

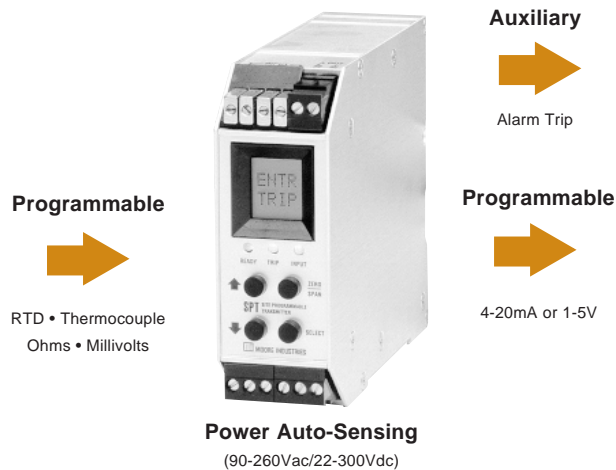
Description

Moore Industries' SPT Site-Programmable Transmitter is an advanced signal conditioner that packs exceptional flexibility, accuracy, and ease-of-use into a compact, universally mountable DIN-style housing.

Accepting T/C, RTD, millivolt, or ohms input in a host of ranges, sensor types, and connection schemes, the SPT provides isolated, process-ready output. Just flick a switch to choose 4-20mA or 1-5V.

Field-selectable input and output, Smart-Ranging, power auto-sensing, and DIN-style packaging that mounts on either G-type or Top Hat rail makes the SPT an ideal "plant standard", and a "universal spare" for all your temperature sensing applications.

Forget Complex, Expensive, and Time-consuming Configurators and Calibrators—SPT setup and calibration is as simple as pushing a button. Its large, LCD screen leads the user through a simple menu system with all programming options spelled out in "plain-English". All settings are stored in the unit's non-volatile memory, protected from power loss or unauthorized changes. Parameters can be viewed at any time without affecting unit operation.



Certifications



Factory Mutual Research Corporation (FMRC)
Non-Incendive – Class I, Division 2,
Groups A, B, C, D
Suitable For: Class II, Division 2; Class III,
Divisions 1 & 2



Canadian Standards Association (CSA)
General (Ordinary) Location – NRTL/C



CE Conformant – EMC Directive 89/336/EEC
EN 50081-2, 1993 and EN 50082-2, 1995



Setting a new standard in flexibility and ease of use, the SPT Site-Programmable Transmitter installs on G-type and Top Hat DIN rails, and programs with the touch of a button.

Features

- Fast and Easy to Configure and Calibrate.**
No tools, no calibrators, no configurators, no protocols—With the SPT you get the power, accuracy, and flexibility of digital technology without any cumbersome or expensive add-on equipment.
- Programmable Input, Range, and Configuration.**
The SPT accepts input from all common ISA T/C's and 2-, 3-, or 4-wire RTD's, as well as direct input for ohm or millivolt sources. There are menu selections for output based on a single sensor, the average of multiple sensors, and dual sensor differentials.
- Programmable Output and Display.** Easy-access controls provide a simple means of changing from 4-20mA (source or sink) to 1-5V (consult the factory for other ranges). The intuitive menu display choices for linearized or non-linearized, proportional output, and precise, "real-time" display of input in either °C or °F.
- Worldwide Power "Auto-Sensing".** The SPT automatically accepts every common ac and dc power input, from 22-300Vdc or 90-260Vac. There are no jumpers or switches to set. Just plug it in and go.

