

SEM710TM Temperature/mA Transmitter/Display/Logger

- **ISOLATED RTD/TC/mA UNIVERSAL INPUT**
- **PUSH BUTTON/NFC/USB CONFIGURATION**
- **6 DIGIT ALPHA-NUMERIC LCD DISPLAY**
- **TWO WIRE (4 to 20) mA OUTPUT**
- **USER LINEARISATION FOR mA**
- **UP TO 5000 POINT DATA LOGGER (USB/NFC INTERFACE)**

➤ INTRODUCTION

The SEM710TM is a two wire (4 to 20) mA temperature transmitter with indicator, designed to accept RTD or Thermocouple temperature sensors or a mA control signal. The device displays the sensor temperature in °C or °F or mA process value on a 6-digit LCD display. Configuration is achieved by operating three-push buttons and navigating a menu structure. USB and contactless (NFC) interfaces are also provided for configuration and data logger function, with up to 5000 time-stamped logs at adjustable rates. The indicator also has an alert LED for signal error indication.

➤ FEATURE HIGHLIGHTS

DATA LOGGING FUNCTION (See Logger* entries, check website for latest Android version compatibility). The SEM710TM also provides a powerful data logging function. The log points can be set up to 5000 points. Each point is time and date-stamped. The SEM710TM can continue to record time-stamp data for over 4 hours on the loss of the loop supply and resumes logging when repowered. The log rate is selectable in steps. The start of log can be delayed if required. Either fixed or rolling logs may be performed.

USB, NFC, AND PUSH-BUTTON CONFIGURATION

Configuration of the SEM710TM can be done in three ways:

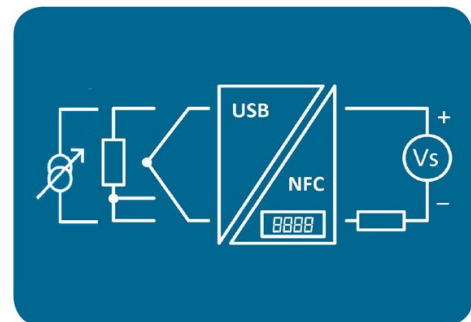
- On a Windows PC running Status Instruments' free "USB-SpeedLink" software.
- Using a suitable Android device running Status Instruments' free NFC Configuration App "NFC-Link".
- By use of push buttons.

USER-LINEARISATION (mA)

The SEM710TM has a user linearization function.

When using a mA input, a 22-point user-linearisation tool is available for applications such as volume in a non-linear tank or correcting known errors in any (4 to 20) mA signal.

This can also be used to apply calibration points for loop sensors that may drift over time.



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INPUT RTD (3 Wire)		SPECIFICATIONS @20°C
Type	Range	Accuracy/ stability
Pt100 (Europe)	(-200 to 850) °C	±0.2°C ±0.05% of reading (plus, sensor error)
Pt100 (USA)	(-200 to 630) °C	
Ni100	(-60 to 180) °C	
Ni120	(-80 to 260) °C	
Cu100	(-80 to 260) °C	
Cu53	(-50 to 180) °C	
Thermal drift	0°C at 20°C	Typically, 0.01 Ω/°C Example Pt100 0.03°C/°C
To maintain full accuracy, annual calibration is recommended. Contact support@status.co.uk for details		

INPUT Thermocouple		SPECIFICATIONS @20°C
Type	Range	Accuracy/ stability
K	(-150 to 1370) °C	±0.1% of full scale ±0.5 °C ± CJ error (plus, sensor error)
J	(-200 to 1200) °C	
N	(-270 to 1300) °C	
E	(-260 to 1000) °C	±0.2% of full scale ±0.5 °C ± CJ error (plus, sensor error)
T	(-270 to 400) °C	
R	(0 to 1760) °C	±0.1% of full scale ±0.5 °C ± CJ error (plus, sensor error) over range (800 to 1760) °C
S	(0 to 1760) °C	
B	(0 to 1820) °C	±0.1% of full scale ±0.5 °C ± CJ error (plus, sensor error)
Thermal drift	0 °C at 20 °C	Typically, ±5 uV/°C
To maintain full accuracy, annual calibration is recommended. Contact support@status.co.uk for details		

COLD JUNCTION CORRECTION For T/C Inputs		SPECIFICATIONS @20°C
Type	Range	Accuracy/ stability
Thermistor 10K Beta 3380	(-30 to 70) °C	±0.2 °C
Thermal tracking	0 °C drift at 20 °C ambient	±0.05 °C/°C

INPUT mA		SPECIFICATIONS @20°C
Type	Range	Accuracy/ stability
mA sense	(0 to 23) mA	±0.02 % of full scale
Max over-current	50 mA	
Loop burden	0.4 V @ 20 mA	20 Ohms sense resistor
Thermal drift	Zero 0.002%/°C Span 0.01%/°C	
To maintain full accuracy, annual calibration is recommended. Contact support@status.co.uk for details		

