground speed value. Depress ENTER to modify the constant. Use the ARROW keys to select digits, increment, and decrement values. Depress ENTER to accept the new number. Once the new values are entered, depress ESCAPE to return to the MENU and ESCAPE again to return to the MAIN SCREEN. Any non-zero value will activate manual ground speed. Set manual ground speed to zero to disable.

NOTE: To verify that the correct calibration number has been obtained move to the speed/area/distance screen. Verify that the speed matches the vehicles' speedometer or re-measure the 400-foot distance.

HELP CARD

A laminated help card is included with the console for a compact reference for definitions, set-up screens, and general operating information.

DICKEY-john

Figure 3. HELP CARD

Functions (top half)	Service	Seed Counting	User interface	Accessories
Rows output (bottom half)	Security	Ground speed	Planter	Population target

Use ENTER to move to main menu (from main operate screen)
Use ENTER to select menu item(s)
Use ENTER to activate data modification

Use ▲◄►▼ (arrow keys) to highlight or change items, change digits, or select digits

Use ESCAPE to accept data and go back (multiple ESCAPE presses always returns user to main operate screen)

Speed/Area/Distance

Color key

Mandatory entry
Optional entry
Operation modes
User interface
Functions
Alarms / errors
Miscellaneous

	Population	Seed Spacing	Seeds per Distance	Field Area 1	Field Area 2	Total Area
Average						

	Population	Seed Spacing	Seeds per Distance	Speed	Area/hour	Distance
Row Scan						

	Population	Seed Spacing	Seeds per Distance	Shaft	Fan	Flow
Minimum Maximum Average						

Warning	Hi/Lo	No flow	Hopper	All Rows Failed	Planter Lifted	No Speed Input

Start	Stop	Reset	Security	Password	Save Password	Configuration

Alarm	English / Metric	Back light	Graphic / Text Label	Population adjust	Response rate

![DICKEY-john logo]

5 <u>KEYS</u>

Figure 4.   PM400 or PM300 keys

ON / OFF

The unit activates when the ON/OFF is pressed. Upon power up, the monitor performs internal self-tests, illuminates the display, sounds the alarm, and determines which sensors are connected to the system. Pressing the key for one second when power is on will power down the system, independent of the screen being displayed.

ALARM CANCEL

During normal operation, pressing this switch acknowledges the alarm conditions that are displayed on the screen. Active row alarms are reset after an All Rows Failure condition or a power down-up sequence occurs. If the error condition remains after reset, the switch must be pressed again to cancel the alarm. When no alarms are active, volume can be modified by pressing and holding the ALARM CANCEL key.

DICKEY-john

ENTER

Depression of ENTER moves the user from the main operate screen to the main menu or to the selected screen.

Once an item is selected, depression of the ENTER key will change modes from navigation to data modification. After changing parameter values, ENTER accepts the modified data.

ESCAPE

In the MAIN OPERATE SCREEN, depressing ESCAPE has no function.

When navigating through screens, the ESCAPE key moves the user back one selection. Multiple ESCAPE presses will return the user to the main operate screen. After changing parameter values, ESCAPE accepts the modified data.

UP & DOWN ARROWS

In the MAIN SCREEN the arrows are used to manually select the parameters being viewed in the top of the display. They are inactive if all parameters are already displayed (number of parameters are equal to or less than number of lines).

When in the MAIN MENU screen, the arrows are used to navigate between options. When in a particular set-up screen, the arrows are used to navigate between options or change a digit/option.

RIGHT & LEFT ARROWS

In the MAIN SCREEN, the arrows are used to manually select the rows being viewed in the bottom of the display. They are inactive if all rows are already displayed. When in the MAIN MENU or in a particular screen, the arrows are used to navigate between options.

DICKEY-john

6 <u>INSTALLATION AND SET UP</u>

Before shipping, the monitor is tested and inspected to insure the unit is fully operational and meets all measurement specifications. After unpacking, inspect for damage that may have occurred during transit. Save all packing materials until inspection is complete. If damage is found, immediately file a claim with the carrier. Also notify your DICKEY-john Sales Representative.
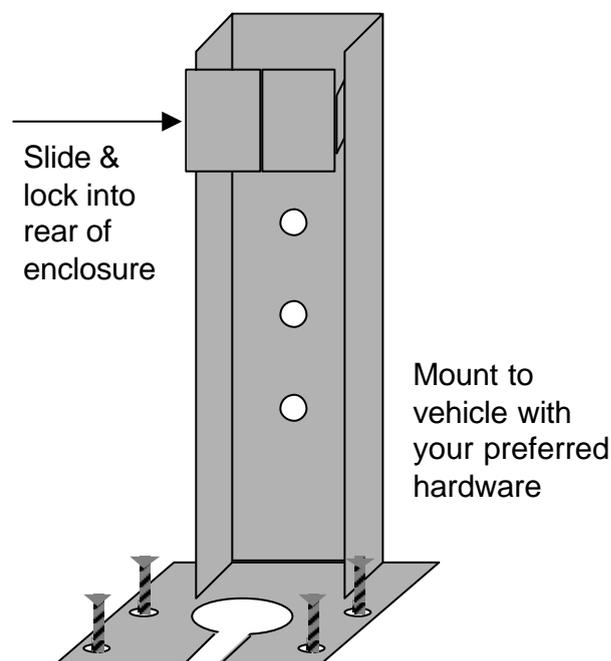
MOUNTING STANDARD BRACKET

Install the mounting bracket to the location of your choice using your hardware. Install the bracket to the console by sliding it into the mating groves until the snap engages.

WARNING: The console must not obstruct the view or interfere with the operation of the tractor.

CAUTION: To prevent damage, assure the snap fully engages when installing bracket to console.

Figure 5.   Mounting bracket installation

Slide & lock into rear of enclosure

Mount to vehicle with your preferred hardware

When mounted to a vertical surface, a ty-wrap can be used to retain the cables to the bottom of the bracket.

