

General Information Brochure



Rieker Inc.

Highly Accurate
User-Configurable
Hazardous Location Certified

2020

FLEX H6EX-B Inclinator





Rieker Inc.

Flex Series - H6EX-B

General Information Brochure

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Hazardous Location Certified, Accurate, User-Configurable, All- in-One Inclinometer

The H6EX-B sensor is an inclinometer that provides high accuracy, dual axis inclination over a range of $\pm 180^\circ$ in a rugged environmentally protected housing certified for Hazardous Locations.

HAZARDOUS LOCATIONS

Hazardous locations are defined as places where fire or explosion hazards may exist due to flammable gases, flammable liquid-produced vapors, combustible liquid-produced vapors, combustible dusts, or ignitable fibers/flyings present in the air in quantities sufficient to produce explosive or ignitable mixtures.

The H6EX-B is suitable for all areas except mining where gas and dust are not likely to occur in normal operation, but if so, will persist for a short period only. It is approved for use in the following hazardous locations:

	ATEX/IECEx	MET (US)/CSA
Location	Zone 2 & 22	Class I & II, Division 2
Gas Group	IIA to IIC	A to D
Dust Group	IIIB	F to G
Temperature Group	Gas: T4. Dust: T135°C	

SENSOR DESCRIPTION

This unit incorporates a MEMS sensor referenced to gravity with integrated temperature compensation for repeatable and precise output over a wide operating range.

The H6EX-B provides two (one per axis) continuous and fully configurable analog outputs, which can be set to current or voltage. The current output can be set to any value between 4mA..20mA, the voltage output can be set to any value between 0V..10V. The measuring range can be set to any angle range between $\pm 180^\circ$. The current and voltage outputs are linear with respect to the input angle.

The H6EX-B also includes a polled, half-duplex (2-wire), RS-485 digital interface for angle measurements and configuration.

The output parameters are configured at the factory to meet any specifications or can be configured by the user through the RS-485 interface.

The H6EX-B installation manual provides specific certification details along with wiring, mounting, and installation instructions.



FEATURES

- Dual Axis
- Horizontal & Vertical Mount
- Scalable Angle Range up to $\pm 180^\circ$
- Temperature Compensated
- Configurable Outputs
 - Current
 - Voltage
 - RS-485
- Vibration & Shock Resistant
- All-weather IP68 Housing
- Extended operating temperature -40°C to $+85^\circ\text{C}$
- Rugged 316 Stainless Steel Housing
- EMC protected to 10V/m
- Reverse Polarity Protection
- CE

HAZARDOUS LOCATION INDUSTRIES

- Oil & Gas
- Offshore
- Mining (Coal)
- Power Generation
- Wastewater Treatment
- Chemical, Pharmaceutical
- Grain Elevators, Flour Silos, Mills
- Water Infrastructure Management

Rieker Rugged. Rieker Reliable.™

RIEKER INC • 34 MOUNT PLEASANT ROAD • ASTON • PA • 19014 • USA

610-500-2000

fax: 610-500-2002

inquiry@riekerinc.com

www.riekerinc.com



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TABLE 1: H6 SENSOR SPECIFICATIONS

INPUT PARAMETERS		
SUPPLY VOLTAGE	+12 or 24 VDC Non-Regulated	
SUPPLY CURRENT ¹	30mA @ 12VDC (Digital Output only)	
	70mA max @ 12VDC (Analog and Digital Outputs enabled)	
ANALOG MEASURING RANGE	Scalable within 360°	
DIGITAL MEASURING RANGE	±180°	
INPUT PROTECTION	Reverse Polarity, ESD & Surge Protected	
ANALOG CURRENT & VOLTAGE OUTPUT PARAMETERS		
OUTPUT RANGES	Current	4..20mA
	Voltage	0..5 V, 0..10V (Configurable within 0..10V)
SENSITIVITY ²	Relative to Scaled Range	
NULL (0°)	User Configurable	
RESOLUTION	<0.005°	
RESPONSE TIME	User Configurable: 6 choices from 4Hz to 0.3Hz	
DIGITAL OUTPUT PARAMETERS		
OUTPUT TYPE	RS-485 Half Duplex (2-wire)	
INCLINATION OUTPUT	32-Bit IEEE Packetized Float	
BAUD RATE	125K Default (Configurable from 9600 to 250K)	
BYTE FORMAT	8 Data Bits, No Parity, 1-stop Bit, No Flow Control	
PACKET FORMAT	See Installation Manual for Packet Details and Commands	
INFORMATION RATE	Polled (up to 20 times/sec)	
TEMPERATURE RANGES		
OPERATING TEMPERATURE	-40°F..+185°F (-40°C..+85°C)	
STORAGE TEMPERATURE	-49°F..+194°F (-45°C..+90°C)	
MECHANICAL CHARACTERISTICS		
HOUSING	Stainless Steel 316, IP68, All-weather, Submersible	
WEIGHT	28.8 oz (816.5 Grams)	
MOUNTING HOLES	Accept #8 or M4.5 screws (See Dimensional Drawing)	
MOUNTING PLANE	Flat Horizontal Surface (Factory Configurable for Vertical Mount)	
OUTLINE DIMENSIONS	4.34" x 3.26" x 1.8" [110mm x 82.8mm x 45.7mm]	
ELECTRICAL CONNECTION	See Electrical Connection Drawing	
Notes: 1. Supply Current varies depending on outputs connected. Digital output only assumes analog output section is always active however current loop is not connected.		
2. Sensitivity defined as (max analog output range) / (sensor input angle range). E.g., A current range set to 4..20mA with a ±30° input range will have a corresponding sensitivity of 16mA/60° or 0.267mA/°.		

