

FOUR CHANNEL SHAFT & BIN MONITOR INSTALLATION & INSTRUCTION

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ABOUT THE MANUAL

This manual is written in four sections; Installation, Before Starting, Operation and Troubleshooting. The **Installation** section contains instructions for installing the various parts of the Four Channel Shaft and Bin Monitor. The **Before Starting** section contains step-by-step instructions for calibrating the various parts of the Four Channel Shaft and Bin Monitor. The **Operation** section describes the basic functions of the Four Channel Shaft and Bin Monitor. Finally, the **Troubleshooting** section contains information on situations that could occur, and details on how to find a solution.

If all else fails, make note of any questions, and contact Agtron Enterprises Inc. toll-free at **1-800-667-0640**, or by email at ***customerservice@agtron.com***.

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WARRANTY AND DISCLAIMER

WARRANTY TERMS

Once Agtron Enterprises Inc. receives a completed warranty card, the Four Channel Shaft and Bin monitor is covered by a three year warranty on materials and workmanship. Without a completed warranty card, the Four Channel Shaft and Bin monitor is covered for only one year.

1. Any warranty shipping costs and installation labour are the responsibility of the customer.
2. Any product failures during the warranty period will be repaired, or replaced with new or rebuilt product by Agtron Enterprises Inc. If replacement parts are sent, the customer has 30 days to return the original defective product. After 30 days the customer will be charged for the warranty replacement parts sent.
3. Damage from neglect, accidents, fire, liquids, chemicals, other substances, flooding, vibrations, excessive heat, power surges, excess supply voltage, incorrect supply voltage, radiation, electrostatic discharges including lightning, other external forces and impacts are not covered under warranty.
4. Unauthorized modifications to the Four Channel Shaft and Bin monitor will void the warranty.
5. Any usage of the Four Channel Shaft and Bin monitor outside of the intended use will void the warranty.

PRODUCT RETURNS

If unsatisfied with the Four Channel Shaft and Bin monitor, a full refund is offered within 30 days of the date of purchase. To receive the refund, contact Agtron Enterprises Inc. for a Return Authorization number. Product returned after 30 days will be charged a 15% restocking fee. No refund is available on product returned 52 weeks after the date of purchase.

CONDITIONS OF USE

1. Agtron Enterprises Inc. takes no responsibility for injuries, damages, or losses due to the use, misuse, abuse, or failure of this equipment. It is the responsibility of the customer to understand the operation of the *PRODUCT NAME* and to ensure that it is operating properly.
2. All products produced by Agtron Enterprises Inc. are intended for use with agricultural implements. Any other application has not been considered; therefore complying with regulations is the sole responsibility of the customer.

sors).

SOLUTION

- First, check that the sensitivity dial of the Bin sensor channel is not turned fully counter clockwise.
- Second, ensure the product has not built-up between the Bin sensor “eyes”.
- Third, ensure the Bin sensor is connected to the Sensor Adapter cable as described in the **Sensor Adapter Cable Connections** section.
- Fourth, replace the Bin sensor.

SITUATION

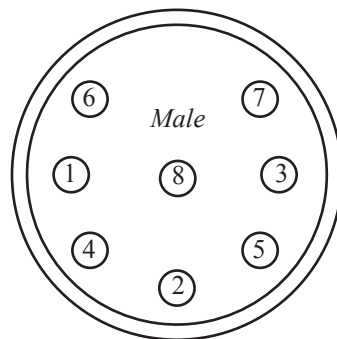
The air cart tank is full, but the Bin sensor is always in alarm (follow this same process for alarm when full sensors).

SOLUTION

- First, ensure the product has not bridged over the Bin sensor “eyes”.
- Second, ensure the Bin sensor is connected to the Sensor Adapter cable as described in the **Sensor Adapter Cable Connections** section.
- Third, if a Shaft sensor is connected to the same channel, make sure the metering shaft is turning.

APPENDIX: COLOUR CODE & PIN OUT

- Pin 1: Channel 1 (yellow)
- Pin 2: Channel 2 (brown)
- Pin 3: Sensor Common (black)
- Pin 4: Channel 3 (green)
- Pin 5: Sensor Power (red)
- Pin 6: Channel 4 (blue)
- Pin 7: Not used (white)
- Pin 8: Not used (orange)



