SEM1605TH USER GUIDE

SMART RAIL MOUNT THERMISTOR TRANSMITTER
TWO WIRE (4 to 20) mA OUTPUT

Important - Please read this document before installing.
Every effort has been taken to ensure the accuracy of this document; however, we do not accept responsibility for damage, injury, loss or expense resulting from errors and omissions, and we reserve the right of amendment without notice.

IMPORTANT – CE, UKCA & SAFETY REQUIREMENTS

Product must be mounted inside a suitable enclosure providing environmental protection to IP65, higher is recommended.
To maintain CE, UKCA EMC requirements, input wires are recommended to be less than 30 metres.
The product contains no serviceable parts, or internal adjustments. No attempt must be made to repair this product. Faulty units must be returned to supplier for repair.
This product must be installed by a qualified person. All electrical wiring must be carried out in accordance with the appropriate regulations for the place of installation.
Before attempting any electrical connection work, please ensure all supplies are switched off.

ABSOLUTE MAXIMUM CONDITIONS (To exceed may cause damage to the unit).	
Supply Voltage	± 30 V dc (Protected for over voltage and reverse connection) SELV
Current with overvoltage	± 200 mA
Input Voltage	± 3 V between any terminals
Ambient	Temperature (- 30 to 70) °C RH (10 to 95) % non-condensing

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1~DESCRIPTION.

The SEM1605TH is a digital rail mount transmitter that accepts Thermistor temperature sensors and converts sensor output over a configured range to a standard industrial (4 to 20) mA transmission signal.

2~RECEIVING AND UNPACKING.

Please inspect the packaging and instrument thoroughly for any signs of transit damage. If the instrument has been damaged, please notify your supplier immediately.

3~SPECIFICATION.

Refer to data sheet for full specification. Download at www.status.co.uk

Configuration	
Factory default	YSI10KB (0 to 100) °C, upscale burnout, 0.0°C offset

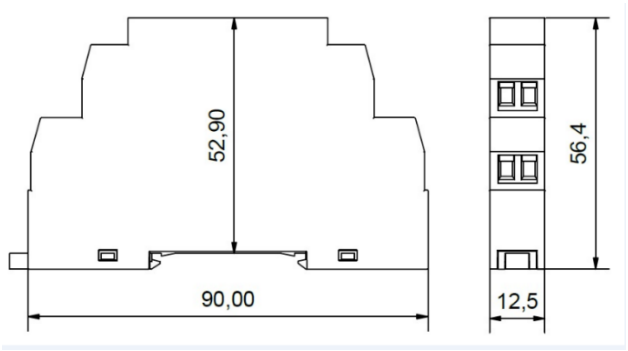
4~INSTALLATION AND WIRING

Important safety requirements

This equipment is suitable for environment Installation BS EN61010-1 Pollution Degree 2; Installation CAT II; CLASS I and is classed as "PERMANENTLY CONNECTED EQUIPMENT". The equipment is intended for industrial and commercial application only and not suitable for domestic or medical use.
The equipment must be mounted inside an enclosure that provides protection >= IP65. In NORMAL USE, the equipment will only be accessed for maintenance by qualified personnel. Please ensure the equipment is mounted vertically with terminals (7 and 8) at the bottom. This will provide maximum ventilation. This equipment may generate heat. Ensure the enclosure size is adequate to dissipate heat. Be sure to consider any other equipment inside the enclosure.
The equipment surfaces may be cleaned with a damp cloth. Use a mild detergent/water. Ensure the supply is OFF before cleaning and, on completion of cleaning, the equipment is completely dry before the supply is turned back ON.
This equipment must be installed by a qualified person. All electrical wiring must be carried out in accordance with the appropriate regulations for the place of installation.

4.1~MECHANICAL.

Dimensions in mm

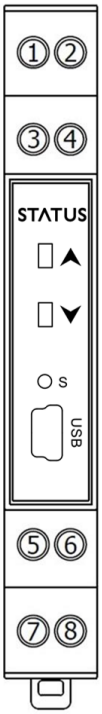


The equipment must be mounted on a DIN rail style DIN EN50022 inside a plastic or metal enclosure with a protection level >= IP65. All wiring must be secured. Maximum cable sizes 2.5 mm². Connection is via screw clamp terminals.

4.2~ELECTRICAL

CONNECTIONS. For wiring connections refer to the side label on the SEM1605TH and this document.

4.2.1~OUTPUT: Connections for cable length >3 metres, use screen or twisted pair cables. Maximum cable run = 1000 metrre. The output loop should be grounded at a single point.



Pin 1 = Output negative (-)
Pin 2 = Output Positive (+), (10 to 30) Vdc

4.2.2~INPUT: Thermistor wires should be equal length and type and as short as possible.

Note: Tested with 30-meter input sensor wires to meet BS EN 61326, keeping input cable within this length is recommended.

2 Wire Thermistor and RTD sensor connection
Pin 5
Pin 7
Thermistor polarity is not required.

If no sensor (input) connection is made, the transmitter will go to its error signal output value, depending on configuration.

4.3~S LED (STATE)

The State LED is OFF under normal run conditions indicating an in-range input signal. If the input signal is out of range or is lost, the State LED will light (RED)
The State LED also has some programming functions. See 5.2

5~USER-CONFIGURATION.

IMPORTANT READ COMPLETE SECTION

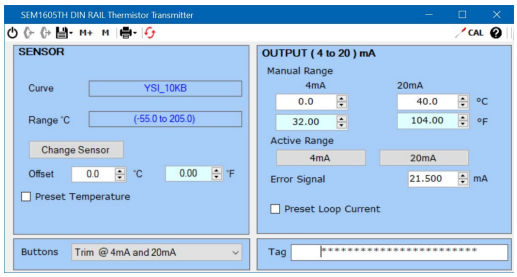
The SEM1605TH can be configured whilst connected and powered, but a portable battery-powered computer or USB isolator must be used to avoid the effects of ground loops.

