



# H4360 Inclinometer

## Mounting & Wiring Instructions (4-20mA)

### Installing the Single axis H4360 with Analog Current (4-20mA) Output

#### Notes

1. The H4360 comes with a single Analog 0-24mA current output as well as a RS-485 Digital Output. The following instructions are for the current output configuration only (Instructions for digital output configuration will be available separately).
2. The current output is factory set to provide a default 4-20mA current output originally scaled for  $\pm 180^\circ$  input ranges. Unit range and current output may have been programmatically reconfigured to different angle and current ranges selected at time of order.
3. The unit is considered to be at zero degrees when mounted in the vertical position (similar to a wall clock) with the hole at the top and the slot at the bottom as shown in *figure 1*.
4. The Minimum and Maximum Currents can be configured anywhere within the 0 to 24mA range.
5. The angle range can be selected anywhere within the  $\pm 180^\circ$  range.
6. The H4360 with customer specified outputs will have a custom part number delineator “-X” depicted in the unit part number H4360-X.

#### 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  $\pm 60^\circ$  range with a 4 to 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° = 0.18mA/°

#### Zero Angle Calculation

To calculate the zero degree angle output:

- **Symmetrical** input ranges (i.e.  $\pm 60^\circ$ ) 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 to 20mA outputs have a Zero Degree Angle Output = 12mA
  - Symmetrical input range with 2 to 20mA outputs have a Zero Degree Angle Output = 11mA
  - Symmetrical input range with 0 to 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 \* Sensitivity).
- Examples
  - Unit with a -10 to +90° range with a 2 to 20mA output:
    - Zero Degree Angle Output = 2mA + (10° \* 0.18 mA/°) = 3.8mA
  - Units with a 0 to +90° range with a 4 to 20mA output:
    - Zero Degree Angle Output = 4mA

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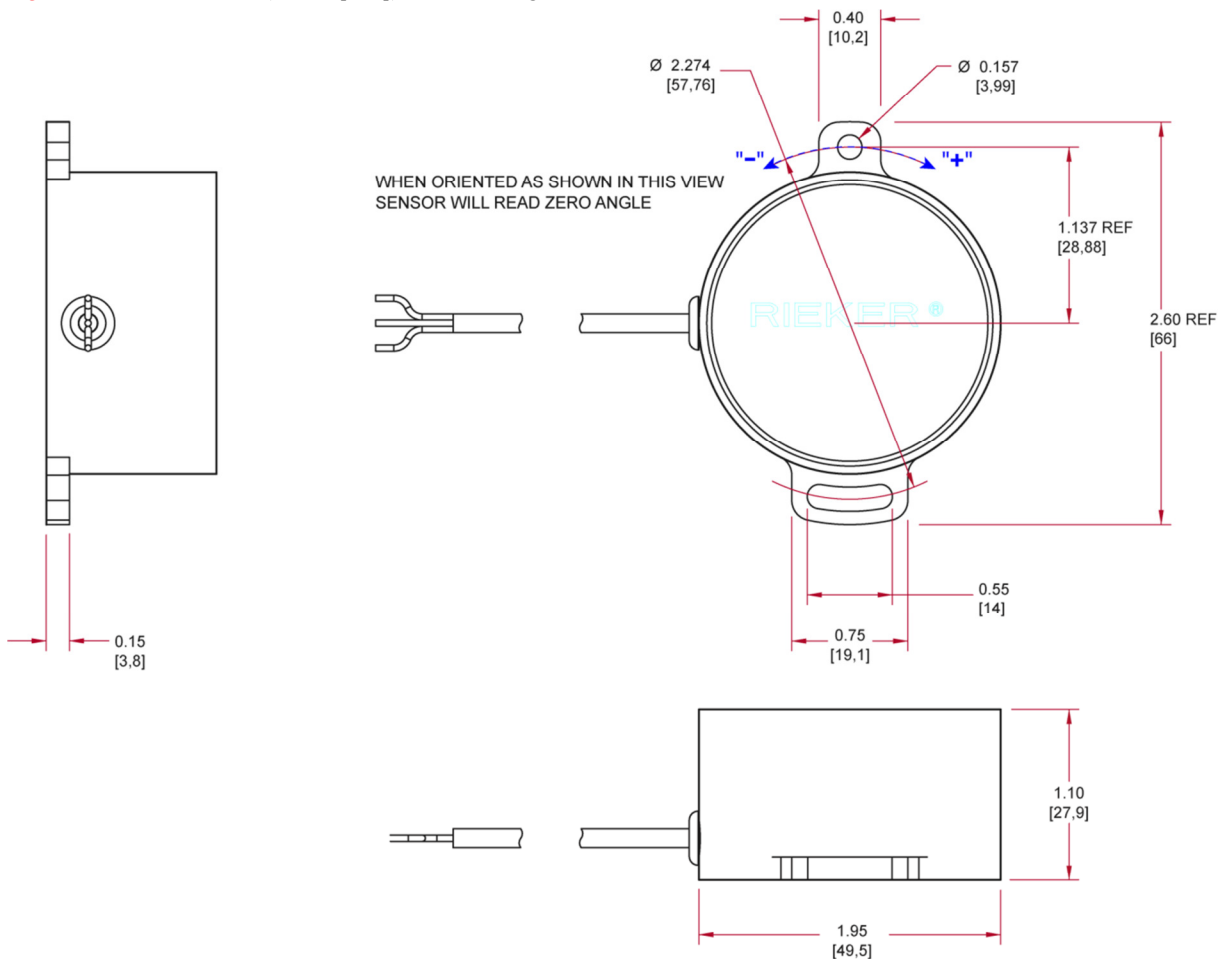
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### Mounting the H4360

