WL320 Submersible Hydrostatic Level Transmitter

USER GUIDE – V1.0x

novus

We Measure, We Control, We Record

CE

1. SAFETY ALERTS

The symbols below are used 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** Electrostatic-sensitive device. Make sure you take the necessary precautions before handling it.

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

2. INTRODUCTION

WL320 Submersible Hydrostatic Level Transmitter is designed to continuously monitor the liquid level in water wells, reservoirs, tanks, boreholes, rivers and other liquids. The submersible device will detect the hydrostatic pressure at the bottom of the liquid and transmit a current signal proportional 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.

The transmitter is available in several level measurement ranges, which allow it to be used in a wide range of applications, such as installation in local or remote panels and use with data loggers or PLCs.

3. TECHNICAL SPECIFICATION

FEATURES	WL320
Measurement Range	1 ... 100 mH2O (1, 1,6, 2,5, 4, 6, 10, 16, 25, 40, 60, and 100 mH2O)
Cable Length	5 ... 120 m (5, 10, 15, 20, 30, 40, 50, 80, and 120 m)
Sensor	Piezoresistive diaphragm
Sensor Resolution	0.001 % F.S.[1]
Analog Output	4-20 mA
Accuracy	0.5 % F.S. @ 25 °C
Cable	Pur (polyurethane) 2x conductors, shielding and ventilation tube
Temperature Compensation	0 to 70 °C
F.S. Temperature Drift	0.01 % F.S. / °C @ 25 °C
Mechanical Vibration	10 g
Mechanical Shock	500 g
Response Time	0.1 ms
Long-Term Stability	0.1 % F.S. ± 0.05 %
Operating Temperature (Ambient Temperature)	-40 to 80 °C
Storage temperature	-40 to 80 °C
Power Supply	Loop Power Supply 4-20 mA (12 ~ 36 V)
Housing Material	SS 316L
Dimensions	19 x 140 mm
Protection Index	IP68
Over Pressure Limit	150 % F.S.
Burst Pressure	500 % F.S.
Electrical Protection	Polarity reversal and current limiter
Certifications	CE, RoHS

Table 1

[1] F.S.: Full Scale

4. IDENTIFICATION

The transmitter has the following identification engraving on the body:

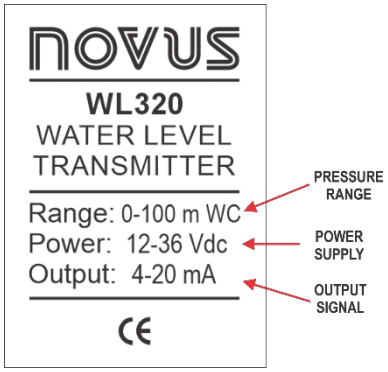

Figure 1

There is also an identification label attached to the end of the cable:

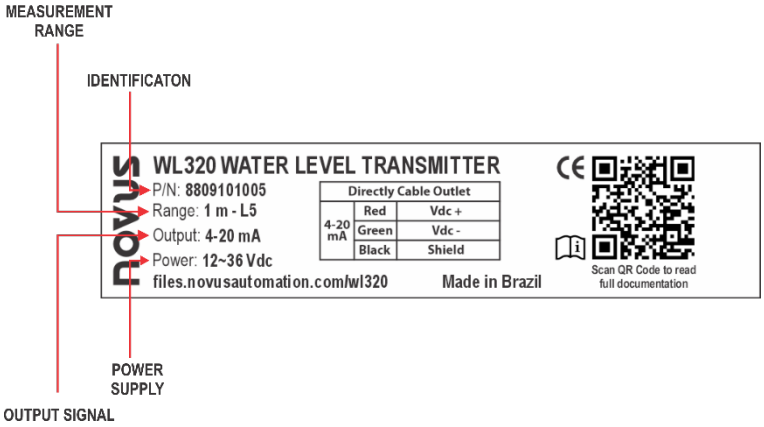

Figure 2

The transmitter is supplied in the following models:

