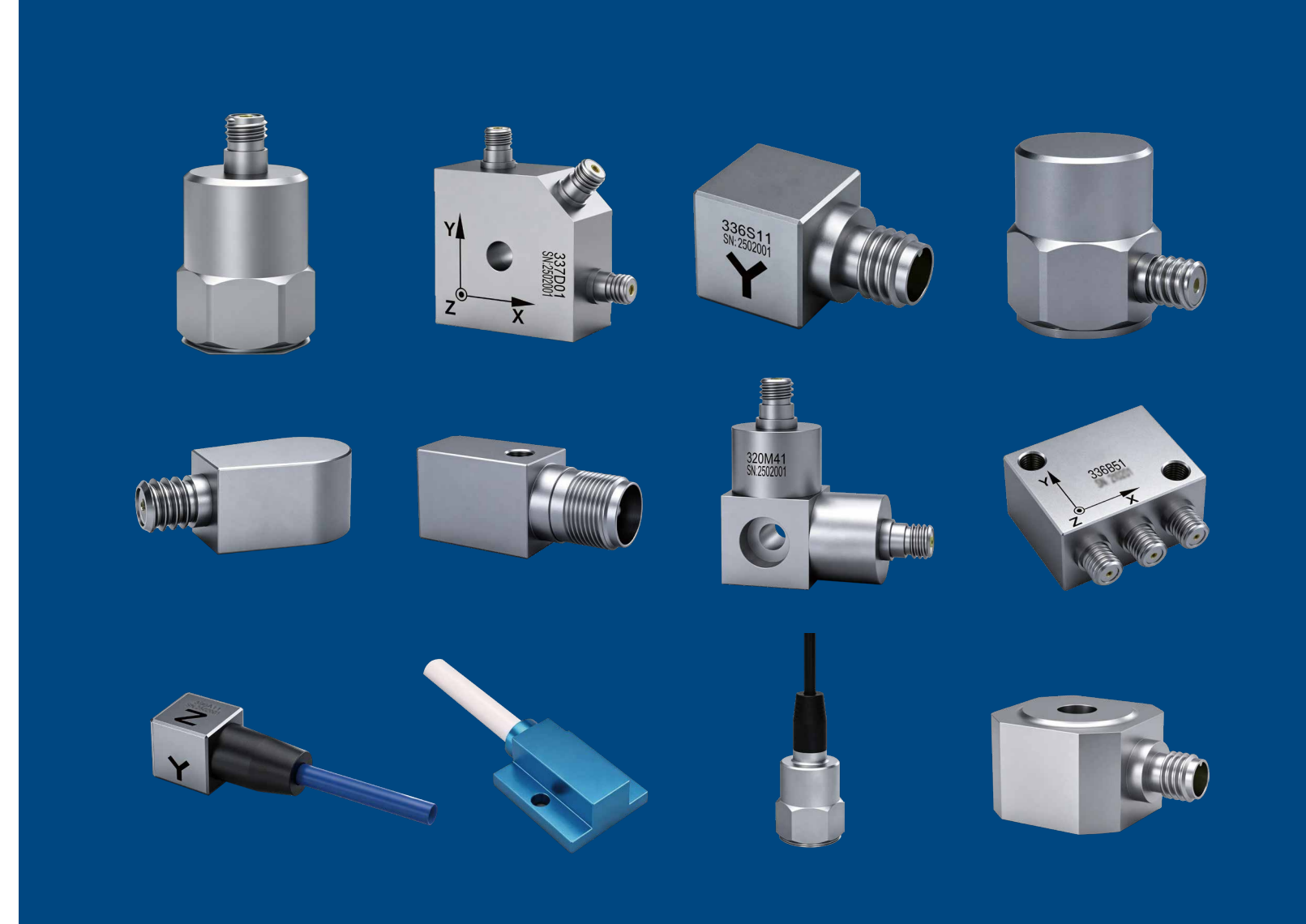




SENSOR PRODUCT CATALOG

传感器 产品目录

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Hebei Huazhang Electronic Technology Co., Ltd

公司简介

“Hebei Huazhang Electronic Technology Co., Ltd.” is located in the High-Tech Industrial Development Zone of Shijiazhuang City, Hebei Province, China, approximately 250 kilometers from the capital, Beijing. Leveraging its core geographical advantage within the coordinated development of the Beijing-Tianjin-Hebei region, the company has deeply integrated itself into the regional industrial cooperation system, technological innovation, and resource integration, and has become a comprehensive electronic technology enterprise.

The company specializes in the field of electronic components. Its business scope encompasses the design, technical development, technical consulting, technical services, and technology transfer of electronic components, as well as the production, processing, and sales of specialized electronic equipment and electronic components. It also holds qualifications for the import and export of goods and technology. The company's main products include inertial sensors, in-vehicle air quality sensors, gas sensors, and high-power semiconductor chips.

Leveraging the comprehensive industrial support and policy benefits of the Beijing-Tianjin-Hebei integration, and driven by technological innovation and reliable quality, we provide stable, high-quality products and comprehensive solutions to customers across various industrial sectors. We are committed to becoming a trusted, high-quality partner in the global electronic components industry.



Applications of Vibration, Shock, and Pressure Sensors

- | | |
|---|---|
| Steam Turbine Vibration Testing | Engine Vibration Analysis |
| Metal-On-Metal Impact Testing | Body Armor and Helmet Testing |
| Drop Testing | Space-Constrained Installation Conditions |
| Structural Modal Analysis | Equipment Vibration Monitoring |
| Bridge and Foundation Structure Testing | Seismic Monitoring |
| Underwater Vibration and Impact Testing | Underwater Free-Field and Atmospheric Free-Field Pressure Testing |

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HIGH TEMPERATURE MODE ACCELEROMETERS PE SERIES



Product Overview

High temperature charge output piezoelectric (PE) accelerometers provide a piezoelectric vibration measurement solution for high temperature operating conditions ranging from 200°C to 650°C. Designed as an equivalent alternative to imported high temperature accelerometers from PCB (USA), these sensors adopt high temperature resistant piezoelectric crystals / special piezoelectric elements. Featuring a charge output (high impedance) structure without built in IEPE circuitry, they require supporting high temperature low noise charge amplifiers. They address challenging high temperature vibration testing applications such as aero engines, gas turbines and high temperature pipelines.

