Fisher® 4320 Wireless Position Monitor

Contents

Figure 1. Fisher® 4320 Position Monitor

This manual describes using the local interface to setup and calibrate the instrument.

Do not install, operate, or maintain a 4320 wireless position monitor without being fully trained and qualified in valve, actuator, and accessory installation, operation, and maintenance. To avoid personal injury or property damage, it is important to carefully read, understand, and follow all of the contents of this manual, including all safety cautions and warnings. If you have any questions regarding these instructions, contact your Emerson Process Management sales office before proceeding.

Introduction

Scope of Manual

This instruction manual includes specifications, installation, initial setup, configuration, operation, troubleshooting, and maintenance information for the Fisher® 4320 wireless position monitor.

Description

The 4320 wireless position monitor is a true linkage-less non-contacting wireless position transmitter and limit switch. It is a rugged measurement device that provides a precise wireless feedback signal to indicate equipment position with a percent (%) of span plus on/off indication. The 4320 can be used to monitor equipment such as valves, sliding-stem regulators,

4320 Wireless Position Monitor

Table 1. Specifications

Available Mountings

■ Quarter-turn rotary, ■ sliding-stem or ■ linear applications

Can also be mounted on other actuators that comply with IEC 60534-6-1, IEC 60534-6-2, VDI/VDE 3845 and NAMUR mounting standards.

Input Measurement

Stem Travel

Minimum: 8 mm (0.3125 inch)
Maximum: 100 mm (4 inches)

Shaft Rotation

Minimum: 45°
Maximum: 90°

Measurement Output

Analog: 0-100%
Discrete: on/off switches (2)

Reference Accuracy

2% of span[1]

Local User Interface

Liquid Crystal Display (LCD)
Two pushbuttons for navigation, setup, and calibration

Input Communication Signal

*Wireless*HART ™

Output Communication Signal

2.4Ghz, DSSS, *Wireless*HART

Wireless Classifications

Class A digital device, complies with part 15 of the FCC Rules

Operating Temperature Limits[2,3]

−20 to 60°C (−4 to 140°F)
LCD may not be readable below −20°C (−4°F)

Storage Temperature Limits[2,3]

Upper limit not to exceed 100°C (212°F)

Adjustments

Zero and Maximum Span through local interface.

Weight

0.5 Kg (1.1 lbs)

Power[3]

Standard

Lithium, non-rechargeable

Power Module Limits

Standard—5 years @ 1 minute update rate with 3 additional devices communicating through it
Extended-Life —10 years
Shelf life —10 years (radio off)

Construction Material

Housing: Engineered resin

1. Reference accuracy can be affected as much as 5% per 50°C (122°F).
2. The pressure/temperature limits in this manual and any applicable standard or code limitation for valve should not be exceeded.
3. Due to the combustible nature of the lithium content, the power module has special installation, operation, storage, and/or shipping requirements. Observe all warnings included with the power module before installing, operating, storing, or shipping. Contact your Emerson Process Management sales office if additional information is needed.

displacement and float level sensors, and relief valves. It is designed to be simple to use, compact, and easily mounted.

The wireless position monitor periodically reads the position of a measured device and transmits that data over a wireless network. The transmitted data includes the percent of span value, two limit switch status indications, and internal device temperature. It also checks for instructions from host systems such as distributed control systems (DCS), asset management systems (AMS), and supervisory control and data acquisition (SCADA) systems.

Terminology

Local Interface—All 4320 wireless position monitors come standard with a Liquid Crystal Display (LCD) and two (2) pushbuttons. The local interface provides the capability to setup and calibrate the monitor.

Magnet Assembly—This is the feedback component that is mounted directly to the valve stem. It supplies a magnetic field that is sensed by the wireless position monitor.

4320 Wireless Position Monitor

Specifications

Specifications for the 4320 wireless position monitor are shown in table 1.

FCC Compliance

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 his own expense.

This product is an FCC approved device. Changes or modifications to the 4320 wireless position monitor that are not expressly approved by the party responsible for compliance may void your authority to operate the device.

⚠ WARNING

This product is intended for a specific temperature range and other application specifications. Failure to to adhere to these specification could result in the malfunction of the product, property damage, or personal injury.

Educational Services

For information on available courses for the 4320 wireless position monitor, as well as a variety of other products, contact:

Emerson Process Management
Educational Services, Registration
P.O. Box 190; 301 S. 1st Ave.
Marshalltown, IA 50158-2823
Phone: 800-338-8158 or
Phone: 641−754−3771
FAX: 641−754−3431
e-mail: education@emersonprocess.com

Installation

⚠ WARNING

Before mounting the 4320 wireless position monitor:

● **Always wear protective clothing, gloves, and eyewear when performing any installation procedures to avoid personal injury or property damage.**

● **Check with your process or safety engineer for any additional measures that must be taken to protect against process media.**

● **If installing into an existing application, also refer to the WARNING at the beginning of the Maintenance section in this instruction manual.**

⚠ WARNING

Due to the combustible nature of the lithium content, the power module has special installation, operation, storage, and/or shipping requirements. Observe all warnings included with the power module before installing, operating, storing, or shipping the 4320 position monitor. Failure to do so may result in personal injury or property damage from fire or explosion.

CAUTION

When installing components, proper means of electrostatic discharge protection is required. Failure to use a grounding strap, or other means of electrostatic discharge protection can result in damage to the electronics.

Valve / Actuator Mounting

If ordered as a part of a control valve assembly, the factory will mount the wireless position monitor on the actuator and calibrate the instrument. If you purchased the wireless position monitor separately,you will need a mounting kit to mount the wireless position monitor on the actuator. The following procedures are general guidelines you
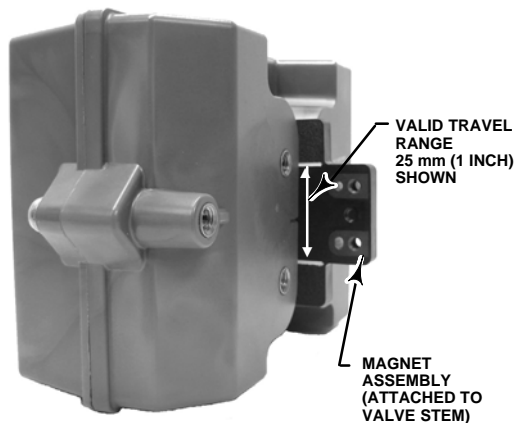
Figure 2. Travel Range

Figure 3. Magnet Assemblies

should consider when mounting the wireless position monitor. See the instructions that come with the mounting kit for detailed information on mounting the wireless position monitor to a specific actuator model.

