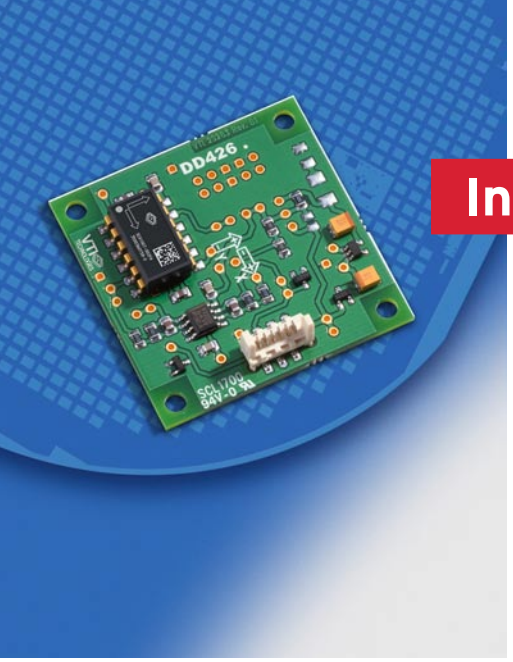
Preliminary



SCL1700 Series

Inclinometer Subassembly

FEATURES

- Available range: ±10 °
- DC...3 Hz sensing bandwidth (controlled frequency response)
- Easy to use and design in
- 0.001 ° resolution analogue output
- 0.2 ° accuracy
- Dual axis inclination measurement
- Advanced failure detection

BENEFITS

- Excellent long term stability
- Sensing element filtered high frequency vibration
- Outstanding shock durability

APPLICATIONS

- Platform tilt measurement
- Equipment and instrument condition monitoring
- Inclination based position measurement

For customized product please contact VTI Technologies

ELECTRICAL CHARACTERISTICS

Parameter	Condition	Min	Typ.	Max	Units
Supply voltage [1]		7	15	28	V
Current consumption			4.5		mA
Output load	Resistive		T.B.D		kOhm
	Capacitive		T.B.D.		nF
Operating temperature		-40		85	°C
Mechanical shock	1 m drop on concrete		20 000		g

PERFORMANCE CHARACTERISTICS

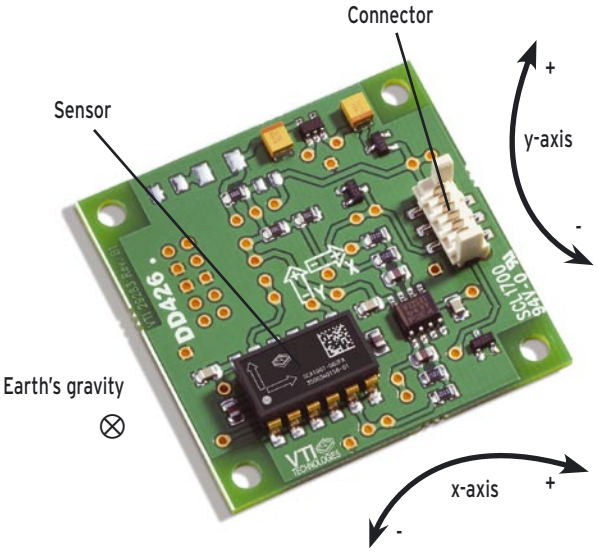
Parameter	Condition	SCL1700-D01	Units
Measuring range [1]		±10	°
Measuring axis	(See "Directions")	X-Y	
Offset [2,3]	Output at 0 °	2.5	V
Offset calibration error [3,4]		±0.1	°
Offset temperature error [3,5]	0...70 °C	±0.2	°
	-25...85 °C	±1	°
Sensitivity [3,6]	@ 0 ° (offset position)	200	mV/°
Sensitivity calibration error [3,7]		±1	%
Sensitivity temperature error [3,8]	0...70 °C	±0.5	%
	-25...85 °C	±1	%
Nonlinearity [9]		±0.03	°
Frequency responce -3 dB		1...3	Hz
Output noise	DC...10 Hz	0.001	°

Typical values @ room temperature, 15 V supply unless otherwise specified.

