Submersible Hydrostatic Level Transmitter

USER GUIDE – V1.0x E

novus
We Measure, We Control, We Record

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1. SAFETY ALERTS

The symbols below are used in the device and throughout this manual to draw the user's attention to valuable information related to device safety and use.

		
CAUTION Read the manual fully before installing and operating the device.	**CAUTION OR HAZARD** Risk of electric shock.	**ATTENTION** Material sensitive to static charge. Check precautions before handling.

All safety recommendations appearing in this manual must be followed to ensure personal safety and prevent damage to the instrument or system. If the instrument is used in a manner other than that specified in this manual, the device's safety protections may not be effective.

2. INTRODUCTION

Submersible Hydrostatic Level Transmitter is designed for continuous monitoring of liquid level in water wells, reservoirs, tanks, boreholes, rivers and other liquids. The submersible unit will detect the hydrostatic pressure at the bottom of the liquid and transmit a proportional current signal to the water column for system instrumentation.

The highly stable 316L stainless steel diaphragm sensor is compatible with raw or chlorinated water and most semi-aggressive liquids and oils.

Several level measurement ranges are available and allow a wide range of applications, such as installation on local or remote panels and use with data loggers or PCLs.

3. TECHNICAL SPECIFICATION

FEATURES	WL420
Pressure Range	1 ... 100 m WC (1, 1.6, 2.5, 4, 6, 10, 16, 25, 40, 60 and 100 m WC)
Cable Length	5 ... 120 m (5, 10, 15, 20, 30, 40, 50, 80 and 120 m)
Sensor	Piezoresistive diaphragm
Sensor accuracy	0.1 % F.S.[1]
Analog Output	4-20 mA
Accuracy	0.5 % F.S. @25°C
Cable	Pur (polyurethane) 2x conductor, shield and ventilation tube
Temperature Compensation	0 m ~ 10 m WC: 0 to ~60 °C
	10 m ~ 200 m WC: -10 to ~70 °C
Zero temperature coefficient	± 1.5 % F.S. (within temperature compensation)
Span tempperature coefficient	± 1.5 % F.S. (within temperature compensation)
Mechanical Vibration	20 g (20~500 HZ)
Mechanical Shock	20 g (11 ms)
Insulation	100 MΩ / 250 VDC
Response Time	≤ 1 ms (Up to 90 % F.S.)
Long Term Stability	±0.2 % F.S./year
Operating Temperature	0 to 60 °C If measuring range < 4 m WC
	-10 to 70 °C If measuring range ≥ 4 m WC
Storage Temperature	-40 to 125 °C
Power Supply	• Loop-powered • 4-20 mA (12 ~ 36 Vcc)
Housing Material	• Sensor: SS 316L • Housing: SS 304 • Protective cover: SS 304
Dimensions	• Height: 105 mm • Diameter: 26.5 mm
Level of Protection	IP68
Overpressure Limit	<=6 m WC: 3x F.S. >=10 m WC: 2x F.S.
Electrical Protection	Reverse polarity and current limiter
Certification	CE, UKCA, RoHS
Warranty	1 year

Table 1

[1] F.S.: Full Scale

4. IDENTIFICATION

The **Submersible Hydrostatic Level Transmitter** has the following identification engraving on the sensor body:

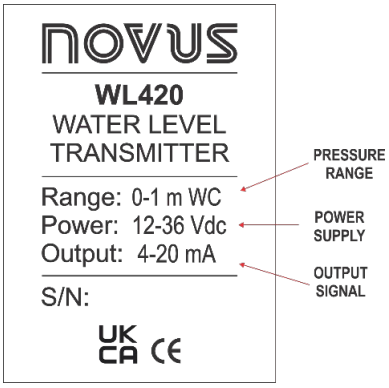

Figure 1 Identification engraving

Attached to the end of the cable is an identification tag:

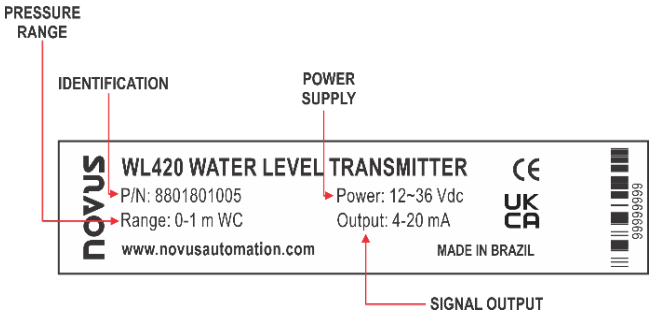

Figure 2 Identification tag

And it is supplied in the following models:

