Digital Pressure Gauge

I. Product Definition

The QD-YB80 (Part No. QDL80B-G) high-precision smart electronic digital pressure gauge is an industrial-grade, battery-powered digital pressure measurement instrument featuring a stainless steel housing. Designed to replace traditional mechanical pressure gauges, it accurately measures the pressure of media such as gases and liquids and displays the readings clearly in digital format.

Key Features:

1. High-Precision Pressure Measurement: Measurement accuracy up to 0.4% FS, covering a range of 0–2.5 MPa. Supports multiple unit conversions (kPa, MPa, bar, PSI, etc.) to meet the reading requirements of various pressure units in industrial settings.

2. Digital and Visual Display: Features a large LCD screen with a dynamic percentage bar graph that illustrates pressure changes, providing clear and intuitive readings without the issues of mechanical pointer sticking or parallax error.

3. User-Friendly Operation: Integrated with four function buttons—power switch, unit selection (UINT), backlight activation, and one-touch zeroing (ZERO)—supporting on-site one-touch zero calibration with a low learning curve.

4. Low-Power Battery Operation: Powered by two standard batteries. The battery compartment features a waterproof flip-top design, ensuring long battery life without the need for an external power source, making it suitable for industrial environments without power supply.

5. Industrial-Grade Protection Design: Featuring a fully stainless steel housing and threaded connections, it offers excellent shock resistance and corrosion resistance, making it suitable for complex industrial environments.

6. Multi-Scenario Adaptability: Suitable for applications such as water treatment, hydraulic systems, pneumatic systems, and HVAC equipment, enabling real-time pressure monitoring and operational status feedback.

II. Working Principle

In simple terms, the operating process of this digital pressure gauge consists of four core steps:

1. Pressure Sensing: The measured medium (gas/liquid) enters the instrument through a threaded connection and acts on the built-in high-precision pressure sensor (with a pressure-sensitive element at its core). The sensor converts this “physical force” of pressure into a faint electrical signal.

2. Signal Processing: The instrument’s built-in circuit module amplifies, filters, and performs analog-to-digital (AD) conversion on the weak electrical signal output by the sensor, converting the analog signal into a digital signal recognizable by the processor.

3. Data Processing and Calibration: The instrument’s microprocessor calculates, temperature-compensates, and linearly corrects the digital signal based on preset calibration algorithms, eliminating the effects of ambient temperature and sensor errors to output precise pressure values.

4. Display and Interaction: The processed pressure data is displayed in real time in digital form on the LCD screen, with a percentage bar graph updating simultaneously; users can interact with the instrument by pressing buttons to switch units, turn on the backlight, or perform a one-touch zero reset.

III. Core Value and Solutions to Pain Points

3.1 Overview of Core Value

The core value of the QD-YB80 Digital Pressure Gauge lies in addressing the pain points of traditional mechanical pressure gauges—low accuracy, difficult readings, and high maintenance costs. It provides industrial users with a high-precision, easy-to-operate, and highly reliable pressure monitoring solution, while also accommodating flexible installation requirements in scenarios without power supply.

3.2 Pain Points

Customer Pain Point 1: Traditional mechanical pressure gauges have low accuracy and are highly susceptible to temperature and vibration, resulting in inaccurate measurement data that affects production decisions.
Solution: This product utilizes a high-precision pressure sensor with 0.4% FS accuracy, combined with temperature compensation and linear correction algorithms. Compared to standard mechanical pressure gauges (typically 1.6%–2.5% FS accuracy), measurement errors are significantly reduced. It also features excellent shock resistance, remains unaffected by on-site vibrations, and delivers stable, reliable data, providing precise basis for production control.

Customer Pain Point 2: Mechanical pressure gauges suffer from needle sticking and parallax error, resulting in unclear on-site readings—especially in low-light environments—making it difficult to quickly obtain accurate values.
Answer: This product features a large LCD digital display with a backlight, ensuring clear visibility of pressure readings in both bright daylight and dim nighttime conditions. Additionally, a percentage bar graph simultaneously displays pressure trends, eliminating issues with needle sticking and parallax error for intuitive and efficient readings.

Customer Pain Point 3: In some industrial settings, there is no external power source, making it impossible to install and use traditional digital displays, forcing users to continue relying on mechanical gauges.
Answer: This product features a battery-powered design that requires no external power source. Just two batteries provide long-lasting battery life, making it suitable for power-deficient environments such as water treatment sites, mobile equipment, and field operations. It replaces mechanical pressure gauges while offering the advantages of a digital display.