Observe any warning information given in the configuration software.

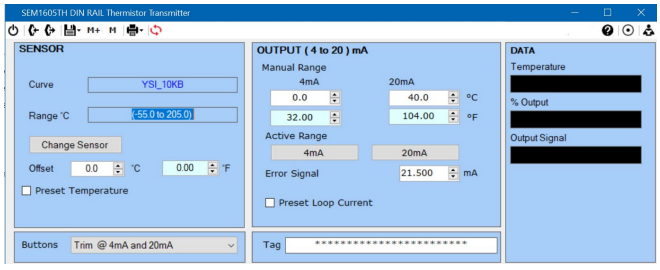
PC Configuration steps		
1	Download and install USB-SpeedLink software from www.status.co.uk Ensure the PC is web-enabled during installation	
2	Run the software and open to the correct screen for the SEM1605TH	
3	Connect to the PC using an A to Mini B USB lead*1.	
4	Use the "Read Configuration" button to view current configuration	
5	Configure the device to the required settings for operation.	
5.1	Standard configuration options.	
	Thermistor sensor type Offset Button function	Low and High range Error signal value Tag
5.2	Active Range configuration options.	
	4 mA or 20 mA: On clicking the button, the signal on the input will be entered for Low (4 mA) or High (20 mA) range value*2.	
5.3	Diagnostic configuration options.	
	Pre-set Temperature: This will fix the input value to the device at the entered value*3. Pre-set Loop Current: This will fix the mA output value from the device to the entered value*3.	
5.4	Multi-function button options. See 5~2.	
	Trim, Active Range, Off	
6	Read data:	
	Live data can be displayed showing input and output values. This can only be done if the device is powered as well as connected to the software via the USB lead*2.	
7	Write/Save the configuration to the device*4.	
*1 Once only, on the first time connecting to the SEM1605TH, drivers will install to the PC. Allow time for this before proceeding.		
*2 The SEM1605PV can be configured whilst connected and powered, but a portable battery-powered computer or USB isolator must be used to avoid the effects of ground loops.		
*3This will only clear when removed using the software.		
*4 The configuration is not saved onto the device unless the configuration screen is sent using the "Send Configuration" button.		

5.1~USBSpeedLink software.

Note: When the unit is correctly connected, the "Send Configuration" and "Receive Configuration" menu buttons will turn black and the "DATA" section of the screen will open to the right.



SEM1605TH screen with no device connected.



SEM1605TH connected correctly.

5.2~BUTTON CONFIGURATION

Options are available depending on the settings selected in software.

Buttons: Trim Configuration steps	
1	User-adjust function allows manual adjustment of the output current. This is useful for minor calibration adjustment or trimming out any sensor error; adjustment is available at both offset and span. Raise and Lower buttons are provided on the front panel of the transmitter, accessed using a 3 mm flat blade screwdriver. Insert the screwdriver into the appropriate slot to operate the button. The button has a click action. The transmitter will automatically detect the correct adjust point (offset or span) based on the output current signal. Offset will be adjusted when the voltage is between (3.8 to 6) mA, Span when the current is between (18 to 22) mA. No trim action occurs at any other voltage.
1.1	Connect transmitter to a suitable resistor (decade box) or sensor. Connect output to a dc supply, connect an ammeter in series with the output signal. Turn supply on, set input to either offset or span calibration point.
1.2	Press and hold the red up arrow ▲ for 10 s until the S LED starts to flash, then release the button
1.3	Adjust output Voltage by pressing either the ▲ or ▼ button, single click to step advance , or press continuously to auto advance.
1.4	Once adjust is complete, allow 30 seconds with no button press. The transmitter will time out and return to normal operation.

Buttons: Active Range Configuration steps	
1	User-range function allows manual adjustment of the 4 mA and 20 mA output range in relation to the input value.
1.1	Connect a resistor decade box or an input sensor to the SEM1605TH. Connect the SEM1605TH to a (15 to 30) VDC power supply. A digital ammeter connected to the output of the SEM1605TH will be useful to monitor the (4 to 20) mA output signal. Turn on the supply and allow 1-minute warm-up period.
1.2	Set the resistor (decade box) to the equivalent resistance of the sensor for the required low range temperature or apply required low range temperature to the sensor. Allow 10 seconds for the SEM1605TH to settle.
1.3	Press and hold the Low range ▼ button until the S LED starts to flash, then release the button. Press and release the Low range ▼ button again: the S LED will flash quickly for a short time and the new low range will be stored. The output current will go to 4.0 mA.
1.4	Set the resistor (decade box) to the equivalent resistance of the sensor for the required high range temperature or apply required high range temperature to the sensor. Allow 10 seconds for the SEM1605TH to settle.
1.5	Press and hold the High range ▲ button until the S LED starts to flash, then release the button. Press and release the High range ▲ button again: the S LED will flash quickly for a short time and the new high range will be stored. The output current will go to 20.0 mA. The ranging of the SEM1605TH is now complete.
Note: The Low and High user-adjust can be set individually and in any order, as required.	

Buttons: Off	
1	No action performed on any button press.

5.3~Thermistor Sensor Library.

Due to frequent updates to the sensor library, the software may not install the full list of available sensors.

Please refer to www.status.co.uk for the full list of sensors available.

With any requests for thermistor sensors not available in the library, please contact sales@status.co.uk

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