SmartLine

Technical Information

STT850 SmartLine Temperature Specification 34-TT-03-14

Introduction

Part of the SmartLine® family of products, the STT850 is a high performance Temperature transmitter offering high accuracy and stability over a wide range of process and ambient temperatures. The SmartLine family is also fully tested and compliant with Experion ® PKS providing the highest level of compatibility assurance and integration capabilities. SmartLine easily meets the most demanding needs for temperature measurement applications.

Figure 1– Smartline STT850 Temperature transmitter

Best in Class Features:

Industry leading performance

- Digital Accuracy up to 0.10 Deg C for RTD
- Stability up to 0.01% of URL per year for ten years
- 125 mSec update time for single input models
- 250 mSec update time for dual input models

Reliable measurement

- Built in Galvanic Isolation
- Differential/Averaging/Redundant/Split Range measurements
- Dual Compartment Housing
- Sensor Break detection
- Comprehensive on-board diagnostic capabilities
- Full compliance to SIL 2/3 requirements.
- Available with 15 year warranty
- Supports Namur 107* Extended Diagnostics
- Supports Namur 89 Wire break

Lower Cost of Ownership

- Universal input
- Dual sensor option
- Multiple local display capabilities
- Modular construction
- External zero, span, & configuration capability
- Polarity insensitive loop wiring
- Digital Output Option*

Communications/Output Options:

- 4-20mA dc
- Honeywell Digitally Enhanced (DE)
- HART ® (version 7.0)
- FOUNDATION™ Fieldbus* compliant to ITK 6.1.1

All transmitters are available with the above listed communications protocols.

*Check with the factory for availability

Description

The SmartLine Temperature transmitter is designed and manufactured to deliver very high performance across varying ambient temperature. The total accuracy level of the transmitter including the ambient temperature effect in, harsh industrial environments, allows the STT850 to replace virtually any competitive transmitter available today.

Unique Indication/Display Options

The STT 850 modular design accommodates a basic alphanumeric LCD display or a unique advanced graphics LCD display with many unparalleled features.

Basic Alphanumeric LCD Display Features

- Modular (may be added or removed in the field)
- 0, 90,180, & 270 degree position adjustments
- Deg C , F, R and Kelvin measurement units
- 2 Lines 16 Characters (4.13H x 1.83W mm)
- Up to 8 display screens with similar formats
- Configurable screen rotation timing (3 to 30 sec)
- Auto/Manual selection for screen rotation
- Displays up to 9 Datapoints - Loop PV, CJ Temperature, Sensor 1, Sensor 2, Sensor Delta, RTD 1 Resistance, RTD 2 Resistance, Loop output, Percent Loop.
- Out of Range Indication
- PV Status and critical fault indication

Advanced Graphics LCD Display Features

- Modular (may be added or removed in the field)
- 0, 90, 180, & 270 degree position adjustments
- Up to eight display screens with 3 formats are possible (Large PV with Bar Graph or PV with Trend Graph)
- Configurable screen rotation timing (3 to 30 sec)
- Provides instant visibility for diagnostics
- Multiple language capability. (EN, GE, FR, IT, SP, RU, TR, CN & JP)

*Check with the factory for availability

Configuration Tools

Integral Three Button Configuration Option

Suitable for all electrical and environmental requirements, SmartLine offer the ability to configure the transmitter and display via three externally accessible buttons when either display option is selected. Zero/span capabilities are also optionally available via these buttons with or without selection of a display option.

Hand Held Configuration

SmartLine transmitters feature two-way communication and configuration capability between the operator and the transmitter. This is accomplished via Honeywell's field-rated Multiple Communication Configuration.
The Honeywell Handheld MC Toolkit is capable of field configuring DE and HART Devices and can also be ordered for use in intrinsically safe environments.

All Honeywell transmitters are designed and tested for compliance with the offered communication protocols and are designed to operate with any properly validated hand held configuration device.

Personal Computer Configuration

Honeywell's SCT 3000 Configuration Toolkit provides an easy way to configure Digitally Enhanced (DE) instruments using a personal computer as the configuration interface.
Field Device Manager (FDM) Software and FDM Express are also available for managing HART & Fieldbus device configurations.

Diagnostics

SmartLine transmitters all offer digitally accessible diagnostics which aid in providing advanced warning of possible failure events minimizing unplanned shutdowns, providing **lower overall operational costs**

System Integration

- SmartLine communications protocols all meet the most current published standards for HART/DE/Fieldbus.
- Integration with Honeywell's Experion PKS offers the following unique advantages.
  - Transmitter messaging
  - Maintenance mode indication
  - Tamper reporting (HART only)
  - FDM Plant Area Views with Health summaries
  - All STT 850 units are Experion tested to provide the highest level of compatibility assurance

Modular Design

To help contain maintenance & inventory costs, all STT 850 transmitters are modular in design supporting the user's ability to replace Temperature boards, add indicators or change electronic modules without affecting overall performance or approval body certifications. Each Temperature board is uniquely characterized to provide in-tolerance performance over a wide range of application variations in temperature and due to the Honeywell advanced interface, electronic modules may be swapped with any electronics module without losing in-tolerance performance characteristics

Modular Features

- Replace Temperature/Terminal board/Lightning protection*
- Exchange/replace electronics/comms modules*
- Add or remove integral indicators*
- Add or remove external configuration buttons

* Field replaceable in all electrical environments (including IS) except flameproof without violating agency approvals.

With no performance effects, Honeywell's unique modularity results in ***lower inventory needs and lower overall operating costs.***

Performance Specifications[1,3]

Reference Accuracy [2] (conformance to +/-3 Sigma)