Customer Pain Point 4: Different pressure units need to be switched between under varying operating conditions, which traditional gauges cannot accommodate, making conversions cumbersome and error-prone.
Answer: This product features a built-in multi-unit switching function. The “UINT” button allows one-touch switching between common pressure units such as kPa, MPa, bar, and PSI, eliminating the need for manual conversion. It adapts to the reading preferences of different equipment and customers, reducing the risk of operational errors.

Customer Pain Point 5: After installation or prolonged use, zero-point drift causes measurement errors. Traditional mechanical gauges are complex to calibrate and cannot be quickly corrected on-site.
Answer: This product supports a one-touch “ZERO” reset function, allowing for rapid on-site zero-point calibration. No disassembly or specialized tools are required; maintenance personnel can perform the operation directly, significantly reducing calibration complexity and maintenance costs.

Customer Pain Point 6: The glass on traditional mechanical gauges is prone to breakage, and the pointers are susceptible to damage, resulting in a short service life in industrial environments and high costs associated with frequent replacements.
Answer: This product features a fully stainless steel housing with no fragile components such as glass or pointers. It offers excellent shock resistance, corrosion resistance, and shatter resistance, making it well-suited for complex industrial environments. Its service life far exceeds that of traditional mechanical pressure gauges, reducing replacement frequency and operational costs.

IV. Key Product Parameters & Specifications

4.1 Basic Electrical Parameters

Product Model: QD-YB80
Part Number: QDL80B-G
Measurement Accuracy: 0.4% FS (High Accuracy Grade)
Display Type: Large LCD digital display (4 digits, 4 decimal places), with percentage bar graph
Display Units: One-touch switching between multiple units including kPa, MPa, bar, PSI, kgf/cm², Pa, etc.
Pressure Type: Gauge Pressure (default), Vacuum, Positive/Negative

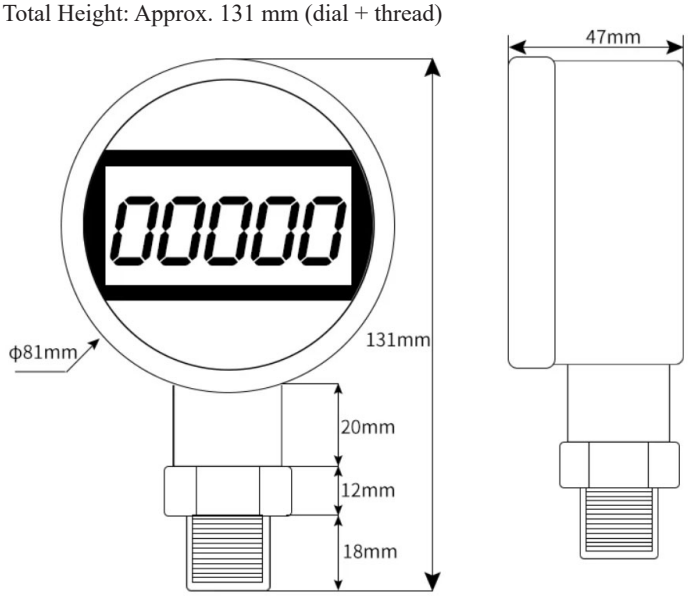
Measurement Range: Standard -100 kPa to 0 to 60 MPa (customizable up to 160 MPa for high-pressure applications); Common ranges: 0 to 0.6 MPa, 0 to 1 MPa, 0 to 1.6 MPa, 0 to 2.5 MPa, etc.
Resolution: 0.0001 MPa (adaptive based on range)
Response Time: ≤10 ms
Zero Drift: ≤±0.15% FS/year
Long-term Stability: ≤±0.2% FS/year

4.2 Isolation Performance Parameters
Insulation Resistance: ≥100 MΩ @ 250 VDC (Input/Housing Isolation)
Isolation strength: 250 VDC for 1 min without breakdown
Immunity: EMI (Electromagnetic Interference) resistance, compliant with CE certification standards
Vibration resistance: 20g (20–5000 Hz), shock resistance 100g (11 ms)

4.3 Power Supply & Power Consumption Parameters
Power supply: Powered by 2 AAA batteries (No external 24 VDC power supply)
Battery Specifications: 2 × 1.5 V alkaline batteries (standard type)
Typical Power Consumption: ≤1 mA (operating), ≤10 μA (standby)
Battery Life: 8–10 months (operating 24 hours per day, at normal temperature and pressure)
Low Battery Alert: Replace batteries when "LOB" appears on the screen
No power output (display-only model; no 4–20 mA/RS485 signal output)

