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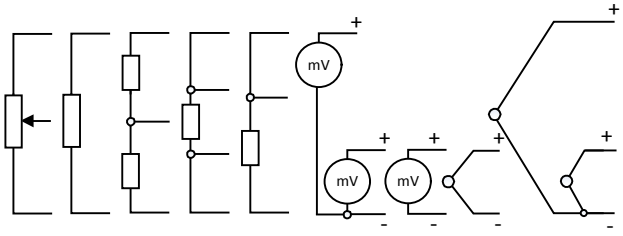
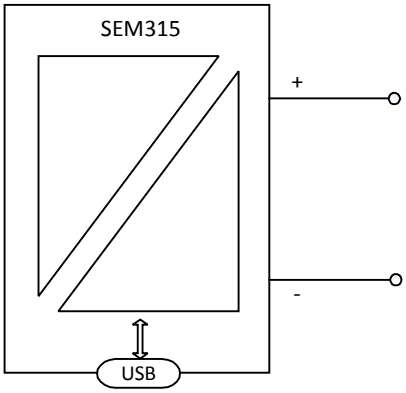
SEM315 MKII USER GUIDE

SMART RAIL MOUNTED HART UNIVERSAL TRANSMITTER
TWO WIRE (4 to 20) mA OUTPUT





Important - Please read this document before any installation.

IMPORTANT - CE & SAFETY REQUIREMENTS

Product must be mounted inside a suitable enclosure providing environmental protection to IP65 or greater.

To maintain CE EMC requirements, input 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.

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)
Current with over voltage	± 100 mA
Input Voltage	± 3 V between any terminals
Ambient Temperature	(-30 to 70) °C Humidity (10 to 95) % RH (Non condensing)

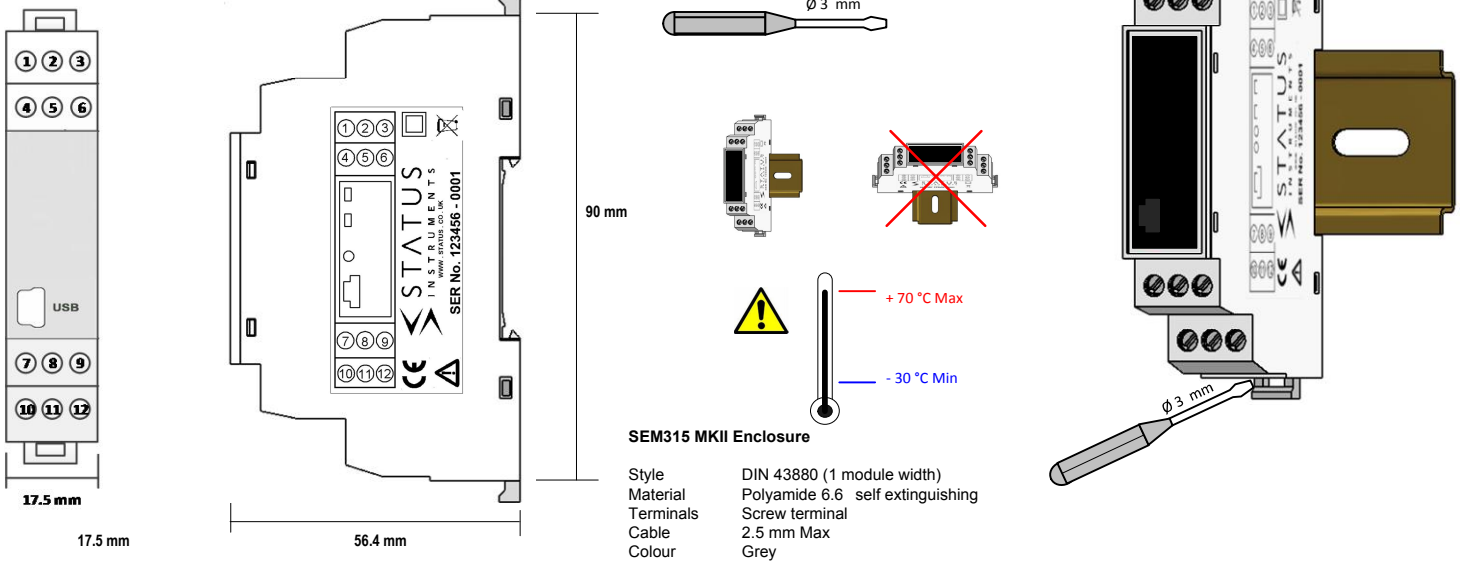
Conditions for use

The SEM315 MKII temperature transmitter should be mounted in an enclosure with a minimum IP rating of IP65. The enclosure should be specified to operate in the ambient temperature range of (-30 to 70) °C.

