

Pressure and level transmitter user manual

ELECALL | English translation

Read before operation

Thank you for choosing an ELECALL product. Read this manual before operating the transmitter, use the instrument correctly, and retain the manual for future reference. Suggestions are welcome to help improve products and service.

1. Product overview

The pressure and level transmitter family is described as conforming to JJG882-2004. The sensing assembly uses a high-precision silicon die, a 316L stainless steel isolation diaphragm and micromachining. Computerized testing and laser resistor trimming compensate zero and sensitivity over the temperature range.

An amplifier circuit inside the stainless-steel housing converts the sensor signal into a standard output. The design is described as resistant to electrical interference, overload and mechanical shock, with low temperature drift, stable operation and high measuring accuracy for industrial automation.

2. Operating principle

A Wheatstone bridge is diffused into the silicon sensing element. Pressure from the measured medium changes the bridge-arm resistance through the piezoresistive effect and produces a differential voltage. The amplifier converts this voltage into a standard signal proportional to the selected measuring range.

Document information

Item	Source information
Preface version	VC-ELE800-200325
Back-cover document code	VN-YLB-260511
Manufacturer and trademark owner	Yueqing ELECALL Electric Co., Ltd.
Address	No. 246 Weishi Road, Yueqing Economic Development Zone, Zhejiang, China
Telephone	4006-111-323
Website	www.elecall.cn
Brand statement	ELECALL: dedicated to high-quality products. Do better for ever.

This family manual describes several constructions and optional configurations. Apply the ratings and connection markings of the supplied instrument.

3. Product selection

The ordering diagram begins with E for ELECALL, followed by the measurement designation, model, additional functions, measuring range, output, supply, accuracy, process thread and electrical connection.

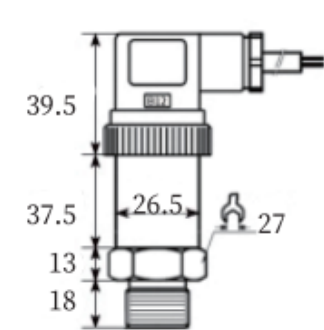
Selection field	Codes / choices
Manufacturer	E — ELECALL
Measurement designation	LE / PT / M — pressure; LE / LT / M — level; DPT — differential pressure
Model	301 — compact installation 601 — intrinsically safe or flameproof 800 — intrinsically safe or flameproof 801 — compact installation 802 — integrated submersible level 803 — submersible level 804 — stainless-steel submersible level 805 — flange installation 806 — sanitary flat-diaphragm quick-clamp 803F — PTFE submersible
Additional functions	S — digital display T — four-wire RS485, Modbus RTU No designation when absent
Measuring range	–100kPa to 100MPa; gauge, absolute or vacuum pressure options
Output	Two-wire 4–20mA DC; three-wire 0.5–4.5V, 1–5V or 0–10VDC
Supply	24VDC standard, operating range 12–30V; special versions can be customized
Accuracy	±0.1%, ±0.25%, ±0.5% or ±1%
Process thread	M20×1.5mm, M14×1.5mm, G1/4 or G1/2; special versions can be customized
Electrical connection	Y — cable leads; K — aviation-style circular socket; H — Hirschmann connector; no designation when absent

Specify the measuring range, supply and accuracy values together with the required model and electrical connection.

