

SEM1801XTC, SEM1802XTC I.S. THERMOCOUPLE TRANSMITTER

- **ATEX, UKEX AND IECEx APPROVED**
- **MULTIPLE THERMOCOUPLE INPUT TYPES**
- **SINGLE AND DUAL CHANNEL VERSIONS WITH ISOLATED INPUT/OUTPUT**
- **RAIL MOUNT (4 to 20) mA TRANSMITTER**
- **SENSOR OFFSET, ADJUSTABLE INPUT FILTER**

➤ **INTRODUCTION**

The SEM1801/2XTC DIN rail temperature transmitter accepts thermocouple temperature sensors and converts the sensor output over a configured range to a standard industrial (4 to 20) mA transmission signal. Two versions are available: single or dual channel ATEX/ UKEX / IECEx approved for hazardous areas.

PC configuration allows the user to select TC type, range, filter, units, linearization and burnout direction, without requiring calibration equipment. Additionally, the user may read live process data when connected to the PC (in the safe area), this allows for sensor offset, and output alignment calibration, where the user can enter values to match the actual process, therefore reducing system errors.

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 burnout high and filter off.

➤ **FEATURE HIGHLIGHTS**

SENSOR REFERENCING

The SEM1801/2XTC sensor referencing via the Windows based USBSpeedlink software allows for close matching to a known reference sensor eliminating possible sensor errors.

THERMOCOUPLE TYPES

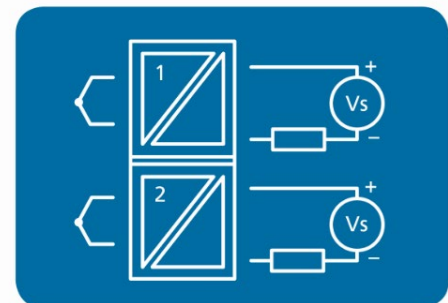
As standard the SEM1801/2XTC has all common thermocouple sensors available from its software library with extra sensors available.

SENSOR BURN OUT DETECTION

If a sensor wire is broken or becomes disconnected the SEM1801/2XTC output will automatically go to its user defined level (upscale or downscale) or a pre-set value.

STABILITY

The SEM1801/2TCX transmitter incorporates the latest digital technology to ensure accurate, low drift performance.



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SENSOR INPUT		SPECIFICATIONS @20 °C
Thermocouple: SEM1801XTC single input, SEM1802XTC dual independent inputs		
Type	Range	Accuracy/ Stability
K	(-150 to 1370) °C	±0.1 % of full scale ± 0.5 °C (plus sensor error)
J	(-200 to 1200) °C	
E	(-260 to 1000) °C	
N	(-270 to 1300) °C	
L	(-200 to 900) °C	
U	(0 to 600) °C	
B	(0 to 1800) °C	
C, D, W	(0 to 2300) °C	±0.2 % of full scale ± 0.5 °C (plus sensor error)
T	(-270 to 400) °C	
R, S, (0 to 1750) °C full scale	(800 to 1600) °C	± 0.1 % of full scale plus ± 0.5 °C (plus sensor error)
Thermal drift	Offset Span	0.1 °C / °C 0.05 °C / °C
Library contains more standard TC types		

COLD JUNCTION		SPECIFICATIONS @20 °C
SEM1801XTC single cold junction, SEM1802XTC dual independent cold junctions		
Type	Range °C	Accuracy/ Stability
Thermistor bead	(-40 to 85) °C	± 0.2 °C
Thermal drift	Zero at 20 °C	± 0.05 °C / °C

OUTPUT		SPECIFICATIONS @20 °C
mA: SEM1801XTC single output, SEM1802XTC dual independent outputs		
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	20.6 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
Power	< 1 W full power	

USB USER INTERFACE		
For SEM1802XTC each channel programmed independently		
Type/ Function	Range/ Description	Notes
Configuration hardware	USB configuration module	USB-CONFIG-MKII
Configuration software	USBSpeedLink	Download www.status.co.uk
Type/ Function	Range/ Description	Notes
Temperature configuration	Sensor type	Thermocouple list
	Temperature range for (4 to 20) mA retransmission	°C or °F
	Sensor offset	°C or °F
	Burnout current	Upscale, downscale User set mA
Type/ Function	Range/ Description	Notes
Tag number		20 characters
Filter	(0 to 100) s time constant	Adjustable

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USB USER INTERFACE continued For SEM1802XTC each channel programmed independently		
Read live data	Input signal	mV
	Temperature output	°C or °F
	Output signal	mA
	Cold junction	°C or °F
Save/open configuration		From PC file

