H6 Inclinometer

Mounting & Wiring Instructions (Current Output)

Installing the Dual Axis H6 with Dual Analog Current Outputs

Notes

1. The H6 comes with two Analog 0..24mA current outputs as well as an RS-485 Digital Output. The following instructions are for the current output configuration only (Instructions for digital output configuration are available separately).
2. The current output is factory set to provide a default 4..20mA current output originally scaled for ±180° input ranges for both axes. Unit range and current output may have been factory set to customer specified angle and current ranges at time of order.
3. The unit is considered to be at zero degrees when mounted flat in the horizontal, desktop position as shown in *Figure 1*.
4. The X and Y axis Minimum and Maximum Currents can each be configured anywhere within the 0.. 24mA range.
5. The X and Y axis angle ranges can each be selected anywhere within the ±180° range.
6. The H6 with customer specified outputs will have a label on the bottom of the housing showing the factory configured Analog Output parameters.

Sensitivity Calculation

The sensor output current sensitivity is calculated by the following equation:

- **Sensitivity** (mA/°) = [Max Current - Min Current] / [Max Angle – Min Angle]
- Examples
  - Unit with a ±60° range with a 4.. 20mA output:
    - Sensitivity = (20mA – 4mA) / (60° - (-60°)) = 16mA / 120° = 0.133 mA/°
  - Unit with a -10 to +90° range with a 2 to 20mA output:
    - Sensitivity = (20mA – 2mA) / (90° - (-10°)) = 18mA / 100° = 0.180 mA/°

Zero Angle Calculation

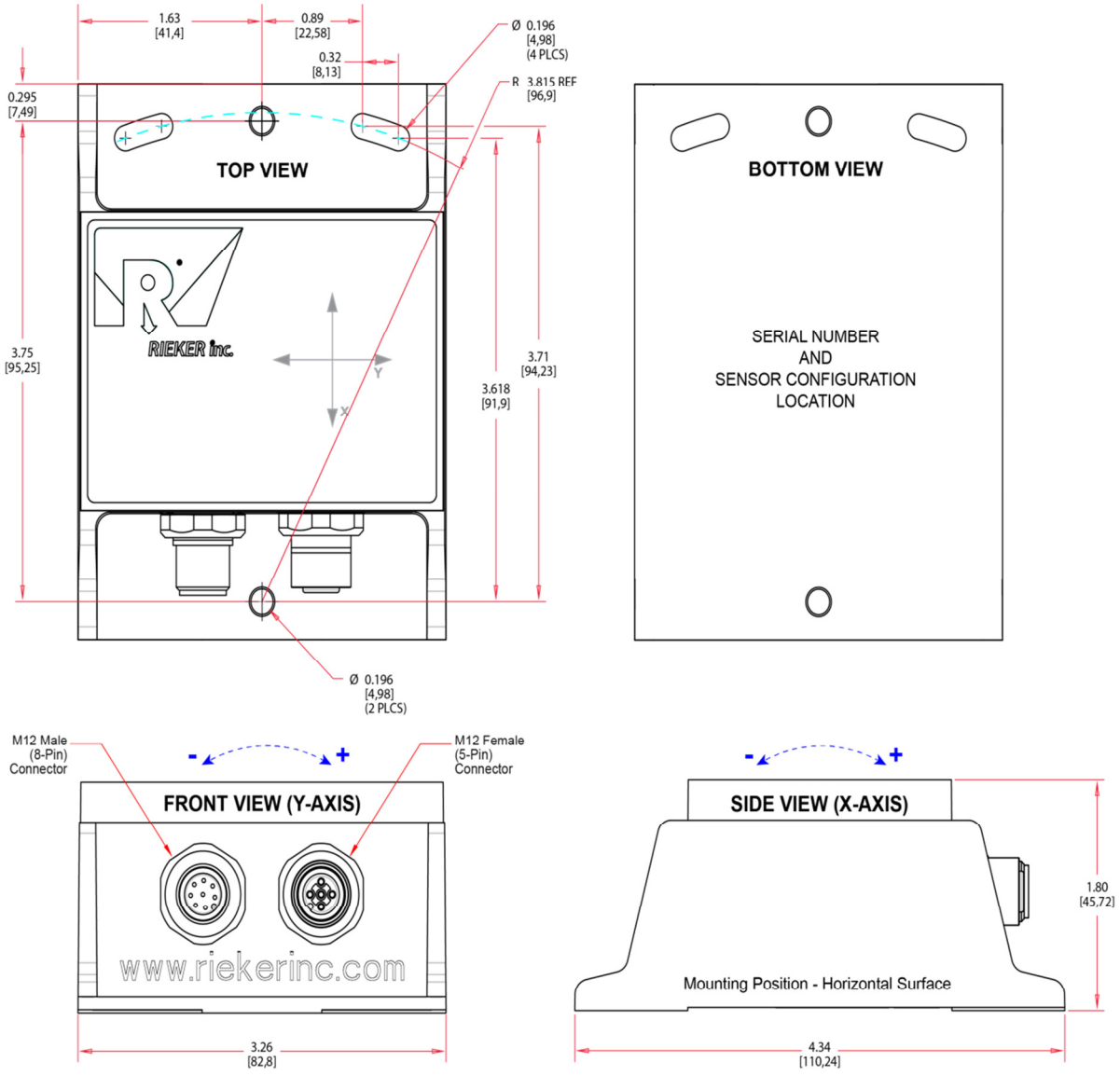
To calculate the zero degree angle output:

- **Symmetrical** input ranges (i.e. ±60°) will have a zero degree angle output at the midpoint of the input current range: [Max Current + Min Current] / 2
- Examples
  - Symmetrical input range with 4.. 20mA outputs have a Zero Degree Angle Output = 12mA
  - Symmetrical input range with 2.. 20mA outputs have a Zero Degree Angle Output = 11mA
  - Symmetrical input range with 0.. 20mA outputs have a Zero Degree Angle Output = 10mA
- **Non-symmetrical** input ranges (i.e. -10 to +90°) the zero degree angle output will be calculated as follows: Zero Degree Angle Output = Min Current + (Min Angle x Sensitivity).
- Examples
  - Unit with a -10 to +90° range with a 2.. 20mA output:
    - Zero Degree Angle Output = 2mA + (10° x 0.18 mA/°) = 3.8mA
  - Units with a 0 to +90° range with a 4.. 20mA output:
    - Zero Degree Angle Output = 4mA

Mounting the H6

1. On the horizontal mounting plane, prepare surface with three tapped holes 3.815" [96.9mm] apart for #9 mounting screws. See *Figure 1*. NOTE that the single hole on side with the two slots is not meant to be used for mounting
2. Mount inclinometer to mounting plane using #9 mounting screws.

Figure 1: **H6 Dimensions** (inches [mm]) **and Mounting Position**



Wiring the H6

1. Connect the power (PIN 1) to an 11..36VDC supply and the ground (PIN 2) to the supply ground/common.
2. Connect the X-axis output (PIN 6) to the positive terminal of the measurement device, and the sensor ground (PIN 2) to the negative terminal/common of the measurement device.
3. Connect the Y-axis output (PIN 7) to the positive terminal of the measurement device, and the sensor ground (PIN 2) to the negative terminal/common of the measurement device.

NOTE: the current outputs will not work using chassis ground. Unit ground (PIN 2) must be used.

4. To convert the current to a voltage output select an appropriate load resistor (Rsense), see Figure 3, based on the equation defined in the H6 Current Sense Table

