



# SMART UNIVERSAL TEMPERATURE TRANSMITTER

## SPECIFICATIONS @ 20 °C

### INPUT SENSORS AND RANGES

#### RTD (Pt100)

Sensor Range		(-200 to 850) °F, (18 to 390 Ω)
Minimum Span*1		25 °C
Linearisation		BS-EN60751 BS1904 DIN43760 JISC 1604 CUSTOM [X]*3
Basic Measurement Accuracy		± 0.01 % FRI ± 0.05 % rdg FRI = Full Range Input
Thermal Drift	Zero	0.008 °C/°C
	Span	0.01 %/°C
Excitation Current		(300 to 550) µA
Maximum Lead Resistance		50 Ω/leg
Lead Resistance Effect		0.002 °C/Ω

Basic Measurement Accuracy*2		± 0.04 % FRI ± 0.04 % rdg or 0.5 °C (whichever is greater)
Linearisation		BS 4937/EC 584-3
Cold Junction Error		± 0.5 °C
Cold Junction Tracking		0.05 °C/°C
Cold Junction Range		(-40 to 85) °C
Thermal Drift	Zero	0.1 µV/°C
	Span	0.01 %/°C

#### MILLIVOLTS

Input		Voltage source
Range		(-10 to 75) mV
Characterisation		Linear Custom [X]*3 (5th Order Polynomial)
Minimum Span*1		5 mV
Basic Measurement Accuracy*2		±10µV ±0.07% rdg
Input Impedance		10 MΩ
Thermal Drift	Zero	0.1 µV/°C
	Span	0.01 %/°C

#### SLIDEWIRE

Input		3 wire potentiometer
Resistance Range		(10 to 390) Ω [End to End] (Larger values can be accommodated by fitting an external resistor)
Characterisation		Linear Custom [X]*3 (5th Order Polynomial)
Minimum Span*1		5 %
Basic Measurement Accuracy*2		0.1 %
Temperature Drift		0.01 %/°C

#### OUTPUT

Output Range		< 3.8 to > 20.2 mA
Max Output		23 mA
Accuracy		± 5 µA
Voltage Effect		0.2 µA/V
Thermal Drift		1 µA/°C
Supply Voltage		(10 to 35) V
Max. Output Load		[(V supply -10)/20] KΩ (700 Ω @ 24 V)

### GENERAL SPECIFICATION

Input/Output Breakdown Isolation	500 V AC rms
Update Time	250 mS maximum
Response Time (Filter OFF)	< 1 s
Filter Factor	Programmable: Off, 2 s, 10 s or Adaptive
Warm up	120 s to full accuracy
Stability	0.1 % FRI or 0.1 °C/year

### APPROVALS

EMC	BS EN61326
ATEX	II 1G EEx ia IIC T4-T6

### ENVIRONMENTAL

Ambient Operating Range	(-40 to 85) °C
Ambient Storage Temperature	(-50 to 100) °C
Ambient Humidity Range	(10 to 90) % RH non-condensing (0 to 100) % RH
I.S. Version	

### ENCLOSURE

Material	NORYL™
Flammability	SEI UL94-V1

### COMMUNICATIONS

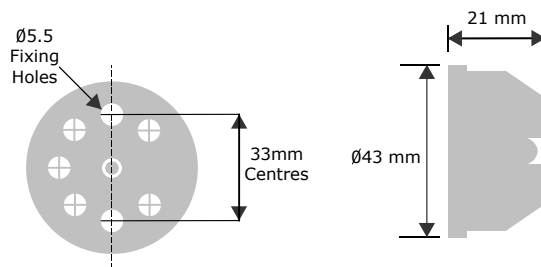
PC Interface	RS 232 via interface adapter
Comms Protocol	ANSI X 3.28 1976
Data Rate	1200 baud
Minimum Output load	100 Ω for 'In loop' programming
Maximum Cable Length	3280 feet (1000 m)
Configurable Parameters	Sensor type: Burnout: °C/°F Output Hi/Lo: Filter: Tag: User offset
Software	PCPW/ Windows based PC tool

### \*NOTES:

1. Any span may be selected but full accuracy is only guaranteed for spans greater than the minimum recommended.
2. Basic Measurement Accuracy includes the effects of calibration, linearisation and repeatability.
3. Customer linearisation is available pre-programmed at the factory, contact sales office for details.
4. Consult thermocouple reference standards for practical temperature.

## MECHANICAL DETAILS

(All dimensions in mm)



Weight

25 g Standard version  
40 g I.S. version

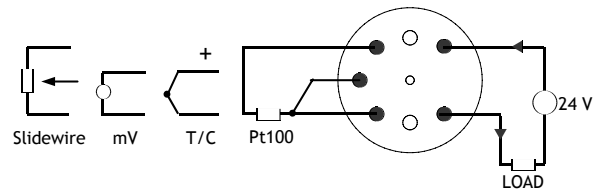
# SMART UNIVERSAL TEMPERATURE TRANSMITTER

## CONNECTIONS

### ELECTRICAL CONNECTIONS

Connections to the transmitter are made via the screw terminals provided on the top face. The transmitter is protected against reverse connection so that incorrect connection of the output wires results in near zero current flow in the loop.