Input Type	Maximum Range Limits		Digital Accuracy (+/-)	Output D/A Accuracy (% of span)	Standards
RTD (2,3,4 wire)	**°C**	**°F**	**°C**	%	
Pt25[5]	-200 to 850	-328 to 1562	0.50	0.005	IEC751:1990 (α=0.00385)
Pt100	-200 to 850	-328 to 1562	0.10	0.005	IEC751:1990 (α=0.00385)
Pt200	-200 to 850	-328 to 1562	0.20	0.005	IEC751:1990 (α=0.00385)
Pt500	-200 to 850	-328 to 1562	0.12	0.005	IEC751:1990 (α=0.00385)
Pt1000[5]	-200 to 500	-328 to 932	0.10	0.005	IEC751:1990 (α=0.00385)
Thermocouples	**°C**	**°F**	**°C**	**%**	
B	200 to 1820	392 to 3308	0.60	0.005	IEC 584-1 (ITS-90)
E	-200 to 1000	-328 to 1832	0.20	0.005	IEC 584-1 (ITS-90)
J	-200 to 1200	-328 to 2192	0.25	0.005	IEC 584-1 (ITS-90)
K	-200 to 1370	-328 to 2498	0.25	0.005	IEC 584-1 (ITS-90)
N	-200 to 1300	-328 to 2372	0.40	0.005	IEC 584-1 (ITS-90)
R	-50 to 1760	-58 to 3200	0.50	0.005	IEC 584-1 (ITS-90)
S	-50 to 1760	-58 to 3200	0.50	0.005	IEC 584-1 (ITS-90)
T	-250 to 400	-418 to 752	0.20	0.005	IEC 584-1 (ITS-90)
$W_5 W_{26}$ (Type C)	0 to 2300	32 to 4172	0.60	0.005	ASTM E 988-96 (ITS-90)
Input Type	**Maximum Range Limits**		**Digital Accuracy (+/-)**	**Output D/A Accuracy (% of span)**	**Standards**
Other Types	**Range**			**%**	
Millivolts[5]	-100 to 1200 mV		0.12 mV	0.005	
Millivolts	-20 to 125 mV		0.015 mV	0.005	
Ohms[5]	0 to 500 Ohms		0.2 Ohms	0.005	
Ohms	0 to 2000 Ohms		0.3 Ohms	0.005	
Ohms[5]	0 to 3000 Ohms		0.45 Ohms	0.005	

1. Digital Accuracy is accuracy of the digital output accessed by the Host system and the handheld communicator
2. Total analog accuracy is the sum of digital accuracy and output D/A Accuracy
3. Output D/A Accuracy is applicable to the 4 to 20mA Signal output
4. For TC inputs, CJ accuracy shall be added to digital accuracy to calculate the total digital accuracy
5. These input types are only available on Fieldbus and HART units

Differential Temperature Measurement
SmartLine Temperature supports differential temperature measurements between any two types of sensors.
When the loop current mode is set to " Differential" then the input range is from A to B for sensor 1 & 2 where

A = Sensor 1 Minimum - Sensor 2 Maximum
B = Sensor 1 Maximum - Sensor 2 Minimum

Digital Accuracy for differential temperature measurement
If both the inputs are similar the digital accuracy equals 1.5 times the worst case accuracy of either sensor type.
For mixed input types the digital accuracy is the sum of sensor 1 and sensor 2 digital accuracies.

Performance under Rated Conditions – All Models

Parameter	Description
Input Span Adjustment Range	No limits to adjustments within the Maximum range except minimum span limit of 1 engineering unit
Analog Output **Digital Communications:**	Two-wire, 4 to 20 mA (HART & DE Transmitters only) Honeywell DE, HART 7 protocol or FOUNDATION Fieldbus ITK 6.1.1 compliant All transmitters, irrespective of protocol have polarity insensitive connections.
Output Failure Modes **(HART/DE only)**	Honeywell Standard: / NAMUR NE 43 Compliance: **Normal Limits:** 3.8 – 20.8 mA / 3.8 – 20.5 mA **Failure Mode:** ≤ 3.6 mA and ≥ 21.0 mA / ≤ 3.6 mA and ≥ 21.0 mA
Output Accuracy **(HART/DE only)**	±0.005% span
Supply Voltage Effect	0.005% span per volt.
Transmitter Turn on Time **(includes power up & test algorithms)**	HART or DE: 2.5 sec. Foundation Fieldbus: Host dependant
Stability	0.01% of URL per year for 10 years
Response Time **(delay + time constant)**	**DE/HART Analog Output** / **FOUNDATION Fieldbus** Single Input: 130 - 230 mSec / Host Dependant Dual Input: 305 - 455 mSec / Host Dependant
Update time	125 mSec for single input units 250 mSec for dual input units
Damping Time Constant	**HART:** Adjustable from 0 to 32 seconds in 0.1 increments. **Default:** 0.50 seconds **DE:** Discrete values 0.0, 0.3, 0.7, 1.5, 3.1, 6.3, 12.7, 25.5, 51.1, 102.3 seconds. **Default:** 0.3 seconds
Ambient Temperature Effect	Digital Accuracy: For RTD Inputs, 0.0015°C/°C For T/C Inputs: 0.005°C/°C **Output D/A:** 0.0005% of span/°C
Cold Junction Accuracy	±0.25°C
Total Reference Accuracy	Digital Mode Digital Accuracy + C/J Accuracy (T/C input types only) Analog Mode (HART/DE only) Digital Accuracy + Output D/A Accuracy + C/J Accuracy (T/C input types only) Example: Transmitter in Analog Mode with Pt100 sensor and 0 to 200°C range Total Reference Accuracy = 0.10°C + (200°C / 100%) * 0.005% = 0.11°C
Sensor Burnout	Burnout detection is user selectable. Upscale or down scale with critical status message. For RTD or ohm type inputs; broken wire/wires will be indicated
Vibration Effect	Per IEC60770-1 field or pipeline, high vibration level (10-2000Hz: 0.21 displacement/3g max acceleration)
Electromagnetic Compatibility	IEC 61326-3-1
Isolation	2000Vdc (1400Vrms) Galvanic Isolation between inputs and output.

Stray Rejection	**Common Mode** *AC (50 or 60 Hz):* 120 dB (with maximum source impedance of 100 ohms) or ± 1 LSB (least significant bit) whichever is greater with line voltage applied. *DC:* 120 dB (with maximum source impedance of 50 ohms) or a ±1 LSB whichever is greater with 120 Vdc applied. *DC (to 1 KHz):* 50 dB (with maximum source of impedance of 50 ohms) or ±1 LSB whichever is greater with 50 Vac applied. **Normal Mode** *AC (50 or 60 Hz):* 60 dB (with 100% span peak-to-peak maximum)
EMC Compliance	EN 61326-1 and EN 61326-3-1 (SIL)
Lightning Protection Option	**Leakage Current:** 10uA max @ 42.4VDC 85°C **Impulse rating:** 8/20uS 5000A (>10 strikes) 10000A (1 strike min.) 10/1000uS 200A (> 300 strikes)

Operating Conditions – All Models

Parameter	**Reference Condition**		**Rated Condition**		**Operative Limits**		**Transportation and Storage**	
	°C	**°F**	**°C**	**°F**	**°C**	**°F**	**°C**	**°F**
Ambient Temperature[1] STT850	25±1	77±2	-40 to 85	-40 to 185	-40 to 85	-40 to 185	-55 to 120	-67 to 248
Humidity %RH	10 to 55		0 to 100		0 to 100		0 to 100	
Supply Voltage Load Resistance	**HART Models:** 10.8 to 42.4 Vdc at terminals (IS versions limited to 30 Vdc) 0 to 1,440 ohms (as shown in Figure 2) **DE Models:** 13.8 to 42.4 Vdc at terminals (IS versions limited to 30 Vdc) 0 to 1,300 ohms (as shown in Figure 2) **FF Models:** 9.0 to 32.0 Vdc at terminals							

[1] LCD Display operating temperature -20°C to +70°C . Storage temperature -30°C to 80°C.

