FargoAire ART 240 Operation

1 Display

The 16 character by two line display shows the selected mode information on the top line. The lower line shows alarms and other information. The display is backlit when the monitor is switched on.

2 Key Presses

The keypad is backlit whenever the monitor is switched on.

2.1 Power Key

Press the Power key briefly to switch on.

To switch off, press and hold the Power key for 5 seconds. No more than 10 mA is drawn while in the "off" state.

2.2 N/A

2.3 Mode Key

Press the Mode key to select:

- Speed
- Area 1or 2
- Distance (if speed sensor is installed)
- Shaft RPM (if shaft sensor is installed)
- Fan RPM (if fan sensor installed)
- Bin status
- Meter status

2.4 Cal Key

Pressing the Cal key enters a new mode depending on the current mode.

2.4.1 Modes entered with Cal key

Current Mode	Action Key	New Mode	Section Reference
Seed Scan	Cal	Sensitivity	
Speed	Cal	Test speed	3.10
Area 1,2	Cal	Select Sensor Ch.	3.25
Distance	Cal	Distance Check	3.15
Shaft 1-8	Cal	Shaft 1-8 targets	3.17
Fan 1-2	Cal	Fan 1-2 targets	3.21
Bin	Cal	Select Sensor Ch.	3.25
Meter	Cal	Select Sensor Ch.	3.25
Any Normal mode	Cal + hold 5 sec	Select Sensor Ch.	3.25
Select Sensor Ch.	Cal	Circumference	3.26
Circumference	Cal	Implement Width	3.27
Implement Width	Cal	System Units	3.28
System Units	Cal	Loop 1 enable	3.29
Loop 1 enable	Cal	Loop 2 enable	3.30
Loop 2 enable	Cal	Set Default Cal	3.31
Default Cal	Cal	Select Sensor Ch.	3.25
Sensor Info	Cal	Sensor Version	4.5, 4.6

2.5 OK Key

Press the OK key to acknowledge alarms.

- Acknowledging any alarm two times will permanently mute the alarm until the alarm status is restored to normal.
- Sensor alarms are inhibited while in any calibration mode.
- All Block alarms for every sensor in a loop can be acknowledged and temporarily muted by holding the OK key for 5 seconds while in the desired loops rate mode.

The OK key is also used to select hidden modes and reset area counters.

2.5.1   Priority of Seed Rate Alarms

Priority	Alarm
1 = highest	Clean
2	Block

2.6 Up and Down keys

Pressing the up or down key enters a new mode depending on the current mode.

The up and down keys are used to edit calibration numbers.

2.6.1 Modes entered with Up and Down keys

Current Mode	Action Key	New Mode	Section Reference
Area 1,2	Down	Reset Area	
Distance	Down	Reset Distance	
Shaft 1-8	Up	High alarm set	3.18
Shaft 1-8	Down	Low alarm set	3.19
Fan 1-2	Up	High alarm set	3.22
Fan 1-2	Down	Low alarm set	3.23
Hour Meter	Down	Reset Hour Meter	4.6

2.7 Hidden Mode Keys Level 1 (Seed Rate and Mode together)

- The OK key cycles through the Hidden modes
- No alarm messages can be displayed while in Hidden modes

2.7.1 Hidden Modes

Current Mode	Action Key	New Mode	Section Reference
Any normal mode	Rate & Mode	Audible Alarm	4.1
Audible Alarm	OK	Loop Current	4.2
Loop Current	OK	Monitor Version	4.3
Monitor Version	OK	Sensor Info	4.4
Sensor Info	OK	System Voltage	4.6
System Voltage	OK	Hour Meter	4.7

Level 1 Diagnostic Screen: New in 2008

- The sensor and loop number will be displayed with three infrared levels (A,B,C). Note: Current SS25A sensors only have two infrared beams so level C will always read zero.
- Press the up and down keys to select different sensors or hold the up or down key for 3 sensors to cycle between loop 1 and 2.
- Sensor infrared values will be displayed as a number between 1 and 15 where a 1 indicates the strongest possible signal and higher numbers are increasing weaker infrared signals

- New production units should have an infrared strength value of 1 to 9.
- These infrared strength values will change with wear and tear on the sensor's optical parts as well as buildup of seed treatments and other debris. The monitor will alarm for cleaning when the infrared value reaches 15.
- Pressing the OK key at any time will change the displayed sensor information to hardware and software versions. The current software version is 5 and the hardware version may be 0, 1 or 2 depending on the age of the sensor.

3 MODES

3.1 Loop Sensitivity Mode

- Sensitivity is the value used to determine how many seeds per second are required to be seen by each sensor so they do not show blockage alarms.
- The sensitivity value can be edited between 0 – 125 using the up and down arrows. The value will change by one. The sensitivity has a default value of 15.
- Sensitivity value of 0 will disable the power and alarms to the seed sensor loop within 30 sec.
- Sensitivity below 15 requires the scanning loop to run slower giving the sensors longer than 1 sec periods to count seed. This allows for sensitivity ranges down to 1 seed / 30 sec. This will affect the time required to detect blockages.
- The time required to detect a blockage is two times the current sensitivities loop scan interval.

