AIT640

DC-Operated Tilt Sensor with unfiltered and low pass filter output

- Ranges ±30°, ±60°, ±90°
- Non-Linearity 0.5 % FRO
- Full Range Output ±5 V
- Supply voltage +6 ... +32 VDC unregulated

Solid State Tilt Sensors measure angle with high accuracy using a micromachined (MEMS) silicon sensor incorporating an air damping feature. Unlike fluid damped devices the air damping employed is essentially independent of temperature. The transducer also incorporates positive mechanical stops conferring excellent shock resistance.

The Tilt Sensor is compensated for the effects of temperature on both sensitivity and zero.

Typical applications include data acquisition systems, road bed analysis, platform levelling, structural monitoring, pipeline levelling, ship ballast transfer systems and many other applications requiring precision tilt measurement.

Designed for operation from an unregulated DC power supply the AIT640 series features a MEMS technology solid-state sensor with integral air damping. Electrical termination is via a military style, bayonet lock electrical connector. The tilt sensor has a high useable frequency response and is fitted with a 5 Hz low pass filter as standard. Available with connector (AIT643) or solder pins (AIT645).

Features

- Ranges ±30°, ±60° and ±90°
- Essentially zero temperature coefficent of damping ratio
- Filtered and unfiltered outputs simultaneously available
- Integral temperature compensation
- DC input - DC output
- Signal ground isolated from power ground
- High reliability

Specifications

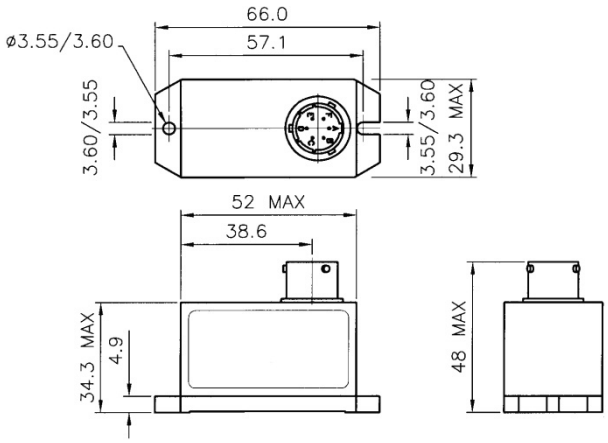
Input	
Ranges:	±30° / ±60° / ±90°
Input voltage:	+6 ... 32 VDC unregulated
Input current:	100 mA DC nom.

Output at 25 °C	
Full range output:	±5 VDC ±2 %
Zero offset:	≤±2 % FRO
Non-linearity:	≤±0.5 % FRO
Hysteresis:	≤0.02 % FRO
Resolution:	≤0.001 % FRO
Cross axis sensitivity:	≤±1 % FRO
Noise output:	5 mV rms (DC to 10 kHz), max.
Damping ratio:	0.7 (±0.2) @ 25 °C
Output impedance:	<1 Ω
Filtered output response:	-3 dB at 5 Hz, 2-pole
Frequency response, unfiltered, ±5 %:	0 ... 250 Hz
Resonant frequency:	700 Hz

Environmental	
Temp. operating:	-40 ... +100 °C
Temp. compensated:	0 ... +50 °C
Temp. storage:	-55 ... +130 °C
Thermal sensitivity shift:	≤±0.03 % FRO/K
Thermal zero shift:	≤±0.03 % FRO/K
Shock:	200 g for 2 ms (½ sine wave)
Acceleration:	Will withstand constant 20 times rated range in all 3 axes without damage.
Humidity / immersion:	IP65
EMC Directive:	EN 61326: 1998
EMC Emissions:	EN 55022: 1998, 30 MHz to 1 GHz
EMC Immunity:	EN61000-4-2 1995 inc A1: 1998 & A2: 2001, ±4 kV EN61000-4-3: 2002, 10 V/m EN61000-4-4: 2004, ± 1 kV EN61000-4-4: 2004, ± 2 kV EN61000-4-6 1996 inc A1: 2001, 3 Vrms EN61000-4-6 1996 inc A1: 2001, 10 Vrms EN61000-4-8: 1994 Incorporating Amendment A1: 2001, 30 A/m
Insulation resistance:	≥20 MΩ at 50 VDC

Physical	
Weight:	120 grams max

Dimensions



Dimensions in mm, approx. values.
These drawings are for information only and not intended for construction purpose.
Please ask for detailed drawings.

Electrical Connection

Connector	Type Bayonet lock, MIL-C-26482, 6 pin, Shell Size 10

Pin A	Supply voltage +
Pin B	Supply voltage 0 V
Pin C	Signal ground
Pin D	Signal output (filtered)
Pin E	Signal output (unfiltered)
Pin F	not connected

AIT64 [ ] - 0001 - [ ]

Series number

3 = Electrical connector
5 = Solder pin outlet

Range in °
30 = ±30°
60 = ±60°
90 = ±90°

Ordering Information

Due to continuous product development, ALTHEN and partners reserve the right to vary the foregoing details without prior notice.

Version 2.01, 04/2015