High temperature charge output piezoelectric (PE) accelerometers feature a pure charge output structure with internal electronic components eliminated. Combined with high temperature resistant housing, special high temperature sealing and high temperature cables, the sensors are available in multiple temperature grade options:

Moderate high temperature grade: 55°C ~ +260°C

Ultra high temperature grade: 55°C ~ +500°C / +650°C

Technical Features

High temperature resistant piezoelectric sensing elements

All metal hermetic sealing

Charge output design

Lightweight structure with multiple mounting options

Low temperature sensitivity drift

Applications

High temperature vibration measurements

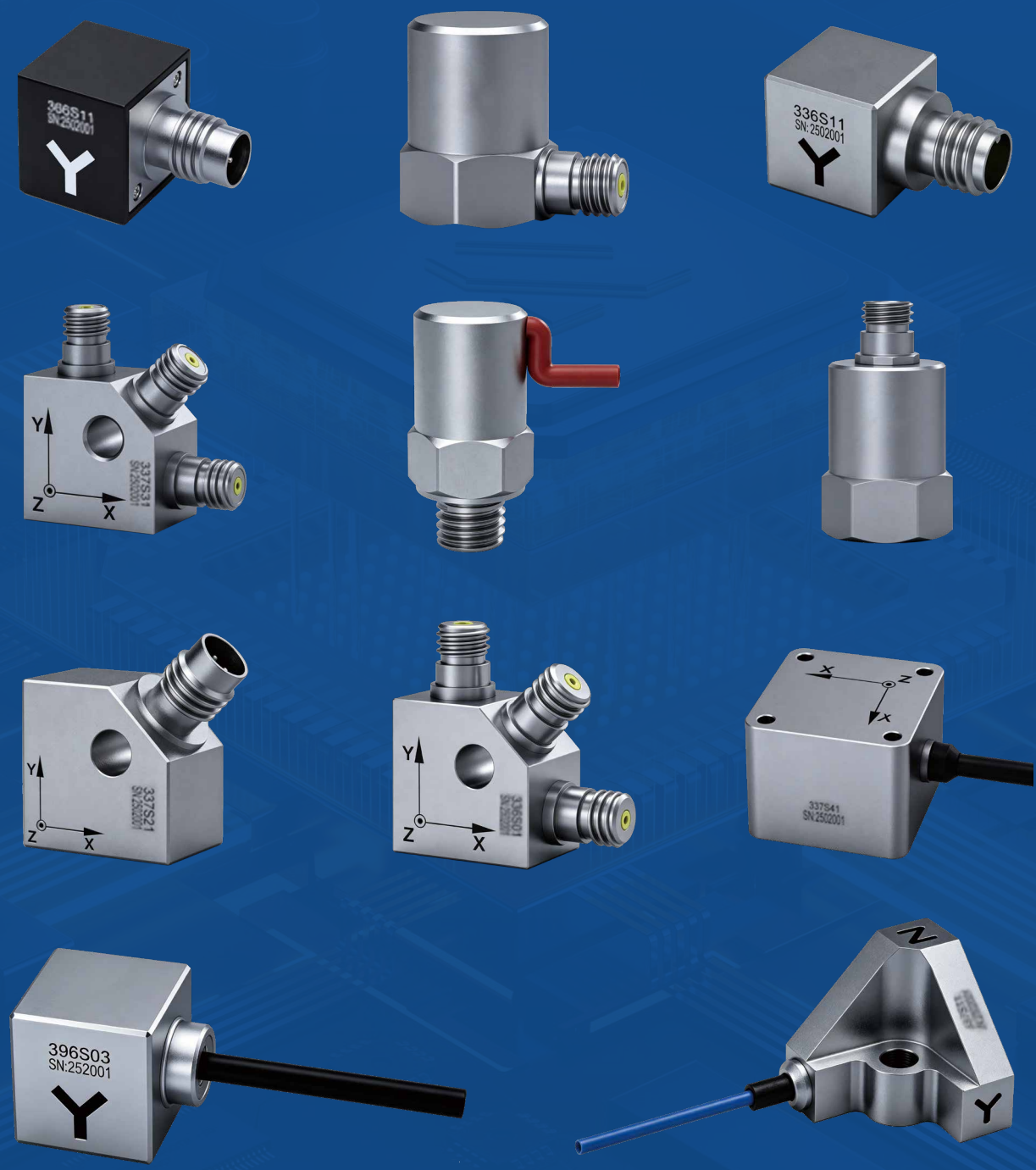
Engine compartment studies

Exhaust component vibration tests

Steam turbine testing

Engine vibration analysis

HIGH IMPACT ACCELEROMETERS PE/IEPE SERIES



Product Overview

High impact accelerometers are developed for transient shock and high-g dynamic impact testing. They are available in two types: voltage output IEPE and charge output PE, covering medium to high shock ranges from $\pm 100g$ up to $\pm 130,000g$ pk.

The accelerometer adopts high-strength piezoelectric sensing elements and rigid shear mode structure. Featuring a titanium alloy housing with laser vacuum sealing, it delivers high resonant frequency, wide frequency response, low transverse sensitivity and strong overload resistance capability. It can accurately capture short duration pulse shock signals, and effectively suppress shock ringing and base strain interference.

