

# DOL 112-PT100 4-wire and DOL 112-PT1000 4-wire temperature sensor



DOL 112-PT100 4-wire and DOL PT1000 4-wire are simple temperature sensors. They are well suited for use in environments where a sturdy design is required.

The sensor is equip with 4 wires, 2 black and 2 white wires. The 2 black wires are short wired inside the sensor and the 2 white wires are short wired inside the sensor. The current have to be connected to a black and white wire. Then the voltage over the sensor can be measured on the other black and white wires. This measurement does not have to be compensated for voltage drop over the wires, since no current runs in the wires that is used for the measurement.

**Table relating to DOL 112 Temperature Sensor Checkup**

°C	DOL 112- PT100	DOL 112- PT1000	°C	DOL 112- PT100	DOL 112- PT1000
	Ω	Ω		Ω	Ω
-40	84.27	842.74	35	113.61	1136.08
-35	86.25	862.50	40	115.54	1155.41
-30	88.22	882.23	45	117.47	1174.70
-25	90.19	901.93	50	119.40	1193.97
-20	92.16	921.60	55	121.32	1213.21
-15	94.12	941.25	60	123.24	1232.42
-10	96.09	960.86	65	125.16	1251.60
-5	98.04	980.44	70	127.08	1270.75
0	100.00	1000.00	75	128.99	1289.87
5	101.95	1019.53	80	130.90	1308.97
10	103.90	1039.03	85	132.80	1328.03
15	105.85	1058.49	90	134.71	1347.07
20	107.79	1077.94	95	136.61	1366.08
25	109.73	1097.35	100	138.51	1385.06
30	111.67	1116.73			

## Product survey



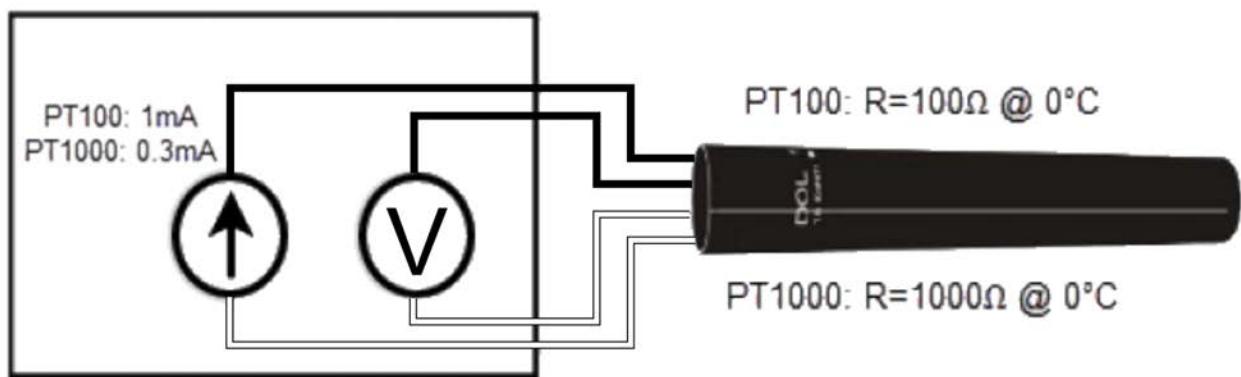
**140383 DOL 112-PT100 temperature sensor - 4-wire**

**140394 DOL 112-PT1000 temperature sensor - 4-wire**

Is used for measuring both inside and outside temperatures.

Cable length: 1.4 m

## Electrical connection



## Technical data

		DOL 112-PT100 4-wire	DOL 112-PT1000 4-wire
<b>Electrical</b>			
Measuring range	°C	-40 to +100	
Accuracy	°C	0 to 40°C: $\pm 0.5^\circ\text{C}$	
Tolerance class		Class B, F0.3	
Time constant	$T_{63}$	5 min. at 0.5 m/s air speed	
Recommended measurement current	mA	1	0.3
Resistance at 25°C	Ω	109.73	1097.35
<b>Mechanical</b>			
Cable		4-wire, 1.4 m, $\varnothing 5$ mm	
<b>Environment</b>			
Ambient temperature	°C	-40 to +100	
Protection class, electronics	IP	68	
<b>Shipment</b>			
Length, diameter	mm	75, $\varnothing 14$	
Weight incl. cable	g	80	