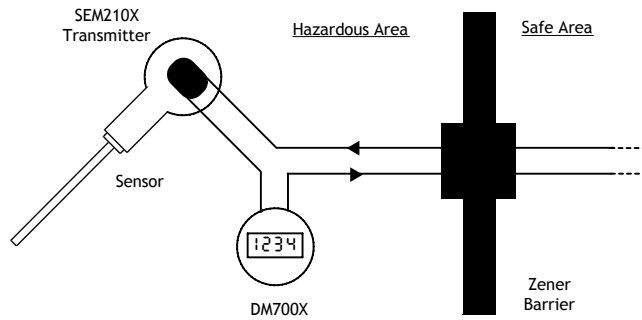
### SEM210 CONNECTIONS



## HAZARDOUS AREA

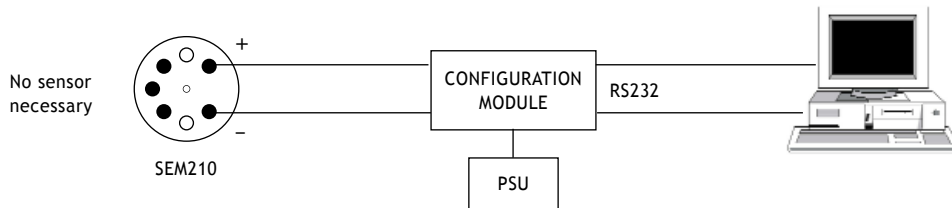
Available for mounting in flammable atmospheres approved to EEx ia IIC T4-T6, FM3610 or Ex NII.

### SEM210X TRANSMITTER

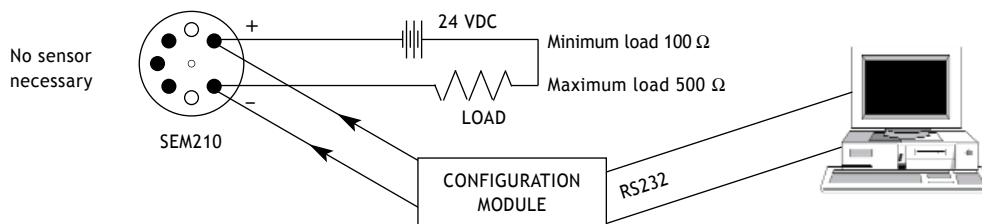


## APPLICATIONS

### USING THE CONFIGURATOR MODULE WITH POWER SUPPLY



### USING EXISTING LOOP POWER



# SMART UNIVERSAL TEMPERATURE TRANSMITTER



SEM210 Showing the RCPW-210 configuration kit and computer

## ASSOCIATED PRODUCTS:

SEM104	The SEM104 is a low cost (4 to 20) mA transmitter for use with standard Pt100 platinum resistance sensors in the size of a standard DIN terminal block.
SEM205P	SEM205P is a second generation "Smart" Head Mount temperature transmitter which accepts Pt100 temperature sensors and generates an industry standard (4 to 20) mA transmission signal.
SEM203	A simple push button operation ranges and calibrates the SEM203 (4 to 20) mA temperature transmitter, eliminating the need for soldering links, potentiometers or PC's.
SEM1000	Analogue signal Isolator
SEM1020	Loop Booster
SEM1100	Line powered process isolator
SEM1200	Signal Splitter
SEM1300	Power supply unit
SEM1400	Loop powered trip amplifiers
SEM1503/1504	Pt100 transmitters
SEM1500TC	Isolating TC transmitter
DM600	The DM600 series of Battery Powered Field Indicators accept either a RTD sensor or a thermocouple sensor, depending upon the model, and displays the temperature on a 4 digit LCD display.
DM700	The DM700 series is a 4 Digit LED Loop Powered Field Indicator. It is available with a choice of (4 to 20) mA, RTD or Thermocouple input.
SENSORS	A complete range of sensors and accessories are available: <ul style="list-style-type: none"><li>● Platinum resistance temperature detectors</li><li>● Thermocouples</li><li>● Thermistors</li></ul>
ACCESSORIES	DIN Rail Mounting kits are available in "Top Hat" and "G" profiles.

## ORDER CODE

SEM210	Standard Unit
SEM210X	Intrinsically Safe Version ATEX, ExN and FM approved
SEM210N	Approved to ExN II
RCPW-210-UK	Programming kit for SEM210 comprising I.F adaptor box, RCPW* software, PSU and carry case. UK use.
RCPW-210-EUR	For European use
RCPW-210-USA	For use in USA/Canada
RCPW-210-AUS	For use in Australia

\*Free updates and demo software available from our website.