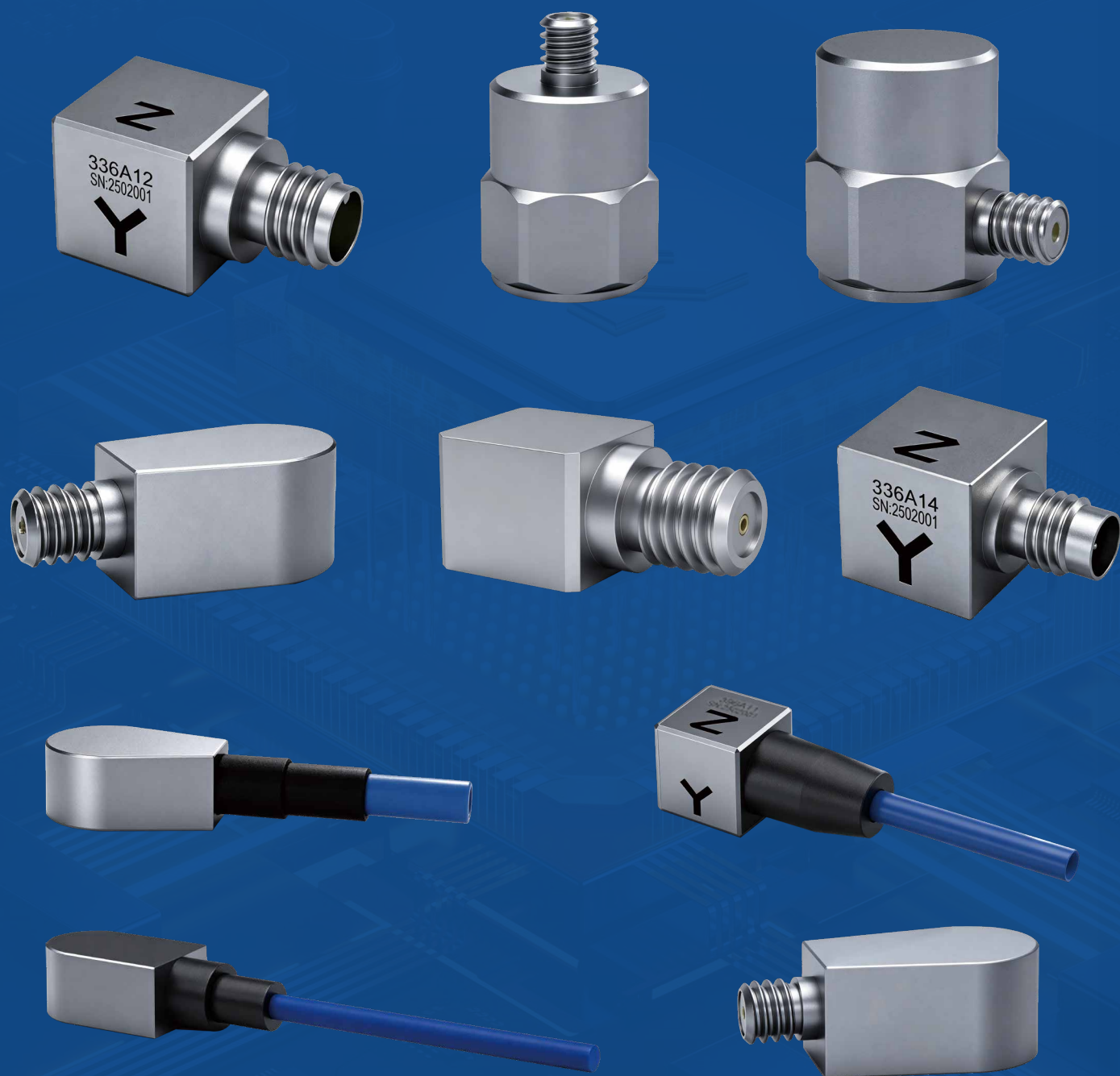
Technical Features

- High strength, lightweight titanium alloy construction
- Fast response, hermetically sealed, suitable for harsh environments
- Shock accelerometers are specially designed for monitoring transient acceleration with extremely high amplitude and short duration

Applications

- Metal to metal impact
- Near field and far field pyroshock
- Shaker shock testing
- Explosive bolt and stage separation testing
- Pile driver monitoring
- Body armor and helmet testing

MINIATURE ACCELEROMETERS PE/IEPE SERIES



Product Overview

Miniature accelerometers adopt high-sensitivity piezoceramic sensing elements, delivering excellent signal-to-noise ratio and high measurement resolution, which makes them ideal for low-level vibration measurements. This is mainly attributed to the inherently higher sensitivity of piezoceramics. Miniature accelerometers feature lighter weight, higher frequency response and lower noise floor. To further reduce sensor mass, all ceramic shear accelerometers are fitted with robust lightweight housings with laser-welded hermetic sealing, available in titanium or aluminum. Reducing the sensor's own mass minimizes mass-loading effects and maximizes the accuracy of test data.

Charge-output miniature accelerometers (PE) are compatible with existing charge-amplifier test systems.

Tri-axial accelerometers (IEPE) are offered in a wide range of sensitivities to meet diverse application requirements. Miniature and lightweight sensors deliver high-frequency response with minimized mass-loading, suitable for installations where space is limited. Through-hole mount versions facilitate adjustment of sensor axis and connector orientation, while enabling controlled cable routing on the test specimen. Filtered-output sensors prevent high-frequency overload commonly encountered during engine NVH and drivetrain measurements.

