

STT 3000 Series STT150

PROGRAMMABLE TEMPERATURE TRANSMITTER

Models STT15R, STT15U, STT15S

34-TT-03-04 04/03

PRODUCT SPECIFICATION SHEET

OVERVIEW

Honeywell's STT 3000 family of microprocessor-based temperature transmitters include the Series STT150 described in this specification sheet and the higher performance Series STT250 and STT350 offering both high performance and advanced functionality.

The STT150 units offer very competitive performance and high reliability in a compact module.

Choose the unit to meet your application needs :

- **STT15R** for RTD measurements or T/C measurement with isolated tip.
- **STT15U** for universal temperature measurements where a galvanic isolation between input and output is required.
- **STT15S** for applications requiring both galvanic isolation and intrinsic safety approvals.

A wide selection of accessories including digital indicators, DIN rail mounting clips, surge protection, sensors, flame/explosion proof

housings are available to complete your thermal solutions.

All units support the same wide range of primary sensor types, are 2 wire powered and give a 4 – 20 mA output linearised to temperature over the 2 power wires. Leadwire compensation is provided for RTD (Resistance Temperature Detectors) and internal digital cold junction compensation is provided for Thermocouples. MilliVolt and Ohms sensor inputs can also be accepted.

BENEFITS

The Series STT150 models are designed to meet the DIN Form B housing requirements and fit in most housings available on the market.

- Suitable for 3 or 2 wire RTD measurement.
- Accepts input signal from a wide choice of primary sensors to satisfy varying application requirements.
- Open/short circuit sensor detection
- Internal electronics system validation and advanced diagnostics.
- Polynomial sensor linearization for mV and Ohms type, including Cold Junction correction.
- Every unit contains the original factory information to allow the user to print the calibration certificate with the PC tool.



DESCRIPTION

The STT150 transmitters are suitable as replacements for any conventional temperature transmitters in use today. It is particularly suited to replacing home run compensation cabling to give lower installed cost and improved accuracy. The memory contains the characteristics of most commonly used temperature sensors.

You can easily use a Windows based PC tool, in combination with a RS232 interface, to configure the transmitter for any of these sensors and it will automatically correct for their associated non-linearities. Accuracies stated below are available merely by selecting the sensor type and range.

Performance Under Reference Conditions*

The table below provides a comprehensive overview of the transmitter output accuracy. The stated accuracy is valid for any range setting within the rated range.

Sensor**	Accuracy, ° or % of span (whichever is greater)		Rated Range °C / °F	Minimum Span °C / °F	Standards
Pt100, Pt200	0.5°C / 0.9°F	0.1%	-200 to 850°C / -328 to 1562°F	25°C / 45°F	IEC 60751 (ITS-90) $\alpha=0.00385$
Pt100J	0.5°C / 0.9°F	0.1%	-200 to 640°C / -328 to 1184°F	25°C / 45°F	JISC 1604-81 $\alpha=0.00392$
J	1°C / 1.8°F	0.1%	-200 to 1200°C / -328 to 2192°F	50°C / 90°F	IEC 60584-1(ITS-90)
K, N	1°C / 1.8°F	0.1%	-200 to 1300°C / -328 to 2372°F	50°C / 90°F	IEC 60584-1(ITS-90)
E	1°C / 1.8°F	0.1%	-200 to 1000°C / -328 to 1832°F	50°C / 90°F	IEC 60584-1(ITS-90)
T	1°C / 1.8°F	0.1%	-230 to 400°C / -382 to 752°F	50°C / 90°F	IEC 60584-1(ITS-90)
B***	2°C / 3.6°F	0.1%	0 to 1820°C / 32 to 3308°F	50°C / 90°F	IEC 60584-1(ITS-90)
R, S	2°C / 3.6°F	0.1%	-50 to 1760°C / -58 to 3200°F	50°C / 90°F	IEC 60584-1(ITS-90)
Ω	0.50Ω	0.05%	0 to 2000Ω	10Ω	
mV	25μV	0.05%	-20 to 120mV	5mV	

* Accuracies include all calibration, hysteresis, repeatability and conformity errors

