

General Information Brochure



Rieker Inc.

Highly Accurate
User-Configurable
Hazardous Location Certified
Intrinsically Safe

2022

FLEX H6EX-A Inclinator





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Flex Series - H6EX-A

General Information Brochure

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Intrinsically Safe, Highly Accurate, User-Configurable, All-in-One Inclinometer

The H6EX-A sensor is an Intrinsically Safe inclinometer that provides dual axis inclination sensing 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-A is suitable for all areas except mining where continuous, long, or frequent periods of exposure to hazardous gas and explosive dust. It is approved for use in the following hazardous locations:

	ATEX/IECEX	MET (US)/CSA
Location	Zone 0, 1, 20, & 21	Class I & II, Division 1
Gas Group	IIA to IIC	A to D
Dust Group	IIIB	F to G
Temperature Group	Gas: T4. Dust: T200°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-A 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..24mA, 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 directly.

The H6EX-A1 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 your specifications. However certain models can be configured by the user through the RS-485 interface.

The H6EX-A1 and H6EX-A2 installation manuals provide specific certification details along with wiring and installation instructions.



FEATURES

- ATEX, IECEX, MET, CSA
- Dual Axis
- Horizontal & Vertical Mount
- Scalable Angle Range up to $\pm 180^\circ$
- Fully 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
- Waste Water Treatment
- Chemical, Pharmaceutical
- Grain Elevators, Flour Silos, Mills
- Water Infrastructure Management

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TABLE 1: H6 SENSOR SPECIFICATIONS

INPUT PARAMETERS		
SUPPLY VOLTAGE	+11..13 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° (User Configurable - H6EX-A1 only)	
DIGITAL MEASURING RANGE	±180°	
INPUT PROTECTION	Reverse Polarity, ESD & Surge Protected	
ANALOG CURRENT & VOLTAGE OUTPUT PARAMETERS		
OUTPUT RANGES	Current	4..20 mA
	Voltage	0..5 V, 0..10V (Configurable within 0..10V)
SENSITIVITY ²	Relative to Scaled Range	
NULL (0°)	User Configurable (RS485 through approved barrier connection - H6EX-A1 only)	
RESOLUTION	<0.005°	
RESPONSE TIME	6 configurable options from 4Hz to 0.3Hz (User Configurable - H6EX-A1 only)	
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	H6EX-A1	H6EX-A2
	-40°F..+149°F (-40°C..+65°C)	-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	
<p>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.</p> <p>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/°. </p>		

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FIGURE 1: Dimensions (inches [mm])

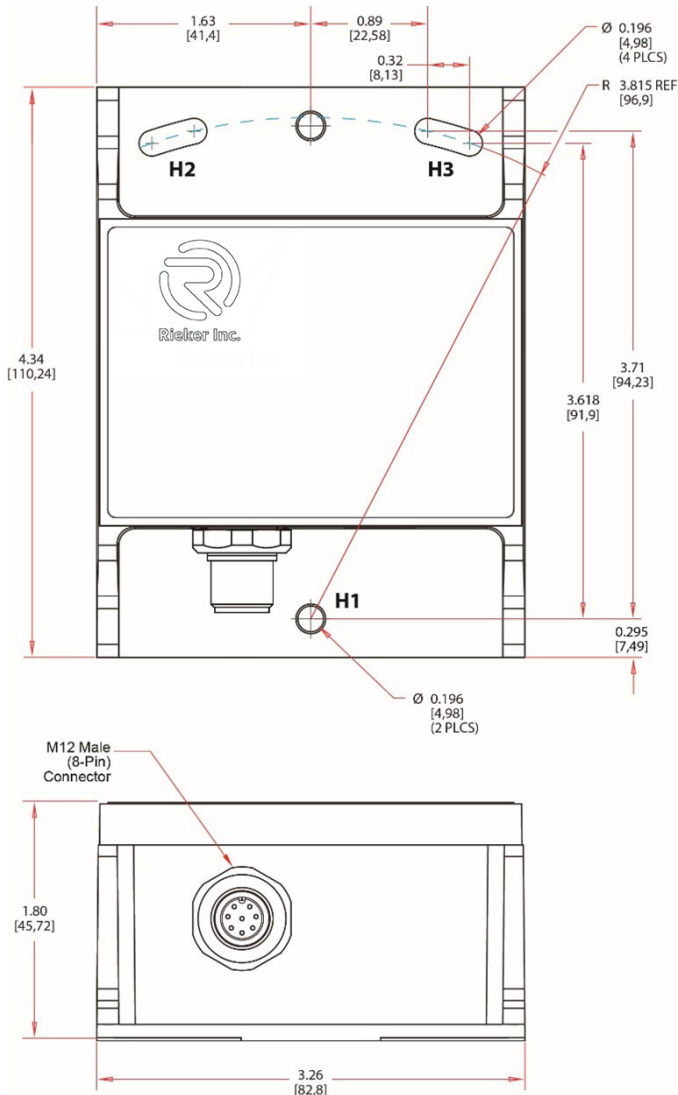


FIGURE 2: Top Surface Markings for H6EX-A1 Showing Hazardous Location Information

INCLINOMETER FOR HAZARDOUS LOCATIONS
H6EX-A1
 Ex II 1 G Ex ia IIC T4 Ga
 Ex II 1 D Ex ta IIIC T200°C Da
 Class I Zone 0 AEx ia IIC T4 Ga
 Zone 20, AEx ta IIIC T200°C Da
 Class I, Division 1, Groups A,B,C,D
 Class II, Division 1, Groups F,G
 -40°C ≤ Tamb ≤ 65°C

