

Fisher™ FIELDVUE™ 4400

Digital Position Transmitter



HART 
COMMUNICATION PROTOCOL

The Fisher FIELDVUE 4400 transmitter senses the position of rotary or sliding-stem valves, vents, dampers or other devices. It provides a precise non-contact feedback to indicate equipment position with a percent (%) of span plus on/off indication. The 4400 provides 4 to 20 mA position feedback and has two 1 ampere solid-state limit switches.

Features

Simple to Configure

Ease of Calibration

Local pushbuttons, accessible when the cover is removed, allow you to calibrate the digital position transmitter in the field. This eliminates the need for tools or the setting of cams or potentiometers during setup, saving you time.

Valve Performance Indicators

The 4400 can track valve response in both directions and allows you to select which diagnostic monitors report the various device conditions as alerts to the host. The time stamped data lets you know exactly when an event starts and ends, providing valuable troubleshooting information.

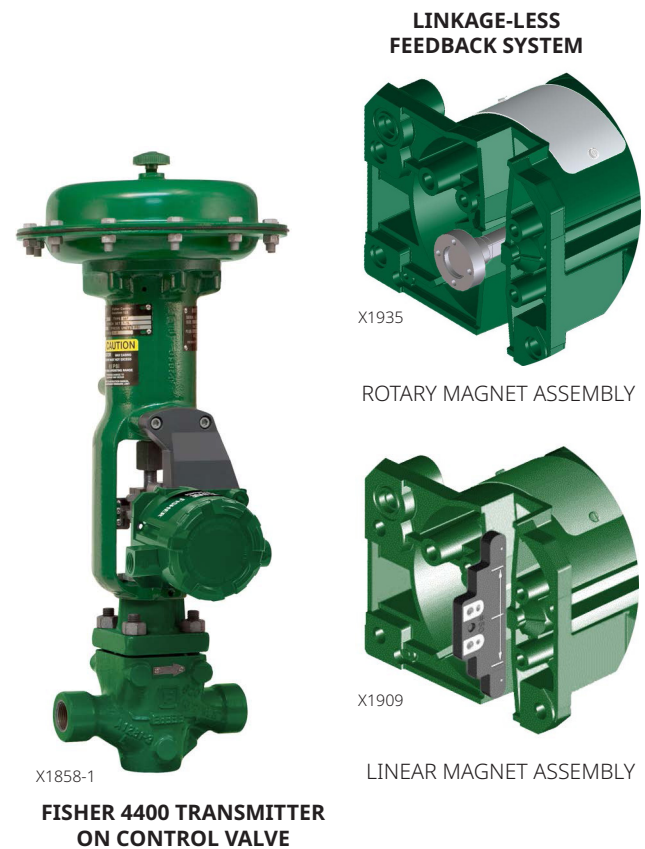
Valve performance indicators include:

- Cycle count
- Time to open/close
- Travel accumulator
- Dwell time (how long in open or close position)
- Current valve position
- Stroke Time

Reliability

Linkage-Less Non-Contact Position Feedback — The high performance, linkage-less feedback system eliminates physical contact between the valve stem and the 4400. There is no wearing of parts so cycle life is maximized.

Figure 1. Fisher 4400 Digital Position Transmitter



Digital Integration

Communication Flexibility — Because the 4400 is a HART® (Highway Addressable Remote Transducer) communicating device, information can be accessed anywhere along the loop. This digital communication occurs over the same two-wire loop that provides the 4 to 20 mA process control signal, without disrupting the process signal.

This flexibility can reduce exposure to hazardous environments and makes it easier to evaluate equipment in hard to reach locations.

Mounting Versatility

Leverages the FIELDVUE instruments vast catalog of mounting kits for a variety of applications.

Benefit of Implementing Position Feedback

- **Broad Range of Applications** — The 4400 provides accurate position indication, monitoring and performance information around valves that are not typically monitored, including pressure relief, safety and anti-surge valves.
- **Insight into Valve Position** helps to reduce production issues and reduce the need to visit the valve in the field.
- **Accurate and Responsive** — Position-sensing uses the proven hall-sensing design, providing position feedback accuracy with the measured device (e.g., valve, regulator, level or louver).

Safety Certification

The 4400 is certified for use in Safety Instrumented System (SIS) applications. Certification is by exida Consulting LLC, a global provider of functional safety and control system security (see Figure 2).

The functional safety assessment was performed to the requirements of IEC 61508: 2010.

4400 position transmitter configuration meets the systematic integrity requirements of SIL 2 (SIL 2 capable).