The feedback system for the 4320 wireless position monitor utilizes a magnetic field for true linkage-less, non-contacting position measurement. In order to prevent inadvertent stem movement while the instrument is in operation, magnetic tools (such as a magnetic-tipped screwdriver) should not be used.

Figure 4. Mounting—Sliding-Stem Magnet Array

CAUTION

The magnet material has been specifically chosen to provide a long-term stable magnetic field. However, as with any magnet, care must be taken when handling the magnet assembly. Another high powered magnet placed in close proximity (less than 25 mm) can cause permanent damage. Potential sources of damaging equipment include, but are not limited to: transformers, DC motors, stacking magnet arrays, and magnetic tipped screwdrivers.

Note

As a general rule, do not use less than 50% of the magnet array for full travel measurement. Performance will decrease gradually as the array is increasingly subranged.
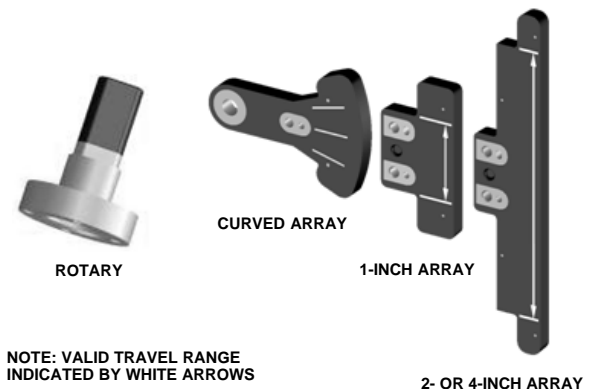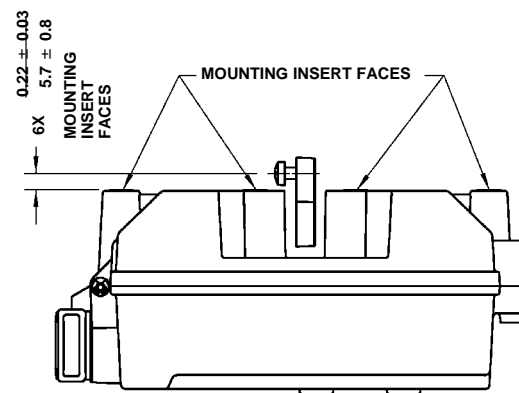
The linear magnet arrays have a valid travel range indicated by arrows molded into the piece. This means that the hall sensor (on the back of the 4320 housing) has to remain within this range throughout the entire valve travel. See figure 2.

The linear magnet arrays are symmetrical. Either end may be up.

There are a variety of mounting brackets and kits that are used to mount the 4320 to different actuators. However, despite subtle differences in fasteners, brackets, and connecting linkages, the procedures for mounting can be categorized as follows:

● Linear or sliding-stem actuators with up to 4 inch travel

● Rotary actuators with travel up to 90 degrees.

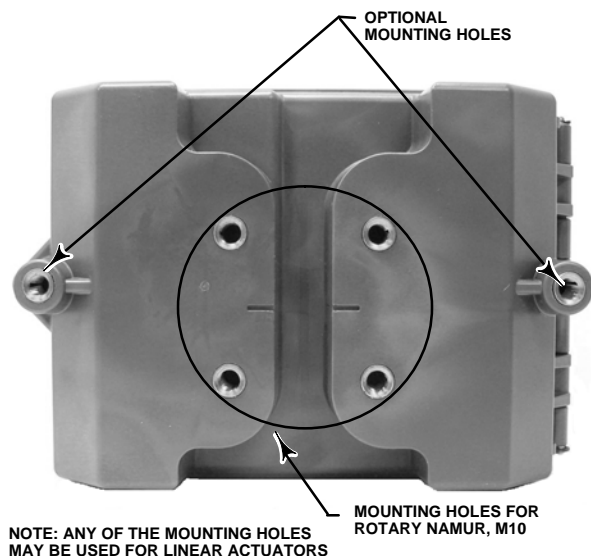See figure 3 for the different travel feedback magnet assemblies.

Figure 5. Housing and Mounting for Linear and Rotary Actuators

Sliding-Stem (Linear) Actuators (e.g. Fisher 667)

1. Attach the mounting bracket to the actuator.

2. Loosely attach the feedback pieces and magnet assembly to the valve stem connector. Do not tighten the fasteners because fine adjustment is required.

CAUTION

Do not install a magnet array that is shorter than the physical travel of the actuator. Loss of control will result from the magnet array moving outside the range of the index mark in the feedback slot of the 4320 housing.

3. Position the feedback array inside the retaining slot.

4. Align the magnet array as shown in figure 4.

5. Tighten the fasteners.

6. Mount the wireless positioner monitor to the mounting bracket, using the mounting bolts. Any of the mounting holes may be used for linear actuators. See figure 5.

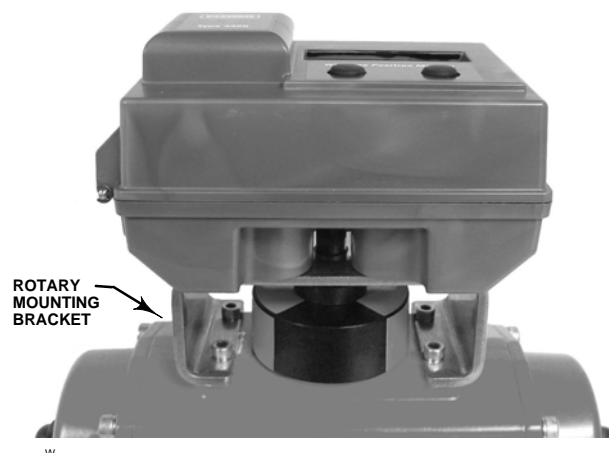7. Once the instrument is mounted perform the local interface calibration procedure, as described on page 8.