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FIGURE 1: Dimensions (inches [mm])

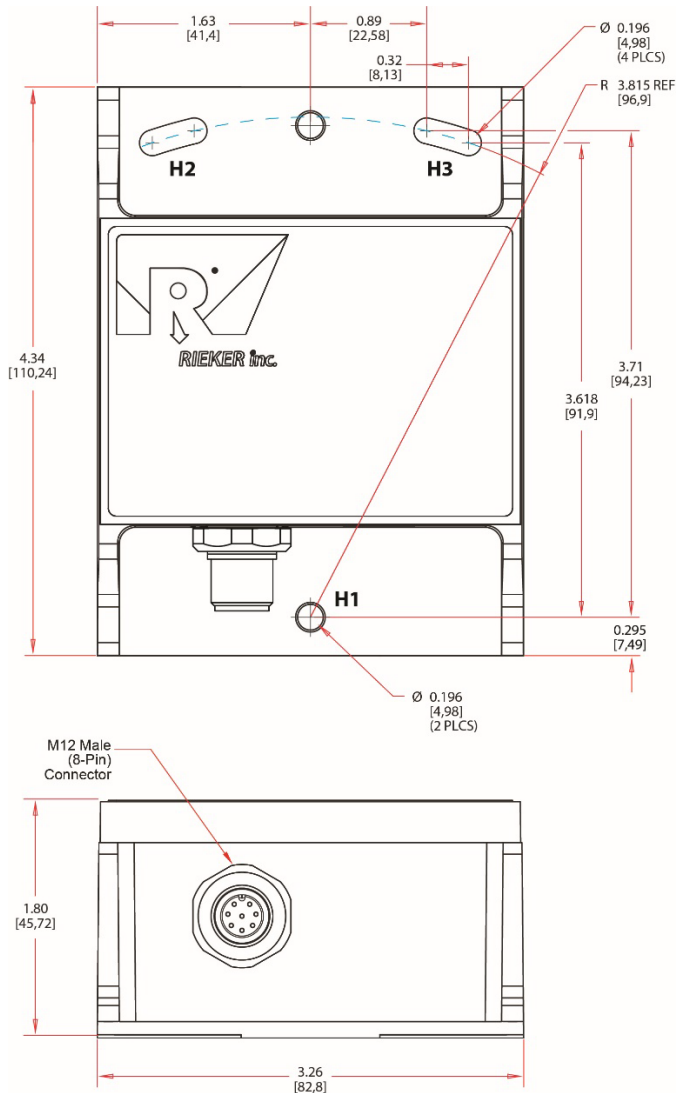
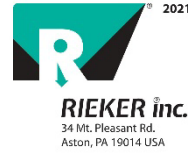


FIGURE 2: Top Surface Markings Showing Hazardous Location Information



- 1) V+
- 2) GND
- 3) RS485 D+
- 4) RS485 D-
- 5) NC
- 6) OUT 1
- 7) OUT 2
- 8) NC



INCLINOMETER FOR
HAZARDOUS LOCATIONS

H6EX-B

Ex II 3G Ex ec IIC T4 Gc
Ex III 3D Ex tc IIC T135°C Dc
Class I, Division 2, Groups A,B,C,D,T4
Class II, Division 2, Groups F,G
-40°C ≤ Tamb ≤ 85°C

V = 24V
I = 90mA

WARNING - EXPLOSIVE HAZARD! DO NOT
CONNECT OR DISCONNECT WHILE ENERGIZED.
AVERTISSEMENT - RISQUE D'EXPLOSION.
NE PAS BRANCHER NI DEBRANCHER SOUS
TENSION.

