Flex Series - H6

General Information Brochure

User-Configurable, Accurate All-in-One Inclinometer

FEATURES

- *Dual Axis*
- *Scalable Angle Range up to ±180°*
- *Temperature Compensated*
- *Outputs:*
  - *Analog Current 4..20mA*
  - *Digital RS-485*
- *Outputs Optional:*
  - *CAN*
  - *Open Collector Switch*
- *Daisy-chain Multiple Sensors*
- *Vibration and shock resistant*
- *Environmentally sealed IP68*
- *Rugged metal housing*
- *EMC protected to 100V/m*
- *Overvoltage/overcurrent protection*
- *-40° to +85°C Operating Temperature*
- *CE Certificate of Conformance*

APPLICATIONS

- *Platform Leveling*
- *Solar Panel Array Alignment*
- *Vehicle Tilt Monitoring*
- *Antenna Positioning*
- *Boom Angle Indicating*
- *Process Controls*

INDUSTRIES

- *Aerospace & Defense*
- *Construction*
- *Energy*
- *Mining*
- *Offshore*
- *Transportation*

DESCRIPTION

The H6 inclinometer provides dual axis inclination sensing in a rugged environmentally protected housing.

This unit incorporates a MEMS sensing element referenced to gravity with integrated temperature compensation over the industrial operating range of -40° to +85°C.

The H6 provides a continuous analog current 4..20mA output and a selectable digital output of a polled RS-485 half-duplex (2-wire) output. Available upon request, the H6 is CAN ready with customer specified protocols. All outputs are linear with respect to the input angle directly.

Used as integrated devices by original equipment manufacturers (OEMs) or as standalone sensors for test and measurement, the H6 is made for applications where high accuracy and long-term stability are required in noisy and wide temperature changing environments.

The output parameters can be modified at the factory to meet your specifications (i.e. range, polarity). We also offer the Flex Series Development Kit allowing the end customer to modify the sensor as needed right from a PC – providing full flexibility for R&D and OEM production lines.

For use with most all applications including commercial, industrial, military applications.

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TABLE 1: H6 SENSOR SPECIFIATIONS	
INPUT PARAMETERS	
SUPPLY VOLTAGE	+12..36 VDC Non-Regulated
SUPPLY CURRENT[1]	22mA @ 24VDC (Digital Output only)
	30mA @ 24VDC (Analog Output - no load)
	75mA @ 24VDC max (Analog and Digital Outputs enabled)
	85mA @ 12VDC max (Analog and Digital Outputs enabled)
ANALOG MEASURING RANGE	Scalable To ±180°
DIGITAL MEASURING RANGE	±180°
INPUT PROTECTION	Reverse Polarity, ESD & Surge Protected
ABSOLUTE ACCURACY OVER FULL OPERATING TEMPERATURE	
RANGE: ±180°	±0.1º
CURRENT OUTPUT PARAMETERS	
OUTPUT TYPE	Factory Default: 4..20 mA (Configurable within 0..24mA)
SENSITIVITY[2]	Relative to Scaled Range
NULL (0º)	Factory Default: 12 mA Nominal (User Configurable)
RESOLUTION	0.05º Max
FREQUENCY RESPONSE	0.5Hz Nominal
DIGITAL OUTPUT PARAMETERS	
OUTPUT TYPE	RS-485 Half Duplex (2-wire)
INCLINATION OUTPUT	IEEE Packetized 32-Bit Float
BAUD RATE	125K Default (Configurable within 9600 to 250K)
BYTE FORMAT	8 Data Bits, No Parity, 1-stop Bit, No Flow Control, CRC16 Checksum
PACKET FORMAT	See Installation Guide for Packet Details and Commands
INFORMATION RATE	Polled (up to 20 times/sec)
TEMPERATURE RANGES	
OPERATING TEMPERATURE	-40ºF..+185ºF (-40ºC..+85ºC)
STORAGE TEMPERATURE	-49ºF..+194ºF (-45ºC..+90ºC)
MECHANICAL CHARACTERISTICS	
HOUSING	Aluminum, IP68, All-weather, Submersible
WEIGHT	18.6 oz. (525 Grams)
MOUNTING HOLES	Accept #8 or M4.5 screws (See Dimensional Drawing)
MOUNTING PLANE	Flat Horizontal Surface
OUTLINE DIMENSIONS	4.34” x 3.26” x 1.8”
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 current range) / (sensor input range). Ex, 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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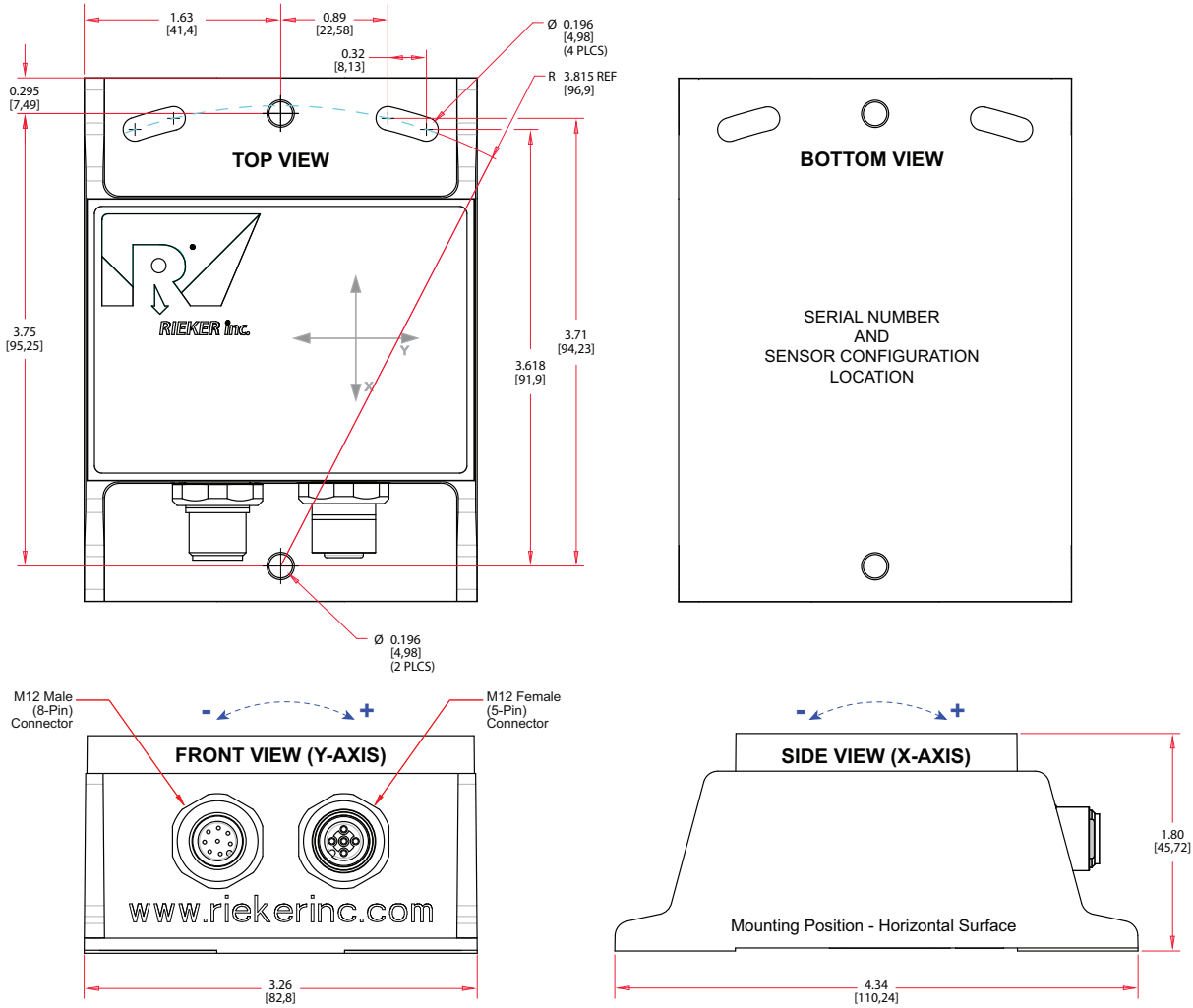
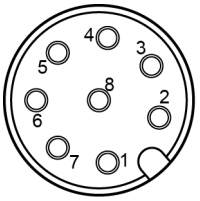
FIGURE 1: **Dimensions (inches [mm]) and Mounting Position**

