- ENCAPSULATED
- INTRINSICALLY SAFE VERSION
- SENSOR REFERENCING
- HIGH ACCURACY AND STABILITY
- EASILY RE-PROGRAMMED
- IN LOOP INTERROGATION

TRANSMITTERS

SMART PT-100 TEMPERATURE TRANSMITTER SEM205P SERIES

INTRODUCTION

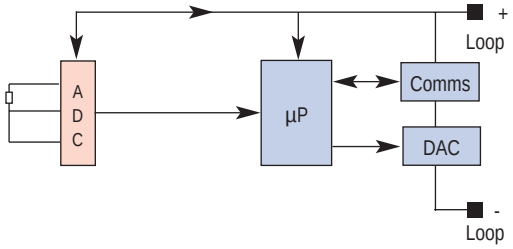
The SEM205P is an encapsulated low cost 'Smart' in head temperature transmitter that accepts PT100 temperature sensors and converts the output to the industry standard 4-20 mA transmission signal.

The SEM205XP is approved to (Harmonised) Cenelec European Standards for use with sensors in Hazardous areas and the SEM205XM is approved to USA FM Standards.

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 0-100°C, adaptive, BS EN 60751 linearisation. Up scale burn out.

Block diagram SEM 205P



INPUTS

PT100 Platinum resistance sensors may be connected to the unit, plus a 'type X' resistance linearisation option which may be pre-configured at the factory to satisfy any custom characterisation requirements.

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.

SPECIFICATION @ 20°C @ 24V DC

INPUT		
Sensor		PT100 to BS EN 60751 100 ohm at 0°C 2 or 3 wire
Sensor Range		-200 to +850°C [18-390ohm]
Minimum Span		25°C
Linearisation	Standard	BS-EN60751 (IEC 751) BS 1904 (DIN 43760) JISC 1604
Linearisation	Custom	Contact Sales Office
Basic accuracy		±0.1°C ±0.05% Rdg measurement
Thermal Drift	Zero	0.008°C/°C
	Span	100 ppm/°C
Excitation current		1 mA max.
Maximum lead resistance		50 Ohms/leg
Lead Resistance effect		0.002°C/Ohm
OUTPUT		
Output Range		4-20 mA (Min 3.8mA to Max 20.2 mA)
Max Output		23mA
Accuracy		±5µA
Voltage effect		0.2µA/V
Thermal drift		1µA/°C
Supply voltage		10 to 35V
Max. output load		$\frac{(V\ supply\ -10)}{20}$ k ohms eg (700 ohms @ 24V)

APPROVALS

EMC	Emissions	BS EN 50081
	Susceptibility	BS EN 50082

HAZARDOUS AREA

Intrinsically Safe	Cenelec	EEx ia IICT4..T6
	FMFM3610	

ENVIRONMENTAL

Ambient operating range	-40 to 85°C
Ambient storage temperature	-50 to 100°C
Ambient humidity range	0 to 100% RH non condensing

GENERAL SPECIFICATION

Update time	1 second to final value
Enclosure	ABS
Filter factor (Programmable)	OFF, 2 secs, 10 secs. or adaptive
Stability	0.1% FRI or 0.1°C/year

52-215-2196-02

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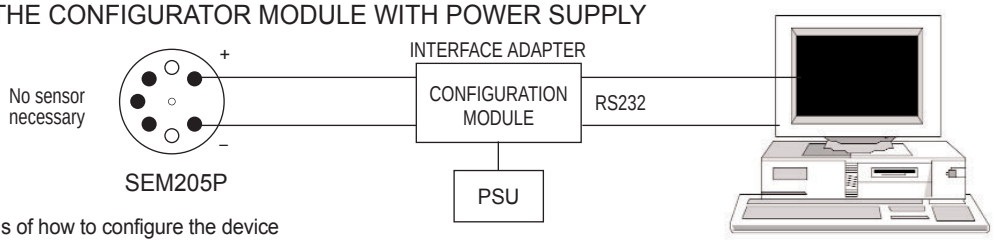
COMMUNICATIONS

PC Interface	RS 232 via interface adapter
Comms protocol	ANSI X3.28 1976
Data Rate	1200 baud
Minimum output load	100 ohms for 'In loop' programming
Maximum cable length	1000 metres
Configurable Parameters	Sensor type: Burnout: °C /°F: Output: Hi/Lo: Filter: Tag: User offset
SOFTWARE	RCPW

The transmitter is accessed via the comms interface adapter for reprogramming 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 adapter's 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 free of charge via the Internet.

