



V1.0

MEMS CURRENT ACCELEROMETER
RION AKF398

TECHNICAL MANUAL



PRODUCTION EXECUTION STANDARD REFERENCE

- Enterprise quality system standards: ISO9001: 2015 standard (certification number: 128101)
- The intellectual property management system standards: GB/T 29490-2013 (Certificate No.: 18117IP1529R0S)
- High-tech enterprise (Certificate No.: GR201844204379)
- China's national intellectual property appearance patent (patent number: ZL 201830753149.6)
- Accelerometer calibration specification: JJF 1427-2013
- Vibration and shock sensor calibration method. Accelerometer resonance test. General method: GB/T 13823.20-2008
- Gyro acceleration test standard: QJ 2318-92 gyro accelerometer test method
- Software Development Reference Standard: GJB 2786A-2009 General Requirements for Military Software Development
- Product environmental test standard: GJB150
- Electromagnetic anti-interference test standard: GB/T 17626
- Revision date: 2019-08-28



*MEMS MICROMECHANICAL
ACCELERATION SENSOR*

- ★ HIGH PRECISION
- ★ HIGH STABILITY
- ★ HIGH FREQUENCY RESPONSE



► **PRODUCT INTRODUCTION**

AKF390B three-axis accelerometer is a widely used accelerometers produced by RION's with patented Swiss technology. It can be used in vibration testing, impact testing and other fields. The product adopts analog current output, different address codes can be set, and multiple sensors are used together in long distance to facilitate multi-point measurement and data analysis. The AKF398B is a monocrystalline silicon capacitive sensor consisting of a micromachined silicon chip (a low-power ASIC for signal conditioning), a microprocessor for storing compensation values, and a temperature sensor. This product with low power consumption has been calibrated, and has a solid structure and stable output. The new electronic configuration provides solid-state power for reset, providing full protection for over-current. This series of products has the characteristics of strong structure, low power consumption and excellent deviation stability, which guarantees outstanding output reliability.

► **PRODUCT FEATURES**

- ★ three axis (X、Y、Z)
- ★ power supply: 9-36V
- ★ working temperature: -40°C ~ +85°C
- ★ size: L34.3×W34.3×H38.5mm
- ★ excellent bias stability
- ★ Good environmental performance (impact, vibration and temperature)
- ★ output voltage: 4-20mA
- ★ anti-impact: 2000G
- ★ store temperature: -55°C ~ +100°C
- ★ weight: 73.5g

► **APPLICATION**

- ★ Crash record, fatigue monitoring and prediction
- ★ Traffic system monitoring, roadbed analysis and high-speed railway fault detection
- ★ Large machinery, engine
- ★ Low frequency vibration and automatic monitoring
- ★ Bridge
- ★ Vehicle
- ★ Wind power generation
- ★ Medical equipment
- ★ Road roller

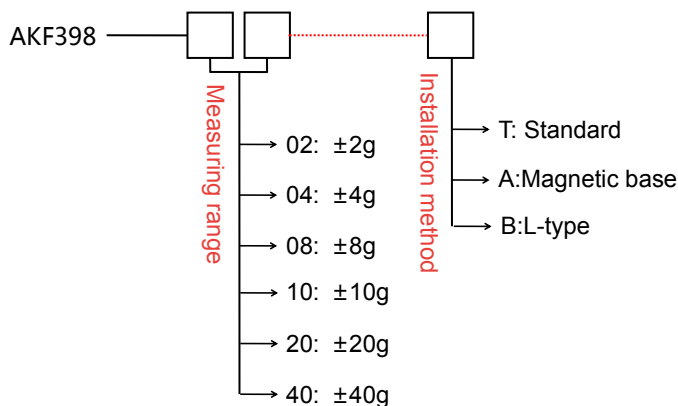


○Inclinometer ○Electronic compass ○Digital inclinometer ○Accelerometer ○Gyro ○North finder ○INS&IMU

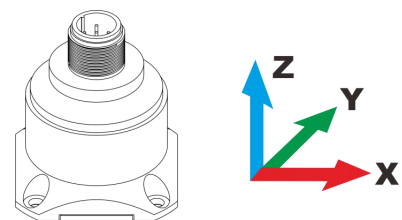
► **PRODUCT PARAMETERS**

AKF398	PARAMETER						UNIT
Range	±2	±4	±8	±10	±20	±40	g
Deviation Calibration	<1	<1	<1	<1	<1	<1	mg
Measuring Axial	X,Y,Z	X,Y,Z	X,Y,Z	X,Y,Z	X,Y,Z	X,Y,Z	axis
Up/Off Power Repeatability	<2	<2	<2	<2	<2	<2	mg(max)
Sensitivity (± 10%)	4	2	1	0.8	0.4	0.2	mA/g
Deviation temperature coefficient	0.01	0.01	0.01	0.05	0.05	0.05	%/°C
Resolution/Threshold (@ 1Hz)	< 1	< 1	< 1	< 1	< 1	< 1	mg(max)
Nonlinearity	<0.5	<0.5	<0.8	<1	<1	<1	% FS (max)
Frequency response	500	500	500	500	500	500	Hz
Bandwidth (3Db)	1000	1000	1000	1000	1000	1000	Hz
Cross-axis sensitivity	1	1	1	2	2	2	%
Lateral vibration sensitivity ratio	1	1	2	5	5	5	%
Resonant frequency	2.4	2.4	2.4	5.5	5.5	5.5	kHz
noise density	21	21	21	86.6	86.6	86.6	µg/√Hz
0g output 12mA	<0.005	<0.005	<0.005	<0.003	<0.003	<0.003	mA
Output current	4~20mA						
Reliability	MIL-HDBK-217, grade two						
Shock Resistance	100g@11ms、Triaxial And Identical (Half Sine Wave)						
Recovery Time	<1ms(1000g, 1/2 sin 1ms, Shock Acting On The i Axis)						
Vibration	20g Rms,20~2000Hz (Random Noise , o ,p,i Per Axis For Action 30 Minutes)						
Input (VDD_VSS)	9-36 VDC						
Running current consumption	<60mA @ 12 VDC						
Connector	Industrial Standard M12 Connector						
Weight	73.5g						
Dimension	34.3*34.3*38.5mm						