4.4 Environmental Specifications
Operating Temperature: -10°C to 60°C (Standard); -20°C to 70°C (Custom)
Compensation Temperature: -10°C to 70°C
Storage Temperature: -40°C to 125°C
Operating Humidity: ≤80% RH (non-condensing)
Protection Rating: IP65 (Dust-tight, Water-jet resistant)
Explosion-proof rating: Intrinsically safe Ex ia IIC T4 Ga (Compatible with safety barriers: e.g., QD series isolated safety barriers)
Media compatibility: 304/316L stainless steel wetted parts; compatible with water, oil, gas, and mildly corrosive media

4.5, Physical Parameters
Mounting method: Radial direct mounting (threads vertical downward)
Mounting Interface: Standard M20×1.5; Optional G1/2, G3/8, NPT1/4, NPT1/2
Dimensions:
Dial Diameter: 80 mm
Thickness: 47 mm (excluding thread)
Thread Length: 20 mm
Total Height: Approx. 131 mm (dial + thread)



Weight: Approx. 0.5 kg (excluding battery)
Housing Material: 304 stainless steel (corrosion-resistant, rust-proof)
Protection Features:
Fully sealed welded construction, waterproof and dustproof
Battery compartment features a waterproof flip-top design; battery replacement does not compromise the seal
No fragile components such as glass or dials; vibration-resistant and shatterproof

V. Application-Specific Selection Guide
5.1 Key Selection Criteria
1. Signal Type Selection: The QD-YB80/QDL80B-G is a local, on-site digital pressure gauge with direct display. It does not feature a 4-20mA analog output or RS485 communication output. It only provides on-site pressure value display, unit switching, one-touch zeroing, and backlight display functions. It is suitable for applications where pressure needs to be monitored on-site and there is no need for remote signal transmission to a central control system; If pressure signals need to be transmitted to a PLC, variable frequency drive, or industrial control system, this model should not be selected; instead, a smart pressure transmitter with signal output must be chosen.

2. Channel Selection: This model is designed for single-channel pressure measurement. A single unit can monitor only one medium pressure point and does not support multi-channel data acquisition. It is suitable for direct use at a single pressure monitoring point; for simultaneous monitoring of multiple points, multiple units must be configured independently.

3. Power Supply Selection: This model is powered by two built-in AAA alkaline batteries, eliminating the need for an external 24V DC power supply or on-site wiring. It is suitable for applications without external power sources, where wiring is difficult, or for mobile devices and unattended outdoor operations. If a stable 24V power supply is available on-site and continuous, uninterrupted operation is required to avoid frequent battery replacement, the externally powered DC model is recommended.

4. Selection Based on Explosion-Proof Requirements: For standard indoor environments with good ventilation and no flammable or explosive gases or dust, the standard general-purpose models QD-YB80/QDL80B-G may be used. In hazardous areas such as chemical workshops with flammable and explosive materials, oil and gas facilities, and enclosed storage tank areas, the intrinsically safe explosion-proof custom version must be used. It is strictly prohibited to use the general-purpose models directly in explosion-proof zones; they must be installed in conjunction with the corresponding
intrinsic safety barrier.

5. Installation Environment Selection: For indoor, dry, normal-temperature environments with no vibration or corrosion, the standard housing version is sufficient; for outdoor, open-air environments with water spray, moisture, or dust, the IP65 high-protection version is recommended; for sites with mechanical vibration or high-frequency pipeline vibration, the stainless steel anti-vibration structure version is suitable; for contact with weakly corrosive liquids or gaseous media, the 316L stainless steel wetted parts version must be selected.

5.2. Selection Guidelines for Industry Scenarios
1. In the chemical industry, operating conditions often involve mildly corrosive media, pipeline vibrations, and explosion-proof requirements in certain areas. For routine water treatment and on-site pressure monitoring of standard chemical pipelines, the QD-YB80 high-precision smart digital pressure gauge is suitable; for flammable and explosive
sections, an explosion-proof custom model must be used;

2. In the power industry, this model is commonly used for on-site pressure monitoring in circulating water systems, hydraulic oil systems, and air compressor circuits. For locations that do not require signal transmission, this battery-powered digital pressure gauge is suitable, offering convenient installation without the need for wiring;

3. The metallurgical industry features high dust levels and significant equipment vibration. The stainless steel housing of this model, with its shock-resistant and dustproof design, is suitable for on-site pressure display and monitoring in metallurgical pipelines, cooling systems, and pneumatic/hydraulic systems;

4. In the pharmaceutical industry, production workshops have high cleanliness requirements and stable operating conditions, with media typically consisting of pure water and clean gases. The standard QD-YB80 model meets the needs for precise pressure display in cleanrooms, as well as oil-free and easy-to-clean operation;

5. For single-unit pressure monitoring in smart manufacturing automation lines, pneumatic tooling, and hydraulic equipment—especially at field locations that do not require connection to a central control system—this digital pressure gauge provides intuitive readings, wireless installation, and simple daily maintenance;

6. For general civil and industrial applications such as HVAC water treatment, water supply and drainage pump stations, and boiler auxiliary systems—where there are no explosion-proof or strong corrosion requirements—the standard QDL80B-G model can be used as a routine replacement for traditional mechanical pressure gauges.