CONFIGURATION DIAGRAM

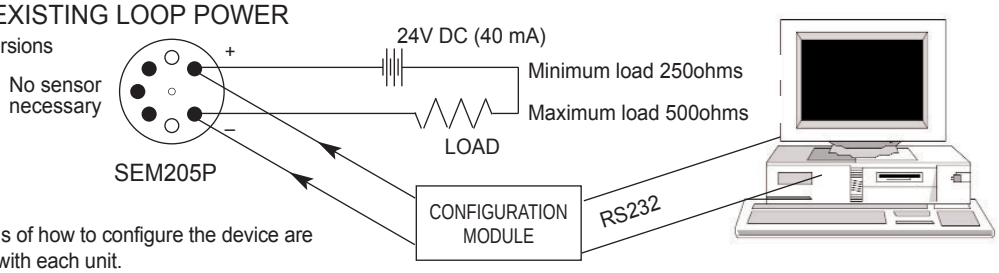
USING THE CONFIGURATOR MODULE WITH POWER SUPPLY



Full details of how to configure the device are supplied with each unit.

USING EXISTING LOOP POWER

Not I.S. Versions

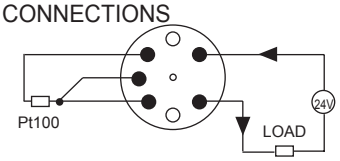


Full details of how to configure the device are supplied with each unit.

ELECTRICAL CONNECTIONS

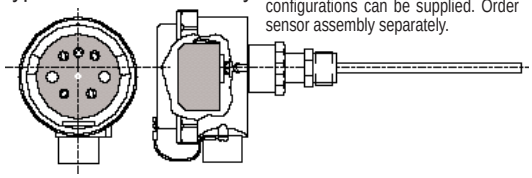
Connections to the transmitter are made via the screw terminals provided on the top face. The transmitter is protected against reverse connection so that incorrect connection of the output wires results in near zero current flow in the loop.

SEM205P CONNECTIONS



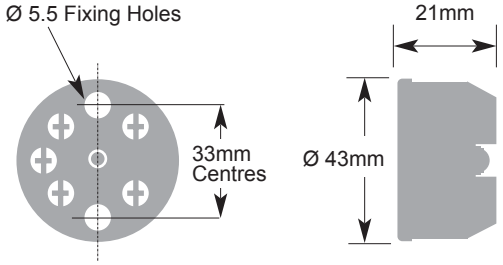
Typical Sensor Assembly

Other Termination head styles and configurations can be supplied. Order sensor assembly separately.



TYPICAL SENSOR - A typical assembly of a Sensor fitted with an SCH4 Connecting Head and containing an SEM205P Series Transmitter.

MECHANICAL DETAILS weight 32g encapsulated



ORDER CODE

SEM205P	Standard Unit RTD input (ranged 0 to 100°C)
SEM205XP	I.S. version European EEx ia IICT4..T6
SEM205XM	FM version USA FM3610
RMK/1/G	"G" Din rail profile mounting kit
RMK/1/T	Top Hat Din rail profile mounting kit
CONFIG 205/lo/hi	Pre Configured to hi/lo stated range
CONFIG 205	[X] Custom linearisation Consult sales office
RCPW-KIT-UK	Programming kit for SEM205 comprising Interface adapter module, RCPW* software, PSU and carry case. UK use. *Free updates and demo software available from our web site
RCPW-KIT-EUR	For European use
RCPW-KIT-USA	For use in USA/Canada
RCPW-KIT-AUS	For use in Australia