DICKEY-john

MOUNTING OPTIONAL 3D ADJUSTABLE BRACKET

Detach the brackets two-halves from one another by loosening the wing bolt. Install the upper half (rectangular section) into the console by sliding it into the mating groves until the snap engages. Install the bottom-half mounting bracket to the location of your choice using your hardware.

WARNING: The console must not obstruct the view or interfere with the operation of the tractor.

CAUTION: To prevent damage, assure the snap fully engages when installing bracket to console.

Figure 6.   Mounting bracket installation

Slide &
lock into
rear of
enclosure

Mount to
vehicle with
your preferred
hardware
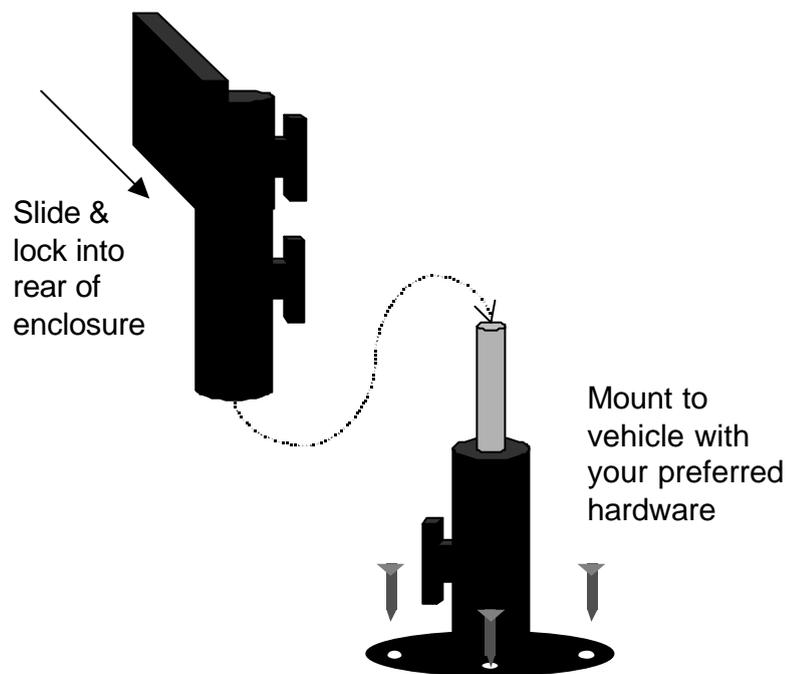
INSTALLING CONSOLE HARNESSES

Several harnesses exit the bottom of the PM400 and PM300. These include power, ground speed sensor, and sensor inputs (rows, lift switch, 2 hopper levels, and one frequency shaft/fan/flow).

1. Route the power harness to a +12V source near the battery if possible.
2. Route the ground speed sensor to the connection to the RADAR, Hall Effect, or GPS ground speed sensor.
3. Route the implement harness to the location of your choice, typically the hitch.

DICKEY-john

CAUTION: The harnesses must not obstruct movement of the operator or of the moving parts of the tractor or implement. Take care when routing harnesses to retain them at proper locations with slack if needed for movement.

CAUTION: Poor +12V connections can cause intermittent console operation. Be sure to connect battery to a clean, well-conditioned source (direct battery connection is best).
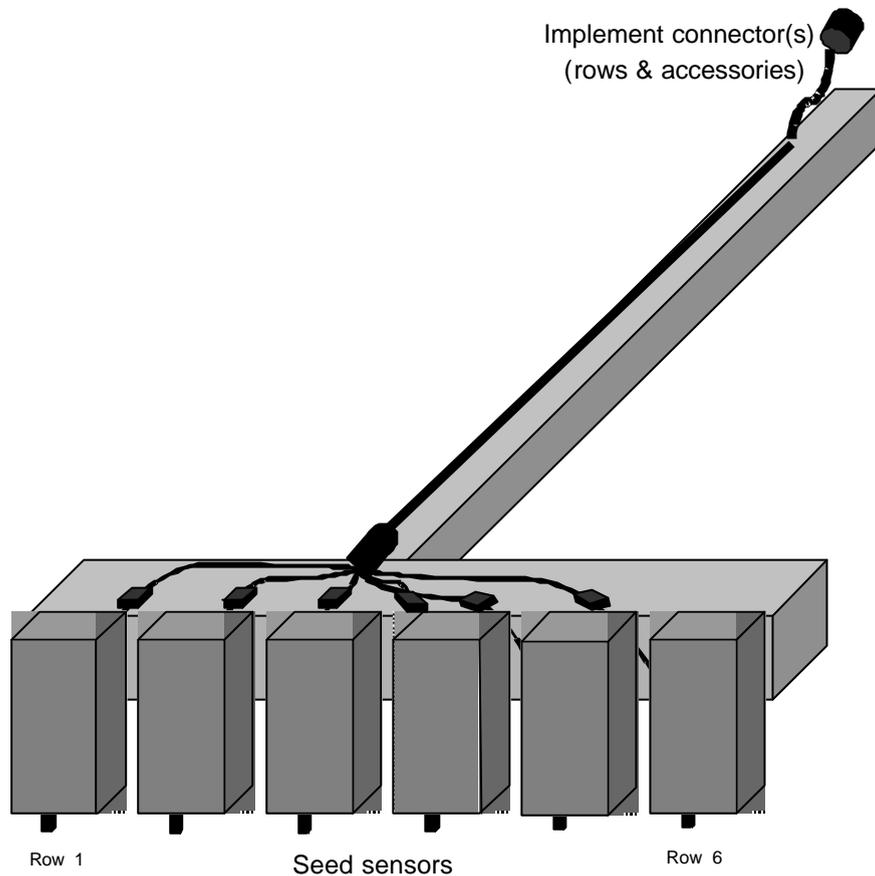
Figure 7.   Console harnesses
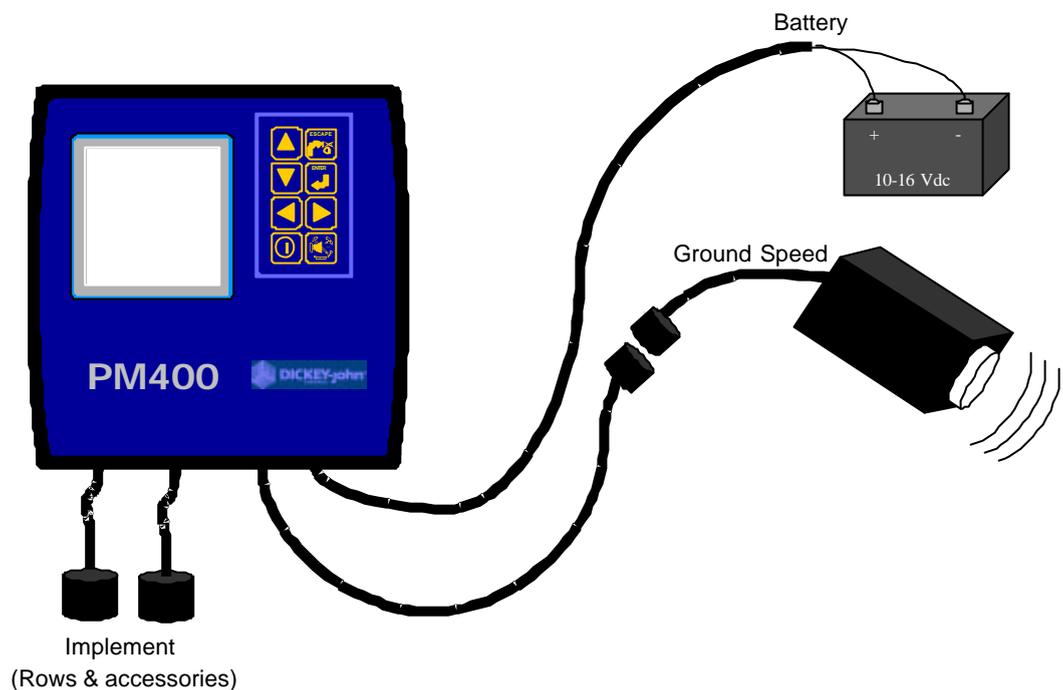
Figure 8.   Implement harness