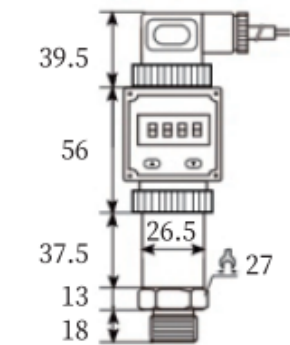
4. Technical parameters

Parameter	Family specification / selectable configuration
Pressure reference	Gauge, absolute or vacuum; select as required
Measured medium	Liquid or gas that does not corrode the wetted materials
Pressure / level range	Pressure: −100kPa to 100MPa; level: 0.1–100m; various spans available
Outputs	4–20mA as standard; 0–5V, 0–10V or 0.5–4.5VDC; optional RS485 with Modbus RTU
Supply	24VDC, operating range 12–30V; source lists load ≤250Ω; special versions can be customized
Accuracy options	±0.1%, ±0.25%, ±0.5% or ±1%
Overload	150% of measuring range
Temperature drift	±0.01%FS/°C within the temperature-compensated range
Stability	±0.1%FS/year
Protection	IP65 for intrinsically safe/flameproof versions; IP54 for compact versions; IP68 for integrated submersible level versions
Process connection	M20×1.5mm, M14×1.5mm, G1/4 or G1/2; SUS304 as standard; other thread specifications can be customized
Installation	Threaded, flanged, sanitary clamp or submersible; select as required
Medium temperature / humidity	−20°C to 70°C; 0–95%RH; 70°C to 300°C versions require customization

5. Reference dimensions (mm)



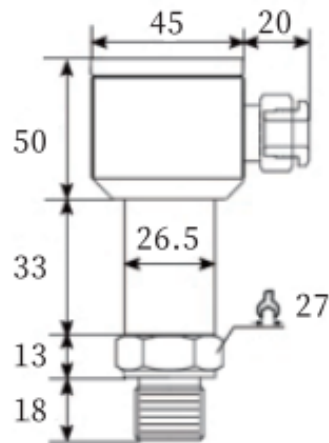
ELE-301 / EM-J11



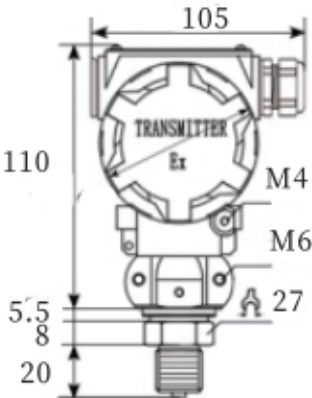
ELE-301S / EM-J11S

Dimensions: compact and head-mounted models

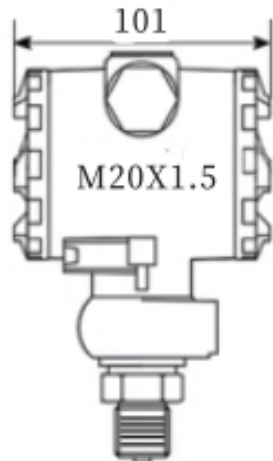
Reference dimensions in mm. Original dimension lines and values are retained.



