ProTherm Sensor connection application note

The ProTherm PT1000 GSM / GPRS temperature logging and monitoring system uses PT1000 temperature sensors. These sensors show 1000Ω at 0°C and 1385Ω at 100°C (or 1392.5Ω at 100°C or α = 0.003925, depending on the DIN type.)

When wiring the sensors via a long cable, ensure that the cable resistance is low enough so as not to affect the accuracy, since the ProTherm PT1000 only uses 2-wires.

eg. 0.1Ω cable resistance causes 0.1 / 385 * 100°C = 0.026°C error

1.0Ω cable resistance causes 1.0 / 385 * 100°C = 0.26°C error

10.0Ω cable resistance causes 10.0 / 385 * 100°C = 2.6°C error

0.385Ω cable resistance causes 0.385 / 385 * 100°C = 0.1°C error

3.85Ω cable resistance causes 3.85 / 385 * 100°C = 1.0°C error

* Using α = 0.00385

So if using 0.01Ω / m cable and you want a maximum error 0.1°C, you should use a maximum cable length of 0.385 / 0.01 = 38.5m.

So if using 0.01Ω / m cable and you want a maximum error 1.0°C, you should use a maximum cable length of 3.85 / 0.01 = 385m.

Note: For long cable runs, if possible, use shielded cable and connect the shield to the ground terminal of the ProTherm.