Implement connector(s)
(rows & accessories)

Row 1   Seed sensors   Row 6

INSTALLING IMPLEMENT HARNESS AND SENSORS

The implement harness provides the custom fit and functions required by the implement. Each harness branch is labeled for the location (row 1, row 2, etc) or sensor (lift switch) that it must be routed for connection. Some sensors may require special adapters for connection.

1. Install sensors onto seed tubes using ty-wraps.
2. Route the implement harness to the appropriate locations, taking care to leave proper lengths near moving parts and attach as required by the implement using ty-wraps.
3. Assure the hitch connections will connect to the tractor connections with the proper amount of slack for implement movement.

CAUTION: The harnesses must not obstruct movement parts of the tractor or implement. Take care when routing harnesses to retain them at proper locations with slack if needed for movement.

PM400/PM300 OPERATOR'S MANUAL

DICKEY-john

SET-UP

The monitor is designed to be simple for basic monitoring while supporting an expanded set of features for the advanced user. In any case, the user decides which features to configure.

MAIN MENU

From the default operate screen, depress ENTER to display the menu. The menu screen includes 7 set-up screen selections and two specialized operation screens (seed count and speed/area/distance).

Figure 9. Main Menu
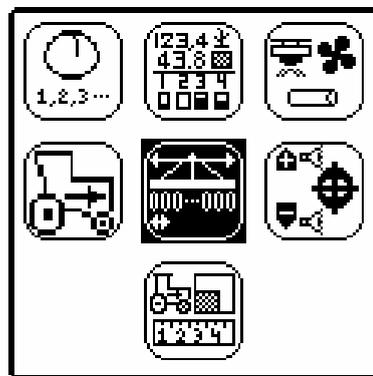
PLANTER & GROUND SPEED (MANDITORY DATA ENTRY)

There are two set-up screens that require inputs for the system to function as a monitor, PLANTER and GROUND SPEED. If RSO functions are desired, the ROW I/O and RSO screen also require inputs.
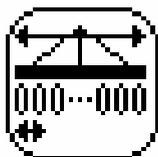
The PLANTER screen must include the number of rows and the row spacing or implement width for the console to properly display population. The user can pre-program up to three different configurations. This supports users with split row planters (configuration 1 for normal and 2 for split row) and a separate seeder or drill (configuration 3).
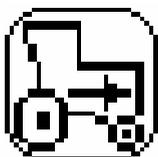
The GROUND SPEED screen must include a calibration factor for proper calculation and display of ground speed. Also included in the GROUND SPEED screen are a calibration aid, a manual ground speed value, and a maximum speed alarm. The calibration aid can be used to measure the calibration factor, which is the number of pulses in 122 m (400 ft). The manual ground speed (optional) can be used when a ground speed sensor is not installed or has failed in the field. The maximum speed alarm (optional) provides the user with an over speed alarm.

DICKEY-john

Figure 10. Planter and Ground Speed Set-up Screens
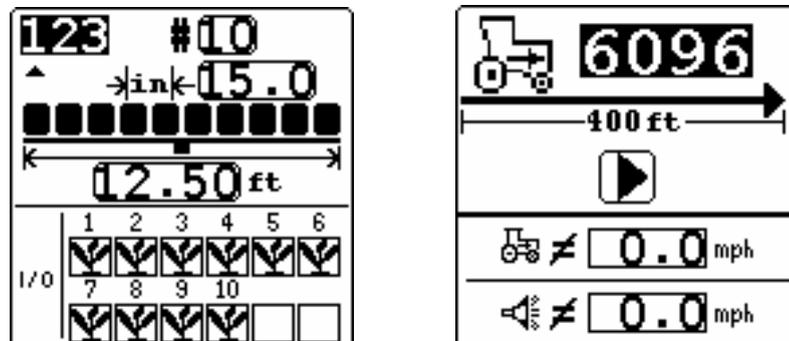
ROW SET-UP (AUTO ASSIGNED)

The console will automatically assign the number of rows defined in the PLANTER screen as ON.