Figure 6. For Rotary Actuators (Typical Mounting Bracket)
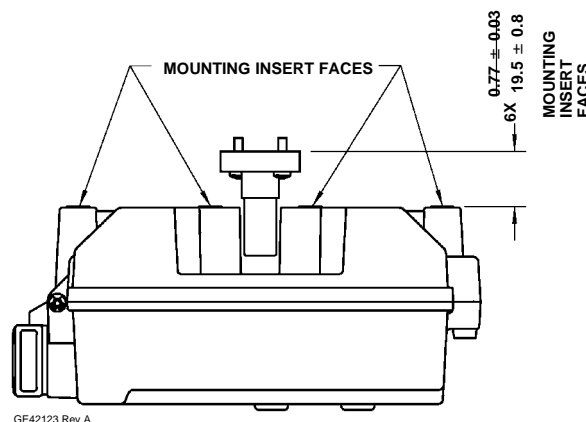
Figure 7. Mounting—Rotary Magnet Array

Guidelines for Mounting on Quarter-Turn (Rotary) Actuators

The 4320 wireless position monitor can be mounted to any quarter-turn (rotary) actuator, as well as those that comply with the NAMUR guidelines. A mounting bracket and associated hardware are required. Refer to figure 6.

1. Attach the magnet assembly to the actuator shaft, as shown in figure 7. At mid-travel, the flats on the magnet assembly must be parallel to the channel on the back of the 4320 housing, as shown in figure 8.

2. Install the mounting bracket on the actuator.

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ORIENTATION AT ONE TRAVEL EXTREME

ORIENTATION AT MID-TRAVEL (FLATS PARALLEL TO 4320 HOUSING CHANNEL)

ORIENTATION AT THE OTHER TRAVEL EXTREME

W8836-1A
W8836-1B

Figure 8. Feedback Assembly Orientation

3. Attach the wireless position monitor to the mounting bracket using the 4 mounting bolts, as shown in figure 6.

4. Check for clearance between the magnet assembly and the positioner feedback slot.

5. Once the instrument is mounted perform the local interface calibration procedure, as described on page 8.
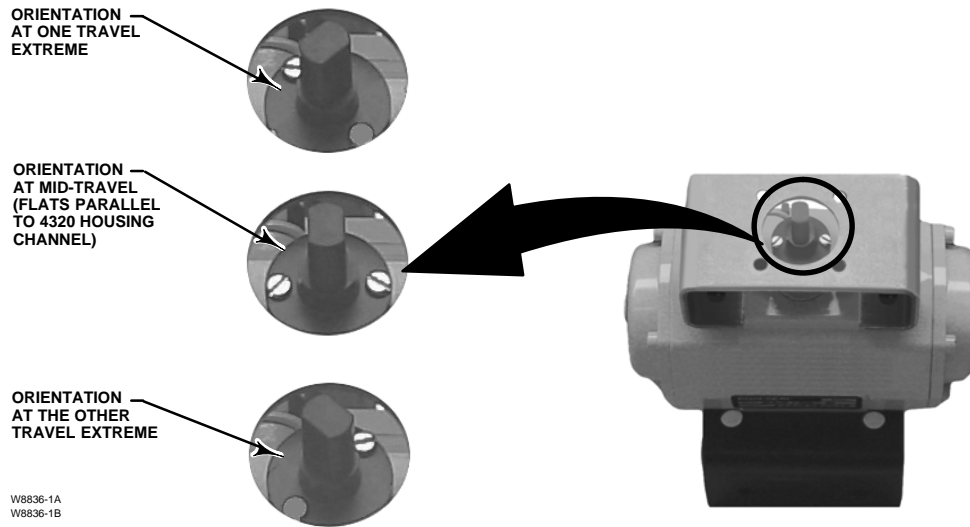
Communications Connections

A HART communicating device, such as a 375 Field Communicator, interfaces with the 4320 wireless position monitor. Convenient termination points are located inside the front cover. The connection pins are not polarity sensitive. The instrument must be powered before digital communication will commence.

Basic Setup using the Local User Interface

CAUTION

When accessing the pushbuttons or terminals proper means of electrostatic discharge protection is required. Failure to provide appropriate protection can cause the valve to move, resulting in valve/actuator instability.

The primary function of the local user interface is for calibration. However, information for checking the status of the device, as well as the connected equipment or valve, is also available through the local user interface.

Note

The valve must move from open to closed, or vise versa, in order for the wireless position monitor to be calibrated. Attempting to calibrate the device without moving the valve will result in the action being discarded. The operation of the device will be unchanged.

The two buttons on the LCD display (see figure 9) are used to activate the display when the LCD is in the sleep state. The buttons can be pressed alone or simultaneously. The Emerson logo will display when the LCD is activated from a HART "squawk" command.