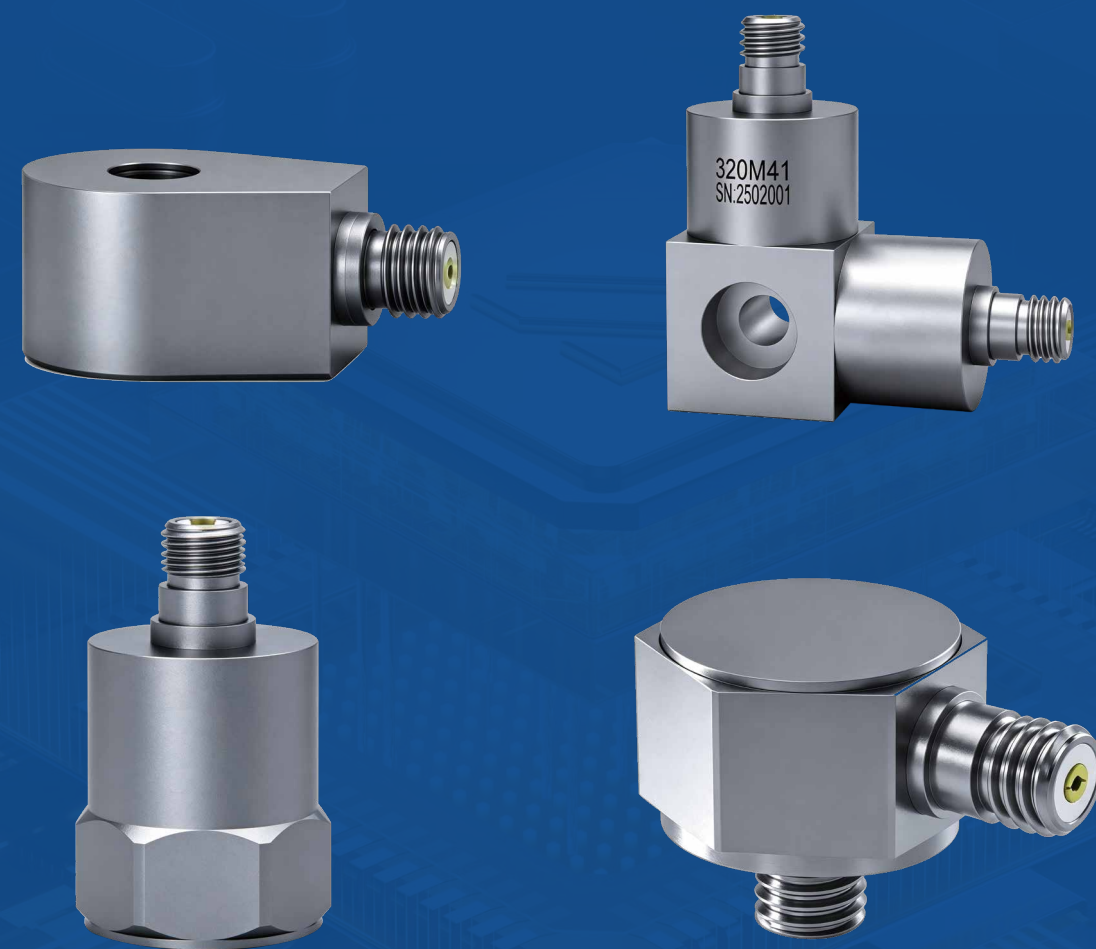
Technical Features

- High structural rigidity for broad high-frequency range
- Lightweight construction to minimize mass-loading effect
- Shock accelerometers are specially designed to monitor transient acceleration with extremely high amplitude and short duration
- Multiple mounting options: screw, stud and adhesive bonding
- Minimum dimension: 6.35 mm³

Applications

- Drop testing and package testing
- Small-component qualification testing
- Low-amplitude vibration measurements
- High-frequency testing applications
- Space-constrained installation conditions

MODAL TESTING ACCELEROMETERS IEPE SERIES



Product Overview

Modal Testing accelerometers adopt high-output piezoceramic sensing elements to deliver strong output signals when measuring low-amplitude input vibrations. Ultra-lightweight housing materials are utilized to reduce mass-loading effects. Minimal phase deviation, a critical indicator for mode-shape analysis, is achieved.

TEDS functionality is available as an option for every model in this series. Sensors equipped with Transducer Electronic Data Sheet (TEDS) are mixed-mode (analog/digital) sensors with built-in read-write memory for storing sensor-specific and application-related information. Adopting the two-wire architecture of traditional piezoelectric sensors with built-in charge amplifiers, TEDS sensors can switch between analog and digital modes, providing either conventional analog output or digital bit-stream output.

Mounting bases, multi-conductor signal cables and patch panels organize and manage wiring harnesses of sensor arrays. They reduce setup-time loss and potential wiring errors caused by cable tangling in multi-channel structural testing.

Technical Features

- High-output piezoceramic sensing elements for powerful output signals
- Lightweight housing materials to reduce mass-loading effects
- Multiple package, mounting and cable options available
- Single-axis and two-axis configurations featuring high output performance

Applications

- Structural vibration testing
- Multi-channel modal analysis
- Analytical model correlation
- Ground Vibration Testing (GVT)
- Force-response simulation

UNIVERSAL ACCELEROMETERS PE/IEPE SERIES



Product Overview

Piezoelectric accelerometers offer great versatility for shock and vibration measurements. These rugged sensors can withstand harsh environmental conditions and are available in a wide range of configurations to meet diverse application requirements. Special custom-built models can also be provided through mechanical and electrical design modifications or additional qualification testing.

Piezoelectric accelerometers fall into two main categories: those with built-in signal-conditioning electronics (IEPE type, voltage mode), and those without internal electronics (PE type, charge mode). General-purpose IEPE accelerometers are available with multiple sensitivity and range options. General-purpose PE charge-output accelerometers are typically used in high-temperature environments, where high temperatures would damage the internal electronic components of IEPE sensors.

Tri-axial accelerometers take simultaneous measurements in three orthogonal directions, enabling analysis of the full vibration experienced by a structure. Each tri-axial sensor incorporates three separate sensing elements arranged mutually at right angles. The data-acquisition system treats each direction (axis) as an individual channel. Multi-pin connectors, split cable leads or multiple coaxial connectors output acceleration signals for the X, Y and Z-axes respectively.