Figure 2. exida Certificate



Table 1. Specifications

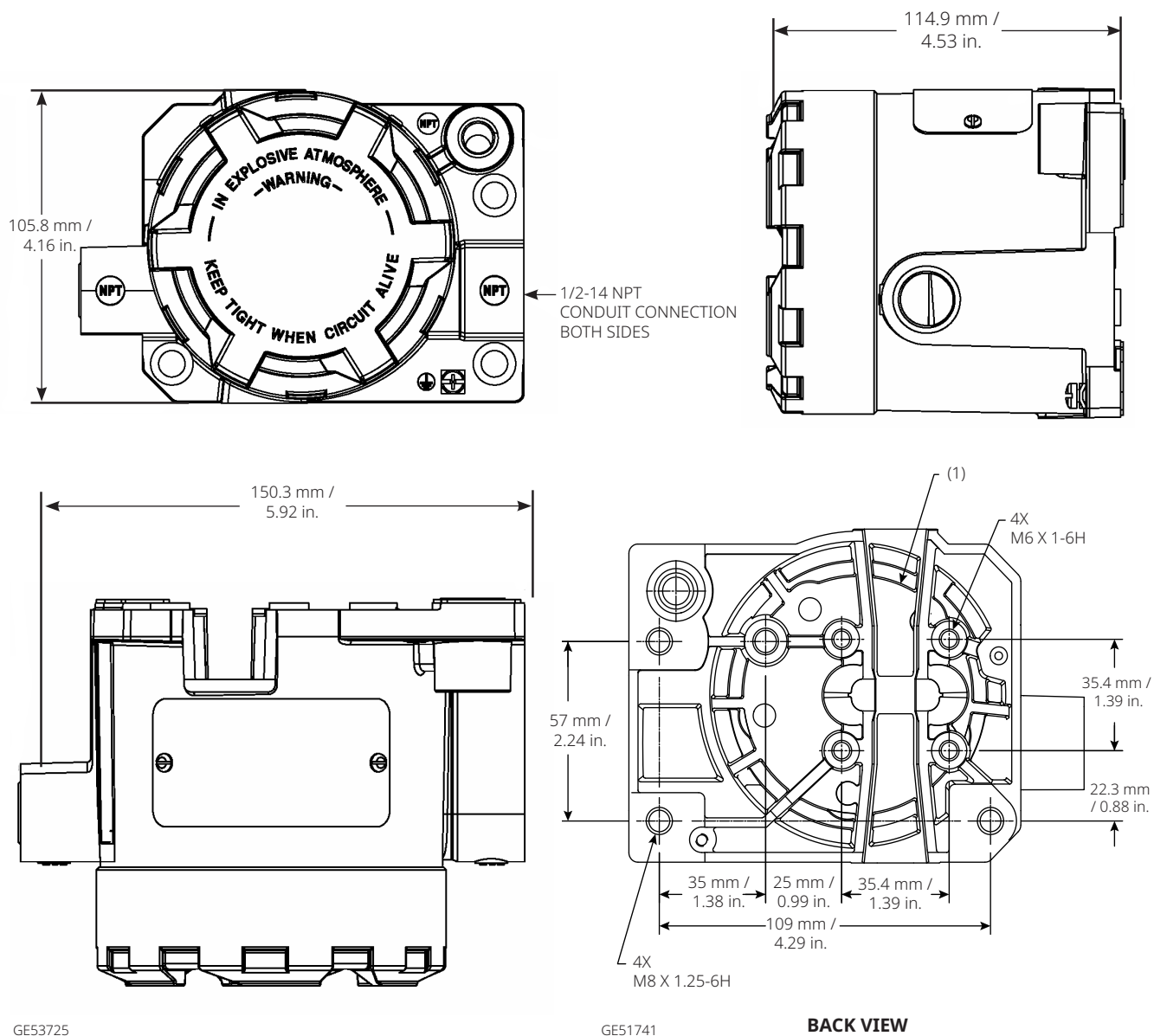
Input Signal Source	Reference Accuracy
Hall Effect Sensor and magnet array	±1% of output span. Includes combined effects of hysteresis, linearity and deadband Limit Switch: 2% of travel span
Transmitter Output Signal	Sensor Refresh Rate
Analog 4 to 20 mA DC High saturation: 20.5 mA Low saturation: 3.8 mA High alarm ⁽¹⁾ : > 21.0 mA Low Alarm ⁽¹⁾ : < 3.6 mA	100 ms / 10 Hz
Digital HART 1200 Baud Frequency Shift Keyed (FSK) HART Version 7 HART impedance requirements must be met to enable communication. Total shunt impedance across the master device connections (excluding the master and transmitter impedance) must be between 230 and 600 ohms. HART receive impedance: Rx: 28.06k ohms Cx: 5.84 nF	Repeatability ±0.25% of span
Output Current Limit 30 mA DC maximum	Electromagnetic Compatibility Meets EN61326-1:2013 and EN61326-3-2:2008
Recommended Power Supply	General Electrical Safety - Environmental Conditions
24 to 30 volts DC; 25 mA Instrument has reverse polarity protection. A minimum compliance voltage of 17.75 V DC (due to HART impedance requirement) is required to guarantee HART communication.	Use: Indoor and Outdoor Altitude: up to 2000 m Temperature: -40 to +80 °C / -40 to +176 °F Relative Humidity: 9.2 to 90% Supply Voltage Fluctuations: N/A, not connected to Mains Transient Overvoltage: Category I Pollution Degree: 4 Wet Locations: Yes
Integral Limit Switch	Vibration Testing Method
Two isolated solid state limit switches, configurable throughout the calibrated travel range or actuated from a device alert Open State: 0 mA (nominal) Closed State: up to 1 A Supply Voltage: 8 to 30 V DC ⁽²⁾	Tested per ISA-75.13.01-203, tested 2 million cycles dwell at resonance for each axis
Travel Limit Trip Points	Operating Ambient Temperature Limits ⁽³⁾
Two	-40 to 80 °C / -40 to 176 °F
	Mounting
	The instrument can mount on the actuator of sliding-stem or rotary valves or it can be used for other applications. Refer to Bulletin D104740X012 for 4400 position monitor and magnet array dimensions.