When navigating the interface the left button is generally used to "SELECT" or take an action, the right button is used to go to the "NEXT" option. Refer to figure 9 for the local interface flow chart.
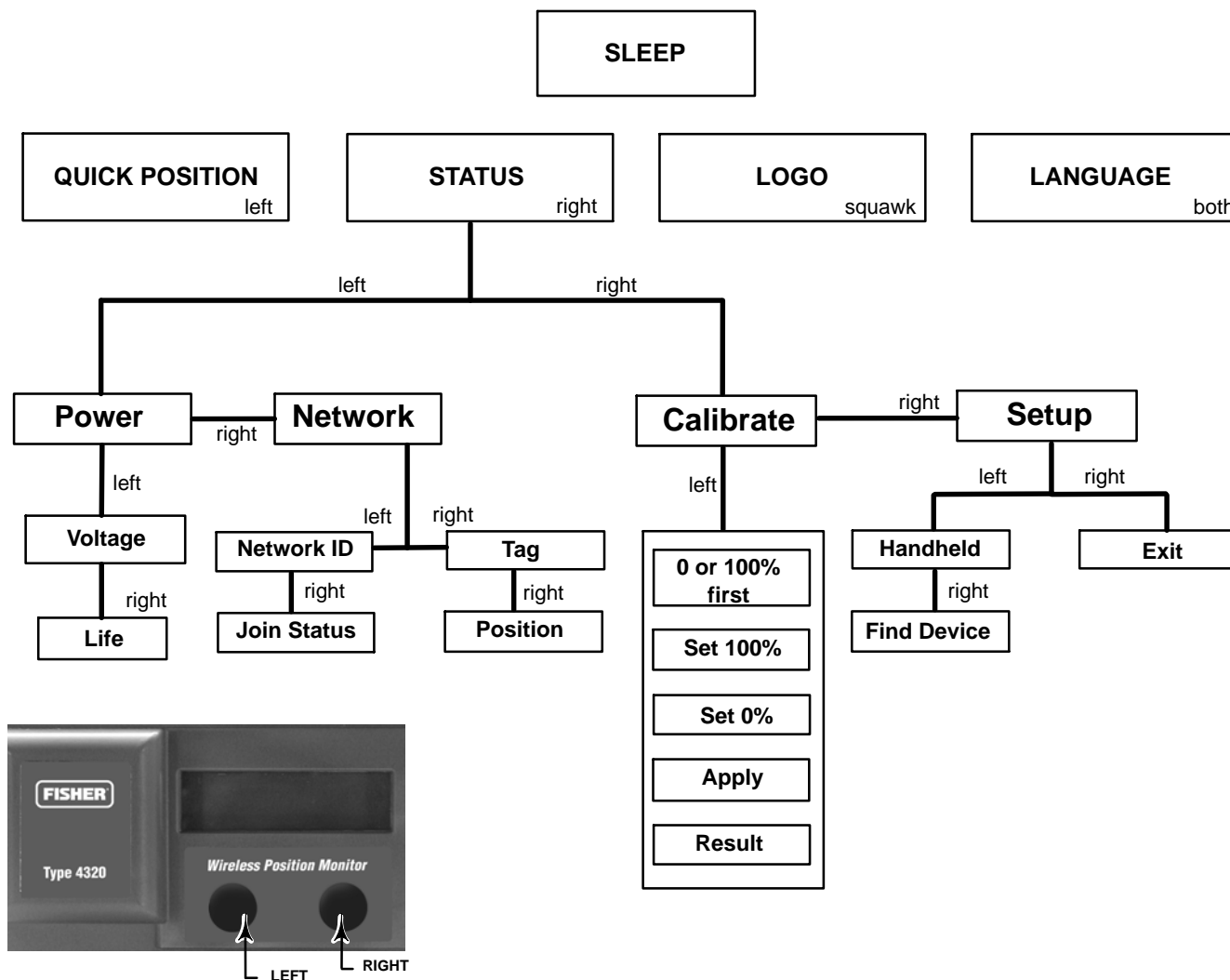
Figure 9. Local Interface Flow Chart

Language Selection

Pressing both buttons activates the language selection menu. Press the right button "NEXT" to scroll to the desired language, then press the left button to "SELECT" the language.

Quick Position

Pressing the left button only activates the QUICK POSITION display. Percent (%) of SPAN and the position of the valve (OPEN, PARTIALLY OPEN, and CLOSED) are shown. The display will turn off automatically after 5 seconds.

Status

Pressing the right button only activates the STATUS menu. The STATUS menu contains information about the device, including the status of the power module, the network operating parameters, and the state of the network interface. It also allows device calibration and enables turning on/off the local HART port (located inside the cover) used with a handheld device, such as the 375 Field Communicator.

Note

For field trial versions of the 4320 the HART port will always be on.

Power

The power status menu is entered from the STATUS menu by pressing SELECT. Press SELECT to see the voltage of the power module. Press NEXT to display the estimated remaining life of the power module.

Note

The remaining life value of the power module is an estimate. The life span of the power module is affected by many operating conditions, including: the update or burst rate of the 4320 wireless position monitor. The number of devices operating through this device to the gateway and their update or burst rates. Network changes causing more or less traffic through the device; for example, a failure in another wireless device in the mesh network, resulting in re-routing, forcing more traffic through the device. Temperature extremes (both high and low) will also affect the life span of the power module.

Note

For field trial versions of the 4320 the power status screens will display RESERVED instead of the actual values.

From the power module life display, press NEXT to go back to the Power menu. Press NEXT to enter the Network menu.

Network

Access the Network screen by pressing the right button (STATUS), the left button (SELECT), and then the right button (NEXT) again.

Press SELECT to display the NETWORK ID configured in the device. Press NEXT to show the current network operational state:

SEARCHING—the device is waiting to detect the presence of a wireless network with the same Network ID and join key.

NEGOTIATING—the presence of a wireless network with the same network parameters has been

detected and the device is attempting to join the network.

CONNECTED—the device has detected the presence of a wireless network with the same network parameters and has successfully joined the network.

OPERATIONAL—the device is operating within a wireless network.

DISCONNECTED—the device has become disconnected from the wireless network.

IDLE—the device has been instructed by a HART command not to attempt to participate in a wireless network.

Press NEXT to return to the Network menu.

Press the NEXT in the Network menu to see the TAG of the device. Press NEXT again to view the current position of the valve or monitored equipment. The top reading indicates % of SPAN, the state of the valve (OPEN, PARTIALLY OPEN, or CLOSED) is on the bottom line.

Press the right button to return to the STATUS menu.

Press NEXT while in the STATUS menu to access the CALIBRATE menu.

Calibration

To access the Calibration menu press the right button to access the STATUS menu, and then the left button (NEXT).

⚠ WARNING

During calibration the valve will move full stroke. To avoid personal injury and property damage caused by the release of pressure or process fluid, provide some temporary means of control for the process.