Maintenance

The SEM315 MKII apparatus contains no user serviceable, adjustable or replaceable parts. No attempt should be made to repair a SEM315 MKII device, all units must be returned to the manufacturer for repair or replacement. Attempted service or replacement of parts may invalidate the warranty of the SEM315 MKII.

Mechanical Detail



SEM315 MKII Enclosure

Style	DIN 43880 (1 module width)
Material	Polyamide 6.6 self extinguishing
Terminals	Screw terminal
Cable	2.5 mm Max
Colour	Grey

Installation

For SEM315 MKII specification please refer to product data sheet. Configuration/Installation is normally performed in the following order. The user may wish to reconfigure the transmitter in the field, in this instance the SEM315 MKII configuration can be changed by following step 1.

1. Configuration
2. Mount Transmitter
3. Wire Sensor
4. Wire (4 to 20) mA Loop

1. Configuration

Note: - The SEM315 MKII can be configured whilst connected and powered, but a portable battery powered computer must be used to avoid the effects of ground loops if the (4 to 20) mA loop is grounded. This may damage the SEM315 MKII.

Visit www.status.co.uk download latest version of USBSpeedLink

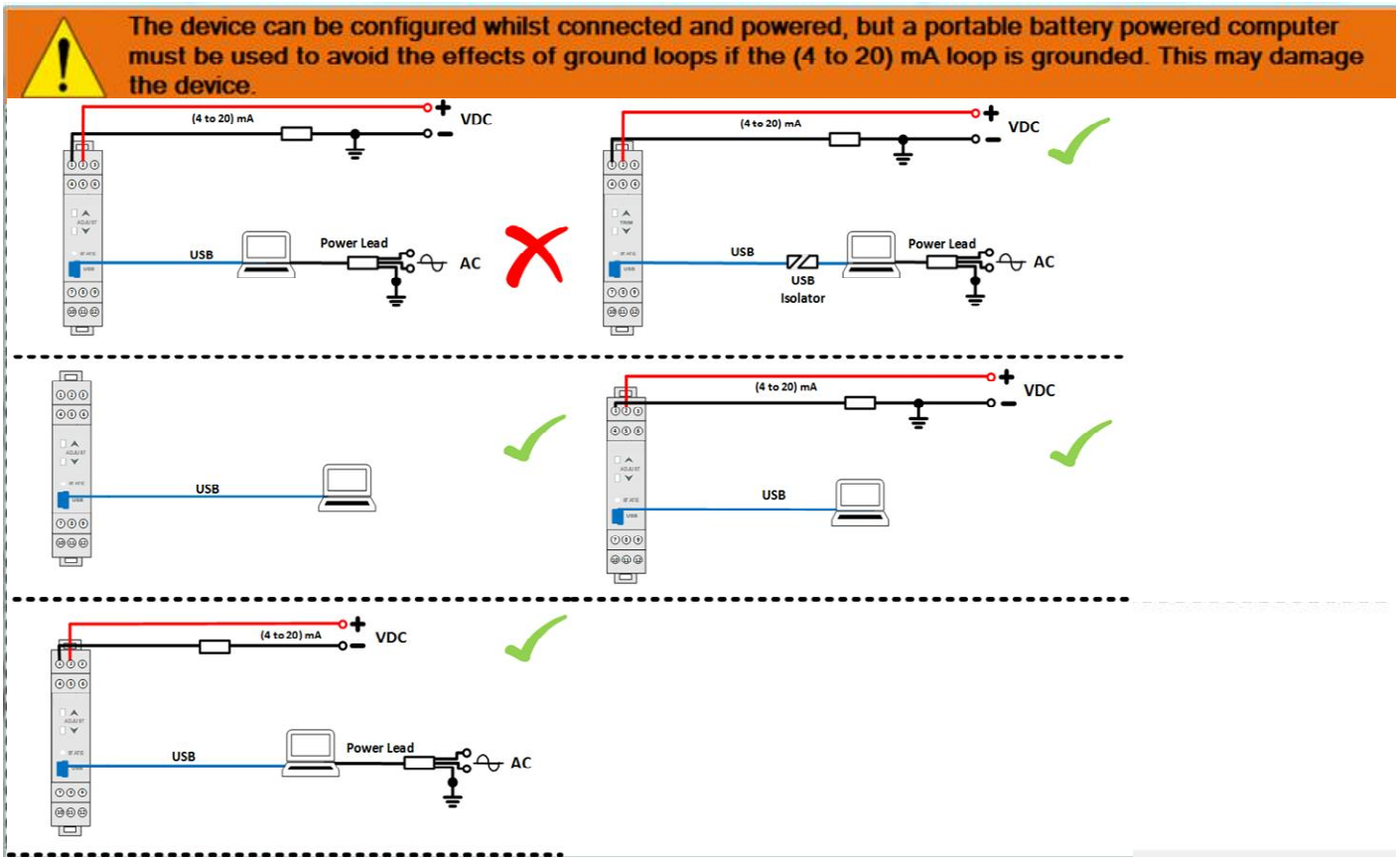
Once software is installed, plug in USB Lead to device ports and connect PC using USB cable.