SPT

Site-Programmable, Isolated
Temperature Transmitter

Specifications

Performance	Maximum Unit Error: Output Accuracy + Cold Junction Reference Accuracy + Input Accuracy (See Table 1, Accuracy) Output Accuracy: ±0.03% of output span Cold Junction Reference Accuracy: ±0.25°C Stability: ±0.1% of calibrated span, max. over six months Output Response: 800 milliseconds (msec) max., for output to reach full scale in response to a full scale input step change Alarm Response: 700 msec, max., from input change to alarm output for step change on input with trip point at midpoint of step Ripple: 15mV*, peak-to-peak, max., for voltage output; 10mV*, peak-to-peak, max., when measured across a 250Ω resistor for current; *Specified at frequencies up to 120Hz Sensor Excitation Current: 0.25mA, nominal Burnout Protection: User-programmable. Front panel push buttons select upscale or downscale drive Output Protection: Transient protection on output Output Limiting Capability: 117% of span, max.; 115% typical	Performance (continued)	Load Capability: 1200Ω, max. for current outputs (4-20mA) when configured as internally powered (source mode); 2000Ω, max. for current outputs when configured as externally powered (sink mode) Input Impedance: 10MΩ, min. (T/C and mV inputs) Load Effect: ±0.01% of span from 0 to max. load resistance on current output Line Voltage Effect: ±0.001% of span for a 1V change in line voltage (ac or dc) Isolation: 1000Vrms between case, input, output, and power terminals Note: High voltage effect of ±0.001% of span/V when unit is subjected to prolonged voltages above 200Vac Input Over-Voltage Protection: ±5.0Vdc	Ambient Conditions Ratings (continued)	RFI/EMI Protection: 30V/M - ABC ≤ 0.5% error in reading, when tested according to SAMA standard PMC 33.1 Noise Rejection: Common Mode, 120dB @ 60Hz Operating Temperature Range: -25°C to +65°C (-13°F to +149°F)	Ambient Conditions Ratings (continued)	Storage Temperature Range: -40°C to +80°C (-40°F to +176°F) Humidity Range: 0-95%, non-condensing
		Ambient Conditions Ratings		Effect of Ambient Temperature	On Maximum Unit Error: (refer to Table 1, Accuracy): ±0.005% of span per °C, ±15ppm of input signal On Reference Junction Compensation: ±0.5% per 50°C change in ambient temperature		
				Adjustments	Four, front panel push buttons control settings for Zero, Span, Alarm Trip point, etc. Easy-access, internal settings select current or voltage output and high/low alarm function; Internal jumper and menu password protect parameter settings Display: 2x4 character, backlit, alphanumeric LCD LEDs: Dual-color TRIP light shows green for non-alarm, red for alarm; Dual-color INPUT light shows green for input within rated range, red for sensor/wire failure or overrange; READY light indicates normal operation, extinguishes in the event of any internal failure	Weight 383 g (13.5 oz)	

Intelligent Site-Programmability — Exceptional Ease of Use

No hand-held configurator or sophisticated bench calibration equipment is needed to get the SPT up and running. Install “generic” SPT’s in all types of temperature sensor applications in the plant. The “plain-English” menu system takes the user through setup parameters quickly, making on-site programming practical and cost-effective.

Setup Security. All configuration data is stored safely in non-volatile memory. Easy-access controls and a security password protects setup from inadvertent or unauthorized changes.

Programmable features include:

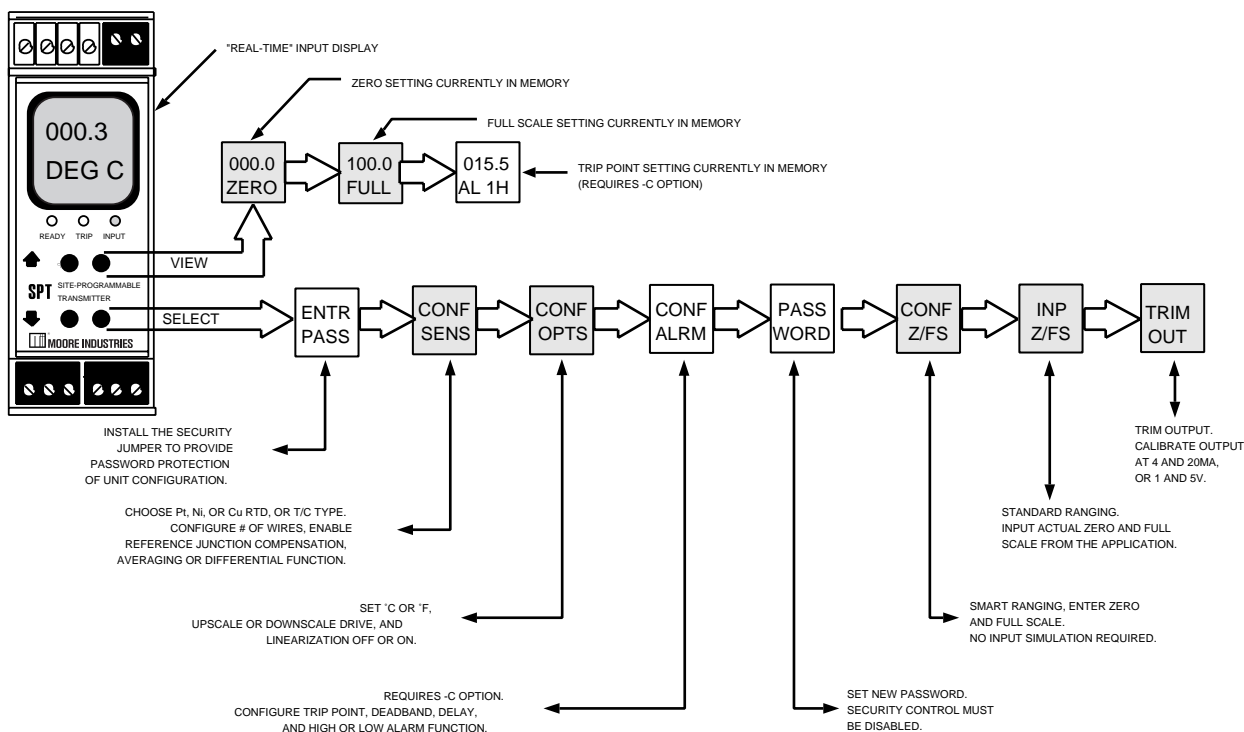
- **Input.** RTD type and number of wires, ISA T/C type, direct mV, or ohms.
- **Output.** Current or voltage (Set with easy-access internal controls).
- Reference Junction Compensation.
- Differential or Averaging of inputs.
- Alarms. Trip point, deadband, delay, high/low. (-C option required for contact closure output.)
- Zero and Full Scale. Smart-Ranging, or bench check with field inputs.

