GC-201 Piezoelectric Force Sensor

Introduction

GC-201 Piezoelectric quartz force sensors offer a wide measurement range and high-frequency dynamic force measurement capabilities, enabling the detection of minute forces under high static loads. They can measure forces as small as a few Newtons under static loads of several kilonewtons. Since the measurement signal generated by quartz sensors decays over time, they are unsuitable for long-term static measurements. However, short-term or "quasi-static" measurements are achievable under certain conditions, depending on the signal conditioner used (e.g., a quasi-static charge amplifier). For dynamic force testing, quartz force sensors provide unique advantages, making them the ideal choice.

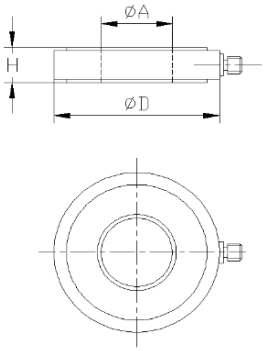
Features

- ✓ Durability: Robust and long-lasting.
- ✓ High Strength: Sturdy construction.
- ✓ Wide Measurement Range: Adaptable to varying force levels.
- ✓ Broad Dynamic Range & Fast Rise Time: Ideal for rapid force changes.
- ✓ Sensitivity, Threshold, and Resolution: Determined solely by the piezoelectric crystal, independent of sensor size or range.
- ✓ Overload Capacity: 20% standard; up to 50% for short durations.
- ✓ High Stiffness: Suitable for integration into machinery (e.g., presses, machine tools) without compromising mechanical performance.
- ✓ Static Calibration: Long-duration, passive operation; compatible with quasi-static charge amplifiers.
- ✓ Long-Term Stability: Lifespan exceeds 15×10^6 measurements.

Application

Crash testing, drop testing, fatigue testing, fracture testing, force monitoring, hemming, stamping and extrusion testing, Mechanical mounting forces, Mechanical impedance testing, Material testing, Roll milling machines, Force balancing.

Dimension(mm)



Range(kN)	5	15	35	60
A（mm）	4	6.5	10	13
H（mm）	7.5	8.0	10	11.5
D（mm）	13.0	14.5	24.0	28.5

Specification

Force Range	5kN	15kN	35kN	60kN
Sensitivity	~ 4pC/N	~ 4pC/N	~ 4pC/N	~ 4pC/N
Overload	120 %	120 %	120 %	120 %
Linearity	≤1%F·S	≤1%F·S	≤1%F·S	≤1%F·S
Hysteresis	≤1%F·S	≤1%F·S	≤1%F·S	≤1%F·S
Repeatability	≤1%F·S	≤1%F·S	≤1%F·S	≤1%F·S
Capacitance	~ 7pF	~ 10pF	~ 18pF	~ 28pF
Insulation	> 10^{12}Ω	> 10^{12}Ω	> 10^{12}Ω	> 10^{12}Ω
Resonant Freq.	> 75kHz	> 70kHz	> 60kHz	> 50kHz
Temperature	-40~120 ℃	-40~120℃	-40~125℃	-40 ~ +120 ℃
Weight	4 g	5.8g	18 g	32 g
Mounting	φ4 (5kN)	φ6.5 (15kN)	φ10 (35kN)	φ13 (60kN)
Housing Material	High-Strength Stainless Steel			
Sensing Element	Quartz			
Output	Side-mounted L5 Connector			
Protective Cap	1 pc			
Cabel	2 m Shielded Cable			

Install Guide