

SSL100 High-Reliability Inclinometer

Features

- High stability & performance-cost ratio
- Small size, light weight, easy to integrate
- Cross-axis sensitivity $\leq \pm 0.3\%FS$
- Full-seal, resistant to vibration and shock
- IP67 protection
- Reference nearly 50 industrial/military standards



Description

SSL100 inclinometer is a high-reliability tilt angle measurement product for construction machinery industry application. This inclinometer adopts various technologies for improving reliability & stability, including full-sealing, enhanced PCBA design, optimized power management, enhanced resistance to shock & vibration, 30kg tensile cable, motion simulation of life testing, patented automatic test technology and precision machining of aluminum alloy.

SSL100 inclinometer adopts low-g MEMS acceleration sensors with 2000g shock. Through non-linearity compensation, cross-axis sensitivity error compensation, filtering etc, it directly outputs analog signals proportional to the actual tilt angle, angle ASCII data, etc.

Applications

Mobile construction machinery, Factory automation, Solar equipment, Transportation machinery, Medical equipment, etc.

Referenced Standards

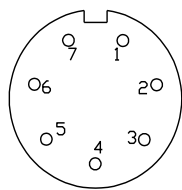
- GB/T 191 SJ 20873 General requirements for Inclinometer & levelmeter (China)
- GBT 18459 Methods for Calculating the Main static performance specifications for transducers(China)
- JJF 1059 Evaluation and Express of Uncertainty in Measurement(China)
- JJF 1094 Evaluation of the Characteristics of Measuring Instruments(China)
- JJF 1116 Calibration Specification for Linear Accelerometer used precision Centrifuger(China)
- QJ 2318 The test method of gyro & accelerometer(China)
- GJB 2786A General Requirements for Military Software Development(China)
- GJB 2884 General Specification for Three Axis angular motion simulator(China)
- EN61000-4-11 Voltage dips & Voltage variations
- MIL-HDBD-338B
- ISO 5348 IDT
- MIL-STD-810F-501.4
- MIL-STD-810F-502.4
- MIL-STD-810F-503.4
- MIL-STD-810F-506.4
- MIL-STD-810F-510.4
- MIL-STD-810F-514.5
- MIL-STD-810F-516.5
- IEC60529 IP
- EN61000 -4-2 ESD
- EN61000-4-3 RS
- MIL-STD-810F-507.4
- EN61000-4-4 EFT
- EN61000-4-5 SURGE
- EN61000-4-6 CS
- EN61000-4-8 PFMF
- ISTA-2A

Performances

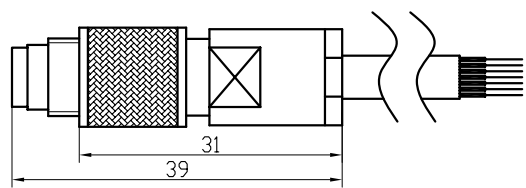
Table1 SSL141/2,SSL151/2,SSL161/2 Inclinator

Product type	SSL141,SSL142,SSL151,SSL152,SSL161,SSL162 with analog/digital output							
Measurement range	±5°	±10°	±15°	±30°	±45°	±60°	±90°	±180°
Accuracy(@25℃)	±0.05°							
Temperature drift coefficient /℃ @ -20~65℃	±0.004°			±0.005°			±0.009°	
Resolution	0.01°							
Repeatability	±0.02°							
Offset repeatability	±0.02°							
Offset	±0.02°							
Measurement axis	1 axis:SSL141,SSL151,SSL161							
	2 axis:SSL142,SSL152,SSL162							
Response time	0.3s @ t ₉₀							
Cross-axis sensitivity	±0.3%FS							
Digital output for SSL161,SSL162	RS232(optional RS485、CAN、CANopen、J1939), Format: 9600bps(adjustable),8 data bits,1 start bit,1 stop bit,none parity							
Voltage output for SSL141,SSL142	0.5~4.5VDC Output Impedance:0.3Ω,load impedance:< 380Ω							
Current output for SSL151,SSL152	4~20mA Output Impedance:50MΩ,load impedance:< 380Ω							
Cold start warming time	60s							
Power supply	With digital/voltage output:9~36VDC,consumption≤20mA							
	With current output:16~36VDC,consumption≤40mA							
Power supply reject ratio	≥85dB							
Operation temperature range	-40~85℃							
Storage temperature range	-40~100℃							
EMC	According to GBT17626							
Insulation resistance	≥100MΩ							
MTBF	150000h/times							
Shock	100g@11ms,three-axis,half-sine							
Vibration	8grms,20~2000Hz							
Protection	IP67							
Housing	6061-T6 Aluminum alloy							
Connecting	Standard: Binder712 connector (optional: metal pigtail)							
Cable	7-wire shielded cable with tensile reinforcement, heavy duty up to 30Kg							
Weight	≤240g(without connector and cable)							