5.3 Common Selection Misconceptions

1. Misconception regarding isolation rating selection: Many users focus solely on measurement range and accuracy while neglecting on-site electromagnetic interference and insulation isolation requirements. Strong electromagnetic interference is common near industrial variable-frequency drives and high-power motors; selecting a standard low-isolation model may result in value fluctuations and unstable displays. This model features basic insulation and anti-interference performance; for environments with strong electromagnetic interference, the isolation and anti-interference rating must be confirmed in advance to avoid blind selection.

2. Misjudging Signal Range: Failing to account for a safety margin based on actual operating pressure and directly selecting the full-scale range based on rated pressure. Long-term operation at full scale will shorten the instrument's lifespan and reduce measurement accuracy; When selecting a model, ensure that the actual operating pressure falls within the 30%–80% range of the instrument's measurement range. Prolonged use beyond the full scale is prohibited. In mixed positive and negative pressure conditions, failure to distinguish between gauge pressure and vacuum pressure ranges may result in inaccurate measurements.

3. Misconception regarding load matching: Mistakenly connecting this local display gauge (which has no signal output) to a PLC or industrial control data acquisition system as if it were a pressure transmitter. Since it lacks standard analog and communication outputs, remote data acquisition is impossible, resulting in incompatibility after installation and the need for rework or replacement.

4. Misapplication of General-Purpose Models in Explosion-Proof Environments: In flammable and explosive chemical, oil and gas, and dust-explosion-hazardous areas, arbitrarily selecting ordinary non-explosion-proof general-purpose pressure gauges fails to meet safety and explosion-proof regulations, posing safety hazards. Additionally, such units cannot pass safety inspections; therefore, explosion-proof custom versions must be selected accordingly.

5.4 Customization Recommendations

1. Custom Signal Output: If you need to add 4-20mA analog output or RS485 Modbus communication for remote data transmission to the QD-YB80, we can provide a custom version with the same structure but featuring signal output, tailored to meet the requirements of industrial control systems for remote data acquisition and centralized monitoring.

2. Customization for Non-Standard Operating Conditions: For special extreme high- or low-temperature environments, highly corrosive acid or alkali media, or high-pressure conditions with non-standard measurement ranges, we can customize versions featuring 316L fully corrosion-resistant wetted parts, wide-temperature compensation for high and low temperatures, and high-pressure non-standard measurement ranges. Non-standard mounting threads such as G3/8, NPT, and special flange connections can all be customized as needed.

3. Multi-Channel Integrated Customization: For scenarios requiring simultaneous monitoring of multiple pressure channels where installing multiple separate units is impractical, we offer customizable multi-channel digital pressure integrated gauges. These devices centrally display multiple pressure readings, saving installation space and facilitating centralized inspection and reading.

4. Customized Features: We offer personalized configurations such as long-battery-life, low-power versions; high-brightness night-vision backlighting; anti-clogging damping structures for specific media; unit locking; and factory-calibrated zero-point settings.

VI. Installation and Commissioning Guidelines

6.1 Pre-installation Preparation

1. Verification of Accessories

Upon receipt of the QD-YB80 (QDL80B-G) high-precision intelligent electronic digital pressure gauge, first verify the standard accessories item by item: 1 unit of the main unit, 1 copy of the product manual, 1 sealing gasket, and 1 set of waterproof O-rings; Inspect the dial screen for scratches, the housing for dents or deformation, the threaded connections for stripped threads or damage, and ensure the buttons are responsive and spring back properly; verify that the model, part number, and range labels match the purchase requirements, and confirm there are no misdelivered or missing accessories.

2. Environmental Inspection

The installation site must be kept away from highly corrosive acid or alkali fumes, open flames, high-temperature heat sources, and areas subject to prolonged water immersion; it must also be kept away from equipment that generates strong electromagnetic interference, such as high-power variable frequency drives, motors, and contactors; the installation location should have adequate lighting to facilitate daily reading and button operation; for outdoor installation, ensure there is no prolonged exposure to rain or direct water spray, and ensure the area is well-ventilated, dry, and free of condensation; Pressure fluctuations in the pipeline medium must not exceed the instrument's rated range; installation under overpressure conditions is strictly prohibited.