- Mounting surface
  - o Dual axis Horizontal surface only.
  - o Single Axis Vertical surface (must be specified at time of order).
- Zero position connector facing user (see FRONT/SIDE VIEW of drawing below)
- X axis clockwise (connector to the right and down) tilt "+" (see SIDE VIEW of drawing below)
- Y axis clockwise tilt "+" (see FRONT VIEW of drawing below)



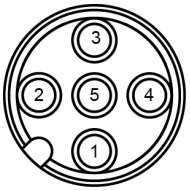
CE European Compliance Statement:
This product complies with the requirements of European Directives 2004/108/EC.

TABLE 2: MALE 8-PIN INPUT CONNECTOR	
PIN	**FUNCTION**
1	SUPPLY VOLTAGE +11.. +36VDC
2	POWER / SIGNAL COMMON
3	RS485 D+ OR CAN HI
4	RS485 D- OR CAN LO
5	CAN SHIELD
6	X AXIS 4..20MA CURRENT OUTPUT
7	Y AXIS 4..20MA CURRENT OUTPUT
8	NO CONNECTION



M12 (male 8-pin)
Pin Assignment
FRONT VIEW

TABLE 3: FEMALE 5-PIN OUTPUT CONNECTOR	
PIN	**FUNCTION**
1	CAN SHIELD
2	SUPPLY VOLTAGE +11..+36VDC
3	POWER COMMON
4	RS485 D+ OR CAN HI
5	RS485 D- OR CAN LO



M12 (female 5-pin)
Pin Assignment
FRONT VIEW

TABLE 4: CURRENT SENSE

Rsense is dependent upon supply voltage and cable/wire resistance. Ensure the following equation is met:

$$\text{Rsense} <= \frac{\text{Vsupply} - 2.5}{0.020} - \text{Rwire}$$

QUICK REFERENCE	
SUPPLY VOLTAGE	SENSE RESISTOR
12V	200-350 OHMS
24V	200-1000 OHMS
28V	200-1000 OHMS

TABLE 5: ACCESSORIES (SOLD SEPARATELY)

FLEX SERIES DEVELOPMENT KIT
- Flexware™ Toolkit Application
- USB Interface Cable from Sensor to PC
- AC Wall Adaptor

INTERFACE CABLE
- Input power / outputs
- Both 8-pin and 5-pin available
- Stock lengths and OEM custom lengths available
- Includes mating connector to sensor, with pigtail leads

Display Box
- Single or Dual Line LCD
- 0.1º Resolution
- Battery or 12..24VDC input supply

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