In the CALIBRATE menu press SELECT. This will allow you to select the first calibration point to be used, either 0% or 100%. Push the left button to select 100% and the right button to select 0%. The next display instructs you to set the valve or monitored piece of equipment in either the 0 or 100% location, depending on the first calibration point chosen.

Once set, use the left button to toggle the recording position to MARKED. MARKED indicates that the location has been recorded; UNMARKED indicates that position has not been recorded. After the first position has been MARKED press NEXT to select the second calibration point (it will be be the opposite of the first calibration point). Use the left button to toggle the recording position to MARKED. Press NEXT to enter the APPLY menu. Select YES to apply the changes.

Note

During the calibration procedure, the valve is moved to one position and MARKED. The valve is then moved to other end of travel or rotation and the second position is recorded (MARKED). Earlier calibration points can be used or discarded.

Applying calibration points without changing the valve position will result in the calibration attempt being unused or discarded.

The calibration status will be displayed:

SUCCESS—indicates that the calibration procedure was successful.

SPAN HI—indicates that a problem with the high end of travel or rotation was observed. Check the mounting and magnetic array placement and re-attempt calibration.

SPAN LO—indicates that a problem with the low end of travel or rotation was observed. Check the mounting and magnetic array placement and re-attempt calibration.

ERROR SPAN—indicates that a problem with the amount of travel or rotation was observed. Either the travel was too much or too little:

- >10° or <40° of rotation was detected for the rotary array

- Excessive travel >125% was recorded for the linear array or less than 25% of travel was detected.

- Check the mounting and magnetic array placement and re-attempt calibration.

Press the right button to exit the calibration attempt, the display will show UNCHANGED.

Press NEXT to return to the CALIBRATE menu.

From the CALIBRATE display press NEXT to enter the SETUP menu.

Setup

Access the Setup menu by pressing the right button to access the STATUS menu, the left button (NEXT), and then NEXT again.

Press the SELECT to toggle the handheld port on or off. NEXT will enable the HART feature for FIND DEVICE. Use the SELECT button to ARM (activate) or UNARM (deactivate) the function. Press NEXT to return to the SETUP display.

In the SETUP display press the NEXT to display the EXIT menu.

In the EXIT menu press SELECT to turn off the display or NEXT to return to the status display.
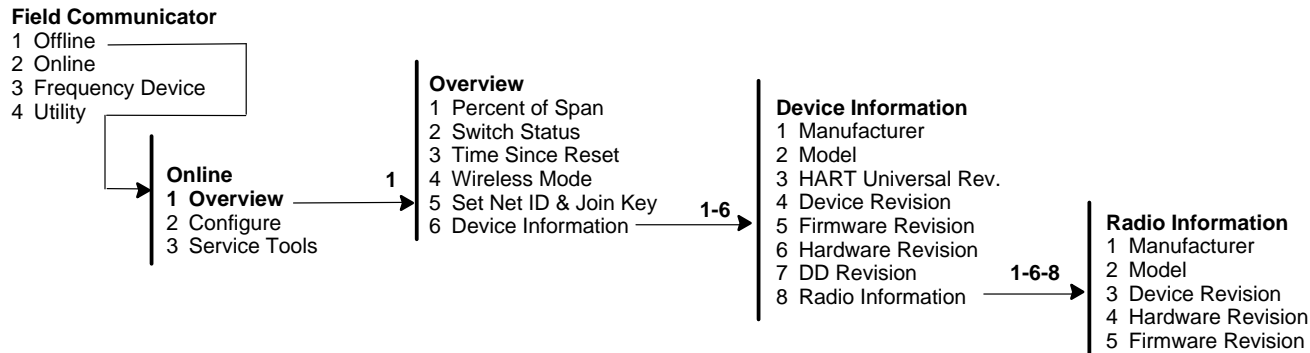
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4 Device Revision
5 Firmware Revision
6 Hardware Revision
7 DD Revision
8 Radio Information

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Radio Information
1 Manufacturer
2 Model
3 Device Revision
4 Hardware Revision
5 Firmware Revision

Figure 10. 375 Menu Tree—Overview

Setup using the 375 Field Communicator

Overview

Refer to figure 10 for the Overview menu tree.

Percent of Span

Percent of Span indicates the position of the monitored equipment (e.g. valve) as a percent of travel or span.

Switch Status

Switch Status indicates the position of the monitored equipment (e.g. valve) as a discrete value; OPEN, CLOSED, or PARTIALLY OPEN.

Time Since Reset

Time Since Reset indicate the time (in hours, minutes, and seconds) since the last time the 4320 received a restart command.

Wireless Mode

Wireless Mode displays the current communication state of the device, or its ability to provide information to the network. During normal start-up a configured device will go through the following sequence: SEARCHING, to NEGOTIATING, to CONNECTED, and OPERATIONAL.

SEARCHING—the device is waiting to detect the presence of a wireless network with the same Network ID and join key.

NEGOTIATING—the presence of a wireless network with the same network parameters has been detected and the device is attempting to join the network.

CONNECTED—the device has detected the presence of a wireless network with the same network parameters and has successfully joined the network.

OPERATIONAL—the device is operating within a wireless network.

DISCONNECTED—the device has become disconnected from the wireless network.

IDLE—the device has been instructed by a HART command not to attempt to participate in a wireless network.

DISCONNECTED and IDLE are used in maintenance activities.

Set Net ID & Join Key

Set Net ID & Join Key allows you to enter the 5-digit Network ID and the Join Key (4 sets of 8 hexadecimal digits). The Join Key is used for encrypting the data on the wireless network. The Network ID and the Join Key must be the same for all devices connected to a gateway.

Note

The Network ID and Join Key are shipped with default values and must be changed prior to use.

