

SEM203TC IN HEAD TEMPERATURE TRANSMITTER

- SUITABLE FOR THERMOCOUPLE and mV SENSORS
- (4 to 20) mA OUTPUT
- PC PROGRAMMABLE INPUT TYPE AND RANGE
- HIGH STABILITY
- OUTPUT CURRENT TRIM

➤ INTRODUCTION

The SEM203TC is a cost effective in head transmitter that accepts thermocouple temperature sensors and converts sensor output over a configured range to a standard industrial (4 to 20) mA transmission signal.

A simple push button operation allows the user to select TC type, burnout direction, select fixed ranges and trim the (4 and 20) mA points.

If required the desired range can be specified at the time of order, removing the need for user configuration. If the range is not specified, then the transmitter will be shipped with the default range of (0 to 1000) °C type K

➤ FEATURE HIGHLIGHTS

PUSH BUTTON CONFIGURATION

The SEM203TC can be ranged against a probe held at high and low range values or by using a thermocouple simulator representing the required temperature using a simple “teach” method. Burnout direction can also be set using the same push button.

A zero and span trim function is also incorporated into the SEM203TC to give maximum flexibility.

SENSOR BURN OUT DETECTION

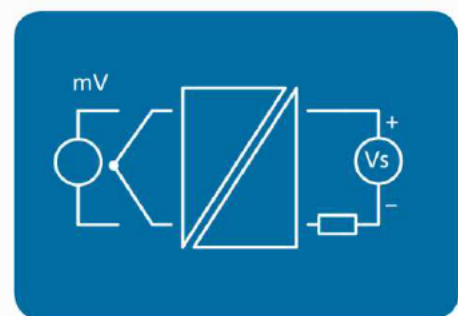
If a sensor wire is broken or becomes disconnected the SEM203TC output will automatically go to its user defined level upscale or downscale and the LED illuminates.

STABILITY

The SEM203TC in head transmitter incorporates the latest digital technology to ensure accurate, low drift performance.



SEM
203TC



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TC SENSOR INPUT		SPECIFICATIONS @20 °C
Type/ Function	Range/ Description	Accuracy/ Stability/ Notes
K	(-200 to 1370) °C	± 0.1% of F.S. ± 0.5 °C *1
J	(-100 to 1200) °C	± 0.1% of F.S. ± 0.5 °C *1
E	(-200 to 1000) °C	± 0.1% of F.S. ± 0.5 °C *1
N	(-180 to 1300) °C	± 0.1% of F.S. ± 0.5 °C *1
T	(-200 to 400) °C	± 0.2% of F.S. ± 0.5 °C *1
R	(-10 to 1760) °C	± 0.1% of F.S. ± 0.5 °C *1 over the range (800 to 1600) °C
S	(-10 to 1760) °C	± 0.1% of F.S. ± 0.5 °C *1 over the range (800 to 1600) °C
mV	(-10 to 70) mV	± 0.02 % of full scale
Thermal drift	(-20 to 70) °C	(± 0.15 °C / °C at zero) + (± 0.1 °C / °C at span)
	(-40 to -20) and (70 to 85) °C	Typically as above
Any span may be selected; full accuracy is only guaranteed for spans greater 25 °C		
Basic measurement accuracy includes the effects of calibration, linearization and repeatability		
*1 plus any sensor error		

COLD JUNCTION		SPECIFICATIONS @20 °C
Type	Range °C	Accuracy/ Stability
Thermistor bead	(-40 to 85) °C	± 0.5 °C
Thermal drift	Zero at 20 °C	± 0.05 °C / °C

OUTPUT		SPECIFICATIONS @20 °C
Type / Function	Range / Description	Accuracy/ Stability/ Notes
Two wire current	(4 to 20) mA	(mA output /2000) or 5 uA (Whichever is the greater)
Thermal drift	Zero at 20 °C	2 uA / °C
Maximum output current	21.5 mA	In high burnout condition
Minimum output current	< 3.9 mA	In low burnout condition
Loop voltage effect	0.2 uA / V	
Maximum output load	[(V supply - 10)/20] KΩ	700 Ω @ 24 V DC
Loop supply	(10 to 30) V DC	SELV

PUSH BUTTON USER INTERFACE		
Type/ Function	Range/ Description	Notes
Sensor configuration	Input type Temperature (4 to 20) mA Sensor offset Burnout current	K, J, E, N, T, R, S, mV °C or °F °C or °F, no offset for mV Upscale or downscale

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GENERAL	
Function	Description
Update time	500 ms
Response time	1 second
Start-up time	4 seconds (mA out < 4 mA during start up)
Warm up time	60 s to full accuracy
Default configuration	Type K (0 to 1000) °C , upscale burnout

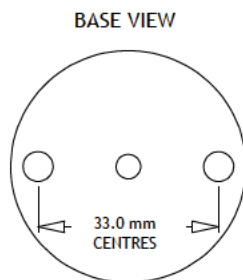
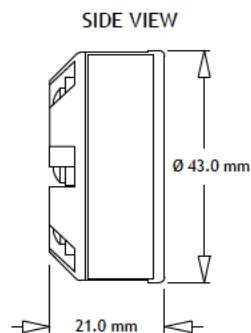
ENVIRONMENTAL	
Function	Description
Ambient temperature	Operating/Storage (-40 to 85) °C / Full accuracy only between (-30 to 75) °C
Ambient Humidity	Operating/Storage (10 to 90) %RH non-condensing
Protection requirement	>= IP65 recommended
Configuration ambient	20 °C to maintain specification

MECHANICAL	
Function	Description
Dimensions	43 mm diameter; 21 mm height
Fixing centres	2 x 5 mm holes on 33 mm centres
Centre hole	4.5 mm hole for wiring aid
Weight	31 g (encapsulated)

APPROVALS	
EMC	BS EN 61326: Note - Sensor input wires to be less than 3.0 m to comply
Ingress protection	BS EN 60529
RoHS	Directive 2011/65/EU

ORDER CODE	SEM203TC
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MECHANICAL



Fixing holes 2 x $\varnothing 5.5 \text{ mm}$, Centre hole $\varnothing 4.5 \text{ mm}$