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Hydrostatic Level Transmitter

- Measuring range configurable up to 100 m (328 ft) H_2O in 10 cm (3.94 in) steps
- Available with 4–20 mA current or 0–10 V voltage output
- IP68-rated for submersion and long-term water exposure
- Potable water certified option, making it safe for drinking water systems

About

The P109 is a compact hydrostatic level transmitter that can accommodate ultra-deepwater measurement requirements with continuous duty. Excellent resistance to lightly soiled and sludge water applications. Its IP68 protection and simple 2-wire configuration make it a reliable plug-and-play solution for long-term deployments. With selectable current or voltage output and optional health certification for potable water contact, it is adaptable for both general industrial and municipal applications.

Applications

- ✓ Sea Water
- ✓ Fresh Water
- ✓ Wastewater
- ✓ Environmental Monitoring
- ✓ Agriculture and Irrigation
- ✓ Critical Utilities and Infrastructure
- ✓ Light Chemicals

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Build Your Part Number

Series P109

Example: P109I2025CH

Series
P109

Output Type - *select one*	
I	Current (4 ... 20 mA)
U	Voltage (0 ... 10 V)

Measuring Range – *please specify in meters (1 ... 100m)*	
XX	Measuring range in meters (Example: 25 meters = 25)

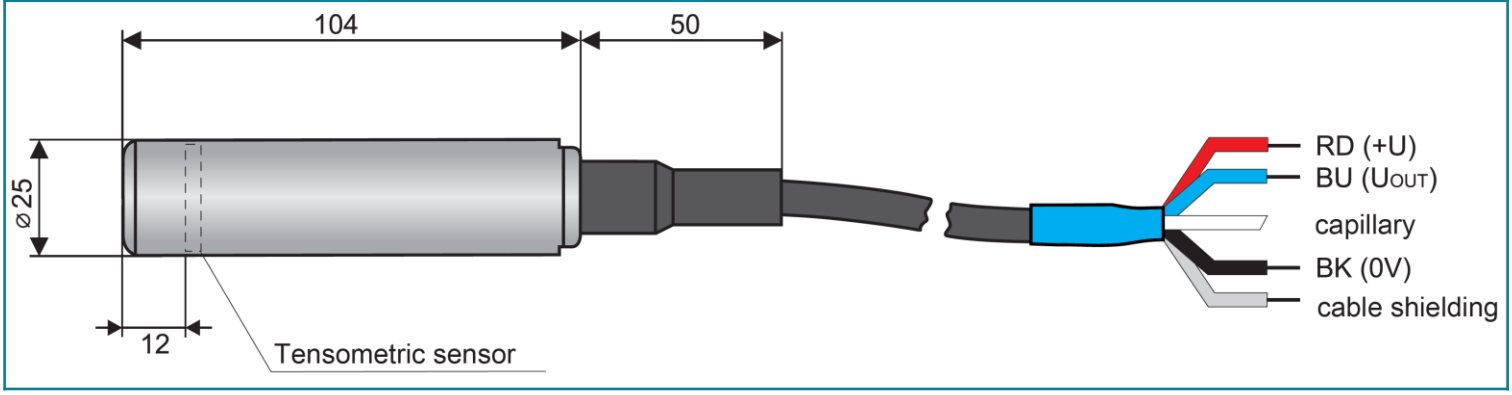
Cable Length - *select one*	
XX	Cable length in meters (Example: 7.5 meters = 7.5)

Accessories – *optional; will be quoted as a separate line item*	
CH	Cable hanger
CB	Non-hermetic connection box (dry junction box)

Technical Parameters

Electrical	Supply voltage	12 ... 34 VDC
	Current output Voltage output	4 ... 20 mA 0 ... 10 V
	Power consumption, off-load (Output type U only)	Maximum 8 mA
	Maximal load resistance for current output (U = 24 V DC)	R_{max}= 600 Ω
	Minimal load resistance for voltage output	R_{min}= 1 kΩ
Materials	Probe housing	Stainless steel W.Nr. 1.4404 (AISI 316L)
	Membrane	Ceramic Al_2O_3 96%
	Sealing O-rings	FPM; EPDM
	Cable Isolation	Plastic PE
	Cable Gland	Silicon ELASTOSIL
	Transmitter Weight	6.35 oz (180 g)
	Cable Weight (1 meter)	2.12 oz (60 g)
Environmental	Measuring Range	1 ... 100 meters (configurable in 10cm steps; no customer-accessible adjusting elements.)
	Pressure permissible overload	1.5x range
	Basic error – accuracy (hysteresis, repeatability, non-linearity)	0.4% of range
	Long-term stability	0.3 % / Year
	Temperature error at 32 ... 122°F (0 ... +50°C)	Maximum 0.04% / K
	Compensated temperature range	32 ... 122°F (0 ... +50°C)
	Ambient temperature range	-4 ... 158°F (-20 ... +70°C)
	Protection Class	IP68