Technical Features

High reliability and stability, suitable for long-term operation, simple and user-friendly

Broad selection of sensitivity options, wide frequency bandwidth and high signal-to-noise ratio

Charge-output (PE) sensors shall be connected to low-noise low-capacitance cables, followed by charge amplifiers, impedance converters or signal analyzers with charge-input capability

Mounting by screw, stud or adhesive bonding

Applications

Routine vibration testing

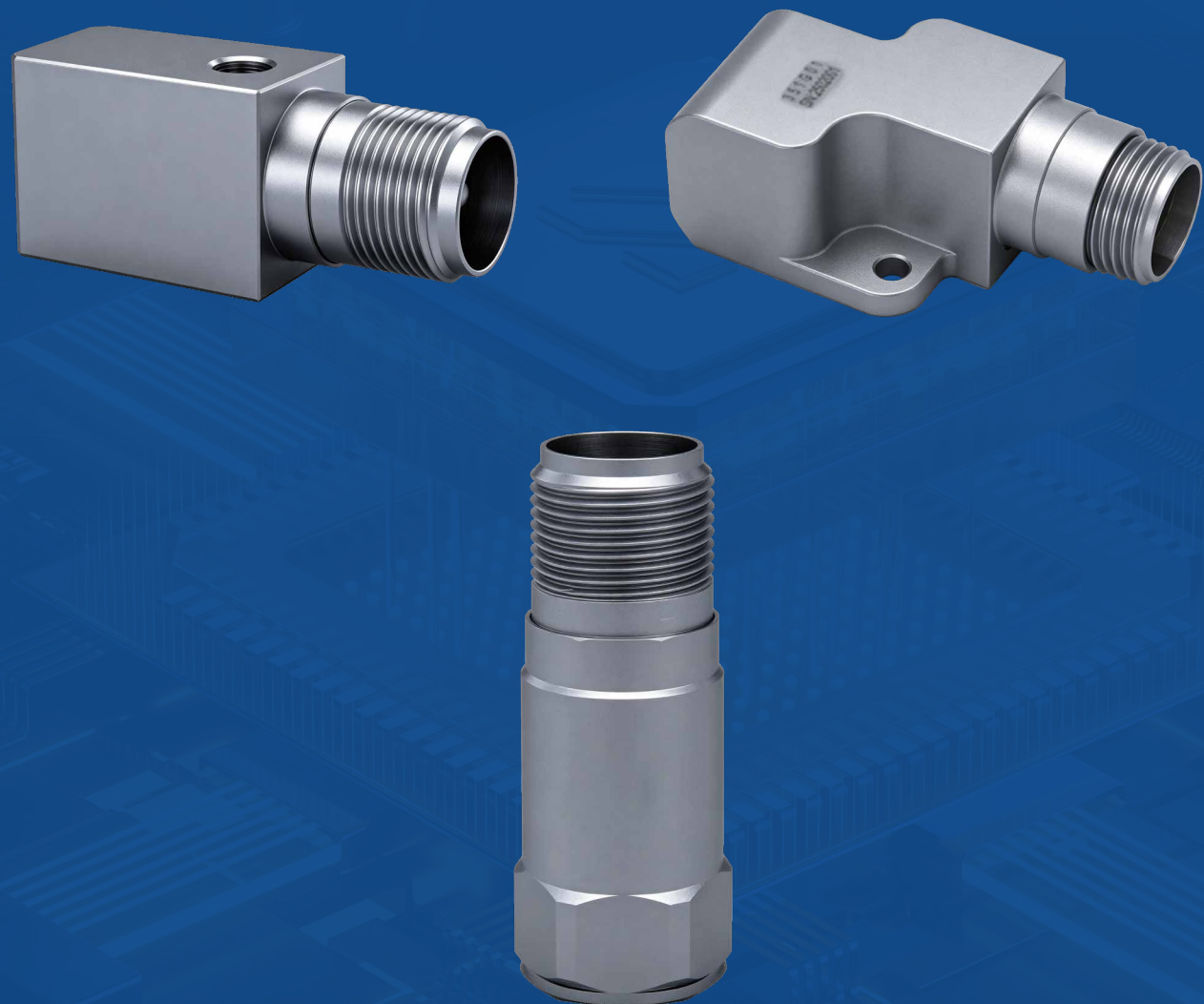
Modal analysis

Micro-machining

Vibration control

Vibration isolation

INDUSTRIAL ACCELEROMETERS PE/IEPE SERIES



Product Overview

Industrial accelerometers are designed for long-term on-line vibration monitoring and predictive maintenance of mechanical equipment. Adopting stainless-steel housing, laser-welded hermetic sealing and case-isolation design, they are adaptable to harsh industrial sites with moisture, oil contamination, dust and other adverse conditions.

Compatible with handheld route-based data collectors, industrial sensors also support permanent mounting. They can directly interface with control systems such as PLC, DCS and SCADA to realize on-line acquisition, analysis of equipment vibration data as well as machinery protection. Capable of early identification of bearing damage, rotor unbalance, misalignment and other faults, they reduce the risk of unplanned downtime. They are widely applied for condition monitoring of rotating machinery in industries including fans, pumps, compressors, motors, gas turbines, petrochemical, power generation and metallurgy.