3. Tool List

Prepare an adjustable wrench, PTFE tape, sealing gaskets, a cloth, and insulated gloves; no wiring tools such as electric drills or power cords are required (this model is battery-powered and has no external wiring); keep 2 spare AAA alkaline batteries on hand for future replacement.

4. Safety Precautions

Before installation, the pipeline medium valve must be closed. Only disassemble or install the instrument after depressurizing; installation or disassembly under pressure is strictly prohibited. Do not disassemble standard versions of the instrument in flammable or explosive hazardous areas; in explosion-proof zones, only use explosion-proof custom models and ensure installation is performed by certified personnel; Handle the instrument with care during installation to avoid dropping, dropping, or striking the dial, which could damage internal sensors; do not use wrenches to grip the glass or plastic parts of the dial; tighten only by gripping the hexagonal threaded section.

6.2 Standard Installation Steps

1. Clean the pipe connection: First, use a cloth to clean debris, rust, and Teflon tape residue from the internal threaded connection of the pressure pipe being measured to ensure the threads are clean and unobstructed.

2. Sealing: Wrap an appropriate amount of PTFE tape evenly around the instrument's external threads, or install the standard sealing gasket, to ensure a tight seal and prevent pressure leakage.

3. Threaded Connection Installation: Align the instrument with the pipe's internal threads and manually screw it in 2–3 turns to align the threads, avoiding misalignment or stripped threads.

4. Tightening and Securing: Use a wrench to grip the hexagonal area at the bottom of the gauge and tighten it moderately. Apply moderate force; do not use excessive force to prevent stripped threads or deformation of the housing.

5. Orientation Adjustment: After tightening, adjust the dial so that the digital display faces the direction of the inspection, facilitating easy and intuitive reading.

6. Battery Installation: Unscrew the waterproof flap on the back battery compartment. Insert 2 AAA 1.5V alkaline batteries according to the positive and negative markings, then close the waterproof flap securely to ensure a tight seal.

7. No Wiring or Grounding Required: This model is a battery-powered, local-display type with no external power terminals or signal input/output terminals. No wiring or grounding work is required; it is ready for use immediately after installation.

6.3 Installation Instructions
The QD-YB80/QDL80B-G model has no external wiring terminals, no 24V DC power supply interface, no 4-20mA analog output, no RS485 communication interface, and no input signal terminals. The entire unit operates independently on built-in batteries.
There are no positive or negative polarity connections, no terminal number distinctions, and no need for shielded cable grounding, power distribution wiring, or isolation wiring operations.
There are no external wiring specifications for power distribution or isolation types, nor are there complex circuit wiring methods.
Common wiring correct/incorrect comparison: Incorrect operations include forcibly drilling holes for wiring and connecting an external power supply to the instrument housing; Correct procedure: No wiring is required throughout the process, and the housing structure remains unchanged; only battery installation and threaded mechanical mounting are required.

6.4 Power-On Debugging Procedure
1. No-Load Test
After installing the battery, the instrument automatically illuminates the screen and enters the standby display interface; when no pressure is applied, observe whether the screen reading returns to zero; under no-pressure conditions, the reading should not drift, fluctuate erratically, or remain consistently high or low; Check whether the backlight button, unit switch button, and zero-reset button are responsive and function normally.

2. Signal and Operating Condition Test
Slowly open the pipeline medium valve to gradually apply pressure. Observe whether the screen reading rises steadily and the percentage bar graph changes synchronously, with no sudden jumps or stuttering in the values. After pressure stabilizes, let the instrument sit for 3–5 minutes; the reading should remain stable with no automatic drift.

3. Display and Status Assessment
The display shows the pressure value and units normally, and the bar graph indicates normal operation; a flickering screen or black screen indicates low battery power; the “LOB” low battery indicator signifies insufficient power, requiring immediate battery replacement; unresponsive buttons are typically caused by a reversed battery or poor battery contact.

4. Calibration Method
If there is a slight zero drift on-site, simply press and hold the ZERO button to automatically zero the instrument with a single press; no specialized equipment or disassembly of the instrument is required—on-site accuracy correction can be completed with a single button press. If the measurement range deviation is too large, do not attempt to disassemble and calibrate the instrument yourself; it must be returned to the factory for professional calibration.

6.5 Installation Precautions
1. Strictly Prohibit Overpressure Use: It is absolutely prohibited to operate at actual working pressures exceeding the instrument’s rated range. Even instantaneous pressure surges must be kept within the rated range. Overpressure will directly damage the internal pressure sensor, causing permanent measurement inaccuracies.

