

12 SmartReader Plus 10 RTD Temperature Logger

The SRP 10 is a temperature logger with four channels: an internal thermistor channel and three external channels specifically designed for use with RTD (Resistance Temperature Detector) temperature probes.



Figure 10-1: SmartReader Plus 10

12.1 Description

Two-, three-, and four-wire RTDs may be used with the SmartReader Plus 10, however, four-wire RTDs produce the highest accuracy. RTDs with a Temperature Coefficient Resistance (TCR) of 0.00385 can be used with this data logger.

12.2 Setup

1. Connect the RTDs to the terminal strip. Connection varies depending on the type of RTD used:



NOTE: For the best results, connect the jumper wire as closely as possible to the probe.

2. Run TrendReader for Windows software, version 1.041 or higher.
3. In the setup window, assign equation numbers as follows:

For results in temperature:

For the internal channel, use equation 45
For the 100 ohm probes, use equation 8
For the 1000 ohm probes, use equation 87

For results in resistance (ohms):

For the internal channel, use equation 45
For the 100 ohm probes, use equation 84
For the 1000 ohm probes, use equation 85

NOTE: even equation numbers are for 100 Ω probes, odd equation numbers are for 1000 Ω probes. See Appendix E

4. Adjust the remaining setup options as desired then press **Save Setup**.

12.3 Specification of RTD Channels

The following specifications are for:

4-Wire Platinum 100 Ohm @ 0° C & TCR = 0.00385

4-Wire Platinum 1000 Ohm @ 0° C & TCR = 0.00385

Description:	Value:
+SIG Input Impedance:	>1 Meg. Ohm
-SIG Input Impedance:	>1 Meg. Ohm
Excitation Current	<=1mA
Temp. Range (100 & 1000 Ω probes):	-230 to 300°C (-382 to 72°F)
Accuracy ** (100 & 1000Ω):	± 0.3°C (0.54°F) ± resolution ± 0.06 % full scale ± resolution
Resolution (100 Ω & 1000 Ω):	± 0.14°C (±0.25°F)
Resistance Range (100 Ω):	5 to 210 V
Accuracy ** (100 Ω):	± 0.13 V ±resolution ± 0.06 % full scale ±resolution
Resistance Range (1000 Ω):	50 to 2100 V
Accuracy ** (1000 Ω):	± 1.3 V ±resolution ± 0.06 % full scale ±resolution
Resolution (100 Ω):	± 0.05 V
Resolution (1000 Ω):	± 0.5 V

* For internal channel specifications please see common specifications for SmartReader Plus loggers

** Temperature compensated for the range of -20°C (-4°F) to 80°C (176°F)