MODEL	PRESSURE RANGE	OVER-PRESSURE	BURTS PRESSURE	CABLE
WL420-1M-L5	1 m WC	300 % F.S.	600 % F.S.	5 m
WL420-1M-L15	1 m WC	300 % F.S.	600 % F.S.	15 m
WL420-1.6M-L5	1.6 m WC	300 % F.S.	600 % F.S.	5 m
WL420-1.6M-L15	1.6 m WC	300 % F.S.	600 % F.S.	15 m
WL420-2.5M-L5	2.5 m WC	300 % F.S.	600 % F.S.	5 m
WL420-2.5M-L15	2.5 m WC	300 % F.S.	600 % F.S.	15 m
WL420-4M-L10	4 m WC	300 % F.S.	600 % F.S.	10 m
WL420-4M-L15	4 m WC	300 % F.S.	600 % F.S.	15 m
WL420-6M-L10	6 m WC	300 % F.S.	600 % F.S.	10 m
WL420-6M-L15	6 m WC	300 % F.S.	600 % F.S.	15 m
WL420-10M-L15	10 m WC	200 % F.S.	500 % F.S.	15 m
WL420-10M-L20	10 m WC	200 % F.S.	500 % F.S.	20 m
WL420-16M-L20	16 m WC	200 % F.S.	500 % F.S.	20 m
WL420-16M-L30	16 m WC	200 % F.S.	500 % F.S.	30 m
WL420-25M-L40	25 m WC	200 % F.S.	500 % F.S.	40 m
WL420-40M-L50	40 m WC	200 % F.S.	500 % F.S.	50 m
WL420-60M-L80	60 m WC	200 % F.S.	500 % F.S.	80 m
WL420-100M-L120	100 m WC	200 % F.S.	500 % F.S.	120 m

Table 2

5. MECHANICAL INSTALLATION

The **Submersible Hydrostatic Level Transmitter** transmitter is suitable to be installed in places with static pressure levels such as liquid tanks, sewers, swimming pools, boreholes, rivers, sea and lakes.

5.1 DIMENSIONS

The figure below shows the device dimensions:

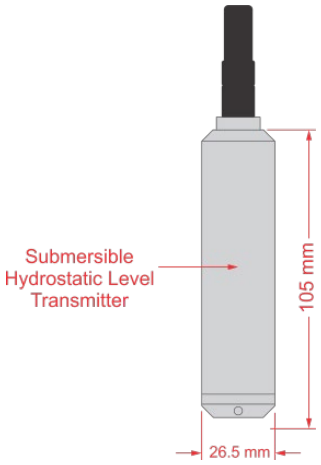

Figure 3 Dimensions

6. ELECTRICAL INSTALLATION

The figure below shows the transmitter cable connections:

Figure 4 Transmitter cable

The table below shows the composition of the cable:

	FUNCTION	COLOR
1	Output current	Blue wire
2	Power supply	Red wire
3	Vent tube	Red tube

Table 3

The figure below shows the electrical connections required for installing the device:

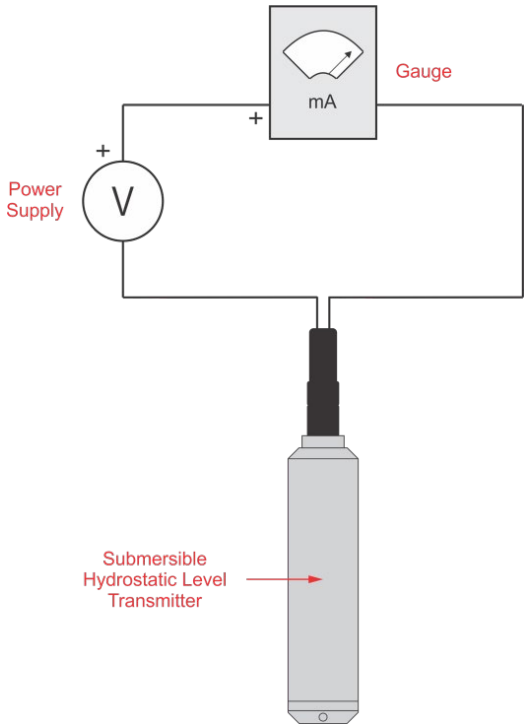

Figure 5 Electrical connections

6.1 RECOMMENDATIONS FOR INSTALLATION

- During installation, do not obstruct the connection cable vent.
- Input signal conductors must run through the system floor plan separately from the output and supply conductors. If it is possible, in grounded conduits.
- The instruments must be powered from the instrumentation power supply circuit.
- In control and monitoring applications is essential to consider what can happen when any part of the system fails.
- It is recommended the use of suppressors in contact coils, solenoids and any inductive load.

7. INSTALLATION INSTRUCTIONS

7.1 STILL WATER INSTALLATION

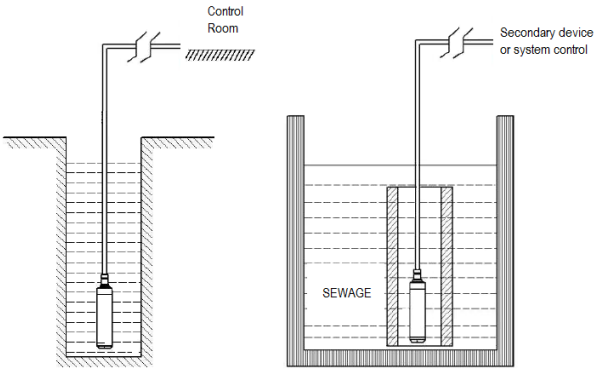

Figure 6 Still water installation

1) When measuring the level of stationaty fluid in an open container, place the **Submersible Hydrostatic Level Transmitter** vertically into the bottom of the container.

2) When the average viscosity is relatively high (such as in a sewage pool), you can install a bracket to ensure that the transmitter is positioned at the bottom of the container.

3) When doing an outdoor installation, the junction box of the transmitter must be placed in a ventilated, dry place to avoid direct exposure to light and rain, which could cause the junction box temperature to be too high or allow water to enter and consequent damage to the internal circuit board.

7.2 MOVING WATER INSTALLATION

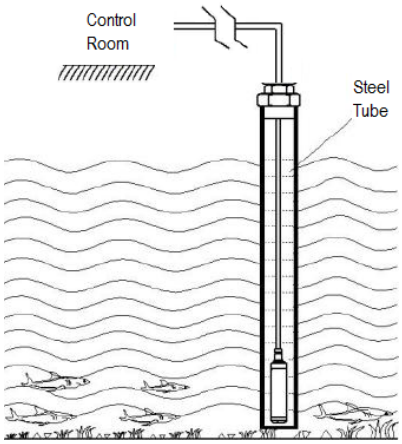

Figure 7 Moving water installation

1) When there is a lot of variation when measuring the level in running water, you can insert a steel tube with an internal diameter of about 50 cm into the channel. In addition, several holes of about Φ5 in diameter should be made in the submerged part of the tube, on the side opposite the direction of flow. This helps to avoid oscillations in the level measurement.

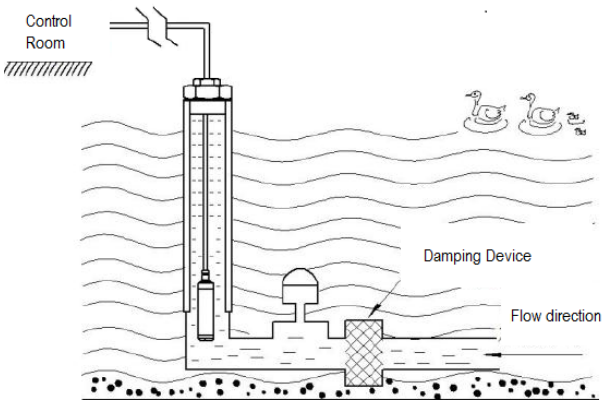

Figure 8 Damping device

2) When the water channel is very uneven or there is a lot of sediment in the bottom, you can install a damping device to filter it out. This eliminates the adverse effects of dynamic pressure and ensures measurement accuracy.

3) It is recommended to install lightning protection devices where the **Submersible Hydrostatic Level Transmitter** will be installed. It is also recommended that the device and power supply be properly grounded to reduce lightning damage to the transmitter.

8. WARRANTY

Warranty conditions are available on request