2. Avoid Strong Electromagnetic Interference: Keep the instrument as far as possible from inverters, high-power motors, and high-frequency switching equipment during installation to prevent electromagnetic interference from causing value fluctuations or unstable displays.

3. Do Not Use Excessive Force During Installation: Do not twist the dial with a wrench, strike the meter body, or drop or impact the meter to avoid displacing or damaging internal sensor components.

4. Protection in Humid Environments: In humid, damp, or outdoor environments exposed to rain, the battery compartment waterproof cover must be securely fastened to maintain IP65 protection; do not use the meter while submerged in water for extended periods to prevent moisture from entering the interior and causing circuit corrosion or failure.

5. Do not modify or disassemble the device: Non-professionals must not open the meter housing or alter its internal structure. Unauthorized disassembly will void the warranty and compromise explosion-proof and sealing performance.

6. Media compatibility restrictions: For strong acids, alkalis, or highly corrosive special media, do not use the standard model directly. You must replace it with a 316L custom version designed for contact with these media to prevent corrosion and leakage at the interfaces.

VII. Recommendations for Daily Use & Operation and Maintenance
7.1 Key Points for Daily Inspections
1. Display Status Inspection
During daily on-site inspections, check whether the QD-YB80 (QDL80B-G) screen display is normal, and look for any abnormalities such as a black screen, screen flickering, erratic value fluctuations, or the display freezing and remaining static. Confirm that the pressure readings match the actual load of the on-site operating conditions, and ensure there is no unexplained drift toward excessively high or low values.

2. Pressure Stability Monitoring
Observe whether the pressure gauge reading remains stable over an extended period under steady-state conditions, with no frequent minor fluctuations or intermittent jumps. When pipeline pressure fluctuates, the reading should follow the changes smoothly without lag or stuttering, thereby determining whether the sensor and the entire unit are operating normally.

3. Environmental Conditions Inspection
Continuously monitor the temperature and humidity around the installation site to ensure the environment is free of condensation and excessive moisture accumulation; avoid exposing the instrument to prolonged high temperatures, direct sunlight, freezing temperatures, or high-humidity, enclosed, and poorly ventilated environments to prevent moisture damage and aging of internal circuits.

4. Visual and Sealing Inspection
Inspect the instrument housing for dents or deformation, check threaded connections for leaks, and ensure the battery compartment’s waterproof cover is securely closed; ensure the dial face is free of dust or oil residue, and that there are no signs of medium leakage or rust at the mounting threads.

5. Battery Status Inspection
Monitor the display for the “LOB” (Low Battery) indicator. If present, arrange for a battery replacement promptly to prevent inaccurate readings, automatic shutdowns, or loss of communication due to low battery power, which could affect on-site pressure monitoring.

7.2. Regular Maintenance Plan
1. Cleaning Schedule
Clean once a month in standard industrial environments; clean every two weeks in metallurgical, chemical, and water treatment sites with high levels of dust, moisture, or oil contamination; Use a soft, dry cloth to wipe the dial and housing. Do not spray water directly onto the device, do not use a high-pressure water gun, and do not use corrosive solvents to clean the screen or housing.

2. Installation and Fastening Inspection
Conduct a quarterly re-inspection of installation threads to check for loose instrument connections or leaks at the threaded joints. Gently verify the stability of the meter housing to prevent thread loosening or pressure leaks caused by prolonged pipe vibration.

3. Function Key Inspection
Conduct a random inspection of key functions quarterly. Test whether unit switching, backlight activation, and one-touch zeroing are responsive and effective to prevent keys from becoming stuck or malfunctioning due to dust accumulation.

4. Accuracy Recalibration Recommendations

Under normal operating conditions, perform on-site zero calibration every six months; this can be completed using the built-in ZERO one-touch zeroing function. For precision measurement and control applications, as well as pharmaceutical and fine chemical processes with strict manufacturing requirements, conduct an annual accuracy re-verification by comparing readings with a standard pressure gauge; if the error exceeds the tolerance, return the unit to the factory for recalibration promptly.

5. Regular Battery Replacement
Based on on-site usage frequency, the standard battery life is 8–10 months. It is recommended to perform a preventive battery replacement every 8 months to avoid unexpected shutdowns due to low battery power and ensure uninterrupted monitoring throughout the year.

7.3 Long-Term Maintenance Tips
1. Dust and Moisture Protection
Ensure the waterproof battery compartment cover remains fully closed at all times during daily use; avoid opening it frequently. In outdoor, dusty, or humid environments, install a simple protective cover to block direct exposure to dust and rain. When the instrument is idle for extended periods, remove it and store it in a dry, well-ventilated room with desiccant to prevent moisture and oxidation of the circuit board.