Rows can be configured to be ON, OFF (split row), FLOW, or DISABLED.

? When ON is selected (plant), the row is active and the console will detect sensors and seed flow.
? When OFF is selected (blank), the row is removed and remaining rows are re-numbered. This is used for split row systems where every other row or sets of internal rows are not planting. Their corresponding row number is ignored, allowing for true planting operations to be displayed on the monitor.
? When DISABLED is selected (circle with slash), the row input is ignored. The row number will be displayed. This is used when a row or sensor is malfunctioning and the operator wants to disable monitoring on that row.
? When FLOW is selected (funnel), the row will not be included for population calculations, but will be monitored for flow. The flow rows will be used to detect flow (fertilizer or seeds) and alarm if the flow falls below 2 pulses per second.

PM400/PM300 OPERATOR'S MANUAL

DICKEY-john

ACCESSORY (OPTIONAL)

To add an auxiliary sensor and its performance characteristics (calibration values, limits, etc) to the monitoring inputs, it must be activated by entering a calibration constant. If minimum or maximum alarms are desired, the limits can be added to the calibrated sensors. A fan, shaft, or flow sensor can be monitored with hi and/or low alarms or no alarm values.

Figure 11. Accessory screen
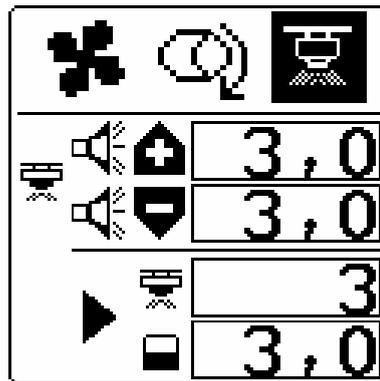
POPULATION (OPTIONAL)

The population screen allows the user to define several population features. The user can define a target population. If no value is selected, the monitor will use the average population as a calculation for alarms and row indicators. Minimum and maximum limits can be assigned with either percentage or value based entries. If the % box is checked, the entry is percentage based, otherwise it is value based. A population adjustment factor is available to provide a means to display populations nearer the actual than the sensed seeding rates. This is useful when sensors do not detect doubles, triples, etc. Lastly, the population response rate is also selectable. This feature is used to provide population display stability for planters with few rows versus planters with many.

Figure 12. Population screen
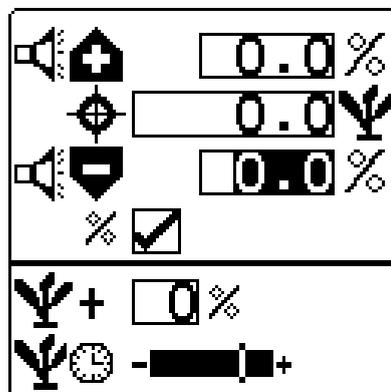
USER INTERFACE (OPTIONAL)

A primary consideration in the PM400 and PM300 design is the ability to provide the flexibility in display information to fit the needs of individual operators. The user interface screen is used to customize the display to include only the information the operator desires. Factory default selections are set for typically desired parameters for basic monitoring. However, the broad range of PM400/300 input features requires the ability to allow the user to define the information available for viewing and the size of the information (small, medium, or large).

The top of the display includes the upper and lower screen set-up icons. Below these icons lie the Metric/English, alarm volume, and back light intensity. The Metric/English allows the operator to select the units they prefer. The alarm volume and back light intensity have 3 levels of adjustment. The security feature allows the PM400/300's password protected security levels to be activated. This protects unauthorized personnel from modifying key parameters in the field. Defaults are text, English, high volume, medium back light, and unlocked security.

The upper screen parameters can be modified by selecting the upper screen icon and depressing ENTER. Once the upper screen is entered, the upper half of the display is used for parameter selection while the lower half is used for changing font sizes or graphic/text (see figure 13). The graphic/text mode allows the operator to view graphic symbols or text-based labels (I.E. versus MPH). The bar selection causes the font size to be large, medium, or small, respectively. Default value is 3 lines (medium).

The user can select which parameter they want displayed in numerical order from the following list. (Also refer to section 8, Monitoring Functions).

- ? Average Population
- ? Average Seed Spacing
- ? Average Seeds per Distance (m/ft)
- ? Population Row Scan
- ? Seed Spacing Row Scan
- ? Seed per Distance Row Scan
- ? Minimum, Maximum, Average Row Population
- ? Minimum, Maximum, Average Row Spacing
- ? Minimum, Maximum, Average Spacing per Distance
- ? Field Area 1
- ? Field Area 2
- ? Total Area 3
- ? Ground Speed
- ? Fan, Shaft, or Flow Frequency

Default values are 3 parameters that include 1 = average population, 2 = seed spacing row scan, 3 = field area 1**.**

DICKEY-john

The lower screen parameters can be modified by selecting the lower screen icon and depressing enter. The row indicator type can be selected in the top selector. Types include blinking box (blink rate proportional to seeding rate), solid box, bar graph, or wiper gauge. These can be displayed in a small, medium, or large size, which is the next selection item. The size determines the number of rows that can be displayed on the bottom half of the display. Default is non-blinking box, medium size.