MODEL	MEASUREMENT RANGE	OVERPRESSURE	BURST PRESSURE	CABLE
WL320-1M-L5	1 mH_2O	150 % F.S.	500 % F.S.	5 m
WL320-1M-L15	1 mH_2O	150 % F.S.	500 % F.S.	15 m
WL320-1.6M-L5	1.6 mH2O	150 % F.S.	500 % F.S.	5 m
WL320-1.6M-L15	1.6 mH2O	150 % F.S.	500 % F.S.	15 m
WL320-2.5M-L5	2.5 mH2O	150 % F.S.	500 % F.S.	5 m
WL320-2.5M-L15	2.5 mH2O	150 % F.S.	500 % F.S.	15 m
WL320-4M-L10	4 mH_2O	150 % F.S.	500 % F.S.	10 m
WL320-4M-L15	4 mH_2O	150 % F.S.	500 % F.S.	15 m
WL320-6M-L10	6 mH_2O	150 % F.S.	500 % F.S.	10 m
WL320-6M-L15	6 mH_2O	150 % F.S.	500 % F.S.	15 m
WL320-10M-L15	10 mH_2O	150 % F.S.	500 % F.S.	15 m
WL320-10M-L20	10 mH_2O	150 % F.S.	500 % F.S.	20 m
WL320-16M-L20	16 mH_2O	150 % F.S.	500 % F.S.	20 m
WL320-16M-L30	16 mH_2O	150 % F.S.	500 % F.S.	30 m
WL320-25M-L40	25 mH_2O	150 % F.S.	500 % F.S.	40 m
WL320-40M-L50	40 mH_2O	150 % F.S.	500 % F.S.	50 m
WL320-60M-L80	60 mH_2O	150 % F.S.	500 % F.S.	80 m
WL320-100M-L120	100 mH_2O	150 % F.S.	500 % F.S.	120 m

Table 2

5. MECHANICAL INSTALLATION

WL320 Submersible Hydrostatic Level Transmitter is suitable for places with static pressure levels such as liquid tanks, sewers, swimming pools, wells, rivers, sea and lakes.

5.1 DIMENSIONS

The figure below shows the dimensions of the transmitter:

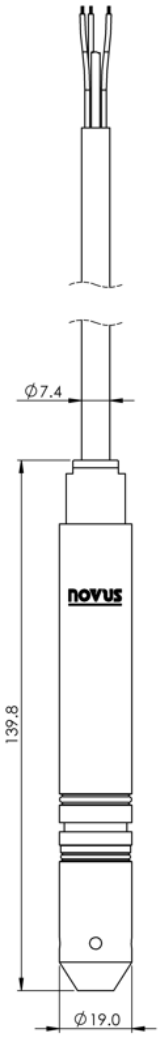

Figure 3

6. ELECTRICAL INSTALLATION

The figure below shows information about the cable connections:

Figure 4

The table below shows information about the composition of the cable:

	FUNCTION	COLOR
1	Output current	Green wire
2	Power supply	Red wire
3	Vent tube	Red tube
4	Grounding	Black wire

Table 3

Grounding must be carried out using the black wire to maintain the EMC specifications for CE Mark certification.

The figure below shows information on the electrical connections required to install the transmitter:

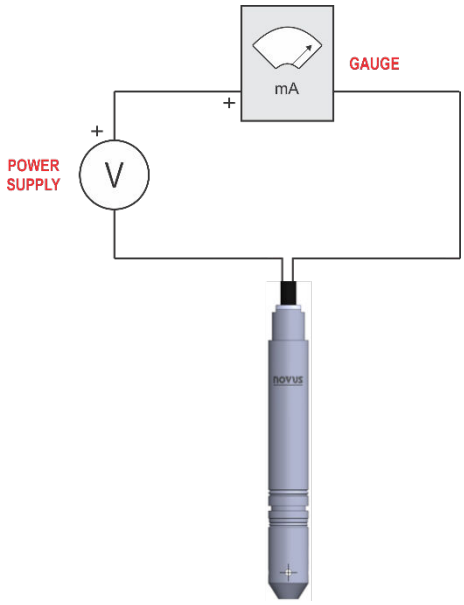

Figure 5

6.1 INSTALLATION RECOMMENDATIONS

- During installation, do not obstruct the connection cable vent.
- Input signal conductors should run through the plant separate from output and supply conductors. If possible, in grounded conduits.
- The power supply for electronic instruments must come from a network specific to the instrumentation.
- In control applications, it is essential to consider what can happen when any part of the system fails.
- It is recommended to use RC FILTERS (noise suppressors) in contactor coils, solenoids, etc.