Technical Features

- Industrial accelerometers adopt stainless-steel construction with double-layer shielding(case-isolation)
- Laser-welded sealing, water-proof and oil-resistant
- Low noise and high anti-interference capability, suitable for long-distance measurement
- Multiple output options including integral cable and armored cable
- Cost-effective industrial accelerometers for long-term online monitoring

Applications

Predictive maintenance of rotating machinery and on-line equipment condition monitoring

Vibration monitoring and protection for fans, pumps, compressors and motors

Vibration measurement for gas turbines and reciprocating equipment

Industrial process monitoring for petrochemical, oil-gas, power generation and metallurgy

HIGH SENSITIVITY ACCELEROMETERS IEPE SERIES



Product Overview

High-sensitivity accelerometers (IEPE) are specifically designed to detect ultra-low-level and low-frequency vibrations from large-scale structures, foundations and earth tremors. Featuring relatively larger physical size, these sensors produce stronger output signals with a lower noise floor, thus delivering excellent measurement resolution. All units are hermetically sealed with titanium or stainless-steel housing.

Vibration monitoring for buildings and critical infrastructure constitutes an important part of smart-city construction. It enables accurate acquisition of stress levels borne by structures. It maximizes occupant safety under full-load operation or environmental disturbances, while greatly shortening the time required for damage assessment. Studies show that synchronized crowd movements in stadium grandstands or theater balconies generate enormous forces and harmonic vibrations upon building structures. Earth tremors, pedestrian traffic, as well as passing trucks and trains can induce vibration, which may lead to structural sway, displacement and even damage or collapse. Permanently installed high-sensitivity accelerometers provide real-time data for trend analysis, data analysis and alarming. Alerts, warnings and emergency response plans can be triggered when structural motion approaches pre-set safety thresholds.

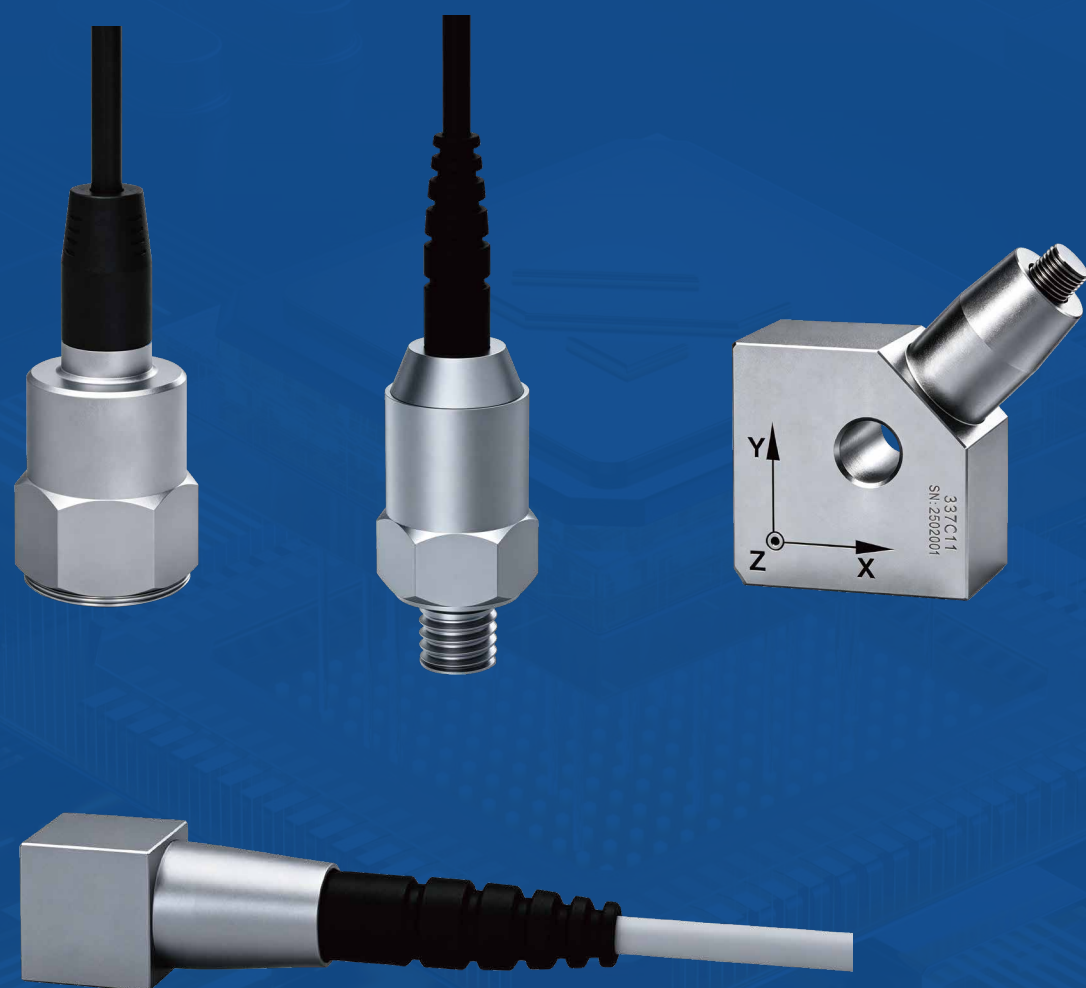
Technical Features

- Capable of capturing ultra-low-level and ultra-low-frequency micro-vibrations of large-scale structures and foundations
- Excellent extended low-frequency performance, suitable for detecting low-frequency signals such as micro-tremors and seismic events
- Hermetically-sealed titanium/stainless-steel housing; selected models adopt case-isolation for superior RF and EMI resistance
- Strong output signal and low noise floor with outstanding measurement resolution, suitable for long-term monitoring of large civil-engineering structures

Applications

- Smart Infrastructure-foundation, floor vibration and safety monitoring
- Earthquake detection/sway-fatigue analysis
- Structural testing of bridges and foundations
- Geological formation studies

WATER TIGHT ACCELEROMETERS IEPE SERIES



Product Overview

Watertight accelerometers (IEPE) feature an integral fully sealed structure designed for harsh conditions including immersion, water spray and high humidity. Adopting high-strength stainless steel housing and laser-welded hermetic sealing, the sensors provide excellent waterproof performance, with selected models supporting full submersible operation. Equipped with integral armored waterproof cables and case-isolation design, the sensors effectively reduce ground loop interference and offer superior oil and corrosion resistance for harsh industrial environments.