Figure 13. User interface screens (primary, upper half, and lower half)
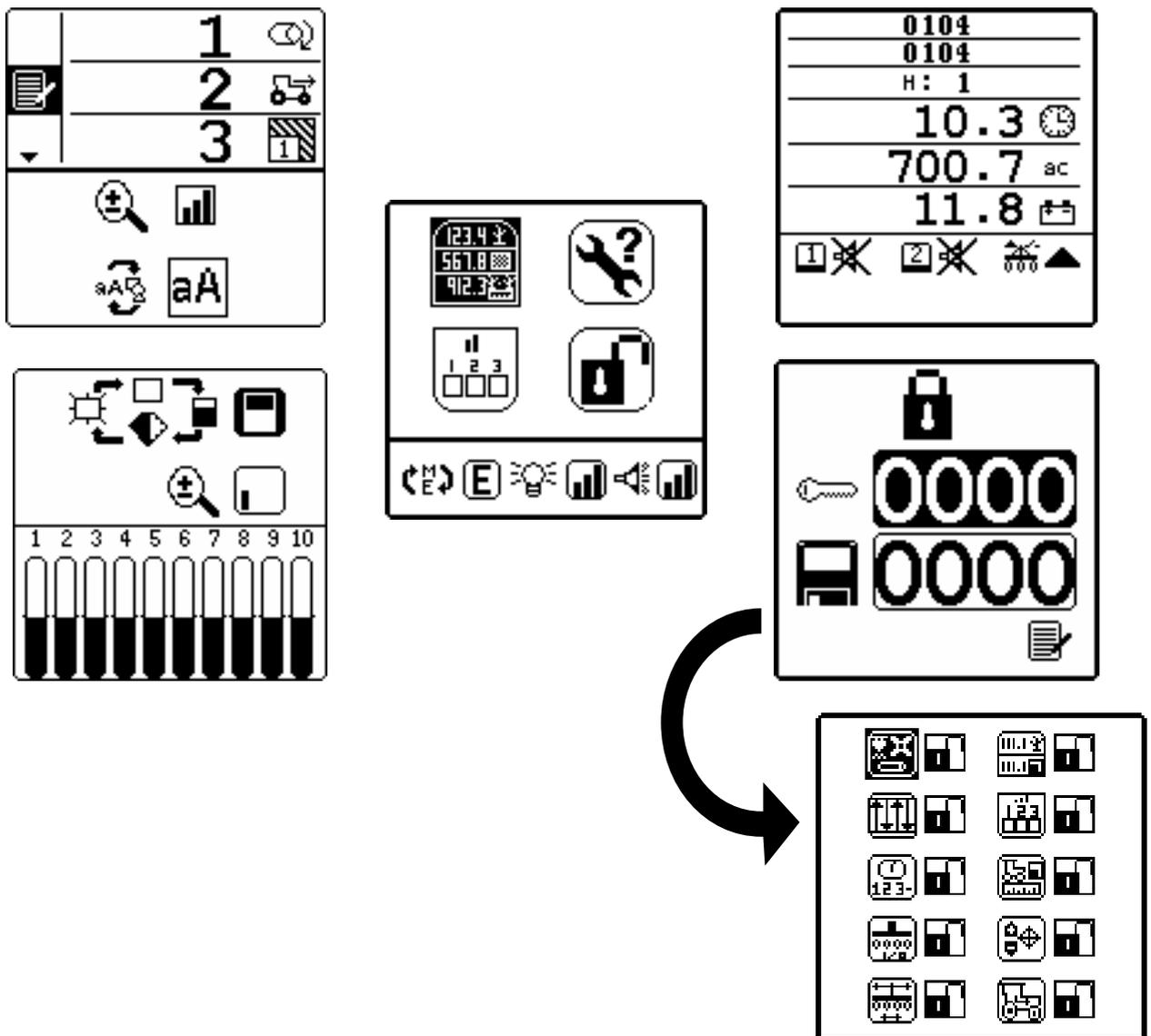
AUXILLIARY MODES (SPEED, AREA, DISTANCE & SEED COUNTING)

Section 10 is dedicated to the use of the Speed, Area, Distance mode and the Seed Counting mode.

The Speed, Area, Distance mode includes start/stop/reset for Field Areas 1 & 2 (hc1-2/ac1-2), Total Area (hc3/ac3), and Distance.

The Seed Counting mode includes a reset for all rows.

Caution: Alarms are disabled in these modes.

Note: If a manual ground speed is selected, the area and distance will not accumulate in this mode.

Figure 14. Speed, area, & distance and Seed counting screens

DICKEY-john
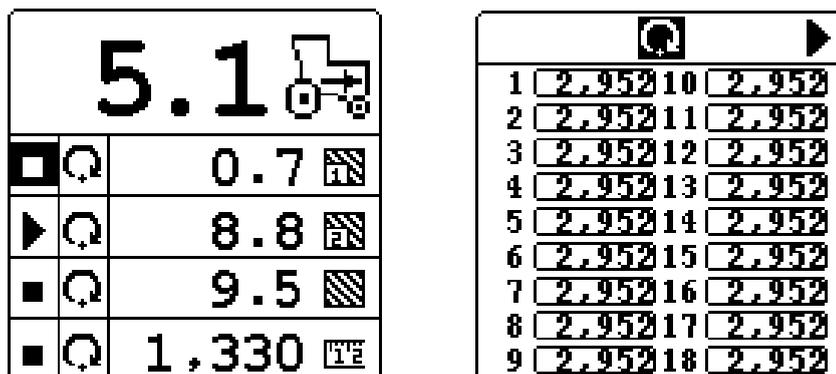
7 <u>MONITORING</u>

MAIN SCREEN

The PM400's or PM300's main screen provides the monitoring functions. No matter where a user has navigated in the set-up, security, or auxiliary modes, they can repeatedly depress the ESCAPE key to return to the main screen.

The main screen is divided into two halves, upper and lower. The upper half provides user definable output parameters (population, area, speed, etc) while the lower half is dedicated to row information.

PARAMETER OUTPUTS & SCROLLING (UPPER SCREEN HALF)

Through the User Interface settings, it is possible for more parameters to be selected than can be displayed on the screen. If more parameters are selected than are available, then the up/down arrow is used to scroll between the parameters. This function provides wrapping. As an example, if 5 parameters are selected:

1 = Average population
2 = Speed
3 = Field area
4 = Total area
5 = Shaft RPM

If the screen were configured to display 3 items, the main screen would display average population, speed and field area. When the down arrow is depressed, the screen would display items 2, 3, and 4. A second depression of the down arrow would display items 3, 4, and 5.