PARTS LIST

STANDARD PARTS

QUANTITY PART NUMBER

Monitor Head -----	1 -----	9A4CHSM
Shaft sensor -----	4 -----	9KSHSEN
Extension cable (10 foot) -----	1 -----	9AM2X10
Extension cable (20 foot) -----	1 -----	9AM2X20
Sensor Adapter cable -----	1 -----	9AM2XM1A
Butt Splice (red) -----	4 -----	850005002
Butt Splice (blue) -----	1 -----	8000B231X
Butt Splice (yellow) -----	1 -----	8000C246X
Magnet (extra) -----	1 -----	9S0010012
Four Channel manual -----	1 -----	MN4CHSM

OPTIONAL PARTS

SENSORS

Bin sensor -----	9KBNSEN
Proximity sensor (Case part number) -----	1032920

CABLES

Extension cable (2 foot) -----	9AM2X02
Extension cable (40 foot) -----	9AM2X40
Proximity sensor adapter cable -----	9ACMSNS

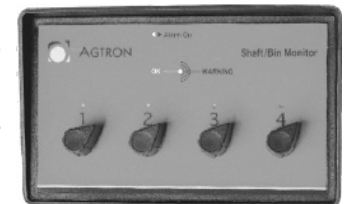
MISCELLANEOUS PARTS

120VAC to 12VDC adapter -----	300681281
External Alarm -----	9KRLYDR
Mounting Bracket -----	9KBRKT0

MONITOR HEAD INSTALLATION

MOUNTING

Select a flat mounting location in the tractor cab where the Monitor Head can be easily seen, and all the dials are accessible.



Monitor Head

Note: Do not mount in a location that obstructs the view of the road or work area.

The tools required to install the Monitor Head are:

- Wire strippers
- Wire cutters
- Crimp tool
- 1/4 inch drill bit (optional)
- 7/16 inch wrench (optional)

Route the power cable from the Monitor Head to a switched 12 volt source in the accessory panel. Secure the power cable to the equipment with cable ties.

Select a mounting location for the Sensor Adapter cable within 20 feet of each Shaft sensor or six feet of each Bin sensor. Secure the Sensor Adapter cable to the equipment with cable ties.

STANDARD MOUNTING

To mount the Monitor Head, remove the backing from the adhesive Velcro® strip; located on the back of the Monitor Head.

Note: *The Velcro® strip allows the Monitor Head to be easily moved.*

MOUNTING BRACKET

Remove the Monitor Head from the mounting bracket by loosening the thumb screws. Drill two ¼ inch holes four inches apart. Using ¼ inch bolts and a 7/16 inch wrench, secure the mounting bracket to the mounting location. Using the thumb screws, secure the Monitor Head to the mounting bracket.

CABLE CONNECTIONS

TRACTOR

Connect the *white* power cable wire to a switched 12 volt source; the Monitor Head is off when the ignition is off.

Connect the *black* power cable wire to a ground source. Not all tractor cabs are properly grounded; it is recommended to use a ground source in the fuse panel.

Note: *Do NOT connect the black wire to the negative terminal of the tractor battery.*

Note: *Do not remove the three ampere (3A) fuse in the white wire, or replace it with a fuse of higher value.*

12 VOLT ADAPTER

Cut the end off the 12 Volt Adapter. Using wire strippers, remove a quarter inch of jacketing from both wires.

Connect the *white* power cable wire to the black 12 Volt Adapter wire with the white dashes.

Connect the *black* power cable wire to the solid black 12 Volt

cables are aligned; start at the hitch connection.

SHAFT SENSOR

SITUATION

A shaft stopped turning, but Shaft sensor channel did not alarm.

SOLUTION

- First, check that the sensitivity dial of the Shaft sensor channel is not turned fully counter clockwise.
- Second, ensure the Shaft sensor is connected to the Sensor Adapter cable as described in the **Sensor Adapter Cable Connections** section.

SITUATION

The Shaft sensor channel is always in alarm even when the metering shaft is turning.

SOLUTION

- First, slowly turn the sensitivity dial counter clockwise; if the sensitivity dial is set to high, this could occur.
- Second, if the shaft turns very slowly, add another magnet opposite the existing magnet; no more than two magnets on a 1 inch shaft.
- Third, make sure the magnet is still on the shaft.
- Fourth, ensure the Shaft sensor is still in-line with the magnet.
- Fifth, ensure the Shaft sensor is still within the required distance from the magnet; a half inch.
- Sixth, ensure the Shaft sensor is connected to the Sensor Adapter cable as described in the **Sensor Adapter Cable Connection** section.
- Seventh, if a Bin sensor is connected to the same channel, make sure the air tank is not empty.
- Eighth, replace the Shaft sensor.

BIN SENSOR

SITUATION

The air cart tank went empty, but the Bin sensor channel never alarmed (follow this same process for alarm when full sen-

OK/WARNING LIGHT

When every channel is operating normally, the OK/Warning light will be on. When an alarm occurs, the alarming channel and the OK/Warning light will flash back and forth.