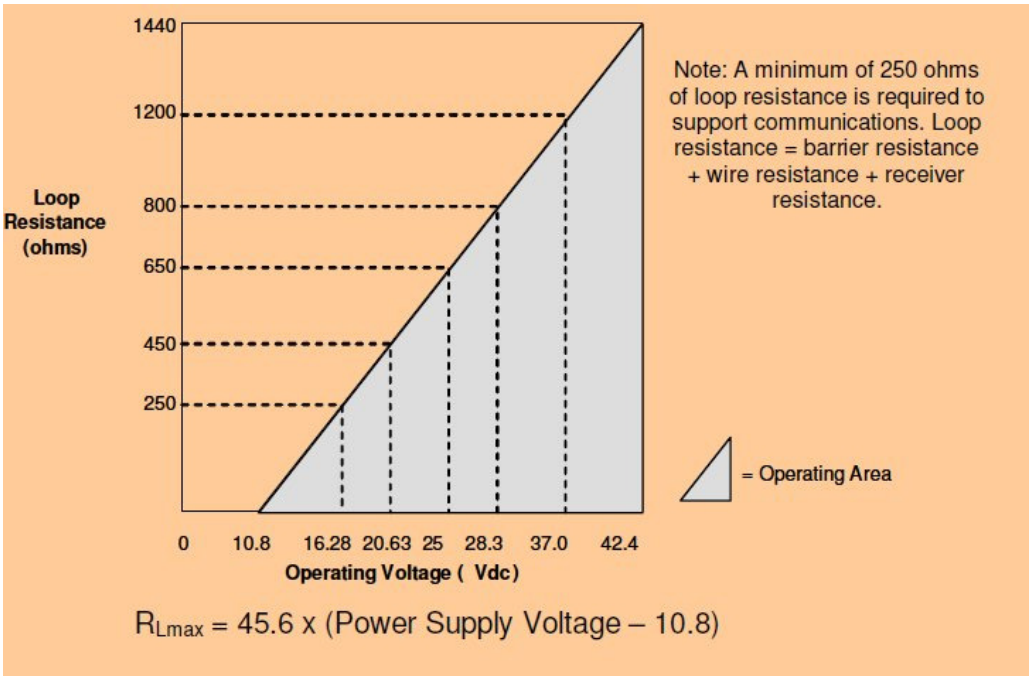


Figure 2 - Supply voltage and loop resistance chart & calculations (not applicable for Fieldbus)

For DE Models, add 3.0V to all values. Maximum voltage for DE is 42.4Vdc and maximum load resistance is 1300Ω.

Materials Specifications (see model selection guide for availability/restrictions with various models)

Parameter	Description
Mounting Bracket	Wall or 2" Pipe, Carbon Steel (Zinc-plated) or 316 Stainless Steel
Electronic Housing	Pure Polyester Powder Coated Low Copper (<0.4%)-Aluminum. Meets Type 4X, IP66, & P67. All stainless steel housing is optional. Cover O Ring Material: Silicone
Sensor/Cable Entry	1/2 NPT electrical connection or M20x1.5
Mounting	Can be mounted in virtually any position using the standard mounting bracket. Bracket is designed to mount on 2-inch (50 mm) vertical or horizontal pipe.
Wiring	Accepts up to 16 AWG (1.5 mm diameter).
Dimensions	See **Figure 3, Figure 4** and **Figure 5**
Net Weight Lbs (kg)	Alum Transmitter with Display – 2.7 Lbs (1.22kg) Alum Transmitter w/o Display – 2.6 Lbs (1.18kg) SS Transmitter with Display – 4.9 Lbs (2.22kg) SS Transmitter w/o Display – 4.8 Lbs (2.18kg)

Communications Protocols & Diagnostics

HART Protocol

Version:

HART 7

Power Supply
Voltage: 10.8 to 42.4Vdc at terminals
Load: Maximum 1440 ohms See figure 2
Minimum Load: 0 ohms. (For handheld communications a minimum load of 250 ohms is required)
IEC 61508 Safety Certified SIL 2 and SIL 3

Honeywell Digitally Enhanced (DE)

DE is a Honeywell proprietary protocol which provides digital communications between Honeywell DE enabled field devices and Hosts.

Power Supply
Voltage: 10.8 to 42.4Vdc at terminals
Load: Maximum 1440 ohms See figure 2

Foundation Fieldbus (FF)

Power Supply Requirements
Voltage: 9.0 to 32.0 Vdc at terminals
Steady State Current: 17.6 mA
Software Download Current: 27.6 mA

Available Blocks

Block Type	Qty	Execution Time
Resource	1P	n/a
Temperature Transducer	1P	n/a
Diagnostic	1P	n/a
Analog Input	1P, 4I	30 ms
PID w/Autotune	1P, 1I	45 ms
Discrete Input	1P, 2I	30 ms
Signal Characterizer	1P	30 ms
LCD Display	1P	n/a
Input Selector	1P	30 ms
Arithmetic	1P, 2I	30 ms
Output Splitter	1P	30 ms

P = Permanent
I = Instantiable

The AI function block allows the user to configure the alarms to HIGH-HIGH, HIGH, LOW, or LOW-LOW with a variety of priority levels and hysteresis settings.
All available function blocks adhere to FOUNDATION Fieldbus standards. PID blocks support ideal & robust PID algorithms with full implementation of Auto-tuning.

Link Active Scheduler
Transmitters can perform as a backup Link Active Scheduler and take over when the host is disconnected. Acting as a LAS, the device ensures scheduled data transfers typically used for the regular, cyclic transfer of control loop data between devices on the Fieldbus.

Number of Devices/Segment
Entity IS model: 15 devices/segment

Schedule Entries

45 maximum schedule entries

50 maximum Links

Number of VCR's: 50 max

Compliance Testing: Tested according to ITK 6.1.1

Software Download
Utilizes Class-3 of the Common Software Download procedure as per FF-883 which allows the field devices of any manufacturer to receive software upgrades from any host.

Standard Diagnostics

STT850 top level diagnostics are reported as either critical or non-critical as listed below. All diagnostics are readable via the DD/DTM tools. All critical diagnostics will appear on the Basic and Advanced integral displays, non-critical diagnostics will appear on the Advanced integral display.