Wiring



Picture 1 Binder712 socket
(View from outside)

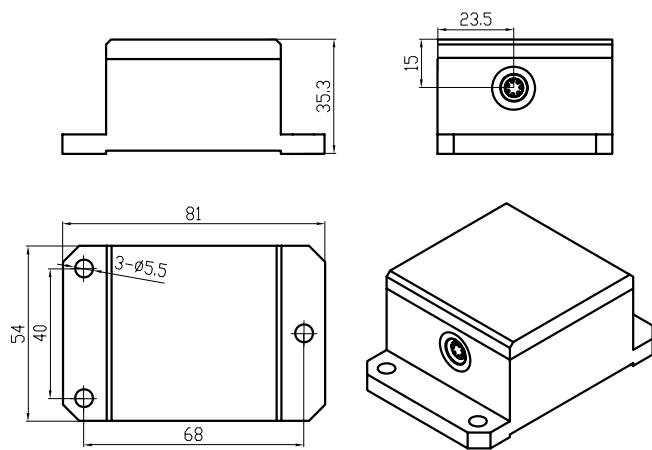


Picture 2 Binder712 plug and cable

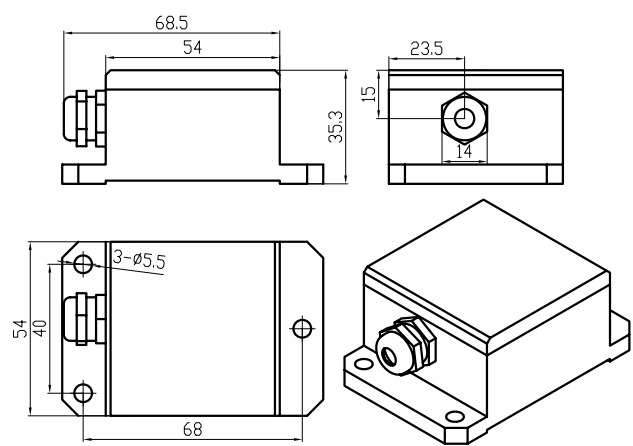
Table 2 Analog/digital output wiring

Binder712 pin	Pigtail wire color	Output							
		SSL151	SSL152	SSL141	SSL142	SSL161	SSL162	Option	
		4~20mA		0.5~4.5VDC		RS232		RS485	CAN
1	Red	Power+	Power+	Power+	Power+	Power+	Power+	Power+	Power+
2	Black	Power -	Power -	Power -	Power -	Power -	Power -	Power -	Power -
3	Green	Signal GND	Signal GND	Signal GND	Signal GND	Signal GND	Signal GND	Signal GND	Signal GND
4	Yellow	Iout	Ioutx	Vout	Voutx	NC	NC	NC	CAN-H
5	White	NC	Iouty	NC	Vouty	NC	NC	NC	CAN-L
6	Blue	NC	NC	NC	NC	RS232-TXD	RS232-TXD	RS485-A	NC
7	Brown	NC	NC	NC	NC	RS232-RXD	RS232-RXD	RS485-B	NC

Dimensions (mm)



Picture 3 SSL100 with Binder712 connector



Picture 4 SSL100 with metal pigtail

Ordering information

Model	Axis	Connector	Output	Range
SSL141	1	Binder712(-C) ,optional Pigtail (-P)	0.5~4.5VDC	±5°,±10°, ±15°,±30°, ±45°,±60°, ±90°, ±180°
SSL142	2	Binder712(-C) ,optional Pigtail (-P)	0.5~4.5VDC	
SSL151	1	Binder712(-C) ,optional Pigtail (-P)	4~20mA	
SSL152	2	Binder712(-C) ,optional Pigtail (-P)	4~20mA	
SSL161	1	Binder712(-C) ,optional Pigtail (-P)	RS232(Optional RS485、CAN、CANopen、 J1939)	
SSL162	2	Binder712(-C) ,optional Pigtail (-P)	RS232(Optional RS485、CAN、CANopen、 J1939)	

For example: if order a dual-axis SSL162 inclinometer, range ±60°, binder712 connector, output RS485,the model should be chosen as: SSL162-60-G1-C