Ordering Information

Unit	Input	Output	Power	Option	Housing
SPT	<p>TPRG Programmable (Temperature). User-set, via integral LCD and menus, for input from RTD, T/C, mV or direct 1/2 RTD Range: 100 to 1000½ -200 to +850j C (-328 to +1562j F) T/C Range: -270 to + 1836j C (-454 to +3308j F) Millivolts Range: -10 to 120mV Ohms Range: 0 to 4000½</p> <p>Menus provide the following selections*: Pt RTD, with α 3916, 3928, 3926, 3923, 3911, 3902, 3850, or 3750 Ni with α 672; Cu with α 427; 2-, 3-, or 4-wire inputs, multiple sensor averaging and dual sensor differential</p> <p>*Factory calibration available ISA T/C Types J, K, E, T, R, S, N & B</p>	<p>PRG Programmable. User-set via easy-access internal controls for either 4-20mA or 1-5V, internally or externally powered (source/sink)</p> <p>(Other ranges available. Consult factory for availability.)</p>	<p>U Universal Power. Power Auto-sensing automatically switches for safe power input from 22-300Vdc or 90-260Vac</p> <p>Power consumption: 2-3W, nominal</p>	<p>-C Contact Closure Relay output SPDT form C, rated 5A @ 250Vac or 24 Vdc, or 0.5A @ 125Vdc, non inductive. Failsafe/Non-failsafe is field selectable through a switch. (700msec max. response time for step change on input with trip point at midpoint of step)</p>	<p>DIN Universal DIN-style housing mounts on both 32 mm, G-type (EN50035) and 35 mm, Top Hat (EN50022) rail</p>

To order, choose: Unit / Input / Output / Power / Option [Housing] from bold face type above
Model Number Example: SPT / TPRG / PRG / U / -C [DIN]

