

Product introduction

ER-F-03 is an industrial-grade current output inclinometer with integrated dynamic and static two-mode combined algorithm. According to different working environment, the product is automatically switched to dynamic and static measurement mode. Ensure high accuracy measurement in various working environments. When the working environment is in static mode, static algorithm will be adopted in the dipmeter; when the working environment is in dynamic mode, dynamic algorithm will be adopted in the dipmeter, which can not only maintain the static high precision, but also ensure the dynamic high precision measurement of objects. Standard current output 4 ~ 20mA, simultaneously output biaxial sound inclination, can be long distance transmission up to 2000 meters. The attitude parameters (roll and pitch) of the motion carrier can be measured. Output signal strong interference, professional application in the harsh environment of the construction machinery equipment. Products using the latest MEMS sensor production process, the temperature error and made the accurate compensation and nonlinear error correction, the highest accuracy can reach 0.03 ° small range (please refer to product performance more precision index table), high accuracy, small volume, high encapsulation process, to withstand the shock vibration, better product of built-in radio frequency (rf), using electromagnetic interference resistance circuit, especially suitable for application of trenchless underground machinery and other harsh industrial environments. In addition to better technical parameters than common products in the market, the product's reliability and stability are also improved by using high-end application level MCU, three-defense PCB board, imported cable, wide temperature shield metal enclosure and other measures.



The main features

- Static and dynamic dip measurement
- Range + 1 to + 90 ° for optiona
- Resolution ratio 0.01°
- Wide voltage input 9~36V
- Output way 4~20mA
- Wide working temperature-40~+85°C
- IP67 Protection grad
- High vibration resistance>2000g
- Size 72.62×42×23.1mm (can be customized)

The product application

- Leveling of engineering vehicles
- Bridge and dam monitoring

- High altitude platform safety protection
- Medical device Angle control
- Attitude navigation of underground drill
- Shield pipe jacking application
- Directional measurement based on dip Angle
- Slope monitoring of geological equipment
- Measurement of pitch Angle of directional satellite communication antenna
- Mining machinery, oil drilling equipment
- Equipment level control
- Registration control, bending control

Product performance index

Parameter	Conditions	ER-F-03-10	ER-F-03-30	ER-F-03-60	ER-F-03-90	Unit
Range of measurement		±10	±30	±60	±90	°
Measurement axis		XaxisYaxis	XaxisYaxis	XaxisYaxis	XaxisYaxis	
Zero output	0°output	12	12	12	12	mA
Resolution ratio		0.01	0.01	0.01	0.01	°
Static accuracy	@25℃	0.02	0.05	0.08	0.1	°
Dynamic accuracy	@25℃	0.1	0.2	0.3	0.5	°
Long-time stability		0.05	0.05	0.05	0.05	
Zero temperature coefficient	-40~85℃	±0.006	±0.006	±0.006	±0.006	°/℃
Temperature coefficient of flexibility	-40~85℃	≤100	≤100	≤100	≤100	ppm/℃
Power on start time		0.5	0.5	0.5	0.5	S
Response time		0.02	0.02	0.02	0.02	s

Response frequency		1~20	1~20	1~20	1~20	Hz
Electromagnetic compatibility	According to EN61000 and GBT17626					
MTBF	≥50000 h/t					
Insulation resistance	≥100 M					
Impact resistant	100g@11ms、Three axis and with(A half sine wave)					
Anti-Vibration	10grms、10~1000Hz					
Waterproof level	IP67					
Cable	Standard 1 m length, wear - resistant, oil - proof, wide temperature, shielded cable 4*0.4mm ²					
Weight	120g(not include cable)					

The performance parameters of the list only $\pm 10^\circ$, $\pm 30^\circ$, $\pm 60^\circ$, $\pm 90^\circ$ series for reference, other measuring range in the adjacent parameters for reference, please.

Electrical parameters of products

Parameter	Conditions	Minimum	Typical	Maximum	Unit
The power supply voltage	Standard	9	12、24	36	V
Working current			50		mA
output load	resistive		400	1000	Ω
Working temperature		-40		+85	$^\circ\text{C}$
Storage temperature		-55		+125	$^\circ\text{C}$

Product mechanical parameters

Connectors: 1m straight leads (customizable)

Protection class: IP67

Material: aluminum alloy grinding sand oxidation

Installation: three M4 screws

Operating principle

The core control unit imported from Europe is adopted. Using the principle of earth gravity, when the inclined Angle unit is tilted, the earth gravity will produce the component of gravity in the corresponding pendulum hammer, and the corresponding capacitance will change. Through amplification, filtering and transformation of the capacitance, the inclination can be obtained.