Critical Diagnostics

Sensor Module Fault
Communications Module Fault
Sensor Communications Fault
Input 1 Fault
Input 2 Fault

Non Critical Diagnostics (for Advanced Display only)

Cal 1 Correct
Cal 2 Correct
Sensor Temperature
Sensor 1 Health
Sensor 2 Health
Input 1 Range
Input 2 Range
CJ Range
Input 1
Input 2
Input 1 TB6 (for RTD types only)
Input 2 TB8 (for RTD types only)
Factory Calibration
Loop Supply Voltage
Communications Module Temperature
DAC Temperature Compensation (not for Fieldbus))
Sensor Communications
Display Setup (not for Fieldbus))
Excess Delta Alert

Approval Certifications:

MSG CODE	AGENCY	TYPE OF PROTECTION	COMM OPTION	Electrical Parameters	Ambient Temperature
A	FM Approvals ™ (USA)	**Explosion proof,** Certificate: 3051269: Class I, Division 1, Groups A, B, C, D; **Dust Ignition Proof:** Class II, III, Division 1, Groups E, F, G; T4 Class 1, Zone 1, AEx d IIC T4 Gb Class 2, Zone 21, AEx tb IIIC T 95°C IP 66 Db	4-20 mA/ DE/HART/ FF/ PROFIBUS	Note 1	-50°C to 85°C With Display: -20°C to 70°C
		Intrinsically Safe, Certificate: 3051269: Class I, II, III, Division 1, Groups A, B, C, D, E, F, G; T4 Class I Zone 0 AEx ia IIC T4 Ga FISCO Field Device (Only for FF Option) Ex ia IIC T4	4-20 mA/ DE/HART /FF/ PROFIBUS	Note 2	-50°C to 70°C With Display: -20°C to 70°C
		Non-Incendive, Certificate: 3051269: Class I, Division 2, Groups A, B, C, D; T4 Class I Zone 2 AEx nA IIC T4 Gc AEx nA IIC T4	4-20 mA/ DE/HART /FF/ PROFIBUS	Note 1	-50°C to 85°C With Display: -20°C to 70°C
		Standards: FM 3600:2011; ANSI/ ISA 60079-0: 2013 FM 3615:2006; ANSI/ ISA 60079-1 : 2009 FM 3616 : 2011 ; ANSI/ ISA 60079-31 : 2009 FM 3610:2010; ANSI/ ISA 60079-11 : 2013 FM 3810 : 2005 ; FM 3611:2004; ANSI/ ISA 60079-15 : 2012 ; FM 3810 : 2005 ; NEMA 250 : 2003 ; ANSI/ IEC 60529 : 2004			
		Enclosure: Type 4X/ IP66/ IP67	ALL	ALL	ALL
B	CSA-Canada	**Explosion proof,** Certificate: 2689056: Class I, Division 1, Groups A, B, C, D; **Dust Ignition Proof:** Class II, III, Division 1, Groups E, F, G; T4 Zone 1 Ex d IIC T4 Gb Ex tb IIIC T 95°C IP 66 Db DIP A21 Class II, III	4-20 mA/ DE/HART/ FF	Note 1	-50°C to 85°C
		Intrinsically Safe, Certificate: 2689056: Class I, II, III, Division 1, Groups A, B, C, D, E, F, G; T4 Ex ia IIC T4 Ga FISCO Field Device (Only for FF Option) Ex ia IIC T4	4-20 mA/ DE/HART/ FF	Note 2	-50°C to 70°C
		Non-Incendive, Certificate: 2689056: Class I, Division 2, Groups A, B, C, D; T4 Class I Zone 2 Ex nA IIC T4 Gc Ex nA IIC T4 Gc	4-20 mA/ DE/HART/ FF	Note 1	-50°C to 85°C
		Enclosure: Type 4X/ IP66/ IP67	ALL	ALL	ALL
		Standards: CSA C22.2 No. 0-10; CSA 22.2 No. 25-1966 (reaffirmed 2009); CSA C22.2 No. 30-M1986 (reaffirmed 2012); CSA C22.2 No. 94-M91; CSA C22.2 No. 142-M1987 (reaffirmed 2009); CSA-C22.2No.157-92 (reaffirmed 2012); C22.2 No. 213-M1987(reaffirmed 2012); C22.2 No. 60529-05			

MSG CODE	AGENCY	TYPE OF PROTECTION	COMM OPTION	Electrical Parameters	Ambient Temperature
		C22.2 No. CSA 60079-0:2011; C22.2 No. 60079-1: 2011; C22.2 No. 60079-11: 2011; C22.2 No. 60079-15: 2012; C22.2 No. 60079-31: 2012; ANSI/ ISA12.12.01-2012; ANSI/ ISA 60079-0 (12.00.01): 2009 ; ANSI/ ISA 60079-1 (12.22.01): 2009 ; ANSI/ ISA 60079-11(12.02.01) : 2012; ANSI/ ISA 60079-26 (12.00.03) : 2011; ANSI/ ISA 60079-15(12.12.02) : 2012 ; ANSI/ ISA 60079-27 (12.02.04) : 2006; ANSI/ ISA 60079-31(12.10.03) : 2009 ; FM Class 3615: Aug 2006; FM Class 3616: Dec 2011; ANSI/ IEC 60529 : Edition 2.1 ANSI/ UL 913: Edition 7; ANSI/ UL 916 : Edition 4 ;			
C	ATEX	**Flameproof,** Sira 14ATEX2046X: II 2 G Ex d IIC T4 Gb II 2 D Ex tb IIIC T 95°C Db IP 66/ IP67	4-20 mA/ DE/HART/ FF	Note 1	-50°C to 85°C
		Intrinsically Safe, Sira 14ATEX2046X: II 1 G Ex ia IIC T4 Ga FISCO Field Device (Only for FF Option) Ex ia IIC T4	4-20 mA/ DE/HART/ FF	Note 2	-50°C to 70°C FISCO: -50°C to 45°C
		Enclosure: IP66/ IP67	ALL	ALL	ALL
		Standards: EN 60079-0: 2012; EN 60079-1 : 2007; EN 60079-31 : 2009 EN 60079-11: 2011; EN 60079-26 : 2006; EN 60529 : 2000 + A1			
		Non Sparking, Sira 14ATEX4052X: II 3 G Ex nA IIC T4 Gc	4-20 mA/ DE/HART/ FF	Note 1	-50°C to 85°C
		Enclosure: IP66/ IP67	ALL	ALL	ALL
		Standards: EN 60079-0: 2012; EN 60079-15 : 2010; IEC 60529 : 2009 with Corr 3			
D	IECEx	**Flameproof,** SIR 14.0020X Ex d IIC T4 Gb Ex tb IIIC T 95°C IP 66/ IP67	4-20 mA/ DE/HART/ FF	Note 1	-50°C to 85°C
		Intrinsically Safe, SIR 14.0020X Ex ia IIC T4 Ga FISCO Field Device (Only for FF Option) Ex ia IIC T4	4-20 mA/ DE/HART/ FF	Note 2	-50°C to 70°C FISCO: -50°C to 45°C
		Non Sparking, SIR 14.0020X Ex nA IIC T4 Gc	4-20 mA/ DE/HART/ FF	Note 1	-50°C to 85°C
		Enclosure: IP66/ IP67	ALL	ALL	ALL
		Standards: IEC 60079-0: 2011, Edition 6; IEC 60079-1 : 2007-04, Edition 6; IEC 60079-11 : 2011, Edition 6; IEC 60079-15 : 2010, Edition 4 IEC 60079-26 : 2006, Edition 2; IEC 60079-31 : 2008, Edition 1 IEC 60529 : 2009 with Corr 3			
E	SAEx (South Africa)	**Flameproof**: Ex d IIC T4 Gb Ex tb IIIC T 85°C IP 66 Db	4-20 mA/ DE/HART/ FF	Note 1	-50°C to 85°C
		Intrinsically Safe: Ex ia IIC T4 Ga FISCO Field Device (Only for FF Option) Ex ia IIC T4	4-20 mA/ DE/HART/ FF	Note 2	-50°C to 70°C
		Non Sparking: Ex nA IIC T4 Gc	4-20 mA/ DE/HART/ FF	Note 1	-50°C to 85°C
		Enclosure: IP66/ IP67	ALL	ALL	ALL
F	INMETRO	**Flameproof**: Ex d IIC T4 Gb Ex tb IIIC T 95°C IP 66 Db	4-20 mA/ DE/HART/ FF	Note 1	-50°C to 85°C

