STATUS INSTRUMENTS

SEM1605P
USER INSTRUCTIONS

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 DIN rail mounted, inside a suitable enclosure providing environmental protection to IP65 or greater.

To maintain CE UKCA requirements, input and supply wires must 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. 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 (SELV)	+/- 30 Vdc (4 to 20) mA loop
Current with over Voltage	+/- 100 mA
Output loop	30 mA fuses recommended
Input Voltage	+/- 3 V between any terminals
Environmental protection	IP65 or greater required
Ambient	Temperature (-10 to 70) °C RH (10 to 95)% non-condensing

UKCA CE ♲ ⚠️ **Important – Read this document before installing.**

1~DESCRIPTION.

The SEM1605P is a DIN rail mounted temperature transmitter. It has been designed to accept most common RTD temperature sensor inputs and provide the user with a standard two wire (4 to 20) mA output signal. All temperature ranges are linear to temperature.

To configure: connect a standard USB cable between the SEM1605P and a PC. The free configuration software will guide you through any changes you wish to make. The SEM1605P does not need to be wired to a power supply for configuration.

Incorrect connection to the output loop will not damage the device as long as the specified maximum currents/voltages are not exceeded.

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 the datasheet for full specification. Download at www.status.co.uk

Factory defaults	Pt100 IEC 003851, (0 to 100) °C Upscale burnout, Zero offset, Buttons = Trim

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.

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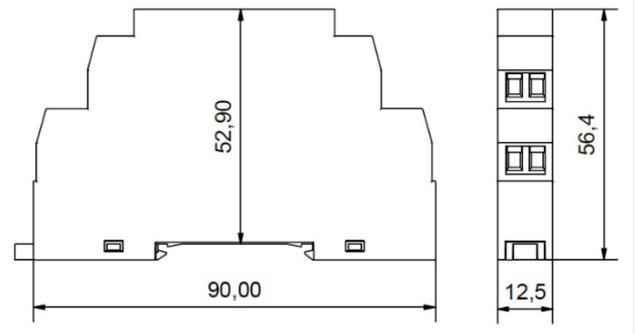
The equipment must be mounted on a DIN rail style DIN EN50022 inside a plastic or metal enclosure with a protection level >= IP65. All wiring must be secured. Maximum cable sizes 2.5 mm². Connection is via screw clamp terminals.

4.2~ELECTRICAL
CONNECTIONS. For wiring connections refer to the side label on the SEM1605P and this document.

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

Pin 1 = Output negative (Ch1 -)
Pin 2 = Output positive (Ch1 +)

Input: RTD wires must be equal length and type .
To maintain CE compliance cable length must be less than 30 metres.

2 Wire RTD probes
Link Pin 5 to Pin 6
Pin 5 = Red or 1st single wire
Pin 7 = White or 2nd single wire

3 Wire RTD probes
Pin 5 = Red or either common wire
Pin 6 = Red or either common wire
Pin 7 = White or single wire

4 Wire RTD probes
Pin 5 = Red or either common wire (1st pair)
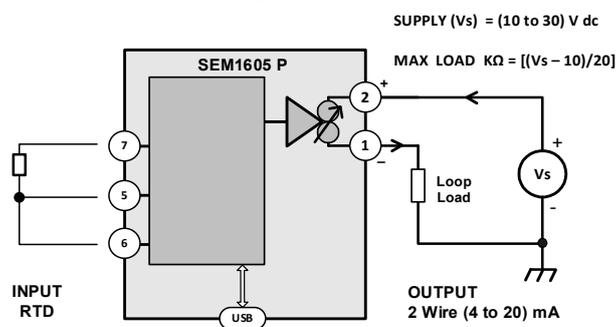Pin 6 = Red or either common wire (1st pair)
Pin 7 = White or either common wire (2nd pair)
Leave one White or common wire (2nd pair) unconnected and insulate any bare wire.

Connections to the transmitter are made via screw clamp terminals. Wire protector plates are provided inside each terminal.

4.2~ELECTRICAL (continued)
SEM1605P Basic block diagram, 3 wire RTD

It is good practice to ensure that the (4 to 20) mA loop is grounded at a single point in the loop.
Before installation, care must be taken to ensure enough voltage is available in the loop to drive the total loop load.

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.

⚠️ **The** SEM1605P 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 software.

5.1~PC CONFIGURATION USBSpeedLink Software

	PC Configuration steps
1	Download and install the USBSpeedLink software from www.status.co.uk
2	Run the software and open to the correct screen for the SEM1605P
3	Connect to the PC using an A to Mini B USB lead.*1
4	Read the current configuration into the software.
5	Configure the device to the required settings for operation.
5.1	Standard configuration options. RTD Sensor type Offset Low and High range Units Error signal value Tag
5.2	Active configuration options. 4 mA or 20 mA: On click of 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.*4 Pre-set Loop Current: This will fix the mA output value from the device to the entered value.*4
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. *3
7	Write/Save the configuration to the device. *2

*1 Once only, on the first time connecting to the SEM1605P, drivers will install to the PC, allow time for this before proceeding.

*2 The configuration is not saved onto the device unless the configuration screen is sent.

*3 The SEM1605P 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.

*4 This will only clear when removed using the software.

5.2~BUTTON CONFIGURATION
Limited configuration options are available depending on the settings selected on the front panel push buttons. See 5.1 step 5.4

	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, ± 5% of range 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 drive. Offset will be adjusted when the current is between (3.8 to 6) mA, Span when the current is between (18 to 22) mA. No trim action occurs at any other current.
1.1	Connect transmitter to a suitable Resistor decade box or sensor. Connect output to a dc supply, connecting a digital mA current meter in series with the output. 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 current 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 SEM1605P using the three connection terminals. Connect the SEM1605P to a (10 to 30) VDC power supply. A digital ammeter connected in series with the SEM1605P will be useful to monitor the (4 to 20) mA current but is not essential. Turn on the supply and allow 1-minute warm up period.
1.2	Set the resistance 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 SEM1605P 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 4.00 mA.
1.4	Set the resistance 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 SEM1605P 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 20.00 mA. The ranging of the SEM1605P 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~ANDROID MONITORING USBView Software
Using a suitable OTG USB lead to connect the SEM1605P to an Android device, live data reading can be taken.
The USBView app. can display input temperature, output mA and the Tag information.

USB Software can be downloaded free of charge from
www.status.co.uk