Watertight accelerometers are applicable to laboratory underwater shock-vibration tests, as well as long-term underwater vibration monitoring for underwater facilities, hydraulic structures and marine equipment. Compatible with various types of vibration acquisition equipment, they can collect and measure vibration and shock signals in underwater environments.

Technical Features

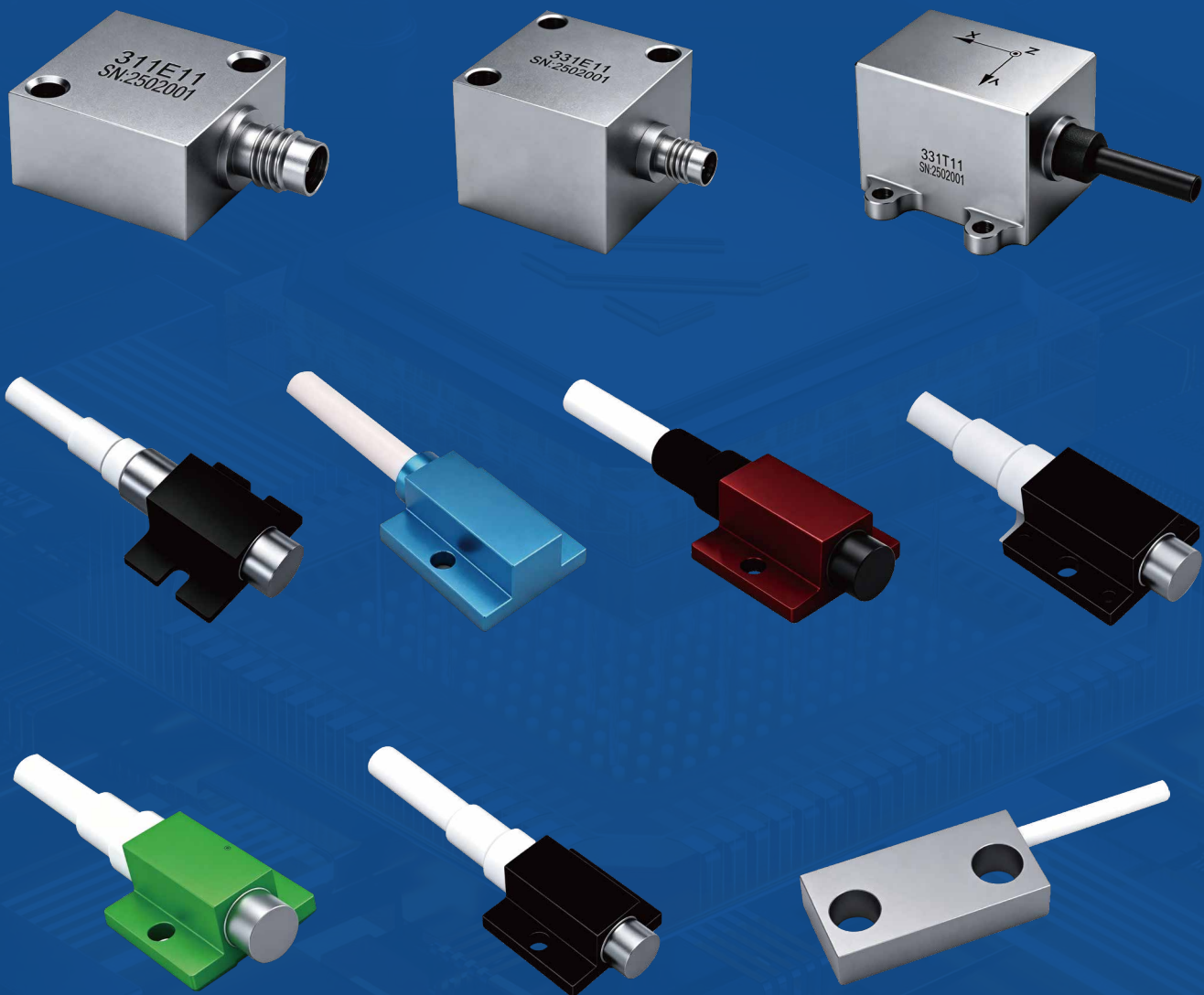
- High-strength, corrosion-resistant and shock-resistant housing material
- IP68 waterproof rating, suitable for harsh environments
- Integral transmission cable ensures stable and reliable signal transmission with strong anti-interference performance
- Selected models are available for underwater operation from several meters up to hundreds of meters depth

Applications

- Vibration and shock testing of underwater and marine equipment
- Underwater structural monitoring for hydraulic and water-conservancy structures
- Simulated shock and vibration tests in underwater environments
- Vibration measurement for industrial sites with high-humidity, water-spray and immersion conditions

MEMS ACCELEROMETERS

MEMS SERIES



Product Overview

MEMS accelerometers are manufactured by silicon based micro-electronic micromachining technology. They are indispensable for analyzing low-frequency motion or constant-acceleration movement. Unlike piezoelectric accelerometers, these sensors feature response down to 0Hz and are generally recognized as DC-response sensors. Gas damping, mechanical overload protection, compact size and titanium housing improve component durability. Electrically, differential output signals are provided to realize common-mode noise rejection.

