



GKM3 MEMS Voltage-Type Vibration sensor Product manual

V1.8-20260720



Technical Highlights

- ❖ Analog voltage output interface;
- ❖ Vibration: 10~2000Hz, 10g;
- ❖ Shock: 100g@11ms, triaxial (half-sine wave);
- ❖ Excellent mechanical strength and long-term stability

Product Introduction

The GKM3 series triaxial accelerometer is a high-performance sensor product independently developed by RUICOM Technology, widely used in vibration monitoring, shock testing, and other fields. This product adopts an analog voltage output mode, supports address encoding settings, and can achieve multi-device cascading networking, facilitating the construction of distributed measurement systems.

Based on single-crystal silicon MEMS capacitive sensing technology, the GKM3 integrates high-precision ASIC signal conditioning circuitry, an embedded temperature compensation module, and a non-volatile memory unit, featuring low power consumption and high stability. The product undergoes rigorous calibration, ensuring reliable structure and excellent output signal consistency. Its innovative circuit design provides solid-state reset functionality and a comprehensive over voltage protection mechanism.

With its robust mechanical structure, excellent zero-bias stability, and low power consumption, this series of products ensures accurate and reliable measurement data, meeting the stringent application requirements of industrial scenarios.

Application Scope

- ❖ Flight data recording and analysis
- ❖ Bridge structural health monitoring
- ❖ Vehicle vibration testing and monitoring
- ❖ Wind turbine generator vibration monitoring
- ❖ Vibration fault early warning for large machinery
- ❖ Monitoring of heavy equipment such as road rollers
- ❖ Structural fatigue monitoring and life prediction
- ❖ Track vibration and roadbed stability monitoring
- ❖ High-speed train operation status monitoring





Performance Parameters

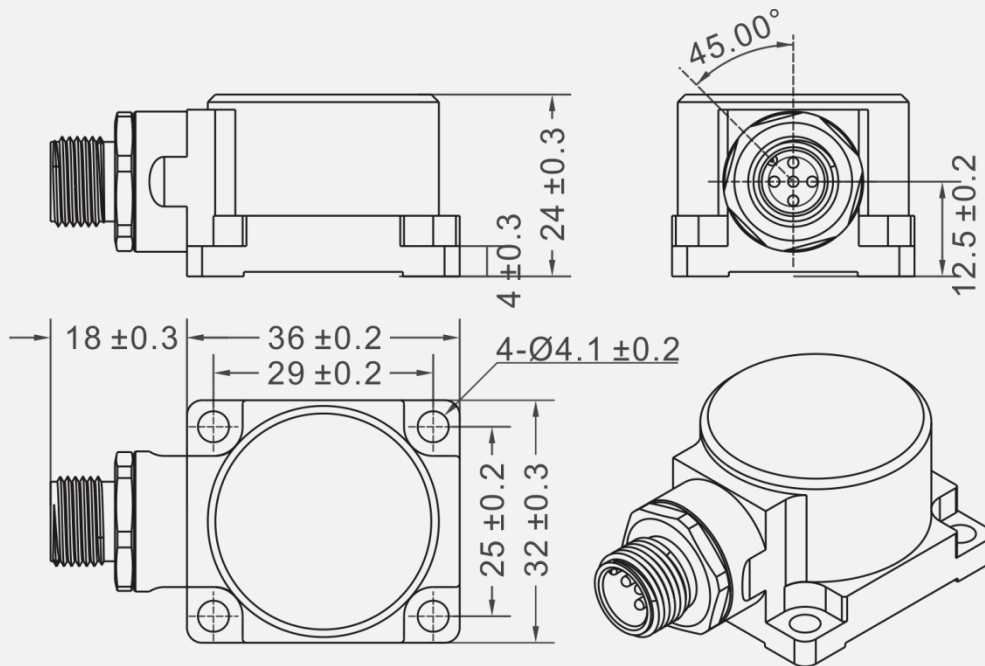
GKM3	Parameter						Unit
Measurement Range	±2	±4	±8	±10	±20	±40	g
Bias Calibration	<1	<1	<1	<1	<1	<1	mg
Measurement Axis	X,Y,Z	X,Y,Z	X,Y,Z	X,Y,Z	X,Y,Z	X,Y,Z	axis
Upward/Power-Off Repeatability	<2	<2	<2	<2	<2	<2	mg(max)
Sensitivity (±10%)	1250	625	312.5	250	125	62.5	mv/g
Bias Temp Coefficient	0.01	0.01	0.01	0.05	0.05	0.05	%/℃
Resolution/Threshold (@1Hz)	< 1	< 1	< 1	< 1	< 1	< 1	mg(max)
Nonlinearity	<1	<1	<1	<1	<1	<1	%FS(max)
Response Frequency	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	%
Transverse 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 2.5V	<0.01	<0.01	<0.01	<0.008	<0.008	<0.008	mV
Output Voltage	0~5V						
Input (VDD_VSS)	9-36 VDC						
Operating Current Consumption	<60mA @ 12 VDC						
Protection Class	IP67						
Connector	MI2 * 1.0/5-core aviation plug connector						
cable	2-meter black PVC shielded wire						
Material	Product: Aluminum alloy magnetic bottom plate: Carbon steel+magnet						
Weight	Net Weight: ≤116g, Magnetic Base: ≤50g						
Product size	Shell size: L36×W32×H24mm Magnetic Base Dimensions: L36×W32×H8.1mm						
Note: Do not use beyond the specified range for extended periods.							