** The maximum range for all sensors are those which are defined by the standard, except for Ω and mV where max. range is equal to rated range.*** Accuracy not guaranteed for temperatures lower than 500°C/932°F

Operating Conditions

Parameter	Reference Condition	Rated Condition	Operative Limits	Storage
Ambient temperature °C (°F)	23 °C ± 2 (73.4 ± 3.6)	-40 to +85 (-40 to 185)	-50 to +85 (-58 to 185)	-50 to +100 (-58 to 212)
Humidity % RH	10 to 55	5 to 95	5 to 100	5 to 100
Supply voltage	9 to 35 Vdc at terminals		Output current ¹	Overrange: 3.8 to 20.8 mA. Failsafe limits: < 3.6 and 21.8 mA
Vibration	Maximum of 4g over 15 to 200Hz	Shock	Maximum of 40g.	

¹ Overage and failsafe limits can be set to any value between 3.6mA and 23.0mA to meet applicable standards e.g. Namur NE43.

Performance Specifications

Cold Junction accuracy : ± 0.75°C (± 1.35°F)

Total reference accuracy : Accuracy + CJ accuracy (T/Cs only)

Ambient temperature effect (per 10°C/18°F) change from 23°C/73°F ref) : for RTD's ±0.10% of span and for TC's/ mV ±0.15% of span.

Cold Junction ambient temperature effect: 40: 1 rejection for ambient temperature changes from 23°C/73°F reference.

Total output ambient temperature effect : Ambient temperature effect + CJ effect (T/Cs only).

Power supply voltage effect: 0.005% of Max span per Volt.

Stability/time drift: 0.05% of max span per year.

Additional Parameters

Output: 4-20mA.

Adjustment range: No limits to adjustments within the Maximum Range and Minimum Span.

Damping time constant: Adjustable from 0 to 100 seconds digital damping.

Output response time: 1 second to reach 63% of final value with 0 sec. damping.

Output update time : 0.5 sec. approx.

Input/output galvanic isolation : 500Vac (not for STT15R).

Sensor open circuit :

Open circuit/ burnout detection is user selectable.

Common mode rejection 110dB from 50Hz to 50 kHz.

Series mode rejection 40dB for 50 or 60Hz ±0.5Hz. (with internal software filter set to local power line frequency).

EMC compliance

In compliance with 89/336/EEC, electromagnetic Compatibility (EMC) Directive.

RFI rejection: ±0.5% of span at 10V/m over 0.15 to 1,000MHz

Condensed Model Selection Guide

KEY NUMBER (see detailed Model Selection Guides for Multi-packs and options)

SELECTION

Programmable Temperature Transmitter Module

CE Mark for compliance to EN 50081-2 and 50082-2
Russian Certificate of Pattern Approval N° 2064 of Jan. 1998

Non-Isolated 4 - 20mA output

STT15R

Isolated 4 - 20mA output

STT15U

Intrinsically Safe / Isolated 4 - 20mA output

STT15S

CENELEC Intrinsic Safety EEx ia IIC T6/T5/T4
FM Intrinsically Safe Class I, Div 1, Groups A, B, C, D
Non-incendive Class I, Div 2, Groups A, B, C, D
CSA Intrinsically safe Class I, II, III, Div 1, Groups A-G

KEY NUMBER (see detailed Model Selection Guide for options)

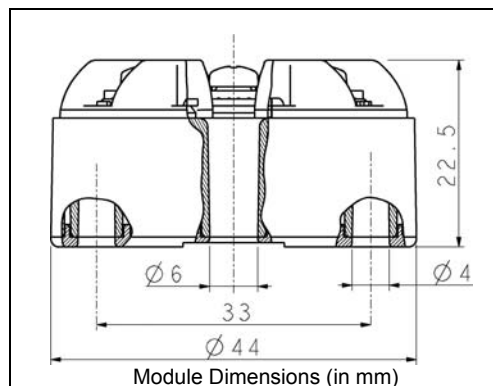
SELECTION

Temperature Transmitter Programming tool for STT150

PC software, compatible with Windows '95, Windows NT.
Interface RS232 to transmitter.

SCT101

Distributor :



Module Dimensions (in mm)

Honeywell

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