If the screen were configured to display 4 items, Average population, speed, field area, and total area would be shown.

DICKEY-john

ROW INDICATORS (LOWER HALF)

The number of rows displayed in the lower half are user definable. When more rows are ON than are viewable, the monitor automatically scrolls through the rows at 3-second intervals (bar graph with 36-row machine). The operator can use the right/left arrows to manually select which rows they desire. The automatic scrolling will restart 10 seconds after a manual selection.

Like parameters, row indicators can be small, medium, or large.

Figure 15. Row indicators

DICKEY-john
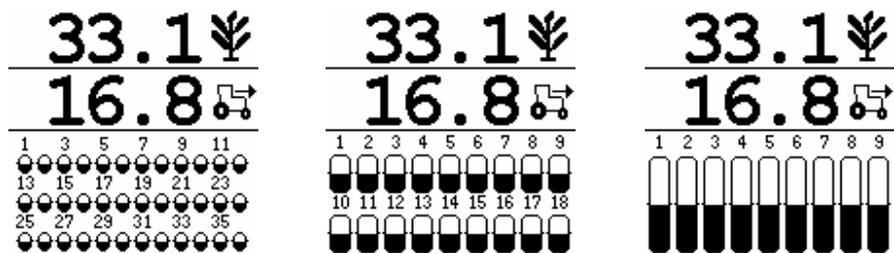
8 <u>MONITORING FUNCTIONS</u>

The operator can choose to simultaneously view 2, 3, or 4 monitoring or control functions and may select several more that require a touch of an arrow key to view. Factory default parameters are population, spacing, and field area.

AVERAGE POPULATION

The AVERAGE population function displays the average of the planter's rows in seeds per hectare (s/ha) or per acre (s/ac) that are configured for population. The population response rate and population adjustment can be modified in the target set-up screen. This function can be labeled with a symbol or text, depending upon the text/graphic setting.
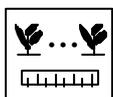
MINIMUM/ AVERAGE/ MAXIMUM POPULATION

The MINIMUM / AVERAGE / MAXIMUM population function alternates the display of the minimum row, planter average, and maximum row every 2 seconds. Whe n a minimum or maximum row is being displayed, the corresponding symbol is shown with the row number.

POPULATION ROW SCAN

The ROW SCAN function displays the population of each of the planter's rows. The console increments the displayed row every 2 seconds. After the last row is displayed, the console returns to the first active row for another scan sequence.

AVERAGE SPACING

The AVERAGE spacing function displays the average of the planter's rows in seed spacing (cm or in) that are configured for population. This function can be labeled with a symbol or text, depending upon the text/graphic setting.
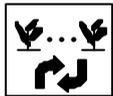
MINIMUM/ AVERAGE/ MAXIMUM SPACING

The MINIMUM / AVERAGE / MAXIMUM spacing function alternates the display of the minimum row, planter average, and maximum row every 2 seconds. When a minimum or maximum row is being displayed, the corresponding symbol is shown with the row number.
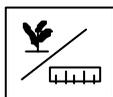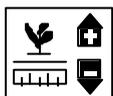
DICKEY-john

SPACING ROW SCAN

The ROW SCAN function displays the spacing of each of the planter's rows. The console increments the displayed row every 2 seconds. After the last row is displayed, the console returns to the first active row for another scan sequence.
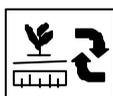
AVERAGE SEEDS PER DISTANCE

The AVERAGE seeds per distance function displays the average of the planter's rows in seeds per distance (m or ft) that are configured for population. This function can be labeled with a symbol or text, depending upon the text/graphic setting.

## MINIMUM/ AVERAGE/ MAXIMUM SEEDS PER DISTANCE

The MINIMUM / AVERAGE / MAXIMUM seeds per distance function alternates the display of the minimum row, planter average, and maximum row every 2 seconds. When a minimum or maximum row is being displayed, the corresponding symbol is shown with the row number.

## SEEDS PER DISTANCE ROW SCAN

The ROW SCAN seeds per distance function displays the seeds per distance of each of the planter's rows. The console increments the displayed row every 2 seconds. After the last row is displayed, the console returns to the first active row for another scan sequence.

FIELD AREA 1
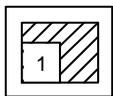
The FIELD AREA (HA1/AC1) function displays the field area in hectares or acres, depending upon the English/Metric setting. This function can be labeled with a symbol or text, depending upon the text/graphic setting.
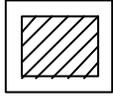
FIELD AREA 2
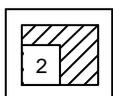
The FIELD AREA (HA2/AC2) function displays the field area in hectares or acres, depending upon the English/Metric setting. This function can be labeled with a symbol or text, depending upon the text/graphic setting.
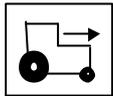
DICKEY-john

TOTAL AREA

The TOTAL AREA (HA3/AC3) function displays the total area in hectares or acres, depending upon the English/Metric setting. This function can be labeled with a symbol or text, depending upon the text/graphic setting.
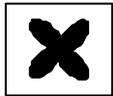
SPEED

The SPEED function displays the vehicle speed in Miles per Hour (MPH) or Kilometers per Hour (KPH), depending upon the English/Metric setting. This function can be labeled with a symbol or text, depending upon the text/graphic setting.
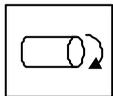
AREA PER HOUR
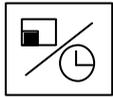
The AREA PER HOUR function displays the current rate of area per hour (HC/HR or AC/HR).
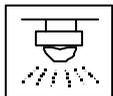
FAN

The FAN function displays the fan's speed in Revolutions Per Minute (RPM).