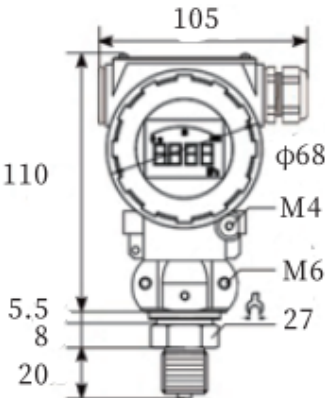
EPT-600B



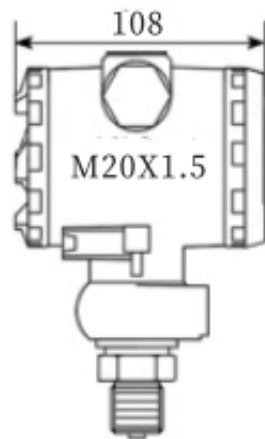
ELE-800 / EPT-800



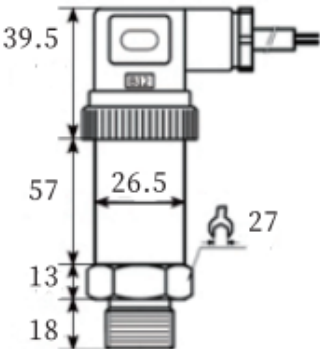
ELE-800 / EPT-800 — side view



ELE-800S / EPT-800S



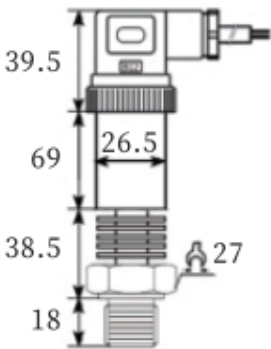
ELE-800S / EPT-800S — side view



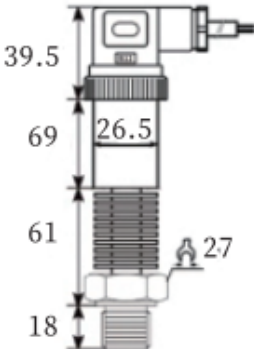
ELE-801 / EM-J10

Dimensions: ELE-801 variants

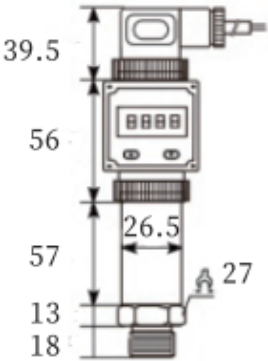
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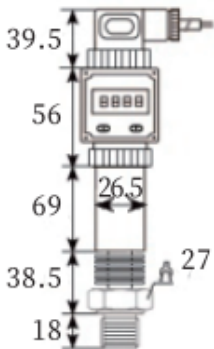
ELE-801G1



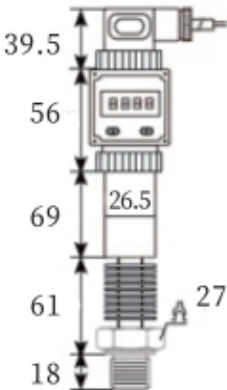
ELE-801G3



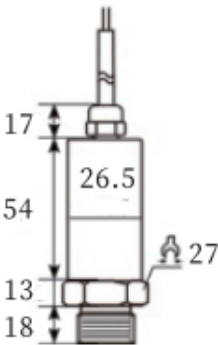
ELE-801S / EM-J10S



ELE-801SG1



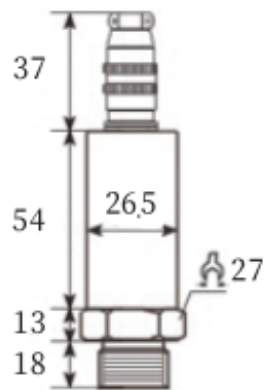
ELE-801SG3



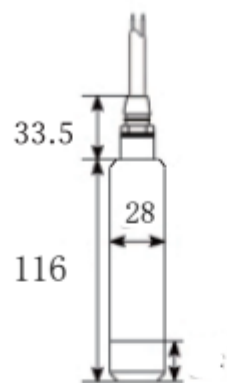
ELE-801Y

Dimensions: cable and submersible models

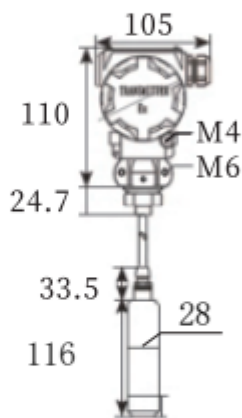
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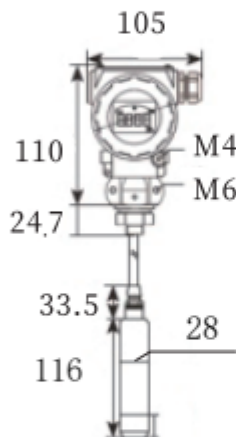
ELE-801K