MSG CODE	AGENCY	TYPE OF PROTECTION	COMM OPTION	Electrical Parameters	Ambient Temperature
		Intrinsically Safe: Ex ia IIC T4 Ga FISCO Field Device (Only for FF Option) Ex ia IIC T4	4-20 mA/ DE/HART/ FF	Note 2	-50°C to 70°C
		Non Sparking: Ex nA IIC T4 Gc	4-20 mA/ DE/HART/ FF	Note 1	-50°C to 85°C
		Enclosure: IP66/ IP67	ALL	ALL	ALL
G	NEPSI (CHINA)	**Flameproof**: Ex d IIC T4 Gb Ex tb IIIC T 85°C IP 66	4-20 mA/ DE/HART/ FF	Note 1	-50°C to 85°C
		Intrinsically Safe: Ex ia IIC T4 FISCO Field Device (Only for FF Option) Ex ia IIC T4	4-20 mA/ DE/HART/ FF	Note 2	-50°C to 70°C
		Non Sparking: Ex nA IIC T4	4-20 mA/ DE/HART/ FF	Note 1	-50°C to 85°C
		Enclosure: IP66/ IP67	ALL	ALL	ALL

Notes

1. Operating Parameters:

4-20 mA/DE/HART (Loop Terminal)
Voltage= 11 to 42 V Current= 4-20 mA Normal (3.8 – 23 mA Faults)

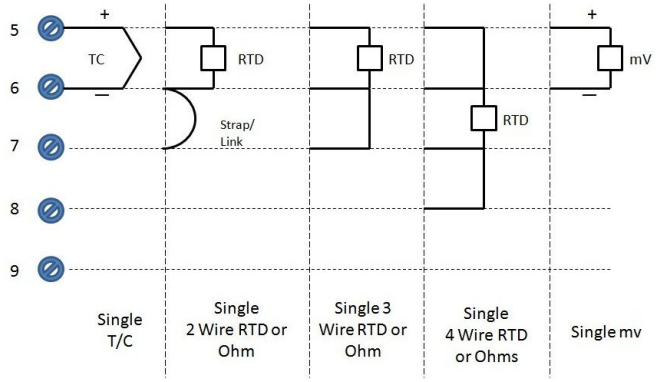
FF (Loop Terminal)
Voltage= 9 to 32 V Current= 25 mA

2. Intrinsically Safe Entity Parameters

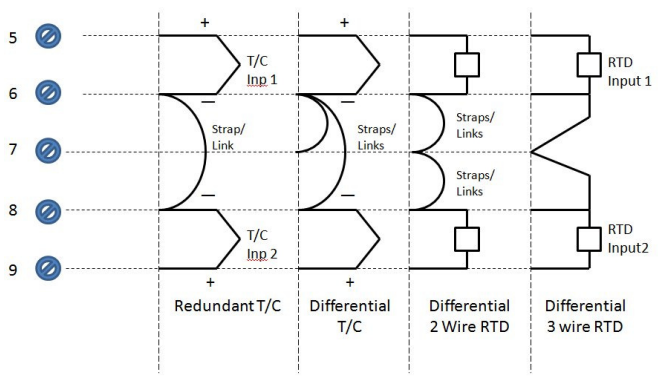
For details see Control Drawing on page 67.

SIL 2/3 Certification	IEC 61508 SIL 2 for non-redundant use and SIL 3 for redundant use according to EXIDA and TÜV Nord Sys Tec GmbH & Co. KG under the following standards: IEC61508-1: 2010; IEC 61508-2: 2010; IEC61508-3: 2010.

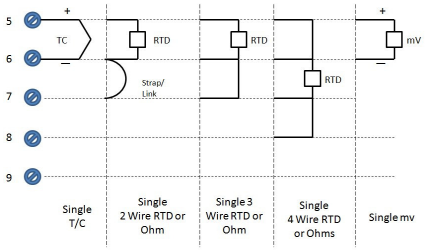
Wiring Diagrams



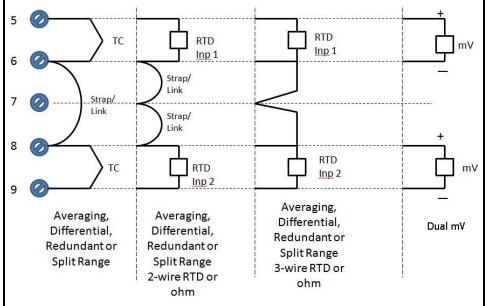
DE- Single Input Wiring Diagram
RTD' Thermocouple mV Connections



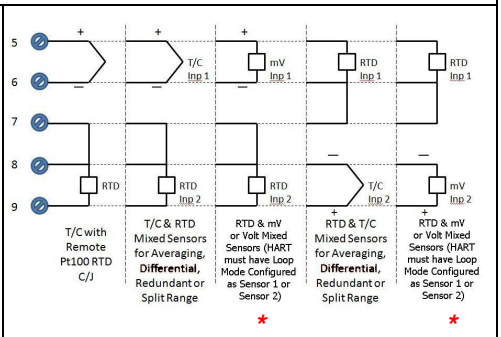
DE- Dual Input Wiring Diagram
Thermocouple and RTD Connections