3.1.1 Sensitivity Values 0 -125

Sensitivity	Seeds/loop required	Loop scan interval (sec)
0	Loop is off	
1	1	30
5	1	20
10	1	10
20	7	1
30	17	1
40	27	1
50	44	1
60	80	1
70	148	1
80	281	1
90	539	1
100	1043	1
110	2019	1
120	4400	1
121	4800	1
122	5300	1
123	5800	1
124	6400	1
125	7000	1

3.2 N/A

3.3 N/A

3.4 N/A

3.5 N/A

3.6 N/A

3.7 N/A

3.8 N/A

3.9 Speed Mode

- Speed is in KPH for metric units, MPH for SAE units.
- The speed value can be range between 0.0 – 99.9, XX.X is displayed for overflow.

3.10 Test speed Calibration Mode

- The Test speed value can be edited between 0 – 20.0 using the up and down arrows. The value will change by 0.1.
- The Test speed value has a default value of 0.
- If Test speed is any value not 0 then it will overwrite any other speed sensor data.

3.11 Area mode

- The monitor supports 2 individual area accumulators.
- This mode requires a speed sensor to be installed.
- Area is in Hectares for metric units, acres for SAE units.
- The Area value can be range between 0.0 – 9999999.9 for display a larger number will display XXXXXXX.X for overflow.
- The Area value has a default value of 0.
- The Area will not accumulate if a work switch is open.

3.12 Clear Area Mode

- To clear the accumulated area, Press the Down Key then HOLD the OK key for 5 sec.

3.13 Distance Mode

- This mode requires a speed sensor to be installed.
- Distance is in meters for metric units, feet for SAE units.
- The Distance value can be range between 0.0 – 9999999.9 for display a larger number will display XXXXXXX.X for overflow.

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- The Distance value has a default value of 0.
- The distance will not accumulate if a work switch is open.

3.14 Clear Distance Mode

- To clear the accumulated distance, Press the Down Key then HOLD the OK key for 5 sec.

3.15 Distance Check Mode

- Distance Check is in meters for metric units, feet for SAE units.
- The Distance Check value can be edited between 0.1 – 9999999.9 using the up and down arrows. The value will change by 0.1.
- The circumference is modified in real time when editing the distance check value.

3.16 Shaft RPM Mode

- This mode requires a shaft sensor to be installed.
- There can be up to 8 shafts installed
- The Shaft value can be range between 0 – 99999 for display a larger number will display XXXXX for overflow.
- Shaft rpm is calculated as RPM = (sensor pulses/min)/targets

3.17 Shaft Target Calibration Mode

- The Shaft Target value can be edited between 1 – 250 using the up and down keys. The value will change by 1.
- The Shaft Target value has a default value of 1.

3.18 Shaft High Alarm Set Mode

- The Shaft High Alarm value can be edited between 0 – 99999 using the up and down arrows. The value will change by 1.
- The Shaft High Alarm value has a default value of 0.
- A Shaft High Alarm value of 0 disables all high alarms for that shaft.

3.19 Shaft Low Alarm Set Mode

- The Shaft Low Alarm value can be edited between 0 – 99999 using the up and down arrows. The value will change by 1.
- The Shaft Low Alarm value has a default value of 0.
- A Shaft Low Alarm value of 0 disables all high alarms for that shaft.
- The Ok key is used to acknowledge Shaft alarms.
- Acknowledging any shaft alarm 2 times will permanently mute the alarm until the alarm type changes or work switch is cycled.
- Shaft alarms are inhibited while in any calibration mode.
- Shaft alarms are inhibited while a work switch open.

3.20 Fan RPM Mode

- This mode requires the desired fan sensor to be installed.
- There can be up to 2 Fans installed
- The Fan value can be range between 0 – 99999 for display a larger number will display XXXXX for overflow.
- Fan rpm is calculated as RPM = (sensor pulses/min)/targets

3.21 Fan Target Calibration Mode

- The Fan Target value can be edited between 1 – 250 using the up and down arrows. The value will change by 1.
- The Fan Target value has a default value of 2.

3.22 Fan High Alarm Set Mode

- The Fan High Alarm value can be edited between 0 – 99999 using the up and down arrows. The value will change by 1.
- The Fan High Alarm value has a default value of 0.
- A Fan High Alarm value of 0 disables all high alarms for that Fan.

3.23 Fan Low Alarm Set Mode

- The Fan Low Alarm value can be edited between 0 – 99999 using the up and down arrows. The value will change by 1.
- The Fan Low Alarm value has a default value of 0.
- A Fan Low Alarm value of 0 disables all high alarms for that Fan.
- The Ok key is used to acknowledge Fan alarms.
- Acknowledging any Fan alarm 2 times will permanently mute the alarm until the alarm type changes or work switch is cycled.
- Fan alarms are inhibited while in any calibration mode.
- Fan alarms are inhibited while a work switch is open.