DISPLAY	
Type/options/function	Description
Display height	7.9 mm non-backlit
Display information options: some information is displayed scrolling.	6 digits, 14-segment input value plus "Warning" icon. Resolution to one decimal place with unit character. Two decimal places (no units displayed).
Display range mA	Max range -999999 to 999999 (User Engineering unit)
Decimal place Temperature	x.x, x.xx °C/°F
Decimal place mA	xxxxxx, x.xxxxx, xx.xxxx, xxx,xxx, xxxx.xx, xxxxx.x
Units Temperature	Fixed °C, °F
Engineering units mA	User (6-character maximum) word
Bar Graph	When log active, Log volume. Otherwise, mA level (with mA icon)
Loss of input signal	Screen displays warning, alert LED

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OUTPUT	
Type/options/function	Description
Output type	(4 to 20) mA control loop
V supply	(10 to 30) V DC SELV
Accuracy	(mA output /2000) or 5 uA, whichever is the greater
Loop Voltage effect	0.2 uA / V
Thermal drift	1 uA / °C
Maximum output	21.5 mA
Minimum output	3.8 mA
Maximum output load	$[(V_{supply}-10)/20]$ K Ohms (Example: 700 Ohms @ 24V)
Input/output Isolation	1000 V, working voltage 48V DC

PUSH-BUTTON USER INTERFACE CONFIGURATION (not available in mA sense mode)	
Function	Description
Sensor	RTD PT100, PT100 USA, Ni100, Ni120, Cu100, Cu53, Thermocouple K, J, E, N, T, R, S, B
Units	°C, °F
Decimal place	0.0, 0.00
Offset	± 10.00 (Temperature units)
Output range	Low (4 mA), High (20 mA)

NFC INTERFACE REQUIREMENTS (ENABLED ANDROID DEVICE)	
Android version 5 onwards, check website for latest Android version compatibility	
Android device	Compatibility to read NFC Tag type 4 to full capacity 65536 bytes *1
Android version compatibility	V (5-11), V (5-latest, see website)
RF Interface	ISO/IEC 14443 Type B Compliant (13.56 MHz)
Configuration software	NFC-Link
Logging software	NFC-LogLink Download www.status.co.uk
*1 If the android device cannot read full bytes, the maximum number of log points will be reduced.	

USB/NFC LOGGER USER INTERFACE (software USB-LogLink, NFC-LogLink) For latest Android compatibility refer to www.ststus.co.uk		
Type/options/function	Description	Notes
Logger*	Start, set log parameters	Rate, (delay) start, number of points, rolling or fixed log, synchronise clock
	Read log parameters	
USB	SEM710TM up to 5000 logs	
Android version 5 to 11	SEM710TM up to 5000 logs	
Android version 5 to latest	SEM710TM up to 2500 logs	
	Read live data	Input values, output values
	View log data/graph log data	Save data/Recall data

USB INTERFACE REQUIREMENTS	
Configuration hardware	PC with Windows 7 or later with USB port A to mini-B cable (not included)
Configuration software	USB-SpeedLink
Logging software	USB-LogLink Download www.status.co.uk

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USB/NFC USER-CONFIGURATION OPTIONS (software USBSpeedLink, NFCLink)		
Input sensor	RTD Pt100, Pt100 USA, Ni100, Ni120, Cu100, Cu53, Thermocouple K, J, E, N, T, R, S, B	
	Range	Low (4mA) High (20mA)
	Burnout signal	(3.8 or 21.5) Temperature I/P only
Other device options	Write Tag, Contact	24 characters each
	Location settings	Latitude and Longitude
Temperature	Set °C or °F, Set decimal place to 0.0 or 0.00	
Other device options	Write Tag, Contact	24 characters each
	Location settings	Latitude and Longitude
Offset temperature I/P	± 10 °C or °F	
Live data	Read values	Process value, O/P value
Auto read (USB only)		Time, date (USB only)
Functions only available via USB-SpeedLink (Functions not available using NFC configuration software)		
Input sensor	Set to mA	
Maths Function mA I/P	Applied to the (4 to 20) mA signal represented as (0 to1) Linear, $^{1/2}$, $^{1/3}$, $^{3/2}$, $^{5/2}$, 2 , 3	
Profiler option mA I/P	22-step X, Y table provided to profile signal (example tank level)	
Display Eng. units mA I/P	On/Off	
Pre-set mA I/P signal	For test purposes, user overrides input signal.	
Damping mA I/P signal	(0 to 60) s/mA provided individually for rise and fall for mV input	
Digit null mA display	Digits 4, 5, 6 provided with null function	
Set device passkey number	Device passkey is used to protect the NFC interface.	