In USBSpeedLink software, select Model type from "Panel/Din Rail Products" – "2 Wire Loop Powered" menu.
For further information on configuration please open the help menu on the product configuration screen.
On completion of configuration remove USB cable.

A to mini B USB

Factory default setting Sensor PT100 range (0 to 100) °C,

1. Configuration continued



The main configuration is performed using the USB interface. The following parameters may be configured using the powerful USBSpeed link software tool, which also provide operator diagnostics.
The following functions apply :-

SENSOR

Sensor type	mV, Dual mV, ohms, slide wire, thermocouple, dual thermocouple, RTD, dual RTD (2 wire).
Sensor wire	(ohms and rtd ranges only) 2, 3, or 4 wire.
Thermocouple type	Download from USBspeedlink expanding library, common type K,J,T,E,R,S,N,B,U,G,C,D.
Thermocouple CJ	Fixed or Auto.
RTD type	Download from USBspeedlink expanding library, common type PT100, PT1000, PT500, Ni, CU, KTY series.
Sensor(s) Fail	Value on sensor A, (sensor B) fail.
Sensor Pre-set	Override sensor signal with pre-set value, primary function diagnostics.

PROCESS

Scaling	Scale sensor signal to process variable (PV), options - Off, Two point scaling or (4 to 22) step profile.
Units	Set PV units

mA Output

Damping	Profile out damping (0 to 32) seconds.
Range	Range (PV units) For (4 to 20) mA output.
Fix loop current	Fix loop current to pre-set value (Note resets on power up) . Primary use Diagnostics.
Hart Multi_drop	Detects HART address > 0.
Set max mA	Set the maximum output current (20 to 23)mA.
Set min mA	Set minimum output current (3.5 to 4.0) mA.
Trim	Read set and reset (4 and 20) mA Trim values. (as for Hart DAC trim).

DIAGNOSTICS

Power ups	Number of power ups from manufacture.
Min Max PV	Minimum and maximum process variable (PV) value during operation with reset.
Operating times	From manufacture and calibration. Calibration time is resettable.
Calibration	Store date, operator and certificate number.
Save Data	Save transducer data to text file.

DIAGNOSTCS LOG

Type	150 point non volatile Process Variable log, with power off indication and sensor fail (not time stamped).
Rates	User set log periods seconds 5, 15, 30 minutes 1, 2, 5, 10, 20, 30, or 60.
Backup	Save log to PC in CSV style format (using semi colon delimiter) for easy export to text editor or spreadsheet.

HART DATA

Edit	Tag Number and Date, Description, Message, Long Tag, Final Assembly Number, Transducer serial number.
Set	Poll address, write protect.
Reset	Configuration counter.

HART INFORMATION/FLAGS

Read	Manufacturers ID, Short ID, Hart Revision, Device Revision, Software Revision, Unique ID, No Preambles, Max No Variables, Configuration Change register, Extd device status, Extd Manufacturers ID, Extd Distributers ID, Device status flags, Extd device status flags.

PROCESS DATA

Data	Live data for sensor (TV) ,pre-scaling, post scaling (PV), Untrimmed mA output, Actual mA output, % output signal and device ambient temperature (SV) (cold junction).
Diagnostics	Sensor wire error detect (not supported in mV mode), Loop power detect.