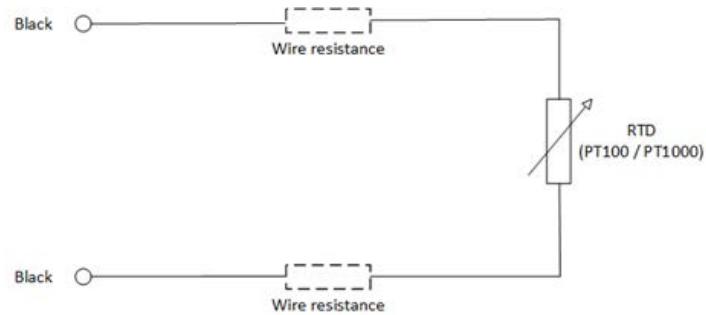
## Difference between 2,3 and 4 wire DOL 112 PT100 and PT1000 description

PT100 refers to a type of Resistance Temperature Detector (RTD) sensor, which is commonly used to measure temperature. The numbers (100) indicate that the resistance of the RTD at 0°C is 100 ohms. PT100 sensors are made of platinum (Pt) and their resistance changes with temperature, allowing them to be used for accurate temperature measurements.

The key difference between PT100 2-wire, PT100 3-wire, and PT100 4-wire configurations lies in how the wires are connected, which affects the accuracy and compensation for the resistance of the connecting wires.

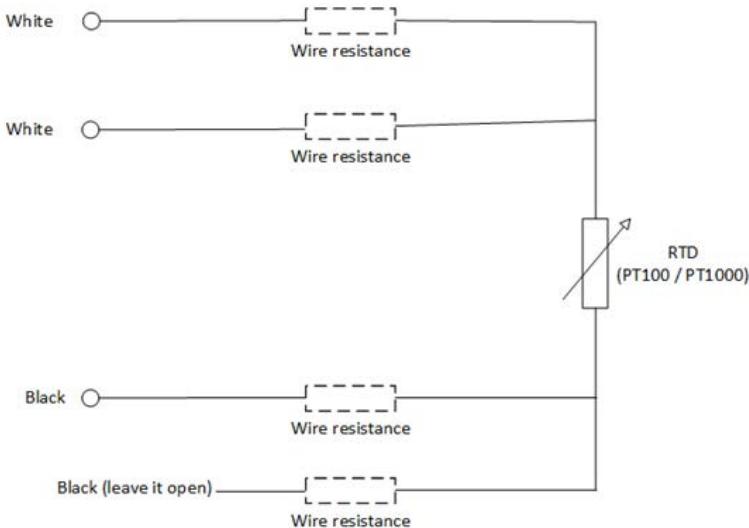
### PT100 2-Wire Configuration:

In a 2-wire configuration, the PT100 sensor is connected to a measuring device using only two wires: one for the current source and one for the voltage measurement. The resistance of the connecting wires adds to the overall resistance of the PT100 sensor, which can lead to inaccuracies, especially over longer wire lengths. This configuration is the simplest but offers the least accurate results due to the lack of compensation for wire resistance.



### PT100 3-Wire Configuration:

The 3-wire configuration aims to compensate for the added resistance of the connecting wires. It uses three wires: two wires for the current source and one wire for voltage measurement. By measuring the voltage drop across the sensor wires, the resistance of the connecting wires can be estimated and subtracted from the total measured resistance, resulting in increased accuracy compared to the 2-wire setup. This configuration is commonly used when a moderate level of accuracy is required.



## PT100 4-Wire Configuration:

The 4-wire configuration provides the highest accuracy among the three options. It uses four wires: two wires for the current source and two wires for voltage measurement. The two pairs of wires are separate, with one pair carrying the current and the other pair carrying the voltage. This eliminates the effect of wire resistance entirely, ensuring that the measured resistance is almost entirely due to the PT100 sensor itself. The 4-wire setup is often used in precise temperature measurement applications where accuracy is critical.