Device Information

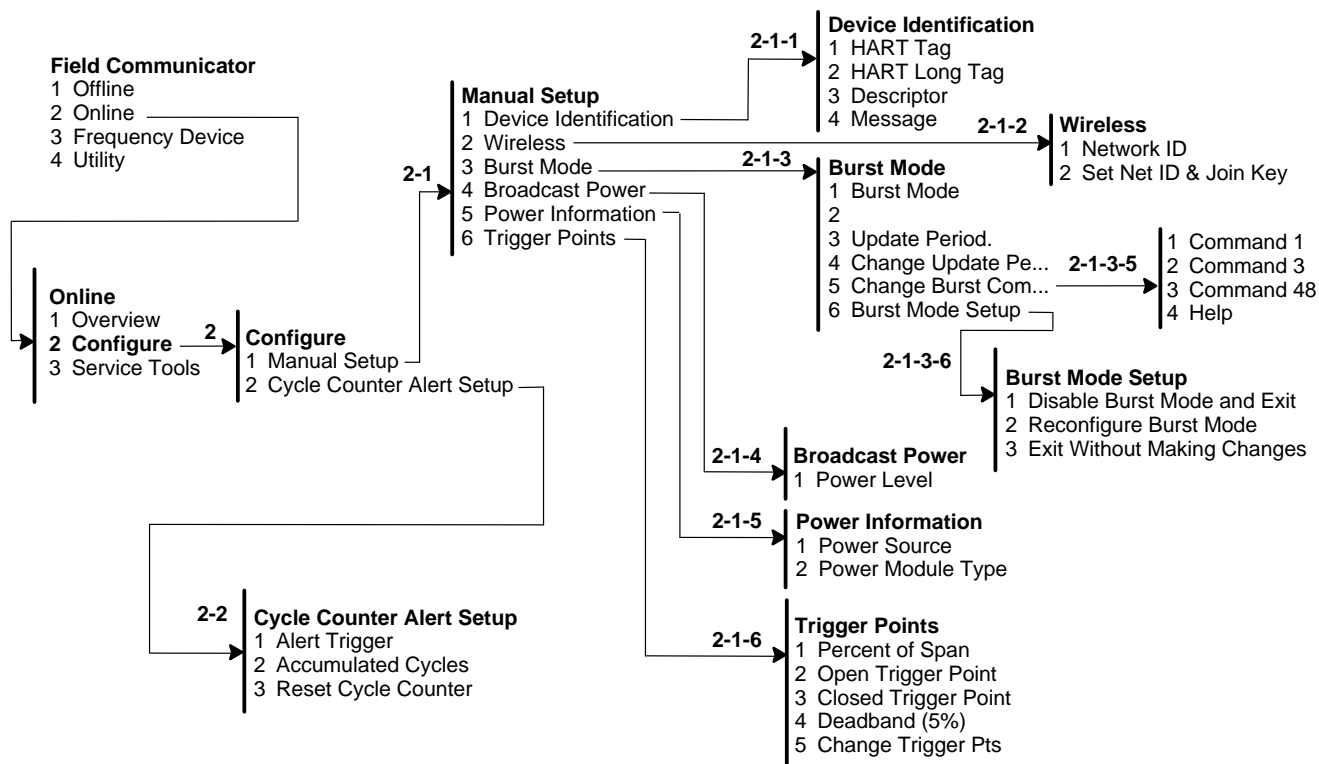● Manufacturer— identifies the manufacturer of the instrument.

Figure 11. 375 Menu Tree—Configure

● Model— indicates the device type.

● HART Universal Rev.— indicates the HART Universal Revision.

● Device Revision— the revision number of the software for communication between the Field Communicator and the instrument.

● Firmware Revision— the revision number of the firmware in the instrument.

● Hardware Revision— the revision number of the electrical circuitry within the instrument printed wiring board.

● DD Revision— indicates the revision level of the device description.

● Radio Information

Manufacturer— identifies the manufacturer of the radio.

Model— indicates the radio model.

Device Revision— indicates the revision level of the radio.

Hardware Revision— indicates the revision level of the radio hardware.

Firmware Revision— indicates the revision level of the radio firmware.

Configure

Refer to figure 11 for the Configure menu tree.

Manual Setup

● Device Identification

HART Tag—Enter an up to 8 character HART tag for the instrument. The HART tag is the easiest way to distinguish between instruments in a multi-instrument environment. Use the HART tag to label instruments electronically according to the

requirements of your application. The tag you assign is automatically displayed when the Field Communicator establishes contact with the 4320 at power-up.

HART Long Tag—Enter the *HART Long Tag* information

Descriptor—Enter a descriptor for the application with up to 16 characters. The descriptor provides a longer user-defined electronic label to assist with more specific instrument identification than is available with the HART tag.

Message—Enter any message with up to 32 characters. Message provides the most specific user-defined means for identifying individual instruments in multi-instrument environments.

● Wireless

Note

The Network ID and Join Key are shipped with default values and must be changed prior to use.

Network ID—Displays the 5-digit default Network ID.

Set Net ID & Join Key—Enter the 5-digit Network ID and the Join Key (4 sets of 8 hexadecimal digits). The Join Key is used for encrypting the data on the wireless network. The Network ID and the Join Key must be the same for all devices connected to a gateway.

● Burst Mode

Burst Mode—Enabling burst mode provides continuous communication from the wireless position monitor. Burst mode applies only to the transmission of burst mode data and does not affect the way other data is accessed.

Access to information in the instrument is normally obtained through a wireless network or a 375 Field Communicator. The field communicator or the network may request any of the information that is normally available, even while the instrument is in burst mode. Between each burst mode transmission sent by the instrument, a short pause allows the Field Communicator or control system to initiate a request. The instrument receives the request, processes the response message, and then continues "bursting" the burst mode data.

Burst Command—there are six burst commands; *Command 1, Command 2*, *Command 3, Command 9, Command 48* and *Command 178.*

● *Command 1* returns the Primary Variable (PV) for the 4320

● *Command 3* returns the loop current, Percent of Range, Close Trigger Status, Open Trigger Status, and Temperature (outside of the instrument).

● *Command 48* returns status about the instruments operation.

Note

Commands 2 and 9 are not covered in this manual. Command 178 is used exclusively with the 1420 gateway for efficiency.