2. Anti-Interference Optimization Maintenance
Install the instrument as far as possible from variable frequency drives, high-power motors, AC contactors, and high-frequency electrical control equipment, maintaining a safe installation distance; avoid running the instrument in close parallel with high-voltage cables to reduce electromagnetic interference, thereby eliminating value fluctuations and display instability at the source.

3. Anti-Vibration Maintenance
In applications with severe pipeline vibrations, install vibration-damping connectors at the interfaces to reduce the direct transmission of mechanical vibrations to the instrument's interior. Do not strike or collide with the meter housing. During inspections and operations, press buttons gently; do not press the screen or bend the meter housing.

4. Protection in Extreme Environments
In high-temperature environments, avoid prolonged exposure to direct sunlight and provide shade; in low-temperature or freezing conditions, select a wide-temperature range version to prevent slow screen response and sudden battery drain caused by cold temperatures; in highly corrosive acidic or alkaline environments, use the custom 316L wetted-part version, and regularly inspect connection points for corrosion to predict replacement intervals in advance.

5. Storage and Maintenance During Inactivity
When disassembling the device for long-term storage, be sure to remove the internal battery to prevent leakage that could corrode internal circuits and metal contacts. Apply rust protection to the case threads and wrap them with protective film to prevent air-induced corrosion, thereby extending the service life of the entire unit.

VIII. Troubleshooting & Emergency Procedures
8.1 List of Common Faults
Applicable Model: QD-YB80 High-Precision Smart Digital Pressure Gauge / Part Number QDL80B-G
No display, black screen, screen does not light up upon startup
Pressure readings drift, zeroing is inaccurate, background reading present when no pressure is detected
Readings fluctuate erratically, readings are distorted, readings are unstable
Low battery indicator remains on (LOB alert), battery life drops sharply
Button malfunction: Reset, unit switch, and backlight buttons unresponsive
Interface leakage, pressure/fluid leakage at threaded connections
Normal operation at room temperature, but abnormal display in high/low temperature environments
Values lock after overpressure, cannot be reset

8.2. Analysis of Fault Causes
Power Supply Issues: Battery installed backwards, low battery, oxidized or loose battery contacts, or moisture ingress due to an improperly secured battery compartment cover causing poor contact.
Zero Drift Causes: Long-term vibration causing zero offset, installation at an angle, residual pressure in the medium not fully released, or temperature drift due to temperature changes.
Value Fluctuation Interference Causes: Installation too close to variable frequency drives, high-power motors, or high-voltage switchgear, resulting in electromagnetic interference; Dust and moisture entering the housing, causing circuit instability.
Operational Causes: Long-term operation beyond the measurement range, sudden pressure surges, unauthorized disassembly or calibration, or use of incompatible or low-quality batteries.
Mechanical Causes: Insufficient Teflon tape wrapping leading to seal failure, threads cracked due to excessive force during installation, internal sensor damage caused by vibration transmitted through the pipeline, or corrosion and blockage of the fluid inlet.
Environmental factors: Prolonged exposure to high temperatures and direct sunlight, freezing temperatures, high humidity causing condensation, and highly corrosive media eroding internal components.

8.3 Step-by-Step Troubleshooting
1. Issue: No display on screen, black screen, or device fails to power on
Troubleshooting steps:
① Check if the batteries are installed correctly and if they are depleted;
② Open the battery compartment and clean any oxidation or dust from the metal contacts;
③ Replace with a new, genuine AAA alkaline battery and reinstall;
④ Ensure the battery compartment's waterproof cover is securely closed to prevent moisture-induced short circuits.
Remedial Actions: Replace with a new, qualified battery and polish the battery contacts; if the screen remains black, assume internal circuit damage and discontinue use.
Emergency Workaround: Temporarily replace with a spare digital pressure gauge of the same specifications, and send the faulty unit for inspection.

2. Issue: Background reading present when there is no pressure; zero drift is inaccurate
Troubleshooting Steps:
① Close the pipeline valve, fully depressurize, and let it sit for 2–3 minutes;
② Observe whether the screen automatically returns to zero;
③ Manually press the ZERO button to zero and calibrate;
④ Check for installation tilt or residual pressure in the pipeline that has not been fully released.
Remedial Actions: Perform a one-button zero reset after fully depressurizing; if drift occurs frequently, inspect for vibration sources and install vibration-damping connectors.
Temporary Workaround: Temporarily record the fixed deviation value and manually calculate the actual pressure; perform a unified calibration or return the unit to the factory for calibration later.

