

Series 800 SMARTStat

The Series 800 Smartstat is a microprocessor controlled temperature switch, transmitter and indicator, which enables several instruments to be replaced with a single device.

General Specification

Power Supply:	24Vdc @ 3.5mA without 4 - 20mA transmission.
	24Vdc @ 22mA with 4 - 20mA transmission. Maximum supply voltage 30 Vdc.
Switching :	Relays have multi-layered contacts making them suitable for switching from 100mVdc 100µA to 30Vdc 3A or 250Vac 4A. Minimum switching life 10 ⁸ operations.
I.S. Certification:	EEx ia IIC T4/T5/T6 EN50 014 , EN50 020 & EN50 284.
	T4 = 80°C, T5 = 55°C, T6 = 40°C. Certificate No: Baseefa 03ATEX0504X
Power Supply:	24Vdc @ 3.5mA without 4 - 20mA transmission.
	24Vdc @ 22mA with 4 - 20mA transmission.
	24Vdc supply via any 28V 300ohm I.S. source certified by Baseefa or any EEC approved certification body to EEx ia IIC. For Smartstat supply C=0, L=0 Suitable barriers include MTL702+, MTL3041, MTL5041, etc.
Switching:	Each relay must be connected to a separate (or the same) I.S. source certified by Baseefa or any EEC approved certification body to EEx ia IIC whose output does not exceed 28Vdc. Umax IN = 28Vdc, Imax IN=3.33A. For relay outputs C=0, L=0. Suitable barriers include MTL707+, MTL2210B, MTL5016, etc.
Ambient Temperature:	-20°C to +85°C (I.S. may be lower)
Accuracy:	Linearity Error: +/- 0.2% typical
	Temperature hysteresis: +/- 0.01
CE:	This product satisfies the requirements of the Electromagnetic Compatibility Directive 89/336/EEC and amendments by compliance with standards EN50081-2 : 1993 and EN50082-2:1995.
	This product also complies with standard EN60947-5-1:1997 in addition to the standards listed for hazardous area certification.



FEATURES:

- RANGES FROM -40 TO 400°C
- 24VDC SUPPLY, 4-20mA LOOP POWERED
- HIGH ACCURACY OF 0.5% AND REPEATABILITY OF 0.1%
- STANDARD ELECTRICAL AND I.S. CERTIFIED VERSIONS AVAILABLE
- REDUCE COSTS

Main Applications

A **world leader** in temperature switches, Rototherm has become the standard for accurate and reliable measurement across the following industries:



Power
Generation



Oil & Gas



Pharmaceutical



Chemical,
Petrochemical &
Refining

ADDITIONAL BENEFITS

- * Pushbutton calibration of set points and transmitter range enables calibration on site without tools.
- * Programmable switching delays - the switching on or off (or both) of the relays may be delayed from 0.5 seconds to 15 minutes. This is particularly useful for preventing unwanted switching due to temperature transients.
- * Display of maximum and minimum temperatures recorded by the Smartstat.
- * Display of transmitter output in mA.

SMARTSTAT OPERATION

The input temperature applied to the Smartstat is converted to a proportional electrical signal by the PT100 IEC751: Class A, platinum resistance sensor. After amplification this signal inputs directly into the analogue to digital (a/d) port on the microprocessor.

The microprocessor continuously calculates the temperature from the input signal, compares this to the switch setpoints and operates the relays as required. If the temperature rises above the UPPER switch point the relay changes over from normally closed (NC) to normally open (NO), as the temperature falls below the LOWER switch point the relay changes over from NO to NC.

In addition the microprocessor updates the LCD display of the temperature and the status of the relays. The typical response time of the relays to an alarm condition is about 125mSec.

Should the 24Vdc power supply fail (or fall below 12 volts) the relays can be configured to remain in their current position or switch to the NO or NC position. This is the 'Fail State' that is indicated on the LCD.

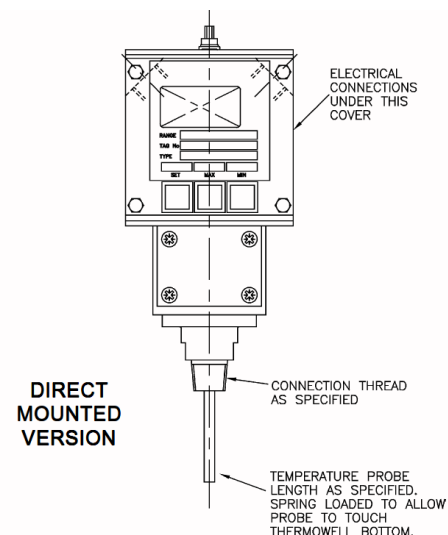
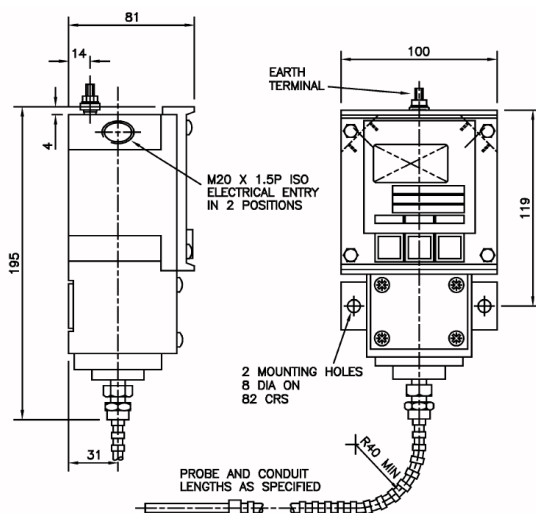
A separate watchdog timer (WDT) continuously monitors the operation of the microprocessor. In the unlikely event that the processor 'hangs' this is detected by the WDT which re-boots the processor, restoring normal operation within 3 seconds.