3.24 Bin Mode or Meter Mode

- There can be up to 8 Bins installed.
- The Bin mode displays all 8 bins on one line. If the Bin is in alarm it will display a 0 if the Bin is not in alarm it will display its Bin number.
- The Ok key is used to acknowledge Bin alarms.
- Acknowledging any Bin alarm 2 times will permanently mute the alarm until the alarm type changes or work switch is cycled.
- Bin alarms are inhibited while in any calibration mode.
- Bin alarms are inhibited while a work switch is open.

3.25 Select Sensor Mode

- Select the Sensor Channel with the Up and Down Keys.
- Press the OK key once the Channel has been selected.
- Select the Sensor Type with the Up and Down keys.

- There are 12 sensor channels. Only one speed sensor and two fan sensors are allowed.

3.26 Circumference Calibration Mode

- Circumference is in centimeters for metric units, inches for SAE units.
- The Circumference value can be edited between 0.1 – 9999.9 using the up and down arrows. The value will change by 0.1.
- The Circumference value has a default value of 1200 inches.

3.27 Width Calibration Mode

- Width is in centimeters for metric units, inches for SAE units.
- The Width value can be edited between 0.1 – 99999.9 using the up and down arrows. The value will change by 0.1.
- The Width value has a default value of 480 inches.

3.28 System Units Select Mode

- The System Units value can be set to either SAE or METRIC
- The System Units value has a default value of SAE

3.29 Loop 1 Enable Mode

- The Loop 1 Enable value can be set to ON to use the first sensor loop, or OFF to disable

3.30 Loop 2 Enable Mode

- The second sensor loop is not installed on this model

3.31 Default Calibration Mode

- The default cal will reset associated values to default settings.
- The default cal is activated by holding the OK key for 5 sec.
- Default Cal mode will automatically activate if a bad checksum is calculated in the Ram at Power Up

4 Hidden Modes

4.1 Audible Alarm Set Mode

- The Audible Alarm value can be edited to either ON or OFF
- The Audible Alarm value has a default value of ON
- No alarms should be audible when Audible Alarm value is OFF.

4.2 Loop Current Mode

- Loop Current mode displays the Seed Sensor Loop Current draw in Amps.

4.3 Monitor Version Mode

- Monitor Version mode displays the monitors Hardware version on line 1 and the monitors software version on line 2.

4.4 Seed Sensor Info Mode

- Sensor Info mode displays the current sensor number and its loop number on line 1 and Eye cal values for 3 sets of eyes on line 2.
- User can select any installed sensor by pressing the up or down arrow to select sensors. Sensor number value will not scroll.
- User can only select sensor numbers that are actually detected in the desired loop.

4.5 Sensor Version Mode

- Sensor Info mode displays the current sensor number and its loop number on line 1 and Sensor Software version and hardware version on line 2.
- User can select any installed sensor by pressing the up or down arrow to select sensors. Sensor number value will not scroll.
- User can only select sensor numbers that are actually detected in the desired loop.

4.6 System Voltage Mode

- Volts detected at the monitor are displayed

4.7 Hour Meter Mode

- The minute value can be range between 0 - 59 for display.
- The hour value can be range between 0 - 99 for display a larger number will display XX for overflow.
- Hour meter accuracy shall be no worse than 1% or +/- one digit of resolution whichever is larger..
- The hour meter value has a default value of 0.

4.8 Reset Hour Meter Mode

- To clear the hour meter Press DOWN key then HOLD the OK key for sec.

4.9
To access the Level 2 Diagnostics:
Hold the SCAN and CAL keys together for 5 seconds

Level 2 Diagnostic Screen: New in 2008

- Seed loop 1 will be running in a production test mode and the test results are displayed one sensor at a time. To test sensors attached to loop 2 you must swap them to loop 1.
- **Note1:** Wait 2 seconds for each sensor installed before reviewing the last sensor results. Eg. 96 sensors should take about 3.5 minutes.
- Once a valid serial number is displayed for the first sensor you can start reviewing the results.
- Press the up and down keys to select different sensors just like level 1 diagnostics.
- The sensor serial number and three infrared (ATD) values are displayed.
- Infrared (ATD) values are displayed with a higher resolution than level 1 diagnostics (1 to 255 vs. 1 to 15).
- New production units should have an ATD value between 15 and 190. Values above 200 usually indicate sensor cleaning is required.
- Pressing the OK key at any time will change the displayed sensor information to test seed count. Sensors flash their infrared LEDS (think hi/low beam headlights) to simulate seed flow during level 2 diagnostics. A value of 4 to 6 seeds per loop communication cycle is expected.
- **Note2:** Only sensors with hardware version 02 are capable of generating the test seed count.