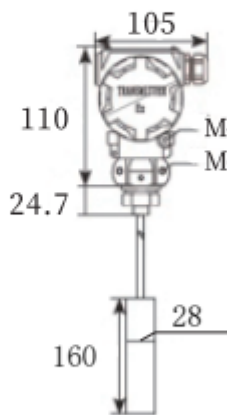
ELE-802 / EM-J20



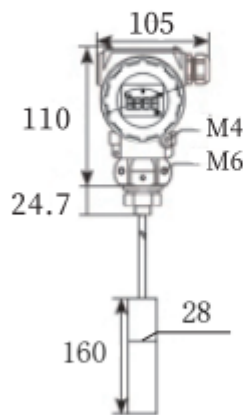
ELE-803 / EM-J30



ELE-803S / EM-J30S



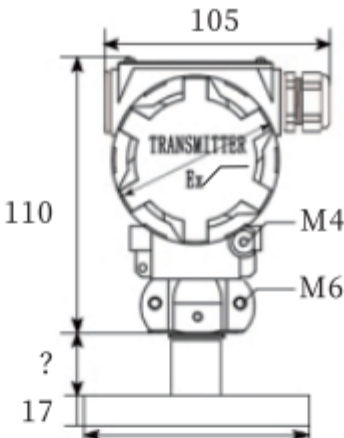
ELE-804



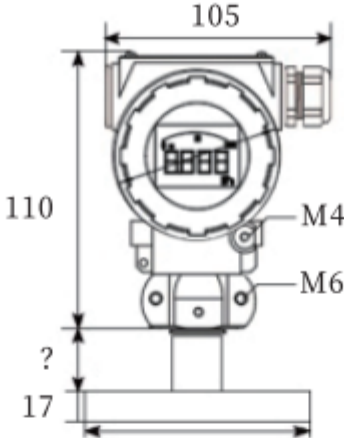
ELE-804S

Dimensions: flange, clamp and PTFE models

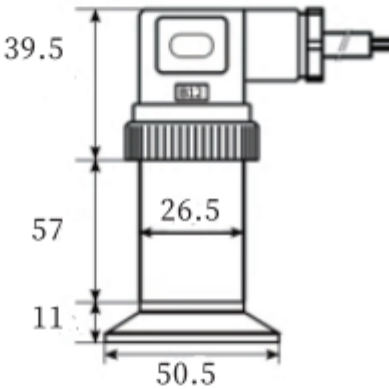
Reference dimensions in mm. Original dimension lines and values are retained.



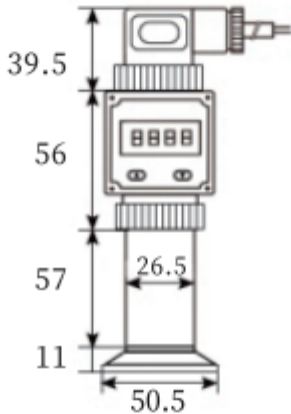
ELE-805



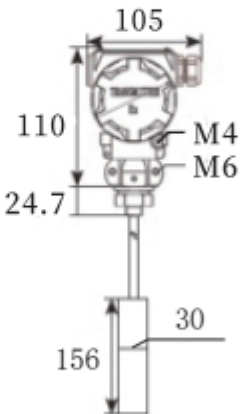
ELE-805S



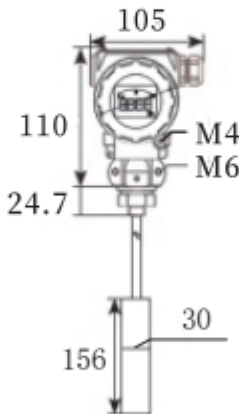
ELE-806



ELE-806S



ELE-803F



ELE-803SF

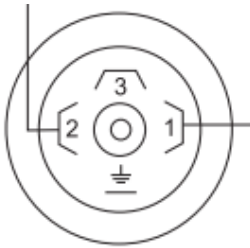
ELE-805 / ELE-805S: flange dimensions are customized to the customer’s requirements. The neck dimension marked “?” is unspecified in the original.

6. Wiring: terminal assignments

Use the appropriate circuit on the following pages with the mapping for the supplied connector or terminal block. The original manual shows 24VDC supplies. Connector pin numbers and cable colours below follow its drawings.