SHAFT

The SHAFT function displays the shaft's speed in Revolutions Per Minute (RPM).

FLOW

The FLOW function displays the flow rate speed in gallons per acre (g/ac) or liters per hectare (l/ha).
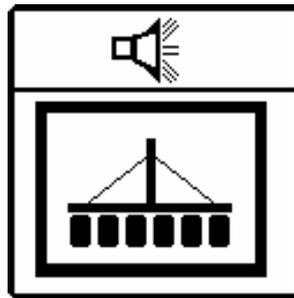
DICKEY-john

9 <u>ALARMS</u>

Primary operating alarms are displayed using the entire screen and are accompanied by an audible alarm. These alarms include:

Row blockage (two seeds per second threshold) - solid ON alarm
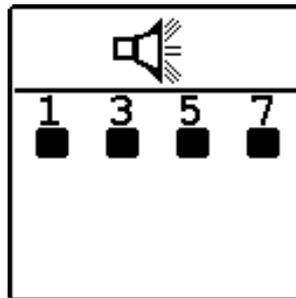
All rows failure – 8 chirps

Hi or low limit exceeded (optional limits for population) – solid ON alarm

DICKEY-john
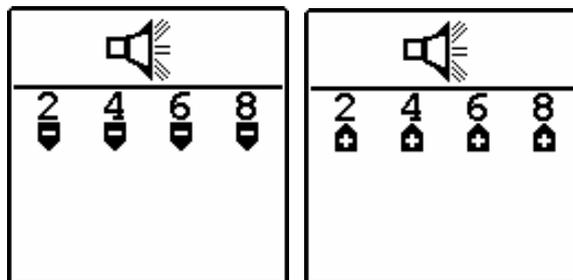
Hi or low limit exceeded (optional limits for accessories) – solid ON alarm
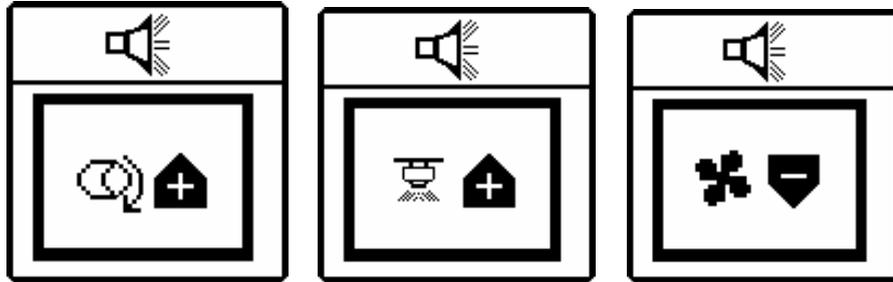
Failed ground speed sensor (planting detected without ground speed)
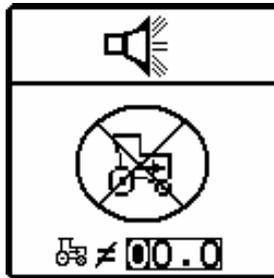
Self test failure (battery voltage out of limits)
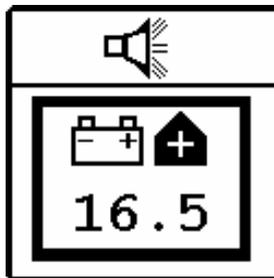
Maximum speed exceeded (optional)

An audible 2-chirp alarm is also output during navigation or data entry to indicate an illegal or non-functional key press.

DICKEY-john

10 <u>AUXILLIARY MODES</u>

The monitors provide modes for alternative monitor use and row unit testing.

SPEED, AREA, DISTANCE MODE

The speed, area, and distance modes can be used for cultivating.

Figure 16. Speed, area, distance screen

SEED COUNTING

The seed counting mode can be used to determine row unit performance when operating the planter in a stationary manner.

Figure 17. Seed counting

11 <u>TROUBLESHOOTING</u>

Symptom	Probable Cause	Action Required
Monitor will not power on	Blown console fuse	Check fuse (located near battery connection). If needed, replace with 7.5A fuse maximum. If fuse blows again, check all harnesses for pinches or breaks that may cause power short to ground.
	Poor battery connection	Assure connections are clean and tight. Inspect harness for damage.
	Low battery voltage	Console voltage must be at least 10V. If low, recharge or replace battery.
	Defective console	Console is damaged. Contact your dealer, DICKEY-john Europe (011-33-141-192189), or DICKEY-john USA (1-800-637-3302).
Row failure or hi/low alarm on row planting properly	Seed sensor coated with dirt	Clean sensor using a dry bottlebrush.
	Defective sensor or harness	Trigger sensor and observe troubleshooting LED. If sensor does not have LED, swap harness connection with adjacent sensor to determine if sensor or harness is damaged. Replace sensor or harness.
	Defective console	Console is damaged. Contact your dealer, DICKEY-john Europe (011-33-141-192189), or DICKEY-john USA (1-800-637-3302).
Hopper alarm does not sound when hopper is empty	Hopper sensor coated with dirt	Clean sensor using a dry bottlebrush.
	Defective sensor or harness shorted to ground	Swap harness connection with another sensor to determine if sensor or harness is damaged. Use service screen if another sensor is not available. Replace sensor or repair harness.
	Defective console	Console is damaged. Contact your dealer, DICKEY-john Europe (011-33-141-192189), or DICKEY-john USA (1-800-637-3302).
Hopper alarm when hopper is full	Defective sensor or harness open	Swap harness connection with another sensor to determine if sensor or harness is damaged. Use service screen if another sensor is not available. Replace sensor or repair harness.