1. Configuration continued

SEM315 Hart Interface provides the user with the following functions :

Universal Command	All universal commands are supported.	
Common Practice commands	34	Write Damping Value
	35	Write Range Values,
	40	Enter/Exit Fixed Current Mode
	41	Perform Device Self-Test
	42	Perform Master Reset
	44	Set (Trim) PV Zero
	45	Trim DAC Zero
	46	Trim DAC Gain
	49	Write PV transducer number
	59	Write Number Of Response Preambles

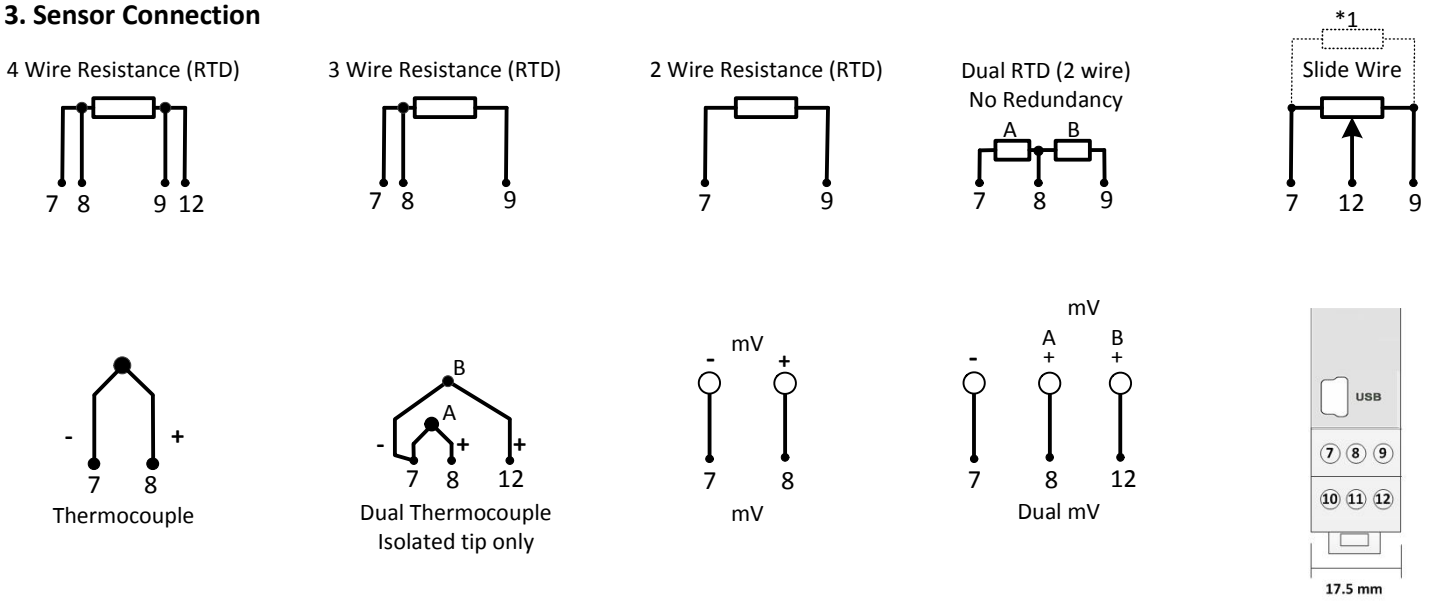
2. Mount Transmitter

The SEM315 MKII is mounted using EN50022 DIN rail. The SEM315 MKII must be installed with adequate protection from moisture and corrosive atmospheres. Refer to conditions for use section of this user guide for information on enclosure IP rating. Care must be taken to ensure the SEM315 MKII is located to ensure the ambient temperature does not exceed the specified operating temperature

INPUT CONNECTION
RTD wire must be equal length and gauge .
Thermocouple inputs must use correct compensating cable.
To maintain CE compliance input cable length must be less than 30 Metres.

OUTPUT CONNECTION
Use twisted pair or screened cables for cable lengths greater than 30 Metres. Max cable length 1000 Metres. Ensure loop is grounded at one point.

3. Sensor Connection



*1 No wiper wire break detect for values above 2 k ohms. If required, shunt slidewire with 1 k ohm resistor.
Burn out limited to (4 to 20) mA range.

4. Wire (4 to 20) mA Loop

Ensure all other aspects of the installation comply with the requirements of this document. The (4 to 20) mA loop is connected as follows:-