Dimensions



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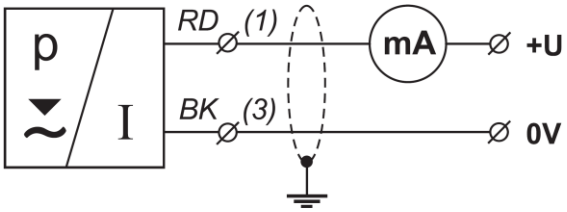
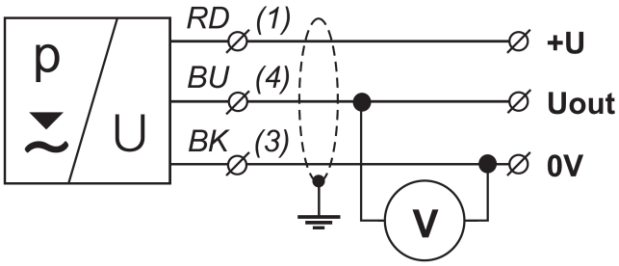
Electrical Connection and Installation

Electrical Connection

The transmitter is connected to the evaluation (control, display) units through the connecting cables. Connection scheme is shown on pictures. Electrical connections must be always done in voltage-free state! The power supply unit must be a source of safe voltage which can be a part of the evaluation or display device.



Connection scheme (current output)



Connection scheme (voltage output)

Wire color:

RD – Red
BU – Blue
BK – Black
⏚ – Cable shield

⚠ Electrical connection can only be made in a voltage-free state!

In the event that the level transmitter is fitted with a shielded cable, it is necessary to ground the cable on the side of the power source for the event of a possible lightning electrical discharge in the vicinity of the transmitter.

In the event that the level transmitter is installed in an outdoor environment at a distance greater than 20 m from the outdoor switchboard, or from an enclosed building, it is necessary to supplement the electrical cable leading to the level transmitter with suitable overvoltage protection.

In case of strong ambient electromagnetic interference, paralleling of conductors with power distribution, or for distribution to distances over 30m, we recommend using a shielded cable and its grounding on the side of the power source.

Installation Instructions

Installation is done by hanging the probe down into the measured area (tanks, boreholes). The probe is left hanging on the cable. If the probe is hung deeper than 50 m, it is necessary to use a cable hanger KD-60 (see picture). During installation of the probe, it is need to be careful to avoid damaging the ceramic membrane. Do not throw the probe into the tank or the borehole, but with caution, run it smoothly to the bottom. If the probe is submerged fast into the liquid, the ceramic membrane can be pressure overload and thus irreversible damaged.

The cable contains a buffer capillary, so non-hermetic junction boxes must be used to connect it to the downstream cabling.

When winding the excess cable into the bundle, the diameter of the circle must be kept at least 30 cm. It is not recommended to shorten or otherwise mechanically modify the cable.
In tanks where there are strong turbulences or waves, the probe should be placed in the stilling tube, behind the wall, or at least at the maximum possible distance from the source of turbulence. If the tank vibrates or contains a swirling medium, it is need to protect the probe against collisions with walls or the bottom of the tank.

When using other liquid than water it is needed to make the output correction with respect to the density of the liquid, eventually consult the application with the manufacturer.

Cable Hanger “CH”

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Safety & Applications

Safety, Protection and Compatibility

Level transmitter P109 is equipped with protection against voltage polarity reversal, protection against current overload and protection against short term overvoltage.

Protection against dangerous contact is provided by low safety voltage according to 33 2000-4-41.

Electromagnetic compatibility is provided by conformity with standards EN 55011 / B, EN 61326-1, EN 61000-4-2 (8 kV), -4-3 (10 V/m), -4-4 (2 kV), -4-5 (1 kV) and -4-6 (10 V).

Packaging, Shipping and Storage

The P109 device is supplied packaged in a cardboard box that protects it against mechanical damage. When handling and during transport, it is necessary to prevent impacts and falls.

The P109 electrical device must be stored in dry enclosed areas with humidity up to 85%, free of aggressive vapors at temperatures between -13 ... 158°F (-25 ... +70°C), and must be protected against the effects of weather.

