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EiS SERIES

INSTALLATION GUIDE
ELECTRONIC INCLINOMETER SENSOR

> > STOP! *Read this first.* < <

This inclinometer is not to be used in applications where personal safety depends on device function. The product is not a safety device according to EC machinery directives.

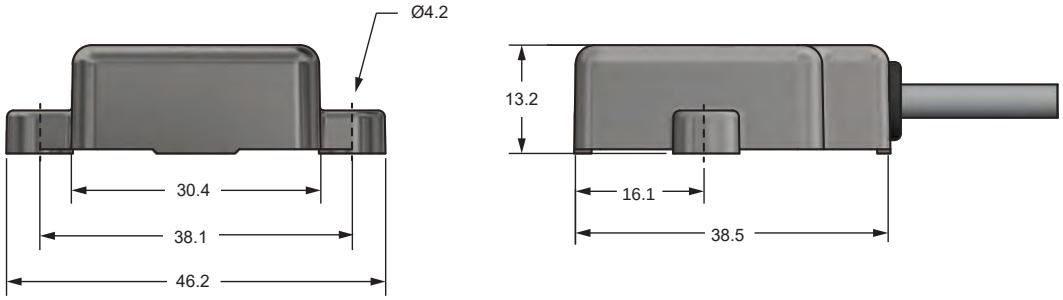
Canfield Connector Inclinometer products are miniaturized solid state electronic devices using mems electronic chips at their core. As such they are subject to proper installation and use in accordance with the technical information supplied for each product. When used to specification, standard warranties apply but, poor sources of electricity, over or under voltage conditions, voltage spikes beyond specification, unauthorized tapering, altering of the device, or uses beyond the published intended use of the product may cause the device to malfunction and void to warranty.

General Description

The Canfield Connector Electronic Inclinometer Sensor EiS is an instrument designed to measure angles of slope, tilt, or elevation of an object with respect to gravity based on an artificial horizon. Synonyms include tilt sensor, tilt switch, clinometer, slope sensor, slope gauge, level sensor, level meter, tiltmeter or pitch and roll sensor. The EiS Series is an all solid-state MEMs device designed to measure tilt while reporting the data within 0.3 degrees accuracy +/- 85° with an analog output of .5 to 9.5 Volts DC, 4 -20mA. The unit features a miniature metal housing and is epoxy encapsulated for vibration, water and dust resistance and is rated IP67 environmental rating. Available in 1 or 2 axis versions, the unit boasts a temperature drift of +/- 1° maximum with a temperature range of -40 to 85°C. The EiS Series is precisely calibrated to remove non-linearity in the sensing range. Applications for inclinometers such as the EiS Series include platform leveling, motion sensing, filter vibrations, boom angle sensing, cameras, machine arm angle sensing as well as mobile security systems. The unit comes with high quality 9 ft. PVC jacketed wire, other lengths and quick connections as options, and is mounted in place by use of two 4.2mm holes.

Dimensional Data

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED

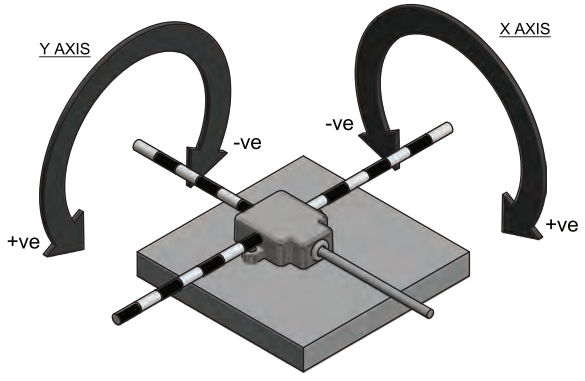


Technical Data

Accuracy @ 20°C	0.3°
Environmental Protection	IP 67
Materials	Housing: Zink die-cast Housing Finish: Black powder coat
Number of Axis	Single: 1 Dual: 2
Output Current	10 mA Maximum (Voltage Output Units)
Output Format	Analog
Output Type	0.5 - 4.5VDC, 0.5 - 9.5 VDC, 4 - 20 mA
Range	+/- 85°
Supply Voltage	12-24 VDC
Temperature Drift	+/- 1° Maximum
Temperature Range	-40° to +85°C
Cable Type	PVC (PUR on request. Consult Factory)
Wire Gauge	24 AWG