CE SEV 18 ATEX 0217 c MET us
1234 IECEx SEV 18.0042 E114209

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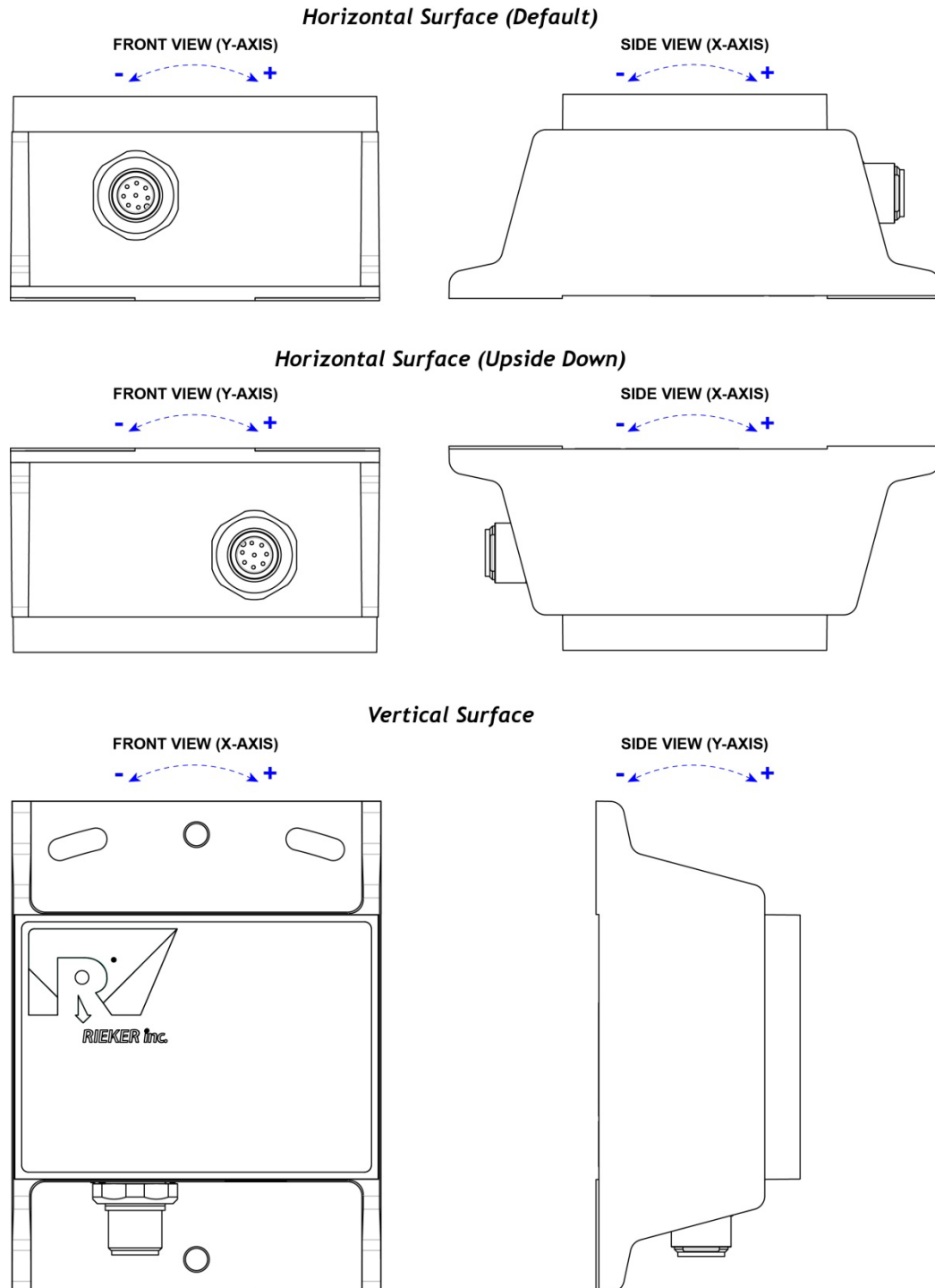
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FIGURE 4: Mounting Positions with Axis Orientations (inches [mm])



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TABLE 2: MALE 8-PIN INPUT CONNECTOR WIRING

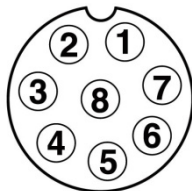
PIN	FUNCTION	 M12 (male 8-pin) Pin Assignment FRONT VIEW
1	SUPPLY VOLTAGE +12VDC	
2	POWER / SIGNAL COMMON	
3	RS-485 D+	
4	RS-485 D-	
5	NO CONNECTION	
6	ANALOG OUTPUT 1	
7	ANALOG OUTPUT 2	
8	NO CONNECTION	

TABLE 3: NOTES & WARNINGS

WARNING:	If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.
AVERTISSEMENT:	Si l'équipement est utilisé de façon non spécifiée par le fabricant, la protection assurée par l'équipement peut être altérée.

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