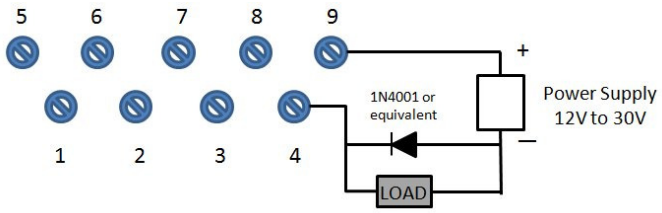
HART/FF – Single Input Wiring Diagram
RTD Thermocouple and mV Connections



HART/FF – Dual Input Wiring Diagram
RTD Thermocouple and Ohm Connections

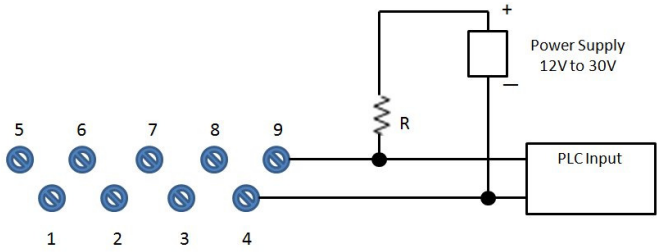


Dual Input HART/FF Wiring Diagram
Remote C/J and Mixed Sensors Connections
(* check with factory for availability)



Minimum Load = Power Supply Voltage / 40mA
Example: If the power supply voltage = 24V then the load must be a minimum of 24 V / 40mA = 600 Ω

Digital Output Connections for mA Load



Resistor should allow approximately 5mA of drop
Example: If the power supply voltage = 24V then the Resistor should be 24 V / 5mA = 4,800Ω