Entry of the switching points, the Fail State and switching delays for each relay is carried out using the pushbuttons on the front of the Smartstat. An access code must be entered first to ensure that there are no unauthorised changes.

The temperature settings for each relay are adjustable throughout the range enabling the switching differential to be varied from just one digit, up to 100% of the range. All of the information entered is stored on an EEPROM so that it is retained when the power supply is off.

The pushbuttons on the front of the Smartstat are also used to calibrate the transmitter output. An access code must be entered first to ensure that there are no unauthorised changes. The 'start of range' and 'end of range' can be input and 4-20 mA or 20-4 mA selected. If the transmitter output is not required it can be disabled, resulting in a constant supply current of 3.5mA to the Smartstat.

The maximum and minimum temperatures applied to the Smartstat can be displayed by pressing the MAX or MIN pushbuttons. These values can be reset to the current temperature by holding down the appropriate pushbutton for 15 seconds. The relays are optional on the Smartstat and can be obtained at a later date and easily fitted by the customer.



Ordering Information

Temperature Switch	STANDARD →	883T	1	1	21	00	100	1.5
Range Code	881T	881T						
	882T	882T						
	883T	883T						
	884T	884T						
	885T	885T						
	886T	886T						
	887T	887T						
	888T	888T						
Certification	Standard Electrical		1					
	Certified Intrinsically Safe (I.S.)		7					
Housing Material	Aluminium Housing with Epoxy Hardened stoved enamel finish			1				
	Austenitic stainless steel housing with self finish			4				
Entry & Transmission	Two M20 x 1.50 ISO cable entries / 4-20 mA				21			
Output Switch	None					00		
	2 x SPDT relays					02		
RTD Element Length	100 mm						100	
	150 mm						150	
	200 mm						200	
	300 mm						300	
Conduit Length	1.5 m							1.5
	3.0 m							3.0
	5.0 m							5.0
	NPT							NPT
	BSP							BSP
***The last 2 options are direct mounted								

For any other options, please contact us sales@rototherm.co.uk or +44 (0)1656 740551

NOTES:

- Dust and weatherproof ratings are IP65 to BS EN 60529 (IEC60529).
- Almost any probe and conduit lengths can be provided. If the option you require is not listed above please contact Rototherm Technical Sales. Please note that the minimum probe length that can be provided is 50mm and the maximum conduit length for an I.S. (Intrinsically Safe) Smartstat is 10 metres.
- All probes are 6mm diameter.
- The probe and conduit are manufactured in stainless steel.
- Smartstat temperature switches use a four-wire, class 'A' RTD element that provides an accuracy of:

- 0.3°C at 0°C
- 0.8°C at 100°C
- 1.3°C at 200°C
- 2.3°C at 400°C

THERMOWELLS

Rototherm can supply 316 stainless steel screwed bar stock thermowells suitable for the 6mm probes fitted on SMARTStat temperature switches.

They are available with different thread options including 1/2" NPT male and 1/2" BSPT male, and different insertion lengths to suit the process requirements.

Thermowells are also available for the direct-mounted Smartstat temperature switch. These have a 3/4" NPT male connection for process mounting and a 1/2" NPT female connection for the Smartstat.

Table 1. Order Coding - Range Codes:

Series 800 Temperature Range Codes				
Range Code	Temperature Range °C	Maximum Temperature °C	Min. Span	Max. Span
881T	-20 to +30 °C	500 °C	10 °C	50 °C
882T	0 to 50 °C	500 °C	10 °C	50 °C
883T	-40 to +60 °C	500 °C	20 °C	100 °C
884T	-20 to +80 °C	500 °C	20 °C	100 °C
885T	0 to 100 °C	500 °C	20 °C	100 °C
886T	0 to 200 °C	500 °C	40 °C	200 °C
887T	0 to 300 °C	500 °C	60 °C	300 °C
888T	0 to 400 °C	500 °C	80 °C	400 °C

NOTES ON RANGE TABLE:

1. The RTD element used in the Smartstat can be configured to provide almost any range between -100°C and +400°C, and high temperature elements can be used up to 650°C. If the range you require is not listed above please contact Rototherm Technical Sales.

2. The minimum span setting for the 4-20mA transmission is 20% of the Smartstat range. The maximum setting is 100% of the Smartstat range.

Technical Certification

- Certificate of conformity
- Factory Test Certificate
- Factory Calibration Certificate (3 point)
- Factory Calibration Certificate (5 point)
- Material Certificate

Export Documentation

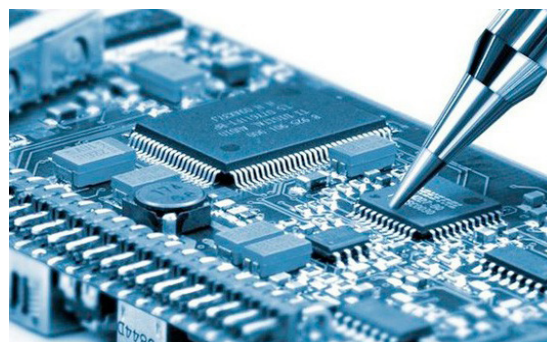
- Certificate of Origin
- EUR1
- ATR

Calibration and After-Sales Support

- Fully trained field service personnel
- Use of UKAS certified calibration equipment
- 5 day turnaround
- Fixed pricing
- Approved manufacturer parts
- Full post-service reports
- 12 month warranty



ISO9001:2008
FM11958



For more information, please contact our service team services@rototherm.co.uk