1. On a vertical mounting plane, prepare surface with two tapped holes 2.274" [57,76mm] apart for #6 mounting screws. See Figure 1.
2. Mount inclinometer to mounting plane using #6 mounting screws. Ensure the unit is orientated so that the writing on the label appears horizontal and upright when looking at it straight on and the hole and slot are vertical - with the slot down as shown in figure 1.
3. See Figure 2 for Electrical Connections and Wiring Diagrams. For measuring the current output directly refer to the top figure. To convert the current to a voltage output select an appropriate load resistor ( $R_{sense}$ ) based on the equation defined in the H4360 Current Sense Table. Refer to the bottom wiring within Figure 2.
4. To align sensor to zero degrees: Calculate the Zero Degree Angle Output as defined above. Loosen screws, then rotate unit within slot until the sensor output either reads the Zero Degree Angle Current or ( $R_{sense} * \text{Zero Degree Angle Current}$ ) for units converted to voltage output. Tighten screws.

**Figure 1:** H4 Dimensions (inches [mm]) and Mounting Position

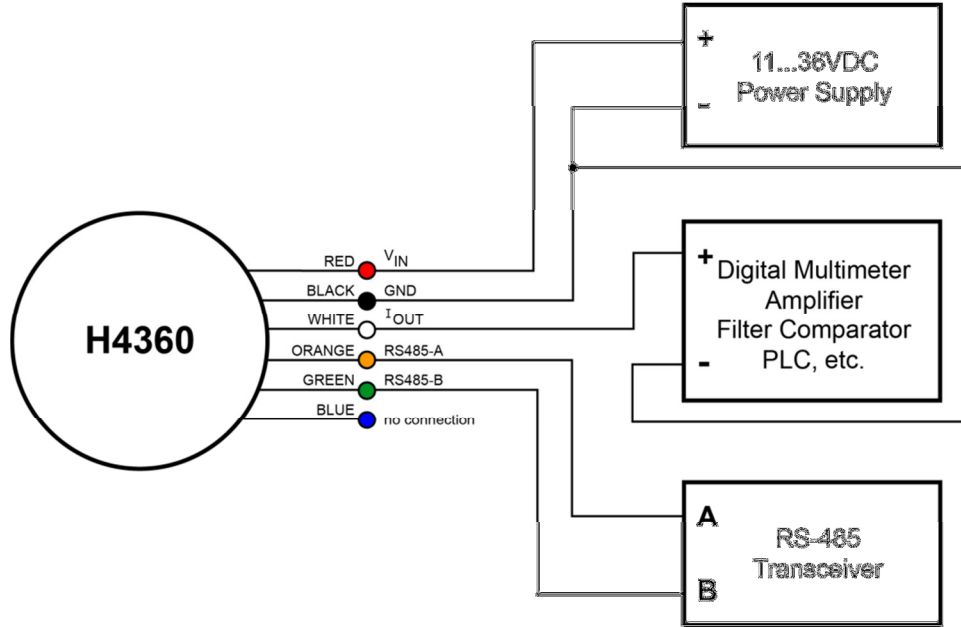


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 FORM NUMBER: H40020\_02/15 UPDATED: 2/20/15

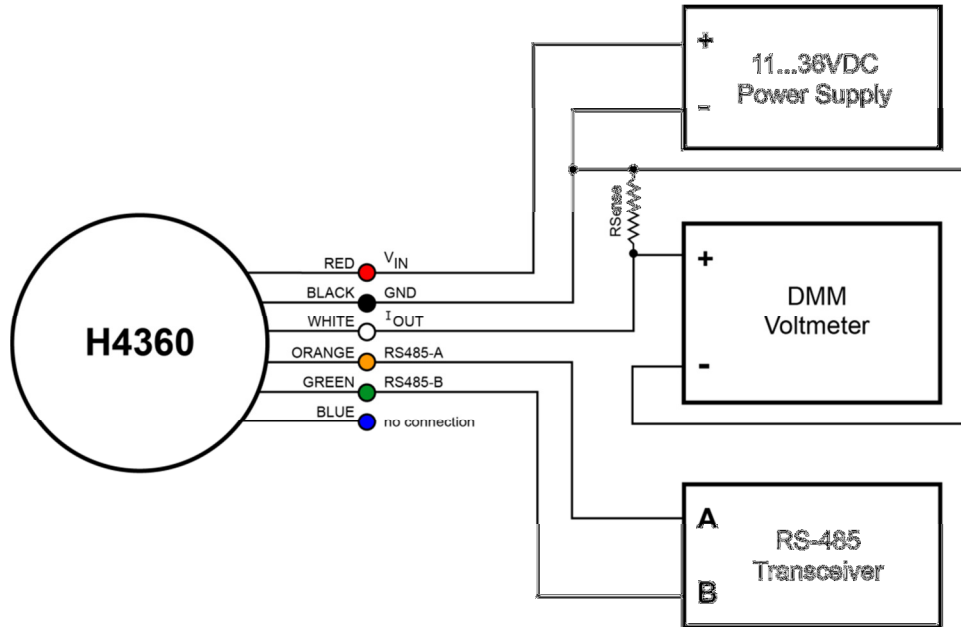
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**Figure 2:** Wiring Diagram

- H4360 Current Output Measurement



- H4360 Current Conversion to Voltage Output Measurement



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CONNECTOR WIRING TABLE:		
COLOR	FUNCTION	PIN
RED	SUPPLY VOLTAGE +11 TO +36VDC	1
BLACK	POWER/SIGNAL COMMON	2
WHITE	4..20MA OUTPUT	3
ORANGE	RS485-A	4
GREEN	RS485-A	5
BLUE	NO CONNECTION	6

H4360 CURRENT SENSE		
<p>Rsense is dependent upon supply voltage and cable/wire resistance. Ensure the following equation is met:</p> $R_{sense} \leq \frac{V_{supply} - 2.5}{0.020} - R_{wire}$	QUICK REFERENCE	
	SUPPLY VOLTAGE	SENSE RESISTOR
	12V	200-350 OHMS
	24V	200-1000 OHMS
	28V	200-1000 OHMS

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