Figure 1. An Overview of the SPT's Intuitive Configuration/Calibration Menu



SPT

Site-Programmable, Isolated Temperature Transmitter

Table 1. SPT Input Codes and Accuracy Ratings

RTD Input*	α^{**}	Ω (@ 0°C)	Range	Input Accuracy	Minimum Span***
Pt	3750	1000	-185°C to +540°C (-301°F to +1004°F)	±0.1°C	Single, 100Ω Sensor: 15°C Averaging 100Ω Sensors: 15°C Differential of 100Ω Sensors: 30°C Single, 200Ω Sensor: 10°C Averaging 200Ω Sensors: 10°C Differential of 200Ω Sensors: 20°C Single, 500 or 1000Ω Sensor: 7.5°C Averaging 500 or 1000Ω Sensors: 7.5°C Differential of 500 or 1000Ω Sensors: 15°C
	3850	100, 200, 300, 400, 500, 1000	-200°C to +850°C (-328°F to +1742°F)	100Ω: ±0.2°C; 200, 300, & 400Ω: ±0.15°C; 500 & 1000Ω: ±0.1°C	
	3902	100, 200, 400, 500, 1000	-100°C to +650°C (-148°F to +1201°F)	100Ω: ±0.2°C; 200 & 400Ω: ±0.15°C; 500 & 1000Ω: ±0.1°C	
	3911	100, 500	-200°C to +630°C (-328°F to +1166°F)	100Ω: ±0.2°C; 500Ω: ±0.1°C	
	3916	100	-200 °C to +510°C (-328°F to +950°F)	±0.2°C	
	3923	98.129	-200°C to +600°C (-328°F to +1112°F)	±0.2°C	
	3926	100, 200, 470, 500	-200°C to +630°C (-328°F to +1166°F)	200 to 470Ω: ±0.15°C; 500Ω: ±0.1°C	
	3928	100	-200°C to +850°C (-328°F to +1742°F)	±0.2°C	
Ni	672	120	-80°C to +320°C (-112°F to +608°F)	±0.14°C	Single Sensor: 10°C Averaging Sensors: 10°C Differential of Multiple Sensors: 20°C
Cu	427	9.035	-50°C to +250°C (-58°F to +482°F)	±1.6°C	Single Sensor: 100°C Averaging Sensors: 100°C Differential of Multiple Sensors: 200°C
Direct Ω^*	Range		Input Accuracy	Minimum Span***	
Ω	0-4000Ω		±0.4Ω	30Ω	
T/C Input*	Range	Linearization Conformance Range	Input Accuracy	Minimum Span***	
J	-210°C to +770°C (-346°F to +1418°F)	-180°C to +760°C (-292°F to +1400°F)	±0.25°C	35°C	
K	-270°C to +1390°C (-54°F to +2534°F)	-150°C to +1370°C (-238°F to +2498°F)	±0.3°C	40°C	
E	-270°C to +1013°C (-454°F to +1855.4°F)	-170°C to +1000°C (-274°F to +1832°F)	±0.25°C	35°C	
T	-270°C to +407°C (-54°F to +764.6°F)	-200°C to +400°C (-328°F to +752°F)	±0.25°C	35°C	
R	-50°C to +1786°C (-58°F to +3246.8°F)	0°C to +1760°C (-32°F to +3200°F)	±0.5°C	50°C	
S	-50°C to +1786°C (-58°F to +3246.8°F)	0°C to +1760°C (-32°F to +3200°F)	±0.5°C	50°C	
N	-270°C to +1316°C (-454°F to +2400.8°F)	-130°C to +1300°C (-202°F to +2372°F)	±0.4°C	45°C	
B	+200°C to +1836°C (+392°F to +3336.8°F)	+400°C to +1820°C (+752°F to 3308°F)	±0.8°C	75°C	
Direct mV Input*	Range		Input Accuracy	Minimum Span***	
MV	-10 to +120mV		±15μV	4mV	

* All input types retain site programmability.