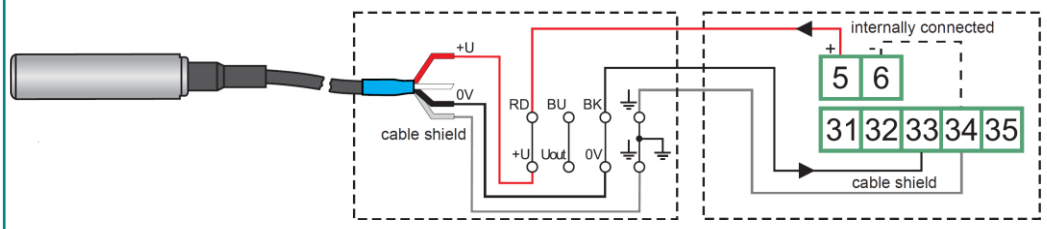
Range of Application

For continuous measurement of water level even slightly contaminated without coarse impurities in pressureless tanks, boreholes, wells, sumps, reservoirs and swimming pools. The measured water should be chemically neutral (pH 7.2 - 7.6) and should not contain increased amounts of chlorine. If the water is not chemically neutral, foreign bodies made of other metallic materials (especially copper or brass) must not be placed in the measured space. Failure to follow these guidelines may result in corrosive damage to the stainless-steel transmitter housing. Consult with the manufacturer if measuring liquids other than water.

Connection Examples

Connection of level transmitter P109 with current output (4 ... 20 mA) to the unit using non-hermetic connection box

When using a connection box with integrated overvoltage protection, the sensor needs to be connected to the bottom series of terminals. This series of contacts is marked by label SENSOR.



Connection of level transmitter P109 with voltage output (0 ... 10 V) to the unit using non-hermetic connection box

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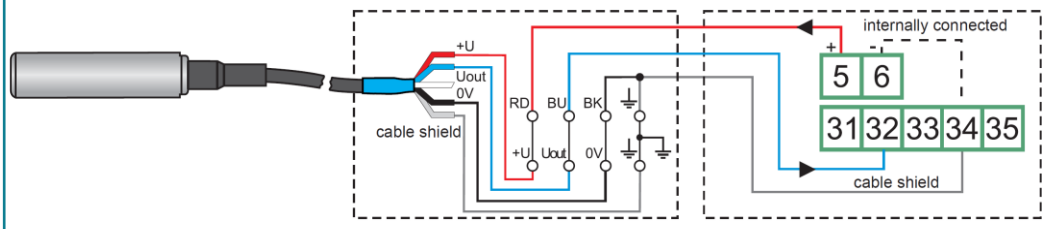

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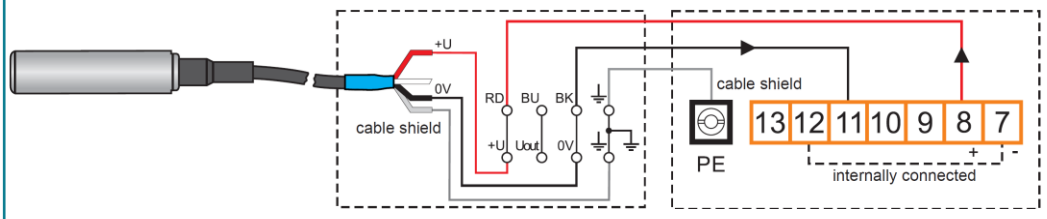

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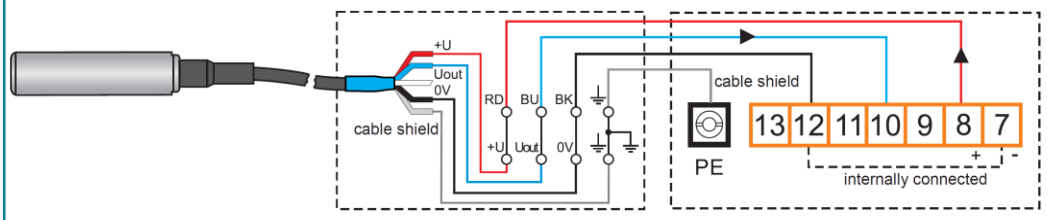

Additional Information

Paquin Sensors' product portfolio is designed to provide options to fit the most diverse range of specifications.

We collaborate with our customers to match the best product technologies with your unique application requirements.

Please contact us or call +1 (800) 831-8217 anytime to discuss your needs!