DICKEY-john

Hopper alarm when hopper is full (cont'd)	Defective console	Console is damaged. Contact your dealer, DICKEY-john Europe (011-33-141-192189), or DICKEY-john USA (1-800-637-3302).
System voltage alarm	Low battery voltage	Console voltage must be at least 10V. If low, recharge or replace battery.
	Poor battery connection	Assure connections are clean and tight. Inspect harness for damage.
	Damaged harness	Check all harnesses for pinches or breaks that may cause power or 8V-sensor power short to ground.
Accessory alarm sounding when shaft, fan, or flow is working	Sensor failure	Shaft, fan, or flow sensor not operating. Replace defective sensors.
	Wrong calibration number	Sensor calibration number is incorrect. Check calibration number in accessory setup screen.
	Incorrect limits	Sensor limits are incorrect. Check limits in accessory setup screen.
	Defective console	Console is damaged. Contact your dealer, DICKEY-john Europe (011-33-141-192189), or DICKEY-john USA (1-800-637-3302).
Ground speed lost alarm	Ground speed sensor failure	No ground speed sensor is detected or planting is detected on at least one row with no ground speed.
	Console failure	Console is damaged. Contact your dealer, DICKEY-john Europe (011-33-141-192189), or DICKEY-john USA (1-800-637-3302).
Ground speed high alarm sounding	Ground speed alarm set too low	Set ground speed alarm limit higher or to zero to disable.
	Incorrect ground speed constant	Ground speed sensor has not been calibrated, RADAR sensor angle has changed, or incorrect sensor constant is entered. Use SPEED-AREA-DISTANCE mode to determine if speed is correct. If incorrect, re-calibrate speed constant (SPEED SETUP SCREEN).
Self-test alarm	Console failure	Console is damaged. Contact your dealer, DICKEY-john Europe (011-33-141-192189), or DICKEY-john USA (1-800-637-3302).

DICKEY-john

12 CONNECTOR PIN-OUTS

CONSOLE

BATTERY

Pin label	Description
Red wire	Battery +12V
Black wire	Battery ground

GROUND SPEED

Pin label	Description
1	Ground (black)
2	Signal (green)
3	Power (red)
4	Sense (white)

PM300 IMPLEMENT

Pin label	Description
1	Row 1 (green)
2	Row 2 (brown)
3	Row 3 (blue)
4	Row 4 (orange)
5	Row 5 (yellow)
6	Row 6 (violet)
7	Row 7 (gray)
8	Row 8 (pink)
9	Row 9 (tan)
10	Row 10 (white/black)
11	Row 11 (red/black)
12	Row 12 (green/black)
13	Row 13 (orange/black)
14	Row 14 (blue/black)
15	Row 15 (black/white)
16	Row 16 (red/white)
17-23	No connection
24	8V sensor power (red)
25	8V sensor power (red/black/white)
26	Sensor return (black)
27	Sensor return (white/black/red)
28	No connection

DICKEY-john

29	Hopper 1 (green/white)
30	Hopper 2 (blue/white)
31	Shaft / Fan / Flow (black/red)
32	8V power (red)
33	12V switched power (white/red)
34	12V return (black)
35	RS-232 Rx (blue/red)
36	RS-232 Tx (red/green)
37	Lift switch (orange/red)

PM400 IMPLEMENT 1

Pin label	Description
1	Row 1 (green)
2	Row 2 (brown)
3	Row 3 (blue)
4	Row 4 (orange)
5	Row 5 (yellow)
6	Row 6 (violet)
7	Row 7 (gray)
8	Row 8 (pink)
9	Row 9 (tan)
10	Row 10 (white/black)
11	Row 11 (red/black)
12	Row 12 (green/black)
13	Row 13 (orange/black)
14	Row 14 (blue/black)
15	Row 15 (black/white)
16	Row 16 (red/white)
17	Row 17 (green/white)
18	Row 18 (blue/white)
19	Row 19 (black/red)
20	Row 20 (white/red)
21	Row 21 (orange/red)
22	Row 22 (blue/red)
23	Row 23 (red/green)
24	8V sensor power (red)
25	8V sensor power (red)
26	Sensor return (black)
27	Sensor return (black)
28	Row 24
29-36	No connection
37	Lift switch (black/white/red)

DICKEY-john

PM400 IMPLEMENT 2

Pin label	Description
1	Row 25 (green)
2	Row 26 (brown)
3	Row 27 (blue)
4	Row 28 (orange)
5	Row 29 (yellow)
6	Row 30 (violet)
7	Row 31 (gray)
8	Row 32 (pink)
9	Row 33 (tan)
10	Row 34 (white/black)
11	Row 35 (red/black)
12	Row 36 (green/black)
13-23	No connection
24	8V sensor power (red/black/white)
25	8V sensor power (red)
26	Sensor return (white/black/red)
27	Sensor return (black)
28	No connection
29	Hopper 1 (orange/black)
30	Hopper 2 (blue/black)
31	Shaft / Fan / Flow (black/white)
32	8V power (red)
33	12V switched power (green/white)
34	12V return (black)
35	RS-232 Rx (blue/white)
36	RS-232 Tx (red/white)
37	No connection

13 PARTS AND WARRANTY INFORMATION

PM400/300 Service parts				
Monitor		Planter Harnesses & Y cables		Accessory & Extensions Harnesses
PM 300 Monitor	46799-0200	4-row harness	45841-0530	Accessory breakout harness	46799-1060
PM 400 Monitor	46799-0300	6-row harness	45841-0550	Hoppers & Lift Switch harness	46799-1240
Standard mounting bracket	46799-0151	8-row harness	45841-0570	16-row, 6 ft extension harness	45841-0810
3D adjustable mounting bracket	46799-0150	12-row harness	45841-0590	16-row, 15 ft extension harness	45968-0320
Fuse, AGC 5A	20112-0005	16-row harness	45841-1080	16-row, 30 ft extension harness	45968-0321
Quick start card	46799-0080	8-row squadron Y-cable	45968-0610	32-row, 15 ft extension harness	45841-0820
		12-row squadron Y-cable	45968-0960	32-row, 30 ft extension harness	45841-0790
		16-row squadron Y-cable	45968-0950		
		24-row squadron Y-cable	45841-0940		
		32-row squadron Y-cable	46799-1320		