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

V_{max} (or U) = 13V C_i = 0.977μF
 I_{max} (or I) = 270mA L_i = 0.0mH
 P_i = 3.348W

CE SEV 18 ATEX 0217 c **MET** us
 1258 IECEx SEV 18.0042 E114209

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 CD_H6EX-A1

FIGURE 3: Top Surface Markings for H6EX-A2 Showing Hazardous Location Information

INCLINOMETER FOR HAZARDOUS LOCATIONS
H6EX-A2
 Ex II 1 G Ex ia IIC T4 Ga
 Ex II 1 D Ex ta IIIC T200°C Da
 Class I Zone 0 AEx ia IIC T4 Ga
 Zone 20, AEx ta IIIC T200°C Da
 Class I, Division 1, Groups A,B,C,D
 Class II, Division 1, Groups F,G
 -40°C ≤ Tamb ≤ 85°C

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

V_{max} (or U) = 13V C_i = 0.977μF
 I_{max} (or I) = 270mA L_i = 0.0mH
 P_i = 2.875W

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 CD_H6EX-A2

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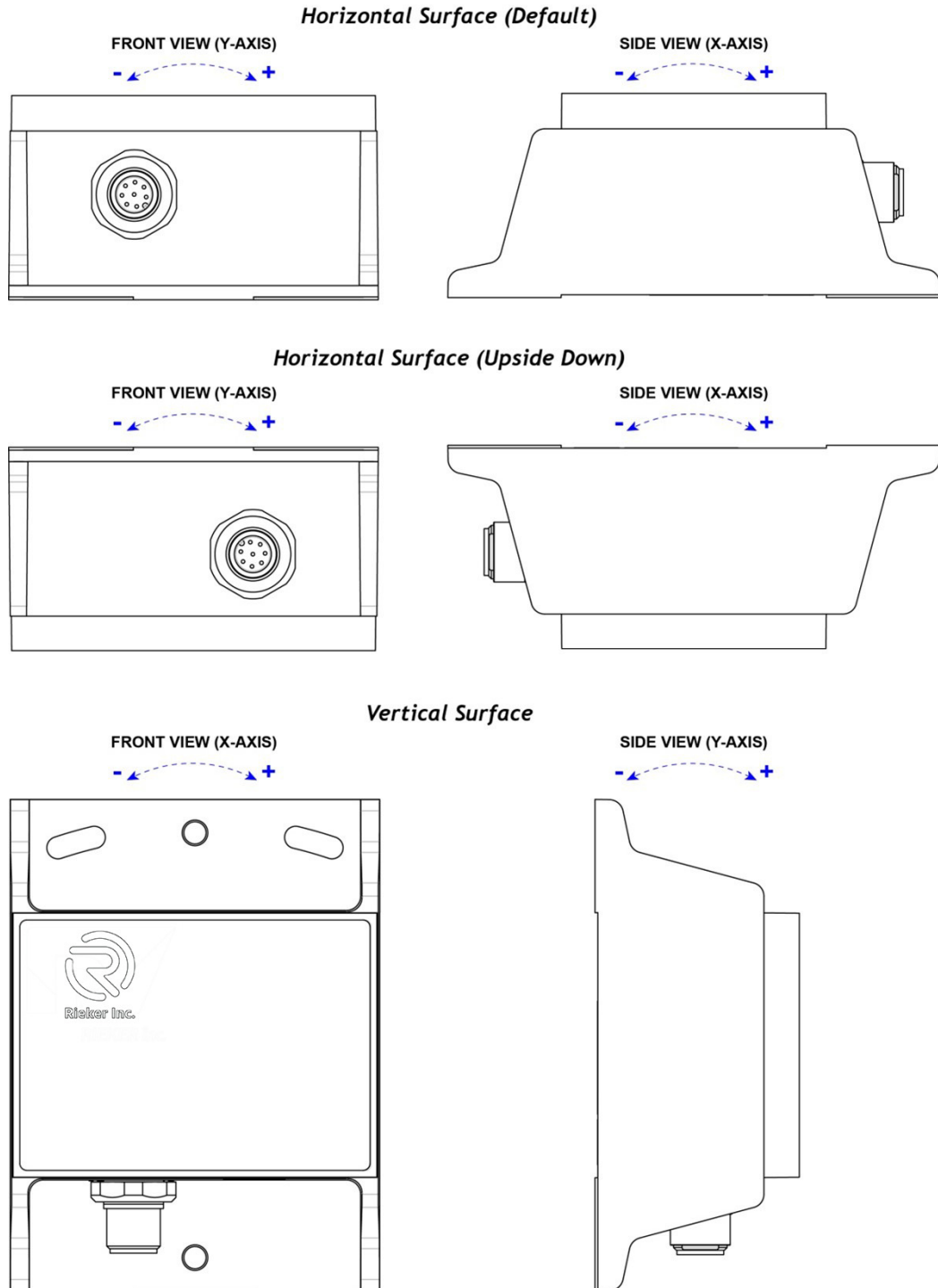


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FIGURE 4: Mounting Positions with Axis Orientations (inches [mm])



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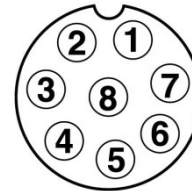
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TABLE 2: H6EX-A1 MALE 8-PIN INPUT CONNECTOR WIRING

PIN	FUNCTION
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



M12 (male 8-pin)
Pin Assignment
FRONT VIEW

TABLE 3: NOTES & WARNINGS

IMPORTANT:	H6EX must be used with a certified isolation barrier.
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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