ALARM SWITCH

The alarm switch is used to turn off the audible alarm; switch to the left to turn off the alarm and switch to the right to turn on the alarm. With the alarm switch turned off, visual alarms still occur, but none of the channels will have an audible alarm. See the **Sensitivity Dial** section for information on turning off an individual channel.

TROUBLESHOOTING

SITUATIONS AND SOLUTIONS

To effectively troubleshoot the Four Channel Shaft and Bin Monitor, start with a known “good” or working system. There are four areas of possible failure; the Monitor Head, Shaft sensors, Bin sensors or cables.

Listed below are situations that could occur with the various parts of the Four Channel Shaft and Bin monitor. If a situation occurs, locate the section of the needed part then follow the SOLUTION process to identify the cause and restore normal operation.

MONITOR HEAD

SITUATION

None of the lights turn on when the power is turned on.

SOLUTION

- First, check the power cable is connected as described in the **Monitor Head Installation** section.
- Second, using a voltmeter, check for 12 volts at the *white* wire, and ground at the *black* wire.
- Third, disconnect the Extension cable from the Monitor Head from the Extension cable routed to the hitch. If the Monitor Head does not turn on, replace the Monitor Head.
- Fourth, check all the Extension cables for damage; crushed, cut, etc. Replace any damaged Extension cables.
- Fifth, make sure the arrows molded onto all the Extension

Adapter wire.

SENSOR ADAPTER CABLE

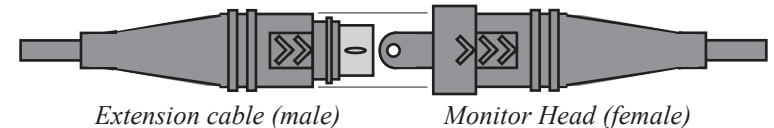
Using Extension cables as necessary, connect the female Extension cable plug of the Monitor Head to the male Extension cable plug of the Sensor Adapter cable. Make sure to allow for a connection at the tractor hitch.



Extension cable

Note: To keep plugs clean, always cover disconnected Extension cable plugs with the provided dust caps molded onto the cable.

Note: When making Extension cable connections make sure to align the molded arrows. If difficult to push together, check the condition of the pins.

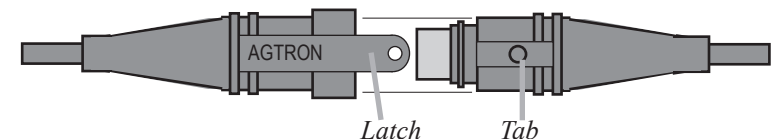


Extension cable (male)

Monitor Head (female)

Note: To help avoid static problems, loop then twist any excess Extension cables to create a figure eight shape before securing the cable.

Note: When making Extension cable connections, make sure to secure the latch on the female plug over the tab on the male plug.



Latch

Tab

SHAFT SENSOR INSTALLATION

MOUNTING

Select a mounting location where the Shaft sensor is aligned with the largest surface of the magnet.



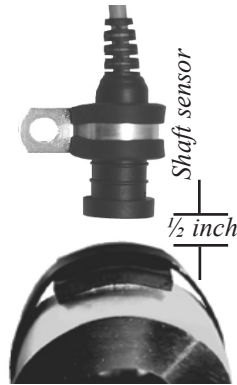
Shaft sensor

Note: Maximum of a 1/2 inch between the Agtron logo on the Shaft sensor and the magnetic target.

The tools required to install a Shaft sensor are:

- Tape measure
- 5/16 inch hex-driver
- Crimp tool
- Wire cutters
- Wire strippers
- Drill

Slide the Shaft sensor, cable first, into the large p-clip. Using one of the provided screws and a 5/16 inch hex-driver or socket, secure the Shaft sensor to the selected mounting location. Ensure the p-clip is secured around the ribbed barrel of the Shaft sensor.



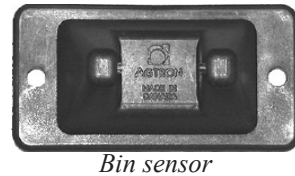
Clean any dirt or grease from the magnet location. Remove the adhesive backing, and attach the magnet to the shaft or tire hub. On shafts, use the provided cable tie to secure the magnet in place.

Slide the Shaft sensor cable through the small p-clip. Using the provided screw and a 5/16 inch hex-driver, secure the Shaft sensor cable to the chassis.