** Actual α is 0.003750, 0.003850, 0.003902, etc.

*** Recommended Minimum Span. Tighter spans, while available, may result in output inaccuracies.

Total Sensor Diagnostics

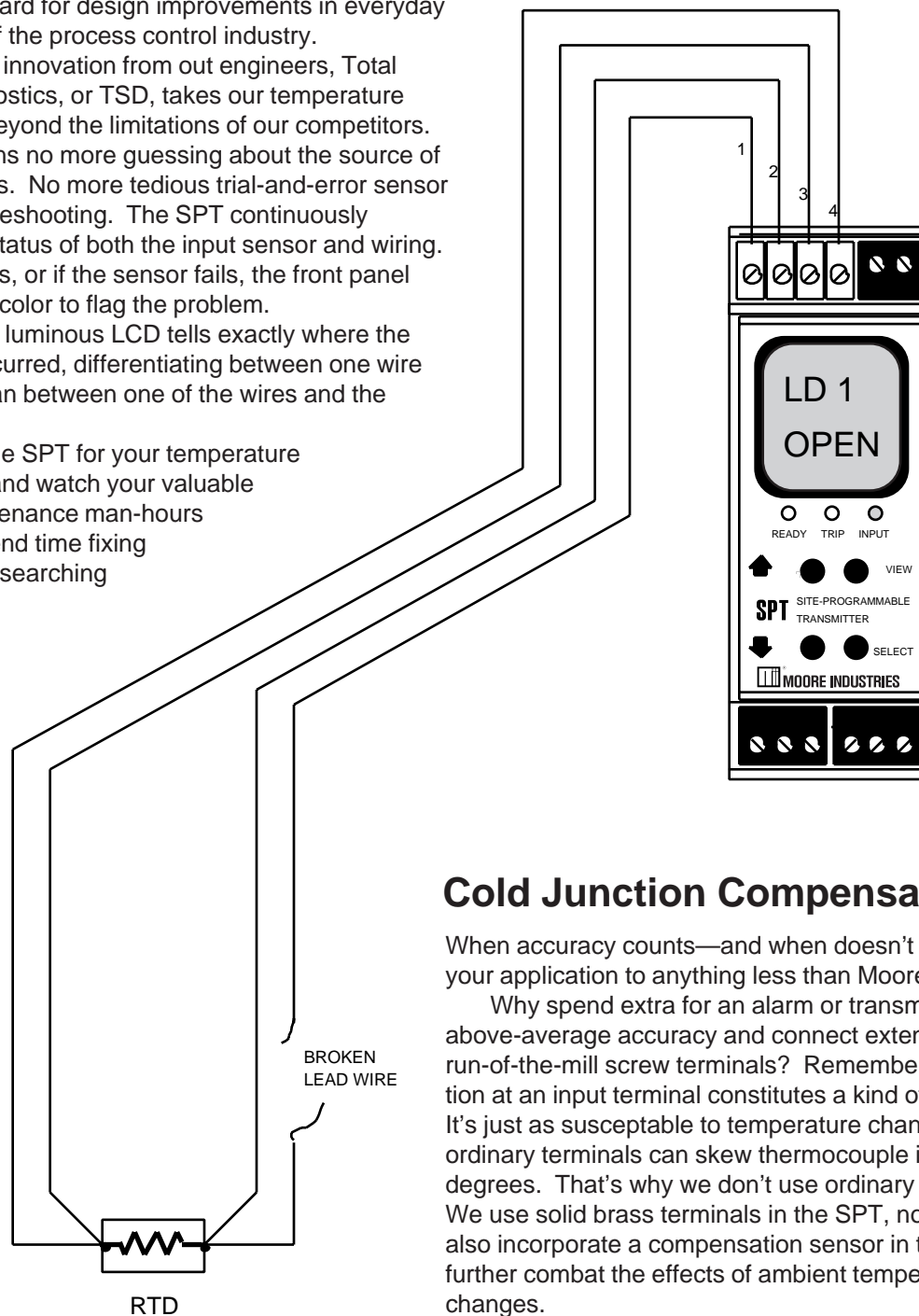
With the SPT, Moore Industries continues to fashion the de facto standard for design improvements in everyday applications of the process control industry.

The latest innovation from our engineers, Total Sensor Diagnostics, or TSD, takes our temperature products far beyond the limitations of our competitors.

TSD means no more guessing about the source of a system fault. No more tedious trial-and-error sensor network troubleshooting. The SPT continuously monitors the status of both the input sensor and wiring. If a wire breaks, or if the sensor fails, the front panel LED changes color to flag the problem.

The clear, luminous LCD tells exactly where the failure has occurred, differentiating between one wire and another, an between one of the wires and the sensor itself.

Choose the SPT for your temperature applications, and watch your valuable monthly maintenance man-hours go down. Spend time fixing problems, not searching for them.



Cold Junction Compensation

When accuracy counts—and when doesn't it?—don't trust your application to anything less than Moore Industries.

Why spend extra for an alarm or transmitter with above-average accuracy and connect extension wires to run-of-the-mill screw terminals? Remember, the connection at an input terminal constitutes a kind of thermocouple. It's just as susceptible to temperature changes, and ordinary terminals can skew thermocouple input by several degrees. That's why we don't use ordinary terminals. We use solid brass terminals in the SPT, not plastic. We also incorporate a compensation sensor in terminal #2 to further combat the effects of ambient temperature changes.

Does it cost more? Perhaps a little. But perhaps accurate control of your process is worth it. The question is not whether you can afford it. The question is, can you afford anything less?