3. Fault: Erratic readings, fluctuating or distorted readings
Troubleshooting Steps:
① Check if the unit is located near variable frequency drives, high-power motors, or high-voltage equipment;
② Check the dial and battery compartment for water ingress, condensation, or moisture;
③ Determine if the pipeline pressure itself is subject to severe pulsation or shock.
Remedial Measures: Relocate the device away from strong electromagnetic equipment; ensure waterproof and dustproof sealing; install damping couplings if pressure pulsation is significant.
Temporary Workaround: Observe steady-state pressure during non-interference periods and prioritize stable pressure values as process references.

4. Issue: LOB (Low Battery) indicator stays on, battery life shortens
Troubleshooting Steps:
① Confirm whether standard carbon-zinc or alkaline batteries are being used;
② Check the battery compartment for moisture or minor leakage;
③ Check if the backlight has been left on for an extended period, causing accelerated power consumption.
Remedial Measures: Replace with high-quality alkaline batteries; turn off the backlight when not in use; remove moisture from the battery

compartment.
Temporary Workaround: Immediately replace the batteries to prevent the device from shutting down and losing measurement data mid-operation.

5. Issue: Buttons Unresponsive
Troubleshooting Steps:
① Check the surface for dust or grease buildup that may be jamming the buttons;
② Disconnect the power, reinstall the batteries, and restart the instrument;
③ Press the buttons repeatedly to determine if a single button is malfunctioning or if all buttons are unresponsive.
Remedial Actions: Clean dust and grease around the buttons with a dry, soft cloth; if restarting does not resolve the issue, the internal button module is damaged.
Temporary Workaround: Avoid switching units or frequently resetting the display; continue using the instrument while maintaining the basic pressure reading.

6. Malfunction: Leaks at threaded connections (air or liquid)
Troubleshooting Steps:
① Check if there is insufficient Teflon tape or if the sealing gasket is worn out;
② Verify whether excessive force during installation caused thread cracking or stripped threads;
③ Check whether the fluid contact points are corroded or rusted.
Remedial Actions: Reapply Teflon tape or replace the sealing gasket; for minor leaks, tighten appropriately; if threads are damaged, replace the instrument.
Temporary Workaround: Temporarily close the corresponding branch valve, remove the faulty meter, and replace it with a spare.

7. Issue: Abnormal Display in High or Low Temperature Environments
Troubleshooting Steps:
① Screen response is sluggish and readings are inaccurate in high-temperature (direct sunlight) or low-temperature (below freezing) environments;
② Excessive environmental humidity causes internal condensation.
Remedial Actions: Provide shade and thermal insulation; avoid direct sunlight and cold drafts; reinforce sealing to prevent moisture ingress.
Emergency Workaround: Verify pressure data during periods of normal temperature; in extreme environments, consider replacing with a wide-temperature custom model.

8.4 After-Sales Repair Guidelines
1. Criteria for Determining a Malfunction (Meet any one of the following to request repair or return to factory)
The screen remains black for an extended period with no display even after replacing the battery;
One-touch zeroing fails to correct the reading, zero drift is severe, and on-site repair is impossible;
Values fluctuate erratically and readings cannot be stabilized; abnormalities persist even after eliminating environmental interference;
All buttons are unresponsive, and all functions are completely inoperative;
Water ingress inside the instrument, damaged housing, or sensor damage due to overpressure;
Non-human-induced failure occurring within the warranty period.

2. Repair Process
Record complete product information: Model QD-YB80, Part Number QDL80B-G, measurement range, installation conditions, and fault symptoms;
Take photos of the instrument's front display and the installation site environment;
Contact sales or technical support to submit the model number, fault description, and on-site photos;
Support will determine the fault type and provide on-site troubleshooting guidance or arrange for return for repair/replacement;
When returning the unit, ensure proper packaging and protection, and include the model number, cause of failure, and contact information.

3. Warranty Coverage
Under normal operating conditions, the product is covered by the original manufacturer's warranty provided there is no human-caused damage, overpressure, or unauthorized disassembly or modification;
Warranty coverage includes: circuit failures, natural sensor failure, factory calibration deviations, and structural sealing failures in original components;
Exclusions from warranty coverage: damage caused by dropping, striking, or impact; unauthorized disassembly or modification; over-range or high-pressure surges; damage caused by using non-customized models with highly corrosive media; water ingress or immersion; and failures resulting from the use of substandard batteries.

4. Usage Notes
This model is a battery-powered, local digital display unit with no external power supply or signal input/output terminals. Troubleshooting requires no inspection of wiring, terminals, or circuits; issues can be identified by examining only four factors: the battery, installation, environment, and operation.