Hirschmann connector

ELE-301, ELE-801 and ELE-806; EM-J10 / EM-J11 equivalents.



Circuit	Pin assignment
Two-wire current	1 = loop +; 2 = loop –
Three-wire voltage	1 = supply +; 2 = common –; 3 = signal +
Four-wire RS485	1 = supply +; 2 = supply –; 3 = A; earth-symbol contact in the drawing = B

The RS485 drawing assigns the contact drawn with an earth symbol to B. This is the source's connector mapping for that configuration; confirm the actual connector marking before connection.

Cable leads: ELE-802 / EM-J20

Circuit	Red	Blue	Yellow	Black
Two-wire current	Loop +	Loop –	—	—
Three-wire voltage	Supply +	Signal +	Common –	—
Four-wire RS485	Supply +	Supply –	A	B

Head terminal block

ELE / EPT-800, 803, 804, 805 and 807; EM-J30 equivalents. The block is marked OUT + / – and TEST + / –.

Circuit	OUT +	OUT –	TEST +	TEST –
Two-wire current	Loop +	Loop –	Unused	Unused
Three-wire voltage	Supply +	Common –	Signal +	Unused
Four-wire RS485	Supply / loop +	Supply / loop –	A	B

For the RS485 head configuration, the source shows the OUT pair connected to a 4-20mA / 24VDC supply or indicator and the TEST pair connected to host A / B. These are configuration-specific signal assignments.

Wiring: current-loop circuits

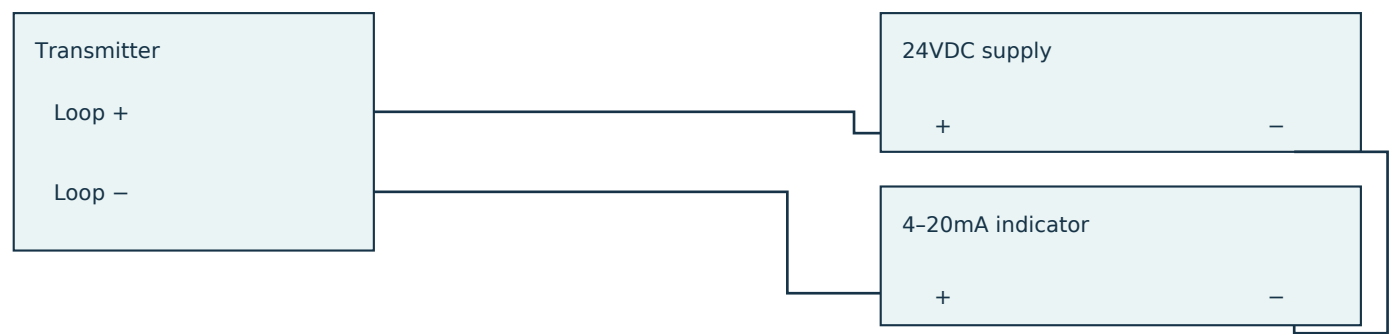
A. Two-wire current, powered indicator

Connect transmitter loop + to the powered indicator’s positive loop terminal and loop – to its negative return. The indicator provides the 24VDC loop supply.



B. Two-wire current, separate power supply

Connect supply + to transmitter loop +; transmitter loop – to indicator current input +; indicator current input – to supply –. The transmitter, receiving current input and power supply form one series loop.



