

# SMART Pt100 TEMPERATURE TRANSMITTER

## SEM205P SERIES

- LOW COST
- SMART TECHNOLOGY
- 10 YEAR WARRANTY
- ATEX APPROVED
- SENSOR REFERENCING
- Pt100/RTD INPUT



## INTRODUCTION

The SEM205P is a low cost 'Smart' in head temperature transmitter that accepts Pt100 temperature sensors and converts the output to the industry standard (4 to 20) mA transmission signal.

The SEM205XP is ATEX approved

The linearisation range and other parameters are easily programmed using a software package running under 'Windows™' without the need for re-calibration.

If no ranges are specified at order point, units will be factory set (0 to 100) °C, adaptive, BS EN60751 linearisation, upscale burn out.

## SPECIFICATIONS @ 20 °C @ 24 VDC

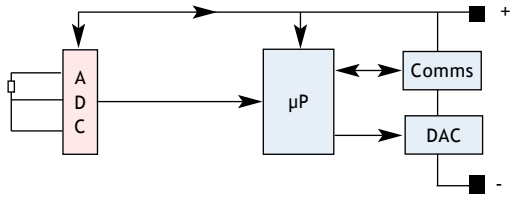
INPUT	
Sensor	Pt100 to BS EN 60751 100 Ω at 0 °C, 2 or 3 wire
Sensor Range	(-200 to 850) °C, (18 to 390) Ω
Minimum Span	25 °C
Linearisation	Standard BS-EN60751 (IEC 751) BS 1904 (DIN 43760) JISC 1604
Linearisation	Custom Please contact Sales Office
Basic Accuracy	± 0.1 °C ± 0.05 % rdg measurement
Thermal Drift	Zero 0.008 °C/°C Span 0.01 %/°C
Excitation Current	1 mA maximum
Maximum Lead Resistance	50 Ω/leg
Lead Resistance Effect	0.002 °C/Ω
OUTPUT	
Output Range	(4 to 20) mA (Min. 3.8 mA to Max. 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	$\frac{(V \text{ supply} - 10)}{20}$ kΩ e.g (700 Ω @ 24 V)

<b>APPROVALS</b>	
EMC	BS EN61326
<b>HAZARDOUS AREA</b>	
ATEX Intrinsically Safe	II 1G EEx ia IIC T4-T6
<b>ENVIRONMENTAL</b>	
Ambient Operating Range	(-40 to 85) °C
Ambient Storage Temp.	(-50 to 100) °C
Ambient Humidity Range	(0 to 100) % RH non condensing
<b>GENERAL SPECIFICATION</b>	
Update Time	1 s to final value
Enclosure	ABS
Filter Factor (Programmable)	OFF, 2 s, 10 s. or adaptive
Stability	0.1 % FRI or 0.1 °C/year
<b>COMMUNICATIONS</b>	
PC Interface	RS 232 via interface adapter
Comms Protocol	ANSI X3.28 1976
Data Rate	1200 baud
Minimum Output Load	100 Ω for 'In loop' programming
Maximum Cable Length	1000 m
Configurable Parameters	Sensor type: Burnout: °C/°F: Output: Hi/Lo: Filter: Tag: User offset
<b>SOFTWARE</b>	RCPW/ Windows based PC tool
<b>MECHANICAL</b>	
Weight	32 g encapsulated



# SMART Pt100 TEMPERATURE TRANSMITTER

INPUTS - Block diagram SEM205P



Pt100 Platinum resistance sensors may be connected to the unit. The Process Variable may be filtered to remove incoming signal noise using one of four settings. If the 'Adaptive' function is selected the filter continuously adjusts to the incoming signal to noise ratio in order to choose an appropriate level of filtering. In this way a slowly changing input can be heavily filtered but if the signal goes through a sudden change the filter quickly reduces allowing a rapid response, other settings are; off, 2 seconds, 10 seconds.

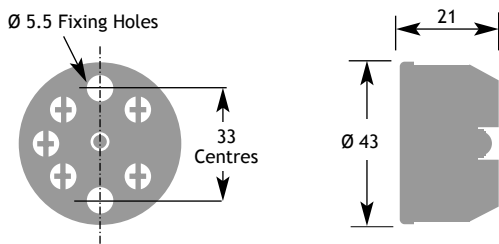
A user programmable offset is available to remove any system errors that may be present and a sensor referencing feature enables the sensor and transmitter to be easily calibrated to a known reference.

## ELECTRICAL CONNECTIONS

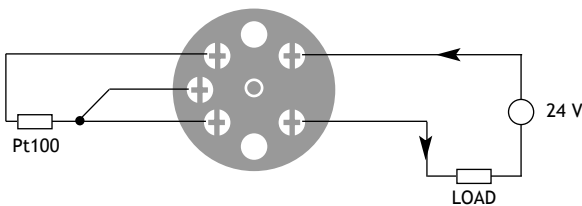
Connections to the transmitter are made via the screw terminals provided on the top face. The transmitter is protected against reverse connection so that incorrect connection of the output wires results in near zero current flow in the loop.

The transmitter is accessed via the comms interface adapter for re-programming or examination of the process variable and status information. The interface adapter converts the special communications signals on the transmitter power connection cables to the standard RS232 in order to connect directly to a PC serial port. There are two methods of connecting the interface adapter to the transmitter i.e. using the adapters own power supply or using the power from an existing loop. Power supply must be capable of supplying 40 mA when powered from the loop. If other RCPW driven products have been purchased, RCPW latest upgrade is available.

## MECHANICAL DETAILS (All dimensions in mm)



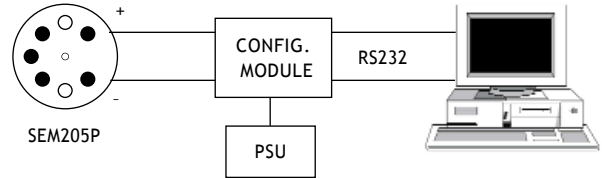
## CONNECTIONS



## APPLICATIONS

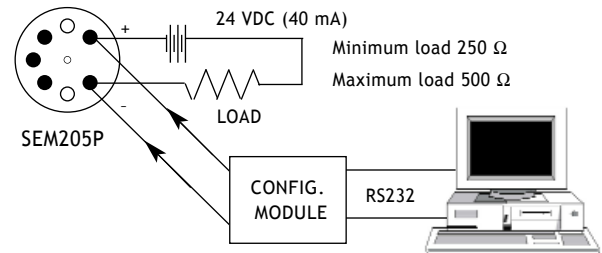
### USING THE CONFIGURATOR MODULE WITH POWER SUPPLY

No sensor necessary



### USING EXISTING LOOP POWER

No sensor necessary



## ORDER CODE

SEM205P	Standard Unit RTD input (ranged 0 to 100) °C
SEM205XP	I.S. version European EEx ia IIC T4..T6
RMK/1/G	"G" DIN rail profile mounting kit
RMK/3-T	Top Hat DIN rail profile mounting kit
RCPW-KIT-UK	Programming kit for SEM205 comprising Interface adapter module, RCPW* software, PSU and carry case. UK use.
RCPW-KIT-EUR	For European use
RCPW-KIT-USA	For use in USA/Canada
RCPW-KIT-AUS	For use in Australia

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