Update Period—Indicates the set Burst Period.

Change Update Pe...—Change Update Period allows you to change the burst period. The maximum burst period is 1 hour.

Change Burst Com...—Change Burst Command allows you to change the information that is being communicated through Burst Mode. Select one of the following commands: *Command 1, Command 3, Command 48.* Select *Help* for information about the three commands.

Burst Mode Setup—Select one of the following actions to perform: *Disable Burst Mode and Exit, Reconfigure Burst Mode*, or *Exit Without Making Changes*

● Broadcast Power

Power Level—Set the power level to the desired setting, either *High* or *Low*.

● Power Information

Power Source—indicates the power source being used. The 4320 operates solely of its (internal) Power Module.

Power Module Type—choose the type of power module being used; either *Standard* or *Extended Life*.
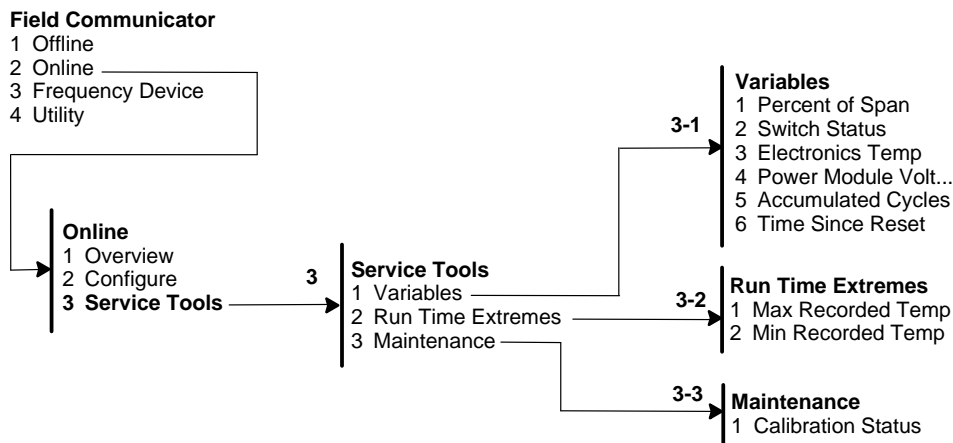
Figure 12. 375 Menu Tree—Service Tools

● Trigger Points

Percent of Span—indicates the set Percent of Span.

Open Trigger Point—indicates the set Open Trigger Point.

Closed Trigger Point—indicates the set Closed Trigger Point.

Deadband (5%)—Select the desired Deadband.

Change Trigger Points—Select the desired Trigger Points. This sets the *Open Trigger Point* and the *Closed Trigger Point.*

Cycle Counter Alert Setup

● Alert Trigger—Select the Alert Trigger

● Accumulated Cycles—indicates how many cycles

● Reset Cycle Counter—Select *Yes* to reset the Cycle Counter to 0 (zero). Select *No* to retain the current Cycle Count.

Service Tools

Variables

Refer to figure 12 for the Service Tools menu tree.

● Percent of Span—indicates the position of the monitored equipment (e.g. valve) as a percent of travel or span.

● Switch Status—dictates the position of the monitored equipment (e.g. valve) as a discrete value; OPEN, CLOSED, or PARTIALLY OPEN.

● Electronics Temp—indicates the temperature of the electronics.

● Power Module Volt...—indicates the Power Module Voltage.

● Accumulated Cycles—indicates the number of accumulates cycles.

● Time Since Reset— indicates the time (in hours, minutes, and seconds) since the last time the 4320 was restarted.
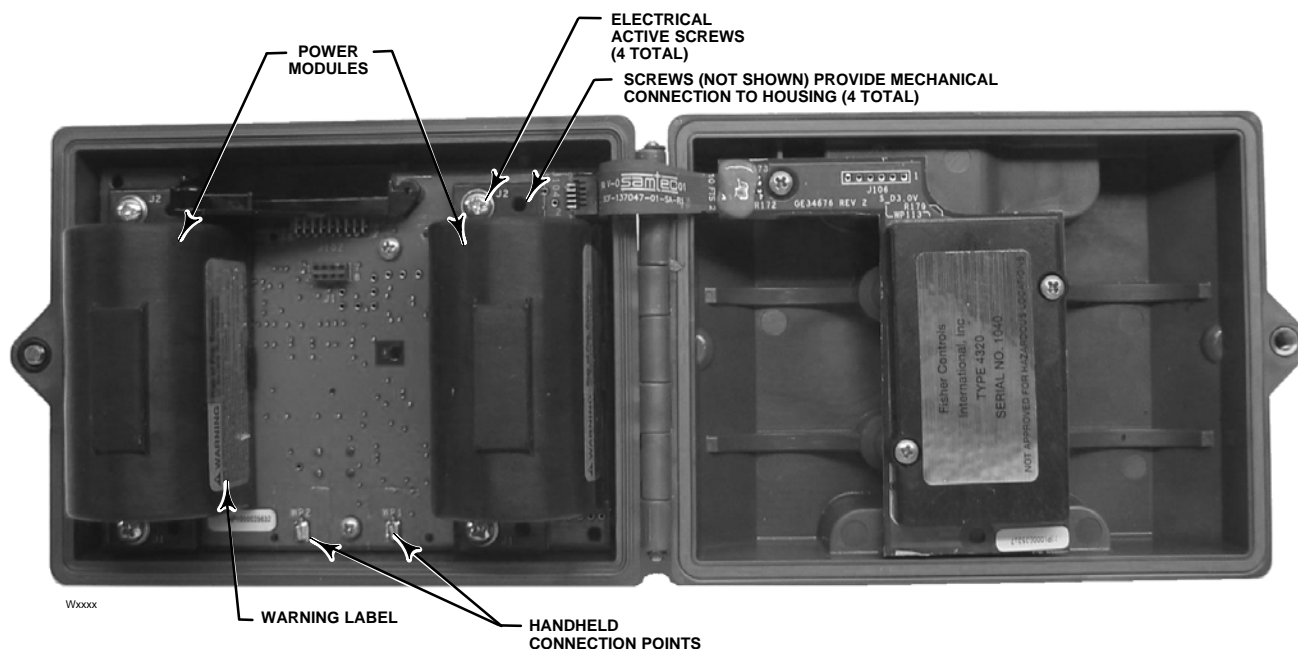
Run Time Extremes

● Max Recorded Temp— indicates the maximum recorded temperature of the 4320.