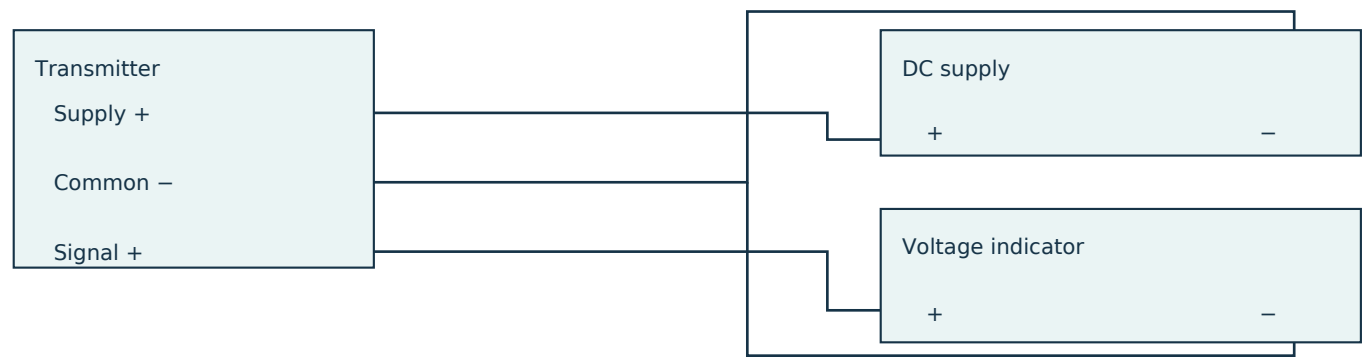
Transmitter connection	Loop +	Loop –
Hirschmann	Pin 1	Pin 2
ELE-802 cable	Red	Blue
Head terminal block	OUT +	OUT –

These two circuits translate all six current-loop drawings in the source: powered-indicator and external-supply wiring for the Hirschmann, cable and head-terminal versions.

Wiring: voltage and RS485 circuits

C. Three-wire voltage

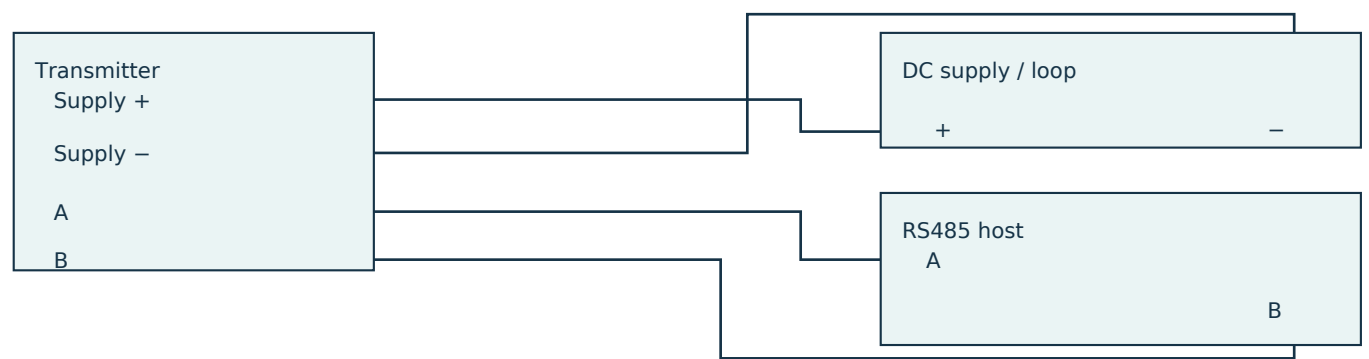
Connect supply + to the transmitter positive supply terminal. Join supply –, transmitter common – and indicator –. Connect transmitter signal + to indicator voltage input +.



Connection	Supply +	Common –	Signal +
Hirschmann	1	2	3
ELE-802 cable	Red	Yellow	Blue
Head terminal block	OUT +	OUT –	TEST +

D. Four-wire RS485

Connect the transmitter supply pair to the DC supply or specified powered loop. Connect transmitter A to host A and B to host B.



Connection	Supply +	Supply –	A	B
Hirschmann	1	2	3	Earth-symbol contact
ELE-802 cable	Red	Blue	Yellow	Black
Head terminal block	OUT +	OUT –	TEST +	TEST –

The original drawings label the host as a PC. Use its RS485 interface for the A / B connections.