BIN SENSOR INSTALLATION

MOUNTING

Select a mounting location in the air tank at the desired empty product level; the Bin sensor alarms when uncovered. Select a mounting location where the Bin sensor cable is protected from field debris damage.



The tools needed to install a Bin sensor are:

- Electric drill
- 5/8 inch drill bit
- 5/16 inch hex-driver

In the selected mounting location, drill a 5/8 inch hole. Remove the cut-outs and adhesive backing from the supplied gasket, thread over the sensor cable and affix to the back of the sensor. Route the Bin sensor cable through the 5/8 inch hole. Using a 5/16 inch hex-driver and the provided self tapping screws, secure the Bin sensor to the mounting location.

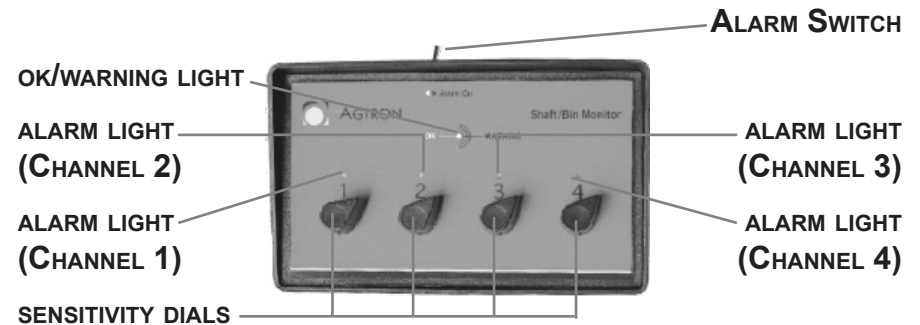
OPERATION

Each channel is independent of the others. When an alarm occurs, the alarm light identifies the channel and the audible alarm will sound.

Bin sensors can be set up to alarm when a tank is empty, or alarm when a tank is full.

With a single magnet, a Shaft sensor can monitor revolutions per minute down to 20 and up to 2000. By using multiple magnets, the minimum RPM can be lowered, but the maximum RPM is also lowered. For example, using four magnets a shaft turning at 5 RPM can be monitored, but this reduces the maximum RPM to 500.

Both a Shaft and Bin sensor can be connected to one channel. When an alarm occurs, the sensor causing the alarm is not identified; only that one of the two sensors is in alarm.



ALARM LIGHTS

Each channel has an alarm light. When a channel detects an alarm, the alarm light of the channel will flash. Alarm lights are a visual alarm used to identify which channel is in alarm. When the channel is working normally, the alarm light will be off.

SENSITIVITY DIALS

Each channel has a sensitivity dial. The sensitivity dial is used to set the minimum revolutions per minute required before causing an alarm. A channel can be turned off by turning the sensitivity dial fully counter clockwise.

BEFORE STARTING

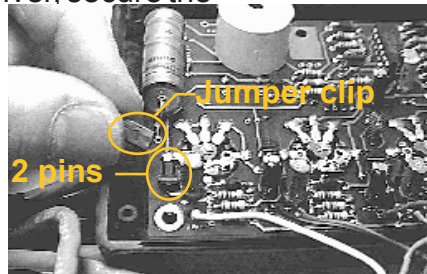
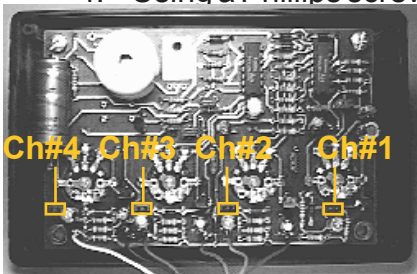
TURN OFF UNUSED CHANNELS

To turn off an unused channel, turn the sensitivity dial of the unused channel fully counter clockwise; a click should be heard.

BIN SENSOR CALIBRATION

Follow this procedure to calibrate a Bin sensor.

1. Turn the sensitivity dial of the Bin sensor channel fully clockwise.
2. Using a Phillips screw driver, remove the back cover of the Monitor Head.
3. Remove the jumper of the Bin sensor channel, and plug it over both jumper posts; see the diagram below.
4. Using a Phillips screw driver, secure the



back cover of the Monitor Head.

SHAFT SENSOR CALIBRATION

Follow this procedure to calibrate a Shaft sensor channel.

1. Turn the sensitivity dial fully clockwise.
2. Start the shaft turning normally.
3. Slowly turn the sensitivity dial counter-clockwise until the alarm light of the Shaft sensor channel stays off permanently.

SHAFT AND BIN SENSOR CALIBRATION

To calibrate a channel with a Shaft and Bin sensor connected, simply follow the above **Shaft Sensor Calibration** procedure.