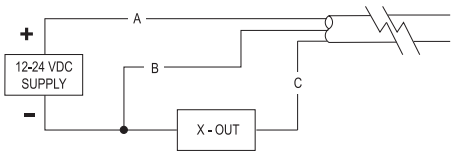
Mounting / Sensing Orientation

Mounted on Horizontal Surface

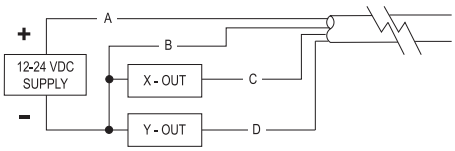


Wiring

Single Axis



Dual Axis

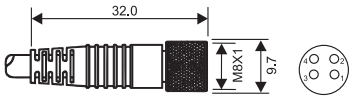


Wire Color Code

	Flying Leads	M8 / M12	GT Deutsch
A	Brown	Pin 1	Pin 1
B	Blue	Pin 3	Pin 2
C	Black	Pin 4	Pin 4
D	White	Pin 2	Pin 3

Optional Mating Cordsets and Pin Configuration

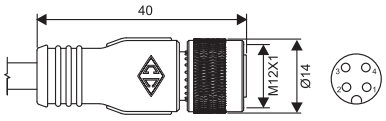
8mm female molded locking connector



Brown = Pin 1
White = Pin 2
Blue = Pin 3
Black = Pin 4

Order P/N:
RC08-AFM040-0120C10A (2m length)
RC08-AFM040-0150C10A (5m length)

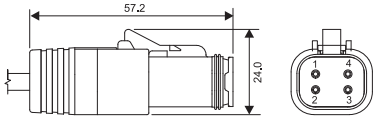
12mm female molded locking connector



Brown = Pin 1
White = Pin 2
Blue = Pin 3
Black = Pin 4

Order P/N:
RC12-AFM040-0120C10A (2m length)
RC12-AFM040-0150C10A (5m length)

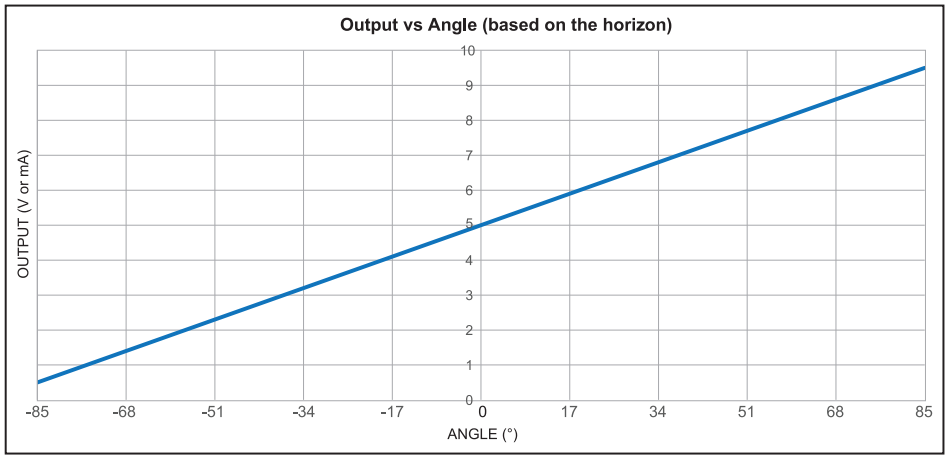
GT Deutsch style locking plug



Brown = Pin 1
Blue = Pin 2
Black = Pin 3
Green = Pin 4

Order P/N:
GT0604-U000-1A (2m length)
GT0604-X000-1A (5m length)

Calculations



Scale Factor (SF) and Output Offset Chart				
Output Type	Output Offset	Angle Range	SF*	
0.5 - 9.5V	5V	+/- 15°	0.3000	V/°
		+/- 30°	0.1500	
		+/- 45°	0.1000	
		+/- 60°	0.0750	
		+/- 85°	0.0529	
0.5 - 4.5V	2.5V	+/- 15°	0.1333	V/°
		+/- 30°	0.0667	
		+/- 45°	0.0444	
		+/- 60°	0.0333	
		+/- 85°	0.0235	
4 - 20mA	12mA	+/- 15°	0.5333	mA/°
		+/- 30°	0.2667	
		+/- 45°	0.1778	
		+/- 60°	0.1333	
		+/- 85°	0.0941	

FORMULA TO CALCULATE ANGLE		
$\frac{\text{(Output Measurement - Output Offset)}}{\text{SF*}}$	=	ANGLE

EXAMPLE CALCULATION		
EiS10-1001-3E30		
+/- 85°	Range	
0.5 - 9.5V	Output	
7.8954 V	Output Measurement	Using more accurate SF value*
$\frac{\text{(7.8954V - 5V)}}{\text{0.0529 V/°}}$ = 54.7335°		$\frac{\text{(7.8954V - 5V)}}{\text{((9.5V - 0.5V) / (85 - (-85)))}}$ = 54.6909°

*For more accurate SF Value use formula: ((MAX OUTPUT – MIN OUTPUT) / (MAX ANGLE – MIN ANGLE))