7. Installation

1. Isolation and wiring: Fit a shutoff valve between the process medium and the transmitter. Close the valve and isolate power, then wait until the transmitter is depressurized and de-energized before inspection or installation. The transmitter is a low-power instrument: use shielded cable and route it separately from power wiring. Add a suitable safety barrier where required for severe interference and provide lightning protection where necessary. The source specifies wiring in accordance with GB/T50312-2016.

2. Tightening: Apply wrench torque only to the transmitter's hexagonal fitting during installation or removal. Do not turn the upper housing directly, as this can damage the internal assembly.

3. Pressure and temperature: Increase and decrease pressure gradually. Fit a snubber where pressure changes abruptly. Use a heat dissipator when the liquid temperature exceeds the permitted temperature. For steam measurement, keep the pressure impulse line filled with water and prevent direct steam contact with the sensing element. Insulate the transmitter when ambient temperature is too low. Keep water out of the signal-output end and form a downward drip loop at the cable entry so that liquid cannot run into the transmitter.

4. Orientation: Mount ranges below 30kPa vertically to preserve accuracy. In hydraulic systems, orient the connection upward to help vent the pipe. Other ranges can be mounted at any angle. If the process thread does not match, use a suitable adaptor.

5. Environment: Choose a location free from vibration and with small temperature variations. Explosion-proof, corrosion-resistant and high-temperature constructions can be customized for the application.

8. Precautions — sensor and cable

1. Fill fluid: The sensing assembly is silicone-oil-filled as standard. If accidental diaphragm damage and silicone-oil leakage would have a serious effect on the application, specify a suitable alternative filled sensing assembly.

2. Submersible cable: Protect the vented cable of a submersible level transmitter. A damaged outer sheath can allow liquid into the cable and damage the instrument. Do not cut or extend this cable yourself, as this can compromise its waterproof construction.

3. Diaphragm: Do not dismantle the instrument or touch its sensing diaphragm. For liquids that may freeze at low temperature, protect the diaphragm from damage caused by ice expansion.

8. Precautions — selection and service

4. Choose the appropriate construction: For noncorrosive, low-viscosity liquids below 70°C, use a submersible transmitter with a PVC-sheathed vented cable. For high-viscosity liquids, media containing many particles, or temperatures above 70°C, the manual recommends a stainless-steel collection-tube submersible construction. For strongly corrosive liquids, use a PTFE submersible type. For easy cleaning, use a sanitary quick-clamp flat-diaphragm transmitter. For large instantaneous pressure changes, the manual recommends a sputtered thin-film sensing element.

5. Incoming inspection: The product is supplied with an instruction manual, certificate of conformity and technical parameters. Check these carefully before use. Ensure the power supply meets the transmitter requirements and the measurement stays within the normal operating range. If the manual differs from the supplied instrument, use the actual instrument information and contact the manufacturer's technical personnel for confirmation.

6. Start-up and faults: Connect wiring strictly according to the manufacturer's instructions. The instrument can operate after power-on; output becomes more stable after a 30-minute warm-up. If abnormal behaviour occurs after power-on, put the system in a safe condition before inspection or removal. Contact the manufacturer's technical department for technical assistance.

7. Warranty: Follow the operating instructions. Warranty begins on the purchase date and follows the agreed term; when no term is agreed, the default is one year. A confirmed product defect within the warranty period is repaired without charge. The source warranty excludes consequential liability arising from quality problems; repair material charges apply to faults caused by the user.

Configuration notes

The family overview refers to JJG882-2004, and the installation instructions refer to GB/T50312-2016. The $\leq 250\Omega$ value in the supply specification is a load condition.

The ELE-805 flange-mounted head construction and the compact sanitary ELE-805 clamp construction use different assemblies. Select the drawing and specification for the ordered construction.

Operating voltage, output and protection depend on the ordered configuration. Available voltage-output configurations include 0-5V and 1-5V; use the supplied nameplate and connection diagram.