Figure 2: **Wiring Diagram Current Output Measurement**

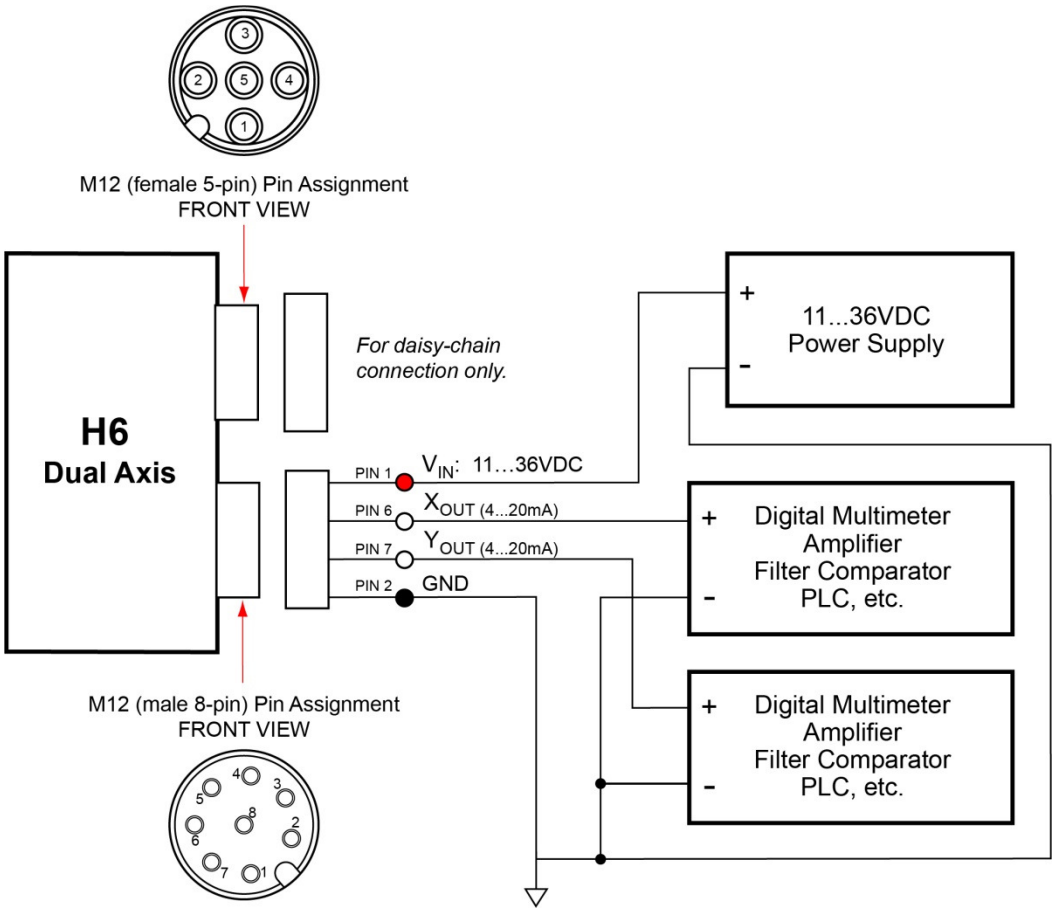
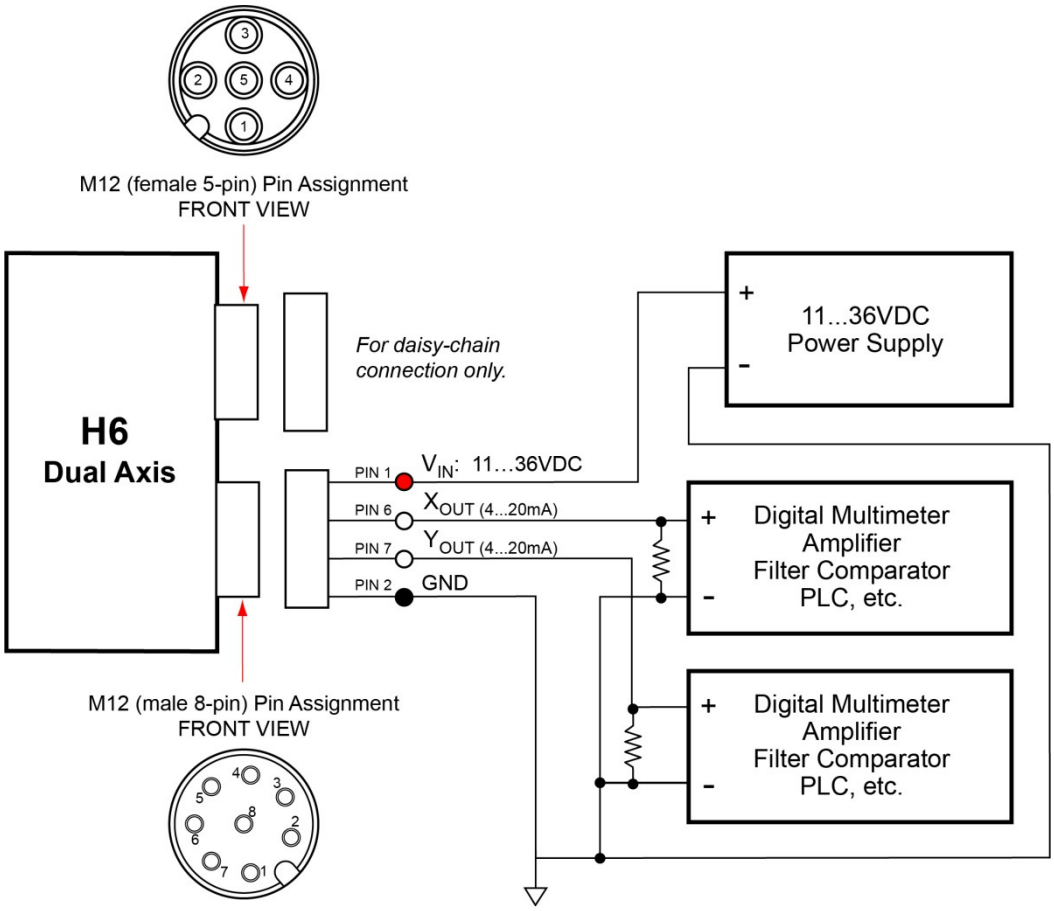


Figure 3: **Wiring Diagram Current Conversion to Voltage Output Measurement**



CONNECTOR WIRING TABLE:	
FUNCTION	**PIN**
SUPPLY VOLTAGE +11 TO +36VDC	1
POWER/SIGNAL COMMON	2
RS485-D+ (NOT REQUIRED FOR CURRENT OUTPUT)	3
RS485-D- (NOT REQUIRED FOR CURRENT OUTPUT)	4
NO CONNECTION	5
X-AXIS CURRENT OUTPUT	6
Y-AXIS CURRENT OUTPUT	7
NO CONNECTION	8

H6 CURRENT SENSE

RSENSE IS DEPENDENT UPON SUPPLY VOLTAGE AND CABLE/WIRE RESISTANCE. ENSURE THE FOLLOWING EQUATION IS MET:

$$RSENSE <= \frac{VSUPPLY - 2.5}{0.020} - RWIRE$$

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

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