► **ORDER INSTRUCTION**

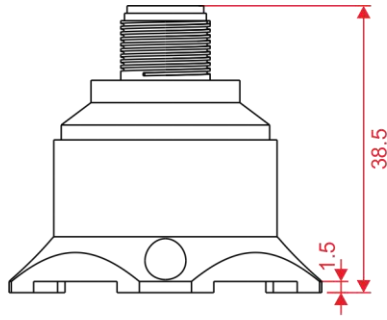


► **MEASURING DIRECTION**

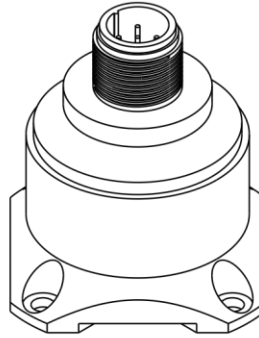
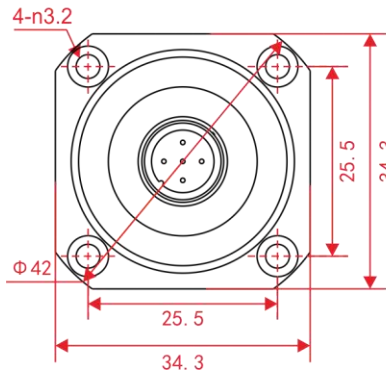


E.g : AKF398-02-T : ±2g measure range, standard installation

► DIMENSION



Size:34.3*34.3*38.5mm



► MOUNTING ACCESSORIES SIZE

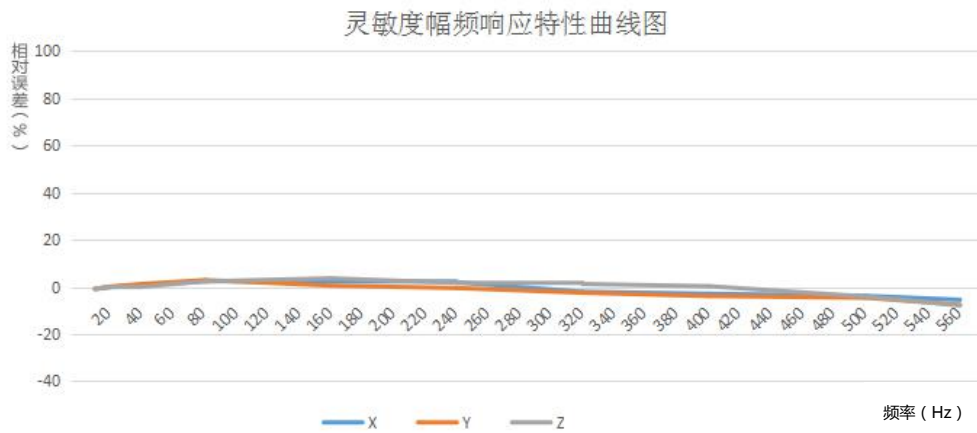
<p>Magnetic base size : 34.23*34.23*6mm , Material: stainless steel</p>	<p>Type L transfer plate size: 36*44*4mm, material: aluminum alloy</p>

► ELECTRICAL CONNECTION

Color Function	BLACK	WHITE	BLUE	BROWN	GRAY
	Power GND	X-axis current signal	Y-axis current signal	Vcc 9~36V Power supply positive pole	Z-axis current signal

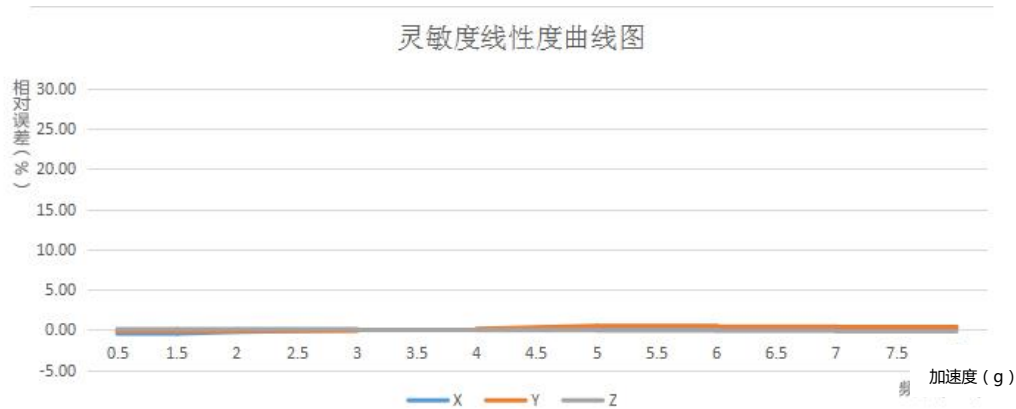


► SENSITIVITY AMPLITUDE-FREQUENCY RESPONSE CHARACTERISTIC CURVE (reference condition : f=20.000Hz , a=2.000G)



Reference diagram of measuring range ±8G

► SENSITIVITY LINEARITY GRAPH





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