Note: To prevent product bridging, mount the Bin sensor on a 45 degree angle.

SENSOR ADAPTER CABLE CONNECTIONS

CHANNEL 1

SHAFT SENSOR

Using one of the provided butt splice connectors, crimp one of the *black* Shaft sensor wires to the *yellow* Sensor Adapter cable wire.

BIN SENSOR: ALARM WHEN EMPTY

Using one of the provided butt splice connectors, crimp the *white* Bin sensor wire to the *yellow* Sensor Adapter cable wire.

BIN SENSOR: ALARM WHEN FULL

Using one of the provided butt splice connectors, crimp the *green* Bin sensor wire to the *yellow* Sensor Adapter cable wire.

SHAFT AND BIN SENSOR: ALARM WHEN EMPTY ONLY

Using one of the provided butt splice connectors, crimp one of the *black* Shaft sensor wires and the *white* Bin sensor wire to the *yellow* Sensor Adapter cable wire.

CHANNEL 2

SHAFT SENSOR

Using one of the provided butt splice connectors, crimp one of the *black* Shaft sensor wires to the *brown* Sensor Adapter cable wire.

BIN SENSOR: ALARM WHEN EMPTY

Using one of the provided butt splice connectors, crimp the *white* Bin sensor wire to the *brown* Sensor Adapter cable wire.

BIN SENSOR: ALARM WHEN FULL

Using one of the provided butt splice connectors, crimp the *green* Bin sensor wire to the *brown* Sensor Adapter cable wire.

SHAFT AND BIN SENSOR: ALARM WHEN EMPTY ONLY

Using one of the provided butt splice connectors, crimp one of the *black* Shaft sensor wires and the *white* Bin sensor wire to the *brown* Sensor Adapter cable wire.

CHANNEL 3

SHAFT SENSOR

Using one of the provided butt splice connectors, crimp one of the *black* Shaft sensor wires to the *green* Sensor Adapter cable wire.

BIN SENSOR: ALARM WHEN EMPTY

Using one of the provided butt splice connectors, crimp the *white* Bin sensor wire to the *green* Sensor Adapter cable wire.

BIN SENSOR: ALARM WHEN FULL

Using one of the provided butt splice connectors, crimp the *green* Bin sensor wire to the *green* Sensor Adapter cable wire.

SHAFT AND BIN SENSOR: ALARM WHEN EMPTY ONLY

Using one of the provided butt splice connectors, crimp one of the *black* Shaft sensor wires and the *white* Bin sensor wire to the *green* Sensor Adapter cable wire.

CHANNEL 4

SHAFT SENSOR

Using one of the provided butt splice connectors, crimp one of the *black* Shaft sensor wires to the *blue* Sensor Adapter cable wire.

BIN SENSOR: ALARM WHEN EMPTY

Using one of the provided butt splice connectors, crimp the *white* Bin sensor wire to the *blue* Sensor Adapter cable wire.

BIN SENSOR: ALARM WHEN FULL

Using one of the provided butt splice connectors, crimp the *green* Bin sensor wire to the *blue* Sensor Adapter cable wire.

SHAFT AND BIN SENSOR: ALARM WHEN EMPTY ONLY

Using one of the provided butt splice connectors, crimp one of the *black* Shaft sensor wires and the *white* Bin sensor wire to the *blue* Sensor Adapter cable wire.

SENSOR COMMON

Using one of the provided butt splice connectors, crimp the remaining *black* Shaft sensor and/or Bin sensor wires to the *black* Sensor Adapter cable wire.

Note: All Shaft and Bin sensors share the same black Sensor Adapter cable wire.

SENSOR POWER

Using one of the provided butt splice connectors, crimp the remaining *red* Bin sensor wires to the *red* Sensor Adapter cable wire.



EXTERNAL ALARM INSTALLATION

MOUNTING

Select a mounting location where the relay can be mounted with the wires hanging down. Select a mounting location where the wires and relay are out of “harm’s way”.

The tools required to install the External Alarm are:

- Wire strippers
- Crimp tool
- Electric drill
- 5/16 inch hex driver

Remove the mounting bracket from the relay. Using a 5/16 inch hex driver and the provided self tapping screw, secure the relay to the mounting location.

CABLE CONNECTIONS

Using a spade connector, attach the external alarm signal wire from the Monitor Head to pin 85 of the relay. Connect a ground source to pin 86 of the relay.

If the signal wire is used to drive an *external alarm*, connect the positive terminal of the horn or light to a 12 volt source. Connect the negative terminal of the horn or light to pin 30. Connect a