Ordering and Selecting

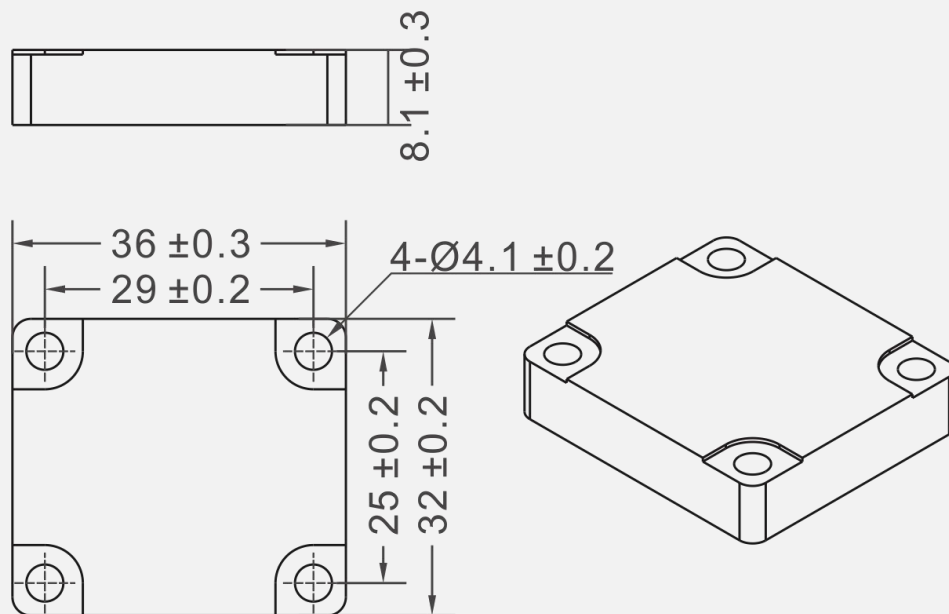
Model	Range	Output cVoltage	Installation Method
GKM3	02: ±2g	V1: 0~5V	T: Standard
	04: ±4g		A: Magnetic Adsorption Base
	08: ±8g	-	-
	10: ±10g		
	20: ±20g		
	40: ±40g		
E.g: GKM302-V1-T: ±2g measurement range /0~5V Output/standard installation.			

✓ Product Size



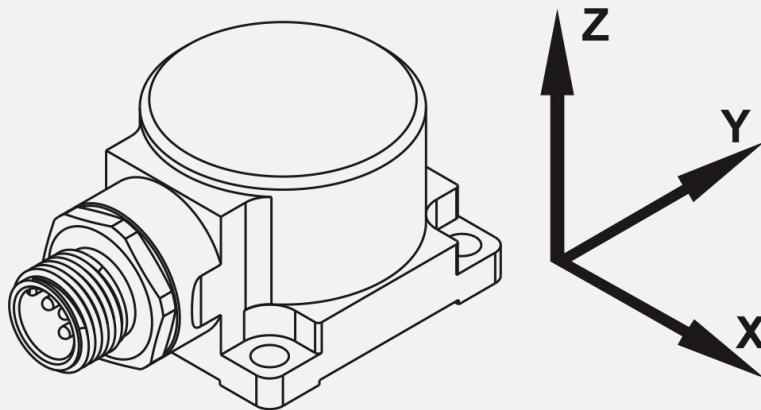
Shell size: L36×W32×H24mm
Installation size: L29×W25×H4mm
Mounting screws: 4 M4 screws