● Min Recorded Temp —indicates the minimum recorded temperature of the 4320.

Maintenance

● Calibration Status— indicates if the position monitor has been calibrated.

POWER
MODULES

ELECTRICAL
ACTIVE SCREWS
(4 TOTAL)

SCREWS (NOT SHOWN) PROVIDE MECHANICAL
CONNECTION TO HOUSING (4 TOTAL)

Wxxxx

WARNING LABEL

HANDHELD
CONNECTION POINTS

NOTE:
SEE FIGURE 14 FOR WARNING LABEL INFORMATION

Figure 13. Fisher® 4320 Wireless Position Monitor

Principle of Operation

The basic concept of the electronic positioner can be understood by visualizing a magnet mounted to a piece of equipment that either has a rotating motion or sliding linear movement. The device has the ability to detect position of the magnet and transmit wirelessly the relative position. The 4320 wireless position monitor is similar to a wired position transmitter on a valve but without wires.

The 4320 is a communicating micro-processor based instrument that includes the use of a hall sensor to detect the relative position (or percent of span) of a magnet that is attached to equipment (e.g. process control valve; either automated or manual). The 4320 is a battery powered device with the power modules located on the inside of the device. The primary means of communication is wireless, conforming to the *Wireless*HART communications standards. The device also supports wired communication using the HART® protocol to connect to a handheld device, such as the 375 Field Communicator. The handheld connection is used for initial device configuration (i.e. network set-up). The device includes a local user interface (LCD display and two pushbuttons) primarily used to calibrate or define the span of position being measured. No ground point is required. Device contains an internal patch antenna.

Maintenance

When replacing any of the components of the 4320 wireless position monitor the maintenance should be performed in an instrument shop whenever possible.

⚠ WARNING

Before performing any maintenance procedures on the 4320 wireless position monitor:

● **Always wear protective clothing, gloves, and eyewear when performing any maintenance procedures to avoid personal injury or property damage.**

● **Provide some temporary means of control for the process before removing the 4320 wireless position monitor.**

● **Check with your process or safety engineer for any additional measures that must be taken to protect against process media.**

CAUTION

When replacing components, use only components specified by the factory.

Always use proper component replacement techniques, as presented in this manual. Improper techniques or component selection may invalidate the product specifications, as indicated in table 1. Improper replacement techniques or component selection may also impair operations and the intended function of the device.

CAUTION

When replacing components, proper means of electrostatic discharge protection is required. Failure to use a grounding strap, or other means of electrostatic discharge protection can result in damage to the electronics.

Note

This product is an FCC approved device. Changes or modifications to the 4320 wireless position monitor that are not expressly approved by the party responsible for compliance may void your authority to operate the device.

Replacing the instrument

To replace an instrument that has been previously mounted to a control valve, perform the following basic steps:

Instrument Removal

1. Make sure that the valve is isolated from the process.

2. Remove the bolts connecting the 4320 housing to the mounting bracket.

Note

The magnet assembly may remain on the valve stem (or shaft).

⚠ **WARNING:** Risk of Fire, Explosion, or Severe Burn Hazard.
DO NOT: Recharge, Disassemble, Heat above 100° C, Incinerate or Expose Contents to Water. Li metal content approx. 2.5g. 0% Mercury and Cadmium.
Dispose of in accordance with Government regulations.
3.6 Volt Li Power Module GE37993.
NOT APPROVED FOR HAZARDOUS LOCATIONS

STANDARD LIFE POWER MODULE

⚠ **WARNING:** Risk of Fire, Explosion, or Severe Burn Hazard.
DO NOT: Recharge, Disassemble, Heat above 100° C, Incinerate or Expose Contents to Water. Li metal content approx. 5g. 0% Mercury and Cadmium.
Dispose of in accordance with Government regulations.
3.6 Volt Li Power Module GE34663.
NOT APPROVED FOR HAZARDOUS LOCATIONS

EXTENDED LIFE POWER MODULE

Figure 14. Warning Labels from Power Module

When replacing the instrument, be sure to follow the appropriate mounting procedure. Once the instrument is mounted, perform the calibration routine before putting back in to service.

Replacing the Magnetic Feedback Assembly

To remove the magnet assembly from the actuator stem, perform the following basic steps.

1. Make sure that the valve is isolated from the process.

2. Remove the 4320 from the actuator.

3. Remove the screws holding the magnet assembly to the connector arm.

Install the new magnet assembly per the appropriate Installation/Mounting procedure. Once the instrument is mounted, perform the calibration routine before putting back in to service.

Replacing the Power Modules

Note

Contact you Emerson Process Management sales office if replacement power modules are required.

WARNING

Proper disposal of used power modules, due to the combustible nature of the lithium content, is required. Consult local regulations and guidelines for proper disposal information, including maintaining appropriate storage temperatures (not to exceed 100°C (212°F). Failure to dispose of a power module properly can result in severe personal injury or property damage from fire or explosion.

Removal

1. Make sure that the valve is isolated from the process.

2. Remove the instrument cover.

3. Remove the 4 electrical active screws as indicated in figure 13. These are the larger screws on the left of the power modules.

4. Remove the 4 smaller screws providing the mechanical connection to the housing, as shown in figure 13.

5. Remove both power modules.

Installation

When installing the new power modules, follow the reverse procedure as outlined above and recalibrate the instrument before putting it back into service.

Note

Neither Emerson, Emerson Process Management, nor any of their affiliated entities assumes responsibility for the selection, use, or maintenance of any product. Responsibility for the selection, use, and maintenance of any product remains with the purchaser and end-user.

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