Digital Output Connections for PLC Counting Input

Mounting & Dimensional Drawings

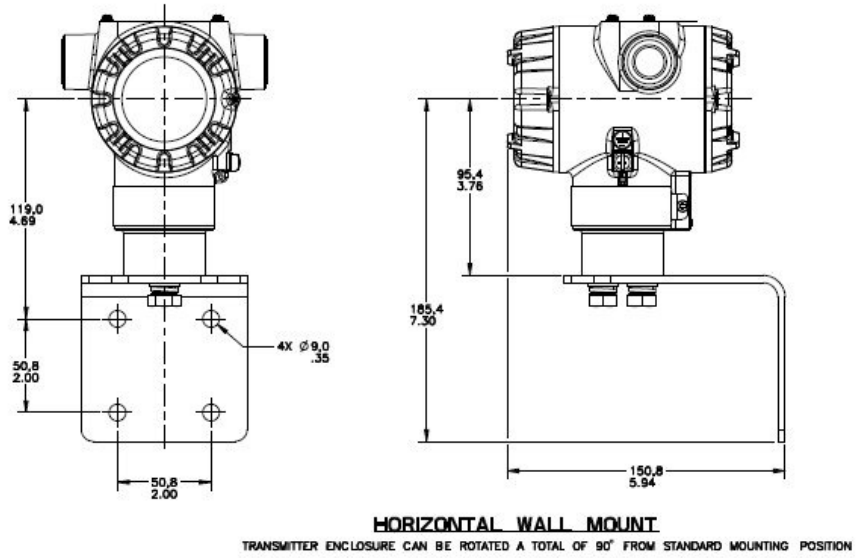


Figure 3 – STT850 Horizontal Wall Mounting

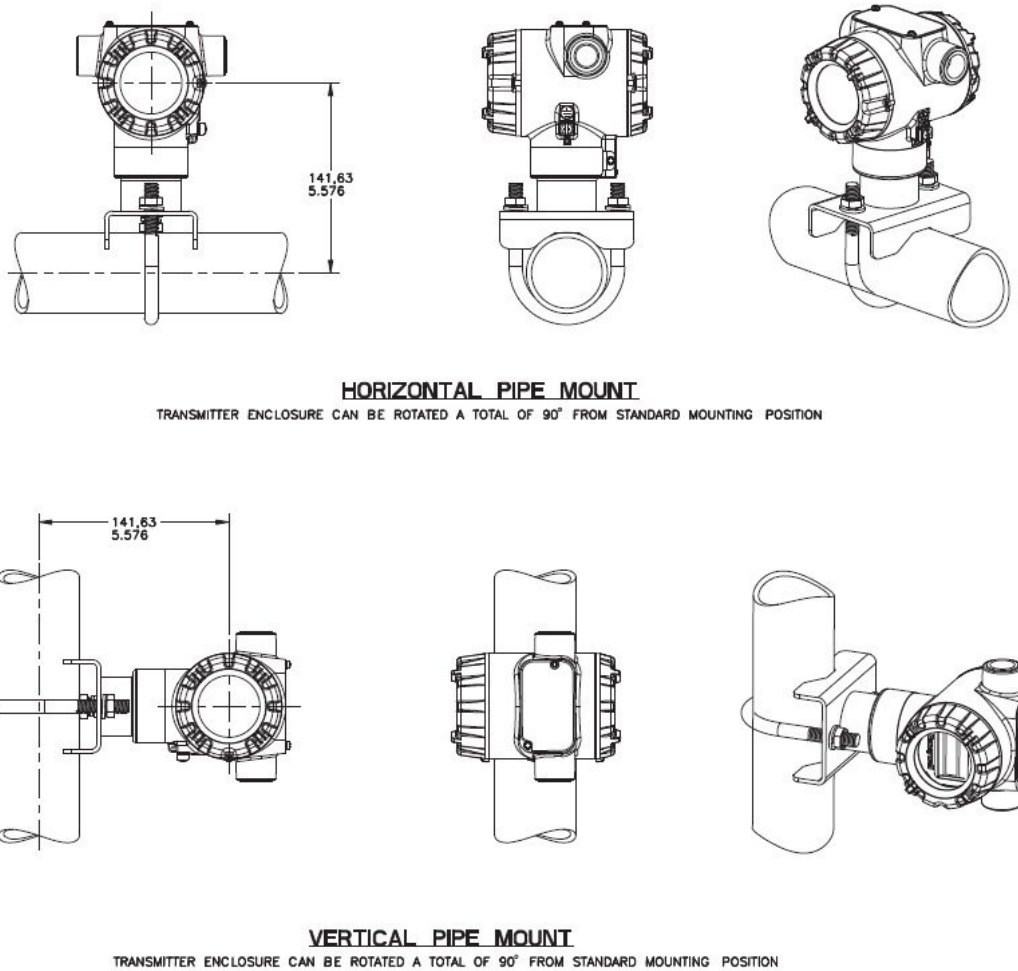


Figure 4 – STT850 Pipe Mount, Horizontal & Vertical

Reference Dimensions: $\frac{\text{millimeters}}{\text{inches}}$

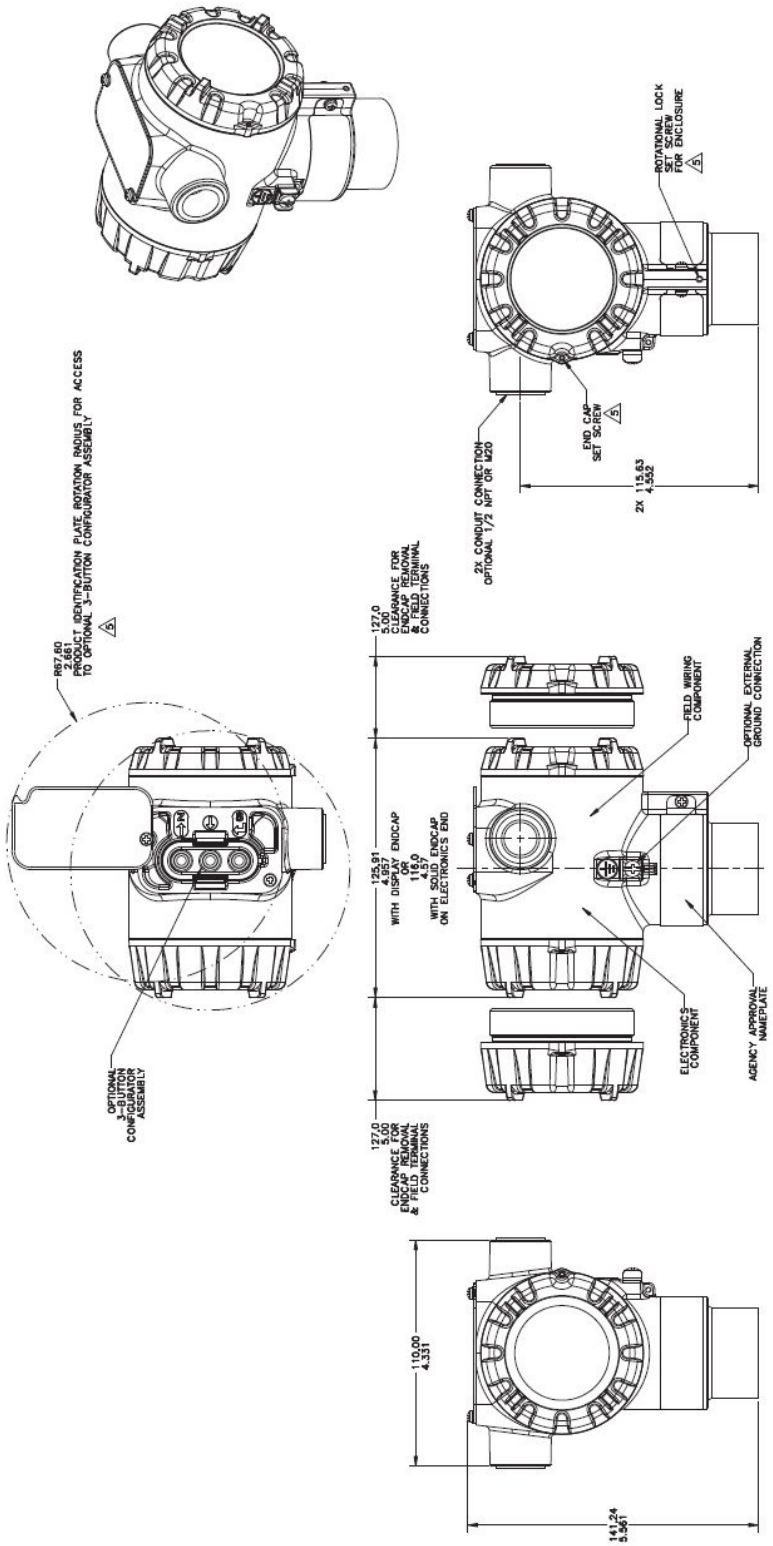


Figure 5 – STT850 Dimensions

Model Selection Guides are subject to change and are inserted into the specifications as guidance only.
Prior to specifying or ordering a model check for the latest revision Model Selection Guides which are published at:
www.honeywellprocess.com/en-US/pages/default.aspx

Model Selection Guide

Model STT850
Smart Temperature Transmitter

Model Selection Guide:

34-44-16-14 Issue 3

Instructions: Make selections from all Tables Key through XIII using column below the proper arrow. Asterisk indicates availability. Letter (a) refer to restrictions highlighted in the restrictions table. Tables delimited with dashes.
List Price: Price equals the sum of prices for all selections made.

Key	I	II	III	IV	V	VI	VII	VIII	IX
STT850	- _	- _	- _	- _ _ _	- _ _ _	- _	- _ _ _ _	- _ _, _ _, _ _	- XXXX

KEY NUMBER	Input Type	Availability Selection
	Universal Input	STT850 *

Table I	No of Inputs	
Input Details	Single	S *
	Dual	T *

Table II	Digital output	
Digital Output	No	0 *

TABLE III	Agency Approvals (see data sheet for Approval Code Details)	
Approvals	No Approvals Required	0 *
	FM Explosion proof, Intrinsically Safe, Non-incendive, & Dustproof	A *
	CSA Explosion proof, Intrinsically Safe, Non-incendive, & Dustproof	B *
	ATEX Explosion proof, Intrinsically Safe & Non-incendive	C *
	IECEx Explosion proof, Intrinsically Safe & Non-incendive	D *
	SAEx/CCoE Explosion proof, Intrinsically Safe & Non-incendive	E *
	INMETRO Explosion proof, Intrinsically Safe & Non-incendive	F *
	NEPSI Explosion proof, Intrinsically Safe & Non-incendive	G *
	KOSHA Explosion proof, Intrinsically Safe & Non-incendive	H *

