

SEM1605PV USER GUIDE

RAIL MOUNT Pt100/RTD TRANSMITTER

THREE WIRE (0 to 10) V 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 DIN rail 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. 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 SEM1605PV is a digital rail mount transmitter that accepts Pt100 and other RTD temperature sensors and converts sensor output over a configured range to a standard industrial (0 to 10) V 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	Pt100 (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.

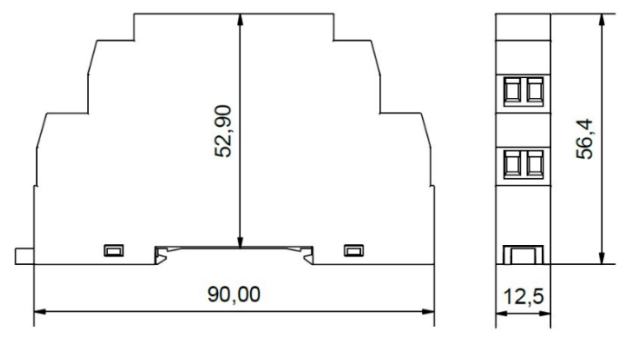
The equipment must be mounted inside an enclosure that provides protection $\geq$ IP65. In NORMAL USE, the equipment will only be accessed for maintenance by qualified personnel. Please ensure the equipment is mounted vertically with terminals (7 and 8) at the bottom. This will provide maximum ventilation. 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



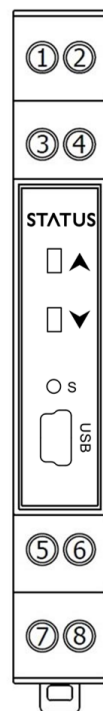
The equipment must be mounted on a DIN rail style DIN EN50022 inside a plastic or metal enclosure with a protection level $\geq$ IP65. All wiring must be secured. Maximum cable sizes 2.5 mm². Connection is via screw clamp terminals.

4.2~ELECTRICAL

CONNECTIONS. For wiring connections refer to the side label on the SEM1605PV and this document.

4.2.1~OUTPUT: Recommended for cable length >3 metres, use screened or twisted pair cables.

Always ensure the output (0 to 10) V is grounded at one point; this would normally be at the monitoring equipment or power supply. Screened wires are recommended for output wires. Avoid running signal wires alongside mains or AC power lines or other sources of electrical interference.



Pin 1 = Supply 0 V (-)

Pin 2 = Supply Positive V (+) (15 to 30) Vdc

Pin 4 = Output Signal (0 to +10) V

4.2.2 Input: RTD wires must be equal length and type.

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

2 Wire RTD probes (1 x Red, 1 x White)

Link Pin 5 to Pin 6

Pin 5 = Red or 1st single wire

Pin 7 = White or 2nd single wire

3 Wire RTD probes (2 x Red, 1 x White)

Pin 5 = Red or either common wire

Pin 6 = Red or either common wire

Pin 7 = White or single wire

4 Wire RTD probes (2 x Red, 2 x White)

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.

Note: For RTD sensors, wires must be of equal length and type for the lead compensation to work correctly.

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

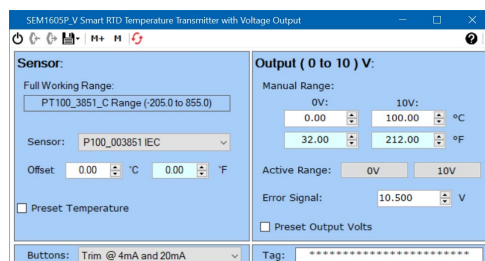
The SEM1605THV can be configured whilst connected and powered, but a portable battery-powered computer or USB isolator must be used to avoid the effects of ground loops.

Observe any warning information given in the configuration software.

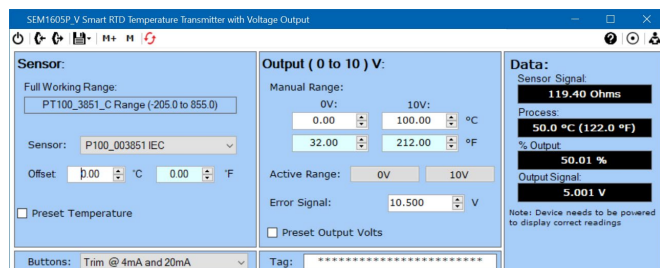
PC Configuration steps		
1	Download and install USB-SpeedLink software from www.status.co.uk Ensure the PC is web-enabled during installation.	
2	Connect to the PC using an A to Mini B USB lead ^{*1} .	
3	Run the software and open to the correct screen for the SEM1605PV.	
4	Use the "Read Configuration" button to view current configuration	
5	Configure the device to the required settings for operation.	
5.1	Standard configuration options.	
	RTD sensor type Offset Button function	Low and High range Error signal value Tag
5.2	Active Range configuration options.	
	0 V or 10 V: On clicking the button, the signal on the input will be entered for Low (0 V) or High (10 V) 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 Output Volts: This will fix the V 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 SEM1605PV, 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.		
^{*3} This 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.



SEM1605PV screen with no device connected.



SEM1605PV 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 voltage. This is useful for minor calibration adjustment or trimming out any sensor errors, 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 voltage signal. Offset will be adjusted when the voltage is between (0 to 1) V Span when the voltage is between (9 to 10.5) V. 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 a voltmeter across the output signal pins. 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 0 V and 10 V output range in relation to the input value.
1.1	Connect a resistor (decade box) or an input sensor to the SEM1605PV. Connect the SEM1605PV to a (15 to 30) VDC power supply. A digital voltmeter connected to the output of the SEM1605PV will be useful to monitor the (0 to 10) V output signal. Turn on the supply and allow 1-minute warm-up period.
1.2	Set a 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 SEM1605PV 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 voltage will go to 0.0 V.
1.4	Connect a 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 SEM1605PV 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 voltage will go to 10.0 V. The ranging of the SEM1605PV 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.

6~TECHNICAL SUPPORT.

If you need to contact Status Instruments for technical support, please refer to this page on our website. <https://www.status.co.uk/support/>

Status Instruments Ltd, Status Business Park, Gannaway Lane, Tewkesbury, Gloucestershire, UK, GL20 8FD, Web Page: www.status.co.uk, Email: sales@status.co.uk

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