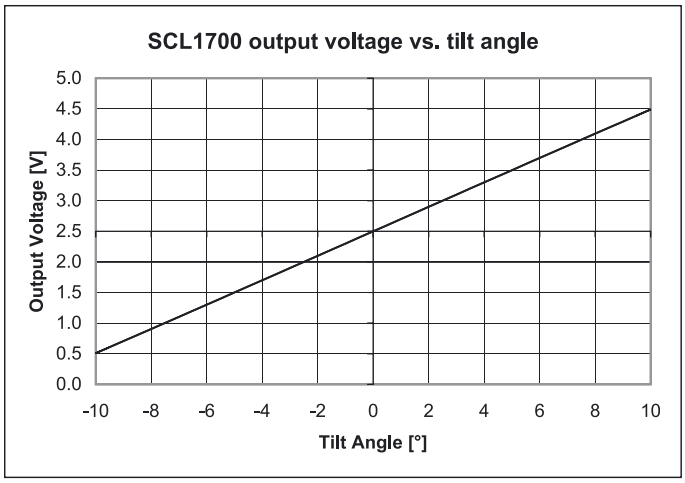
Note 1. The measuring range is limited by sensitivity, offset and supply voltage rails of the device.
Note 2. Offset specified as Voffset = Vout(@0 °) [V].
Note 3. +15 V supply voltage used in calibration and testing.
Note 4. Offset calibration error specified as Offset_Calib_error = arcsin(Offset_Calib_error_in_g) [°],
Offset_Calib_error_in_g = {Vout(@0 °) - 2.5 V} / Vsens [g], Vsens=11.46 V/g.
Note 5. Offset temperature error specified as
Offset_Error_@_temp. = arcsin(Offset_Error_@_temp_in_g) [°],
Offset_Error_@_temp_in_g = {Vout @ temp. - Vout @ room temp.} / Vsens [g], Vsens=11.46 V/g.
Note 6. Sensitivity target in calibration Vsens _nom 11.46 V/g (--› 200 mV/°)
Sensitivity specified as Vsens = {Vout(@+10 °) - Vout(@+10 °)}/(2*sin(10 °) g) [V/g].
Note 7. Sensitivity calibration error specified as
Sensitivity_calibr_error = {Vsens - Vsens_nom} / Vsens_nom x 100 % [%],
Vsens_nom = nominal sensitivity.
Note 8. Sensitivity temperature error specified as
Sensitivity_temp_error = {Vsens @ temp - Vsens @ room temp} / Vsens @ room temp} x 100 % [%].
Note 9. From best fit sine-function to output through -10 ° and +10 °.

VTI TECHNOLOGIES

MEASURING DIRECTIONS



OUTPUT SIGNAL



Notes:

- It is important that the part is mounted horizontally. Measuring axes are X and Y according to above figure.
- Above figures provide information on how the output of the inclinometer behaves in different circumstances. Please also note that you can rotate the part around the measuring plane for optimum mounting location.

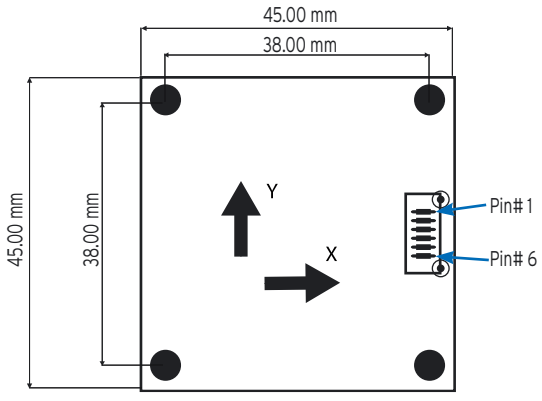
ELECTRICAL CONNECTION

Name	Fuction	Connector pin
Vcc	Power supply, 7 - 28 V	1
NC	Internally not connected	2
GND	Ground	3
OutX	Analoque X-direction output	4
OutY	Analoque Y-direction output	5
NC	Internally not connected	6

Connector: Molex, Pcoflex PF-50

MECHANICAL SPECIFICATIONS

- PCB Material: FR4
- PCB thickness: 1.6 mm
- Size: 45 mm x 45 mm
- Height: max 10 mm
- Mounting holes: Ø 3.5 mm
- Weight: < 10 g
- Connector: Molex, Picoflex PF-50, 1.27 mm pitch, mates with Molex 90327



Mechanical dimensions in mm.

MOUNTING

The sensor module is to be mounted with 4 screws, dimension M3.

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