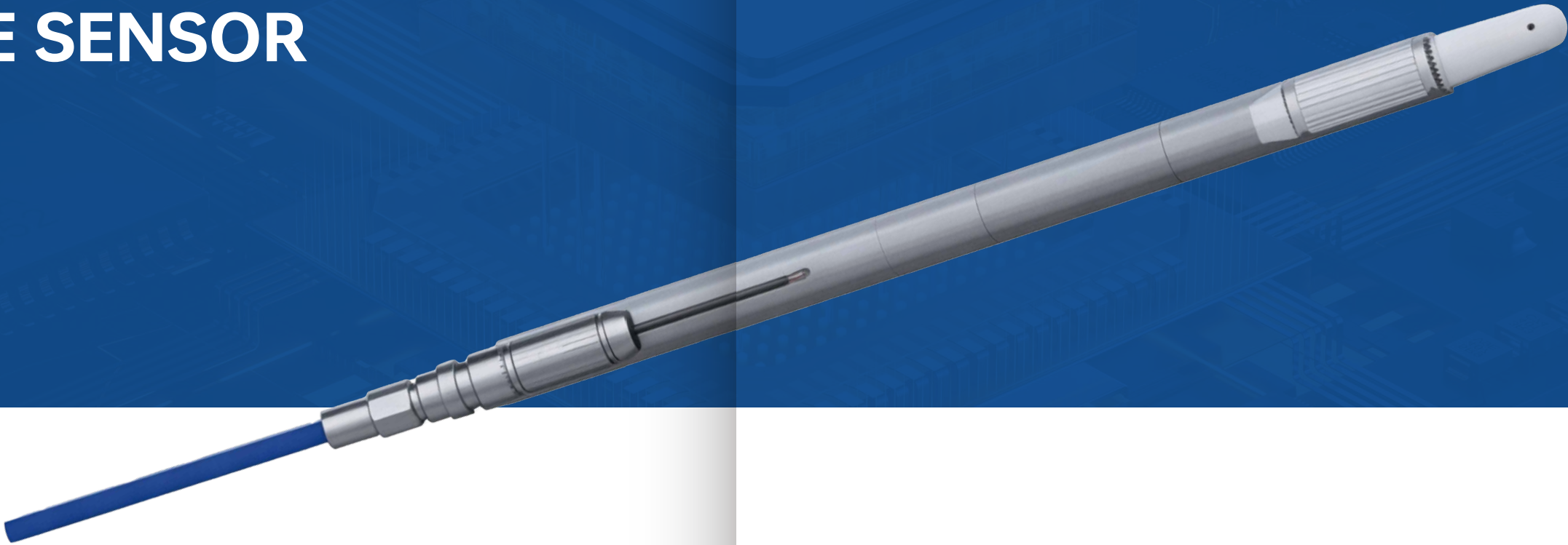
Technical Features

- 0Hz DC-response capability for static and constant acceleration measurement, compensating for the limitation of piezoelectric sensors incapable of DC measurement
- Equipped with integral cables or multi-pin connectors with simple DC power excitation
- Compact size and titanium housing for enhanced sensor durability
- Single-axis and tri-axis configurations available with single-ended or differential signal outputs

Applications

- Static acceleration, attitude and tilt measurement
- High-temperature vibration testing, engine structure research and other applications
- Structural health and modal testing for bridges, buildings and large-scale infrastructure
- Inertial measurement for vehicles and equipment

UNDERWATER FREE-FIELD PRESSURE SENSOR



Product Overview

Underwater free-field pressure sensors are precision measuring devices that convert dynamic pressure signals into electrical signals. Featuring high accuracy, fast response and strong environmental adaptability, the sensors provide a wide amplitude and frequency range. Built-in acceleration compensation minimizes shock and vibration sensitivity, effectively eliminating mechanical interference and ensuring authentic and reliable underwater blast pressure measurement.

Applications

Miniature pressure sensors are available in differential pressure and gauge pressure types for diverse pressure testing scenarios.

Customizable temperature compensation range effectively improves measurement accuracy and stability under special working conditions.

Suitable for high-speed and low-speed wind tunnel tests, automotive aerodynamics research, architectural engineering and other industrial studies.

Technical Features

Independently developed high-performance sensitive materials and optimized high-pressure structure design improve the pressure resistance and measurement stability of the sensor.

Adopting high-strength pressure-resistant and sealed structure, it can work stably at a water depth of 3000 meters.

It provides an ultra-wide frequency bandwidth ranging from infrasound (below 20 Hz) to ultrasonic frequency (tens of kHz to MHz). Equipped with low-noise circuits, anti-interference materials and advanced signal processing algorithms, it greatly enhances the detection capability of weak pressure signals.

Structural optimization based on finite element simulation and high-strength materials enables stable and reliable operation in ultra-deep sea environments of over 5000 meters.

AIR FREE-FIELD PRESSURE SENSOR



Product Overview

Air free-field pressure sensors are precision devices that convert dynamic pressure signals into electrical signals. Featuring high accuracy, fast response and excellent environmental adaptability, the sensors offer a wide amplitude and frequency range. Built-in acceleration compensation minimizes shock and vibration sensitivity, effectively reducing structural vibration interference and ensuring highly reliable air blast wave test results.

Applications

Miniature pressure sensors are available in differential pressure and gauge pressure types to meet various pressure measurement requirements.

Customizable temperature compensation range effectively improves measurement accuracy and stability under special working conditions.

Suitable for high-speed and low-speed wind tunnel tests, automotive aerodynamic testing, building wind pressure engineering research and other precision measurement scenarios.

Technical Features

Independently developed high-performance sensitive materials and optimized high-pressure structural design effectively improve the sensor's pressure resistance and dynamic measurement performance.

Specially designed for air blast free-field environments, it is suitable for explosion effect tests and accurate monitoring of blast energy loss.

Aiming at the microsecond-level ultra-short rise time of explosion shock waves, the sensor delivers ultra-high frequency response. Optimized mechanical structure of sensitive elements and signal transmission paths realize ultra-fast dynamic response. The specially designed mechanical structure extends the measurement range and resists strong mechanical impact caused by explosions. Equipped with electromagnetic shielding structure to eliminate strong electromagnetic pulse interference at blast sites, the sensor reaches international advanced performance levels and ensures high accuracy and reliability for explosion effect analysis.