7. INSTALLATION INSTRUCTIONS

7.1 INSTALLATION IN STAGNANT WATER

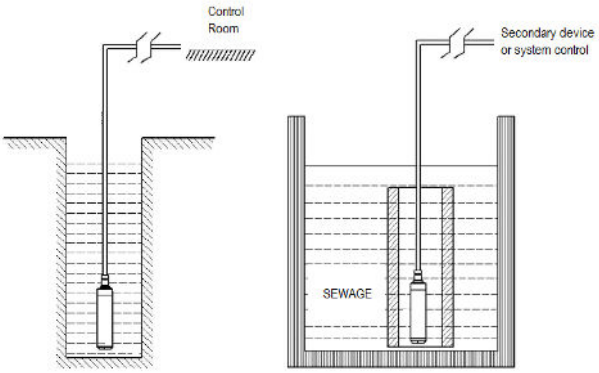

Figure 6

1) When measuring the stationary fluid level in an open tank, the **WL320 Submersible Hydrostatic Level Transmitter** should be positioned vertically and at the bottom of the tank.

2) When the average viscosity is relatively high (such as in a sewage system), support can be installed 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 and dry location to avoid direct exposure to light and rain, which could cause the temperature of the junction box to be too high or allow water to enter and consequently damage the internal circuit board.

7.2 INSTALLATION IN RUNNING WATER

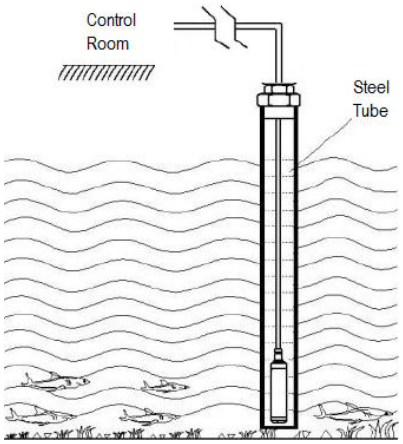

Figure 7

1) When there is a lot of variation when measuring the level in running water, a steel tube with an internal diameter of around 50 cm can be inserted into the channel. Furthermore, several holes about 12 cm in diameter should be drilled in the submerged part of the tube, on the opposite side to the direction of flow. This helps to avoid fluctuations in the level measurement.

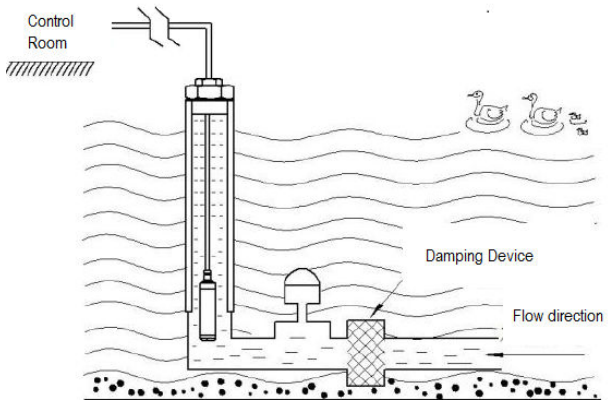

Figure 8

2) When the water channel is very uneven or there is a lot of sediment on the bottom, a damping device can be installed to filter it out, eliminating the adverse effects of dynamic pressure and ensuring measurement accuracy.

3) It is recommended to install lightning protection devices where the **WL320 Submersible Hydrostatic Level Transmitter** will be installed. It is also recommended that the device and power supply are properly grounded to reduce lightning damage to the transmitter.

8. WARRANTY

Warranty conditions are available on our website www.novusautomation.com/warranty.