✓ Installation accessory Size



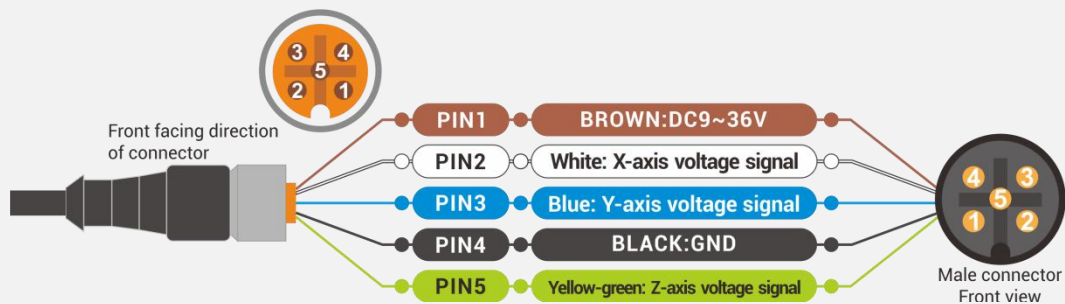
Magnetic base plate size: L36×W32×H8.1mm
Installation size: L29×W25×H11.6mm
Installation method: Magnetic adsorption base installation

✓ Spatial coordinate system



✓ PIN Definition

Connector PIN/line color	PIN Definition
PIN1/Brown	DC9 ~ 36V
PIN2/White	X-axis voltage signal
PIN3/Blue	Y-axis voltage signal
PIN4/Black	GND
PIN5/Yellow-green	Z-axis voltage signal



✓ Acceleration calculation formula

Acceleration = (Output Voltage - 2.5V) ÷ Sensitivity

Sensitivity can be obtained from theoretical values of technical parameters or actual tests.

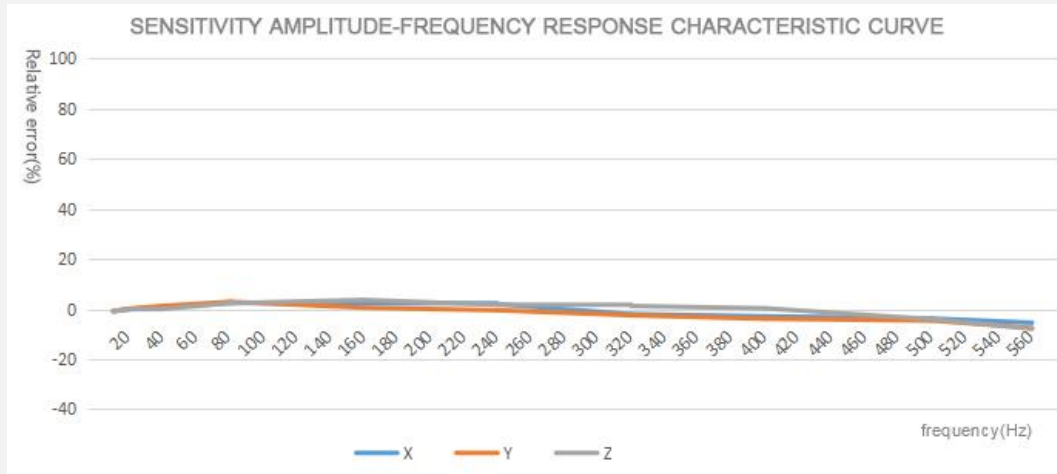
Example: GKM390-02-T ($\pm 2g$ measurement range 0 ~ 5V output voltage range), when the output voltage is 4V,
 $\text{acceleration} = (4 - 2.5) / 1.25 = 1.2g$

Note: There is a gravity of 1g in the vertical direction when at rest.



Sensitivity amplitude-frequency response characteristic curve

Reference conditions: $f = 20.000 \text{ Hz}$, $a = 2.000 \text{ G}$



Reference chart for range $\pm 8\text{G}$



Sensitivity linearity curve