GENERAL	
Function	Description
Update rate	300mS
Response time	< 1 second
Bar Graph	When log active, Log volume. Otherwise, mA level (with mA icon)
Clock backup	Clock time and date is battery-backed for up to 4 hours at (10 to 30) °C ambient
Clock accuracy	±2 seconds per month typically
Input / Output	Two-part screw connector(s)
USB connection	USB mini-B socket

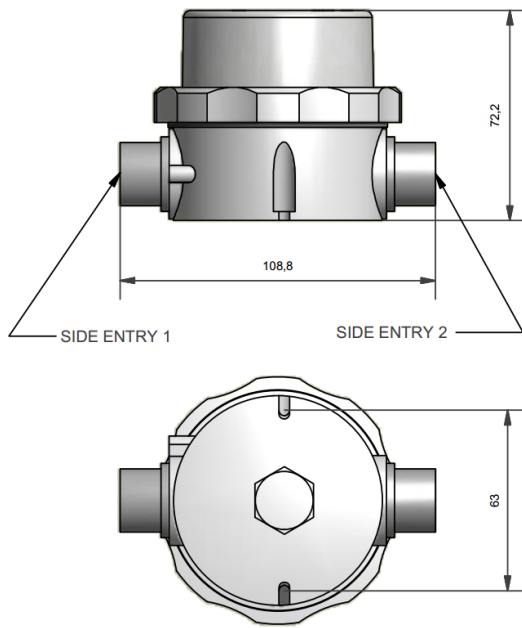
ENVIRONMENTAL	
Function	Description
Ambient temperature	Operating/storage (-30 to 70) °C Below -5 °C the display may become slow to respond.
Ambient humidity	Operating/storage (10 to 90) %RH non-condensing
Protection	IP65, cable/ probe entries must be sealed to IP65 to maintain
USB/NFC configuration ambient	(10 to 30) °C

MECHANICAL	
Function	Description
Enclosure	ABS, grey base, grey clamp ring
Display cover	Polycarbonate, clear
Case entries	Base and side entry options see ORDER CODES below
Front of display diameter	65 mm
Weight (approximate)	170 g

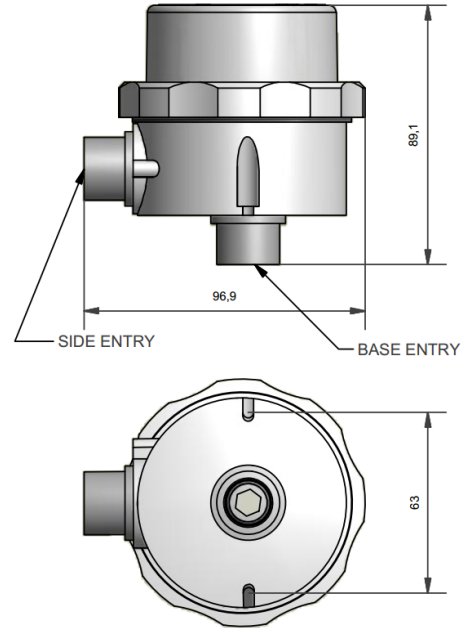
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APPROVALS	
Function	Description
EMC	BS EN 61326: Tested to maintain full CE EMC requirements for industrial applications with 3 metres sensor wire. The maximum recommended sensor wire length is 10 metres.
Ingress protection	BS EN 60529 IP65
RoHS	2011/65/EU & EU 2015/863, and the UK designated standards

Body type B: 2 x side entry



Body type C: 1 x side entry with 1 x base entry



ORDER CODE	SEM710TM + HOUSING CODE (See below for housing code)				
ORDER CODE	SCH4 HOUSING				
	Body type		Base entry	Side entry A	Side entry B
SCH4	B or C	0	Thread option	Thread option	Thread option
B: Double side entry C: Base entry with side entry		0	00 = None fitted 24 = M24	<u>Thread options</u> 16 = M16 .5BSP = 1/2" BSP	20 = M20 .5NPT = 1/2" NPT
Example: base entry (M24) with side entry (M16)					
SCH4	C	0	24	16	00
For further options please contact sales@status.co.uk					

ACCESSORIES	
USB-SpeedLink	USB configuration software @ www.status.co.uk
USB-LogLink	USB log software @ www.status.co.uk
NFC-LogLink	NFC log software free of charge @ www.status.co.uk
NFC-Link	NFC configuration free of charge @ www.status.co.uk
Temperature probe options	www.status.co.uk

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

Status Instruments Ltd
Status Business Park
Gannaway Lane, Tewkesbury
Gloucestershire, UK
GL20 8FD
Tel: +44 (0)1684 296818
Fax: +44 (0)1684 293746
Email: sales@status.co.uk
Website: www.status.co.uk

