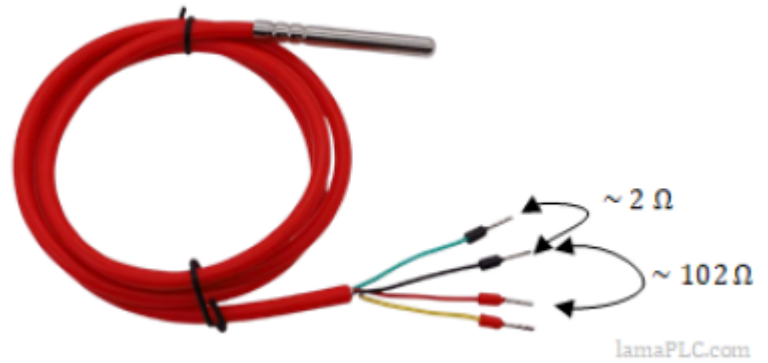


PT100 / PT1000 sensors

RTDs (*Resistance Temperature Detectors*) are straightforward devices: simply a small strip of platinum that measures precisely 100 Ω or 1000 Ω at 0°C. Bonded to the PT100/PT1000 are two, three, or four wires.



Thus, the 4-wire RTD has two wires attached to each side of the sensor. Each wire has about 1Ω of resistance. When connected to the amplifier, the innovative amp measures the voltage across the RTD and across the wire pairs.

For example, the approximate resistances of a 4-wire PT100 RTD at 0 °C are as follows. (For a PT1000, the middle resistance would be about 1002Ω rather than 102Ω).

<p align="center">4 – Wire PT100 / PT1000 Circuit</p>	<p align="center">3 – Wire PT100 / PT1000 Circuit</p>	<p align="center">2 – Wire PT100 / PT1000 Circuit</p>
<p align="right">lamaPLC.com</p>	<p align="right">lamaPLC.com</p>	<p align="right">lamaPLC.com</p>
<p>When the amp measures this sensor, it first assesses the resistance between one set of red and blue wires. It then measures the resistance between the red wires and the blue wires. To get the resistance of a single wire, divide each resistance value by two. The final calculation is $102 - 1 - 1 = 100\Omega$.</p>	<p>These are very similar to the 4-wire type, but only have one 'pair' of connected wires. This is because the wires for the RTD are all the same gauge and length; therefore, instead of two pairs, the amplifier reads one pair and uses that resistance for both wires.</p>	<p>It is as simple as it gets, with only one wire on each side. You might need to calibrate the sensor by placing it in an ice bath to measure the resistance at 0°C (around 102 Ω), then subtract 100 Ω to find the total resistance of the connection wires!</p>

Connect the two ends of the PT100/PT1000 resistor to the RTD+ and RTD- terminals on the sensor module. For example, a resistance of 102 Ohms can be measured. In a 3-wire or 4-wire setup, the wire connections go to the F+ and F- terminals. These connections might differ from the resistance values of the respective sides by only a few Ohms, meaning the resistance between F+ and RTD+ or F- and RTD- may vary slightly, just a few Ohms.

°C	Ω	°C	Ω	°C	Ω	°C	Ω	°C	Ω	°C	Ω
-200	18,49	0	100,00	200	175,84	400	247,04	600	313,59	800	375,51
-190	22,80	10	103,90	210	179,51	410	250,48	610	316,80	810	378,48
-180	27,08	20	107,79	220	183,17	420	253,90	620	319,99	820	381,45
-170	31,32	30	111,67	230	186,82	430	257,32	630	323,18	830	384,40
-160	35,53	40	115,54	240	190,45	440	260,72	640	326,35	840	387,34
-150	39,71	50	119,40	250	194,07	450	264,11	650	329,51	850	390,26
-140	43,87	60	123,24	260	197,69	460	267,49	660	332,66		
-130	48,00	70	127,07	270	201,29	470	270,86	670	335,79		
-120	52,11	80	130,89	280	204,88	480	274,22	680	338,92		
-110	56,19	90	134,70	290	208,45	490	277,56	690	342,03		
-100	60,25	100	138,50	300	212,02	500	280,90	700	345,13		
- 90	64,30	110	142,29	310	215,57	510	284,22	710	348,22		
- 80	68,33	120	146,06	320	219,12	520	287,53	720	351,30		
- 70	72,33	130	149,82	330	222,65	530	290,83	730	354,37		
- 60	76,33	140	153,58	340	226,17	540	294,11	740	357,42		
- 50	80,31	150	157,31	350	229,67	550	297,39	750	360,47		
- 40	84,27	160	161,04	360	233,17	560	300,65	760	363,50		
- 30	88,22	170	164,76	370	236,65	570	303,91	770	366,52		
- 20	92,16	180	168,46	380	240,13	580	307,15	780	369,53		
- 10	96,09	190	172,16	390	243,59	590	310,38	790	372,52		

Basic resistance values in Ohm PT100 sensors according to DIN/IEC 751

[RTD](#), [PT100](#), [PT1000](#), [sensor](#), [temperature](#)

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Last update: **2026/04/21 20:47**