SPT

Site-Programmable, Isolated
Temperature Transmitter

Figure 2. SPT Housing Dimensions

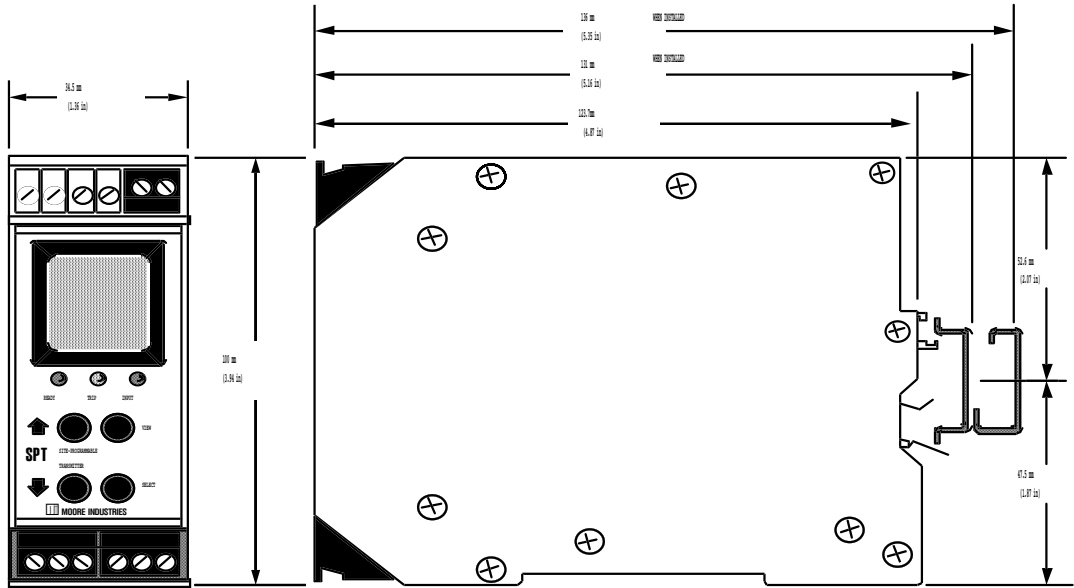
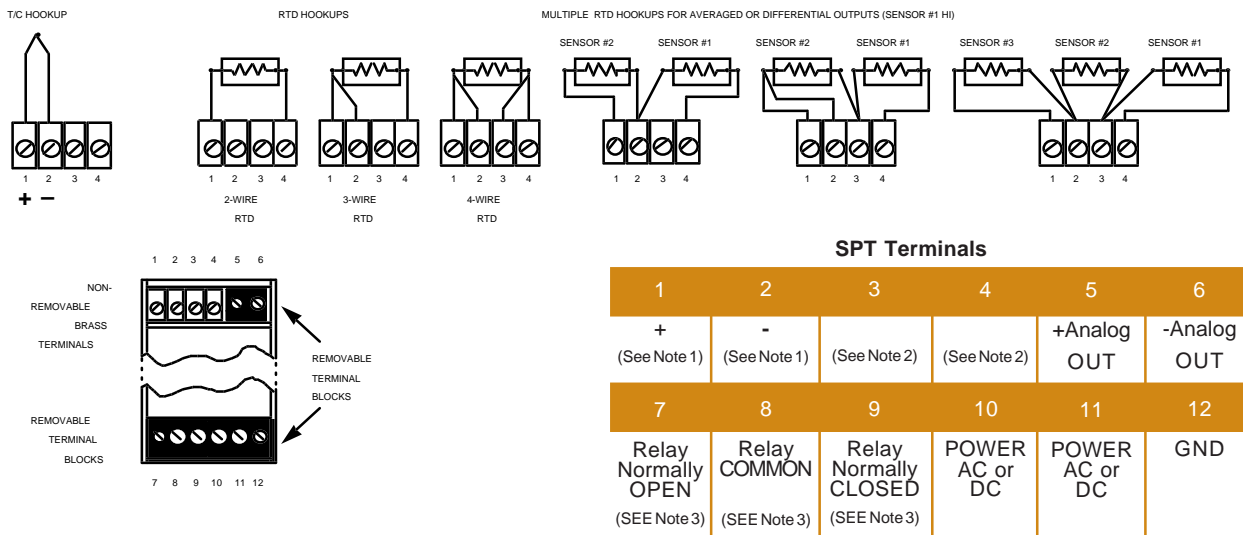


Figure 3. SPT Single- and Multi-Sensor Hookups



Notes: 1. Reference polarity when connecting T/Cs or other mV sources only.
2. Not used with T/C inputs.
3. Requires -C option.



The Interface Solution Experts • www.miinet.com

United States • info@miinet.com
Tel: (818) 894-7111 • FAX: (818) 891-2816
Australia • sales@mooreind.com.au
Tel: (02) 9525-9177 • FAX: (02) 9525-7296

Belgium • mii.belgium@pandora.be
Tel: 03/448.10.18 • FAX: 03/440.17.97
The Netherlands • sales@mooreind.demon.nl
Tel: (0)344-617971 • FAX: (0)344-615920

China • sales@mooreind.com.cn
Tel: 86-21-58313053 • FAX: 86-21-68752927
United Kingdom • sales@mooreind.com
Tel: 01293 514488 • FAX: 01293 536852