GENERAL	
Function	Description
Update time	160 ms
Response time	0.5 s
Start-up time	5 s
Warm-up time	120 s to full accuracy
Isolation	Input to output 500 Vdc: Working voltage 50 Vdc
Default configuration	Thermocouple type K (0 to 1000) °C, upscale burnout

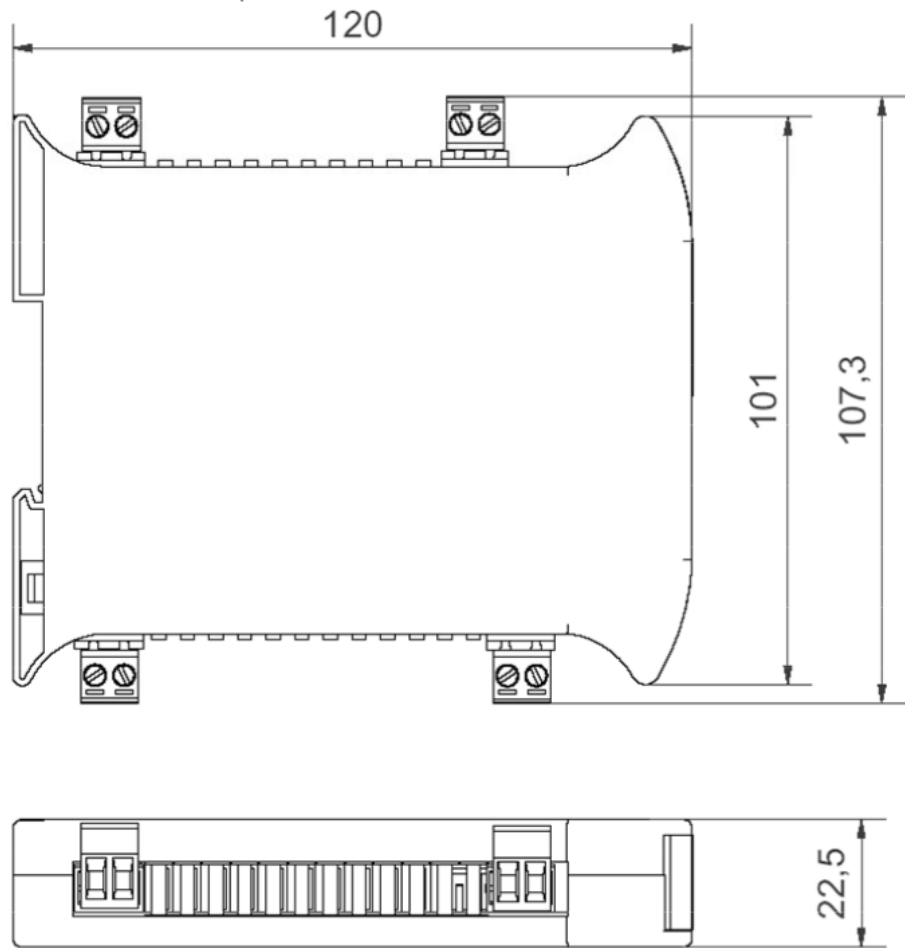
ENVIRONMENTAL	
Function	Description
Ambient temperature	Operating/Storage (-40 to 70) °C Full accuracy only above -30 °C
Ambient Humidity	Operating/Storage (10 to 90) %RH non-condensing
Protection requirement	>= IP64 recommended
USB configuration ambient	(10 to 30) °C

MECHANICAL	
Function	Description
Dimensions	120 mm deep, 107.3 mm height, 22.5 mm wide
Mounting	35 mm "top hat" rail EN 50022
Protection requirement	>= IP64 recommended
Connections	Screw terminals 2.5 mm wire maximum
Weight	110 g SEM1801XTC 141 g SEM1802XTC

APPROVALS	
EMC	BS EN 61326: Note - Sensor input wires to be less than 3 m to comply
Ingress protection	BS EN 60529
RoHS	Directive 2011/65/EU Incorporating Amendment Directive EU2015/863 and UK designated standard.
ATEX / UKEX SEM1801XTC, SEM1802XTC	Ex ia IIC T4 Ga Ex ia IIIC T135 Da
IECEX SEM1801XTC, SEM1802XTC	Ex ia T4 Ga Ex ia IIIC T135 Da

SEM1801XTC, SEM1802XTC I.S. THERMOCOUPLE TRANSMITTER

Mechanical
Dimmensions in mm



ORDER CODE

Single channel	SEM1801XTC
Dual channel	SEM1802XTC

ACCESSORIES

Approved USB programming kit	USBTTX
USB configuration software	USBSpeedLink free of charge from www.status.co.uk
Probe options	Refer to www.status.co.uk

To maintain full accuracy annual calibration is required contact support@status.co.uk for details
The data in this document is subject to change. Status Instruments assumes no responsibility for errors