- continued -

Table 1. Specifications (continued)

Actuator Compatibility	Connections
Stem Travel (Sliding-Stem Linear) Linear actuators with rated travel between 6.35 mm / 0.25 in. and 606 mm / 23.375 in. Shaft Rotation (Quarter-Turn Rotary) Rotary actuators with rated travel between 45° and 180° ⁽⁴⁾	Electrical: 1/2 NPT internal
Hazardous Area Approvals	Safety Instrumented System Classification
cCSAus – Flameproof (Ex d), Explosion-proof, Class I Div. 1, Class I Div. 2 (Canada & United States) ATEX – Flameproof IECEX – Flameproof CML – Certification Management Limited (Japan) ECAS - Emirates Conformity Assessment Scheme (UAE) NEPSI - National Supervision and Inspection Centre for Explosion Protection and Safety of Instrumentation (China) SANS - South Africa National Standards Taiwan - Ministry of Labor Proof of Registration	SIL 2 capable - certified by exida Consulting LLC
	Dimensions
	Refer to Figure 3
Hazardous Area Approvals - PENDING	Approximate Weight
cCSAus – Intrinsically Safe, Dust Ignition-proof ATEX – Intrinsically Safe, Increased Safety "e", Dust by intrinsic safety or by enclosure IECEX – Intrinsically Safe, Increased Safety "e", Dust by intrinsic safety or by enclosure	Transmitter without mounting bracket: 1.8 kg / 4 lbs
Electrical Housing	Construction Materials
cCSAus – Type 4X, IP66 ATEX – IP66 IECEX – IP66	Housing and Cover: Aluminum Alloy Elastomers: Silicone Mounting Hardware: Aluminum, stainless steel and steel construction Pipe Plug: Steel with NCF coating
NOTE: Specialized instrument terms are defined in ANSI/ISA Standard 51.1 - Process instrument terminology. 1. Only one high/low alarm available in a given configuration. Alarms are NAMUR NE43 compliant. 2. In the event of power loss the switches will go to the open state. 3. The temperature limits in this manual and any applicable standard or code limitation for valve should not be exceeded. 4. Rotary actuators with 180 degree rated travel require a special mounting kit; contact your Emerson sales office for kit availability.	

Figure 3. Fisher 4400 Envelope Dimensions



Note:

1. Housing insert for SSTEM #210 magnet assembly inserted here.

Product Selection

Base Instrument Model	
4400	Digital Position Transmitter
Hazardous Area Approval Agency/Location/Protection	
A	EMC compliance to CE, IEC 61010 and IEC 61000-4
B	cCSAus Flameproof, Explosion-proof, Class I Division 1, Class 1 Division 2, Dust Ignition-proof Pending: Intrinsically Safe
C	IECEX Flameproof Pending: Intrinsically Safe, Increased Safety "e", Dust by intrinsic safety or enclosure Includes Certified Blanking Element, Includes RCM mark for import into Australia and New Zealand
D	ATEX Flameproof Pending: Intrinsically Safe, Increased Safety "e", Dust by intrinsic safety or enclosure
E	CML (Japan) - Flameproof
F	NEPSI (China) - Flameproof
G	ECAS (UAE) - Flameproof
H	SANS (South Africa) - Flameproof
I	Taiwan (Ministry of Labor Proof of Registration) - Flameproof



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