TABLE IV	TRANSMITTER ELECTRONICS SELECTIONS			
a. Electronic Housing Material & Connection Type	Housing and Material	Connection	Lightning protection	
	Polyester Powder Coated Aluminum	1/2 NPT	None	A _ _ *
	Polyester Powder Coated Aluminum	M20	None	B _ _ *
	Polyester Powder Coated Aluminum	1/2 NPT	Yes	C _ _ *
	Polyester Powder Coated Aluminum	M20	Yes	D _ _ *
	316 Stainless Steel (Grade CF8M)	1/2 NPT	None	E _ _ *
	316 Stainless Steel (Grade CF8M)	M20	None	F _ _ *
	316 Stainless Steel (Grade CF8M)	1/2 NPT	Yes	G _ _ *
	316 Stainless Steel (Grade CF8M)	M20	Yes	H _ _ *
b. Output/ Protocol	Analog Output		Digital Protocol	
	4-20mA dc		HART Protocol	_ H _ *
	4-20mA dc		DE Protocol	_ D _ *
	none		Foundation Fieldbus	_ F _ *
c. Customer Interface Selections	Indicator	Config Buttons	Languages	
	None	None	None	_ _ 0 *
	None	Yes (Zero/Span Only)	None	_ _ A f
	Basic	None	English	_ _ B *
	Basic	Yes	English	_ _ C *
	Advanced	None	EN,GR,FR,IT,SP,RU,TU	_ _ D *
	Advanced	Yes	EN,GR,FR,IT,SP,RU,TU	_ _ E *
	Advanced	None	EN, CH, JP	_ _ H *
	Advanced	Yes	EN, CH, JP	_ _ J *

TABLE V	CONFIGURATION SELECTIONS					
a. Application Software	Diagnostics				1 _ _	*
	Standard Diagnostics					
	Write Protect	Fail Mode	High & Low Output Limits[3]			
b. Output Limit, Failsafe & Write Protect Settings	Disabled	High> 21.0mAdc	Honeywell Std	(3.8 - 20.8 mAdc)	_ 1 _	f
	Disabled	Low< 3.6mAdc	Honeywell Std	(3.8 - 20.8 mAdc)	_ 2 _	f
	Enabled	High> 21.0mAdc	Honeywell Std	(3.8 - 20.8 mAdc)	_ 3 _	f
	Enabled	Low< 3.6mAdc	Honeywell Std	(3.8 - 20.8 mAdc)	_ 4 _	f
	Enabled	N/A	N/A	Fieldbus	_ 5 _	g
	Disabled	N/A	N/A	Fieldbus	_ 6 _	g
c. General Configuration	Factory Standard				_ _ S	*
	Custom Configuration				_ _ C	*

[3] NAMUR Output Limits 3.8 - 20.5mAdc can be configured by the customer or select custom configuration Table Vc

TABLE VI	CALIBRATION & ACCURACY SELECTIONS				
a. Accuracy and Calibration	Accuracy	Calibrated Range	Calibration Qty		
	Standard	Factory Std	Single Calibration	A	*
	Standard	Custom (Unit Data Required)	Single Calibration	B	*

TABLE VII	ACCESSORY SELECTIONS			
a. Mounting Bracket	Bracket Type	Material		
	None	None	0 _ _ _	*
	Pipe Mounting Bracket	Carbon Steel	1 _ _ _	*
	Pipe Mounting Bracket	316 SS	3 _ _ _	*
	Wall Mounting Bracket	Carbon Steel	5 _ _ _	*
	Wall Mounting Bracket	316 SS	6 _ _ _	*
b. Customer Tag	Customer Tag Type			
	No customer tag		_ 0 _ _	*
	One Wired Stainless Steel Tag (Up to 4 lines 26 char/line)		_ 1 _ _	*
	Two Wired Stainless Steel Tag (Up to 4 lines 26 char/line)		_ 2 _ _	*
	One Wired Stainless Steel Blank Tag (Up to 4 lines 26 char/line)		_ 3 _ _	*
c. Unassembled Conduit Plugs & Adapters	Unassembled Conduit Plugs & Adapters			
	No Conduit Plugs or Adapters Required		_ _ A0	*
	1/2 NPT Male to 3/4 NPT Female 316 SS Certified Conduit Adapter		_ _ A2	n
	1/2 NPT 316 SS Certified Conduit Plug		_ _ A6	n
	M20 316 SS Certified Conduit Plug		_ _ A7	m
	Minifast® 4 pin (1/2 NPT) (not suitable for X-Proof applications)		_ _ A8	n
	Minifast® 4 pin (M20) (not suitable for X-Proof applications)		_ _ A9	m

TABLE VIII	Other Certifications and Options		
c. Certifications and Warranty	None - No additional options	00	*
	Certificate of Conformance	F3	* b
	Calibration Test Report & Certificate of Conformance	F1	*
	Certificate of Origin	F5	*
	SIL2/3 Certificate	FE	j
	Extended Warranty Additional 1 year	01	*
	Extended Warranty Additional 2 years	02	*
	Extended Warranty Additional 3 years	03	* b
	Extended Warranty Additional 4 years	04	*
	Extended Warranty Additional 15 years	15	*

TABLE IX	Manufacturing Specials		
Factory	Factory Identification	0000	*

MODEL RESTRICTIONS

Restriction Letter	Available Only with		Not Available with	
	Table	Selection(s)	Table	Selection(s)
f			IVb	_ F_
g			IVb	_ H,D_
j	IVb	_ H_	Vb	_ 1,2,5,6 _
m	IVa	B,D,F,H_ _		
n	IVa	A,C,E,G_ _		
b	Select only one option from this group			

Sales and Service
For application assistance, current specifications, pricing, or name of the nearest Authorized Distributor, contact one of the offices below.

ASIA PACIFIC
Honeywell Process Solutions,
(TAC) hfs-tac-support@honeywell.com

Australia
Honeywell Limited
Phone: +(61) 7-3846 1255
FAX: +(61) 7-3840 6481
Toll Free 1300-36-39-36
Toll Free Fax:
1300-36-04-70

China – PRC - Shanghai
Honeywell China Inc.
Phone: (86-21) 5257-4568
Fax: (86-21) 6237-2826

Singapore
Honeywell Pte Ltd.
Phone: +(65) 6580 3278
Fax: +(65) 6445-3033

South Korea
Honeywell Korea Co Ltd
Phone: +(822) 799 6114
Fax: +(822) 792 9015

EMEA
Honeywell Process Solutions,
Phone: + 80012026455 or
+44 (0)1202645583

Email: (Sales)
FP-Sales-Apps@Honeywell.com
or
(TAC)
hfs-tac-support@honeywell.com

AMERICA'S
Honeywell Process Solutions,
Phone: (TAC) 1-800-423-9883 or
215/641-3610
(Sales) 1-800-343-0228

Email: (Sales)
FP-Sales-Apps@Honeywell.com
or
(TAC)
hfs-tac-support@honeywell.com

Specifications are subject to change without notice.

To learn more about SmartLine Temperature contact your local channel partner...

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Motherwell: +44 (0) 1698 327372
Warrington: +44 (0) 1925 572401

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www.honeywellprocess.com

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