SEM1700 SMART UNIVERSAL SIGNAL CONDITIONER

- **UNIVERSAL INPUT**
- **ISOLATED mA or VOLTAGE OUTPUT WITH RELAYS**
- **ISOLATED UNIVERSAL AC DC POWER SUPPLY**
- **USER TRIM/CONFIGURATION VIA PUSH BUTTONS**
- **PC CONFIGURATION USING USB PORT**
- **LIVE DATA CAN BE VIEWED ON AN ANDROID PHONE OR TABLET**

INTRODUCTION

The SEM1700 is a DIN rail-mounted universal signal conditioner from Status Instruments. It has been designed to accept most common process and temperature sensor inputs and provide the user with a programmable current or voltage output signal, plus dual relays with a programmable delay function. Isolation is provided between input, output and supply. All temperature ranges are linear to temperature. Both input and output loop excitation are provided as well as a fully universal power supply.

Designed for ease of use, a USB interface is fitted for quick and easy configuration. Just connect a standard USB cable between the SEM1700 and your PC. Using our free configuration software. To further help save time, the SEM1700 does not need to be wired to a power supply during the configuration process, it is powered via the USB interface from your PC.

USB PC CONFIGURATION
The SEM1700 is quick and easy to configure using a standard-type USB lead and the free-of-charge USBSpeedLink Windows software.

USB ANDROID VIEW The SEM1700 can be connected to an Android phone or tablet using an OTG USB adaptor. Running a free App, the Android device can then be used to view live data from the SEM1700

FEATURE HIGHLIGHTS

FLEXIBLE The SEM1700, with its wide range of input and output options (including two independent relays), paired with the configuration functionality it has to offer, makes it a hugely flexible and versatile tool for many varied applications. Live readings can be displayed to a PC via the configuration software.

UNIVERSAL Supply: From 20 VDC to 240 VAC and everything in-between, the auto-detecting power supply is simple but effective, giving the SEM1700 the capability to be powered from a variety of supplies.

Input: A wide range of temperature sensors (RTD, T/C) and process inputs, with variable update rates to suit the application, such as a potentiometer needing a quicker update rate.

Output: With mA sink and source as well as voltage output options, the SEM1700 can be integrated into process control systems with standard analogue signals. Two relay alarms give additional capabilities.

USER-FRIENDLY Designed for ease of use with a universal power supply, I/O options, two-part connectors and simple intuitive software. The SEM1700 also has front of panel push buttons that can be assigned to different functions depending on the application requirements.
The SEM1700 is a multi-purpose temperature transmitter/signal conditioning unit.

RTD SENSOR INPUT		**SPECIFICATIONS @20°C**
Type RTD	**Range**	**Accuracy/Stability/Notes**
Pt100 ~ 0.00385 (IEC)	(-200 to 850) °C (-320 to 1560) °F	1 Reading/Second ± 0.15 °C + (0.05 % of FSR) 4 Readings/Second ± 0.5 °C + (0.1 % of FSR) 10 Readings/Second ± 1.0 °C + (0.1 % of FRS)
Pt100 ~ 0.00391 (IPTS-68)	(-200 to 630) °C (-320 to 1160) °F	
Pt100 ~ 0.00392 (IPTS-68)		
Pt100 ~ 0.00393 (ITS-90)	(-200 to 960) °C (-320 to 1760) °F	
Ni 100 ~ 0.00618 (DIN)	(-60 to 180) °C (-76 to 320) °F	
Ni120 ~ 0.00672 (Nickel A)	(-80 to 260) °C (-112 to 460) °F	
Cu100 ~ 0.00427		
Cu 53 (GOST)	(-50 to 180) °C (-58 to 320) °F	
RTD Connection		2 or 3 wire
RTD Lead Resistance		20 Ω Maximum
RTD Lead effect		0.015 °C / Ω
Temperature stability (over the range (-10 to 50) °C±0.015 % FSR / °C		
FSR = Full Scale range		

THERMOCOUPLE SENSOR INPUT **@20°C**		**SPECIFICATIONS**	
Type	**Range**	**Stability**	**Accuracy/Notes**
K	(-200 to 1370) °C (-320 to 2498) °F	±0.05 % FSR/°C	1 Reading/Second ± 0.5 °C + (0.1 % of FSR) 4 Readings/Second ± 1.0 °C + (0.1 % of FSR) 10 Readings/Second ± 2.0 °C + (0.1 % of FSR)
J	(-200 to 1200) °C (-320 to 2190) °F		
E	(-200 to 1000) °C (-320 to 1832) °F		
N	(-180 to 1300) °C (-292 to 2372) °F	±0.08 % FSR/°C	
T	(-200 to 400) °C (-320 to 750) °F	±0.15 % FSR/°C	
R *1 *2	(-10 to 1760) °C (-148 to 3200) °F	±0.10 % FSR/°C	
S *1 *2			
L	(-100 to 600) °C (-148 to 1100) °F	±0.08 % FSR/°C	
B	(0 to 1600) °C (32 to 3000) °F	±0.10 % FSR/°C	
U	(0 to 600) °C (32 to 1100) °F	±0.08 % FSR/°C	
C(W5) *2	(0 to 2300) °C (32 to 4200) °F	±0.05 % FSR/°C	
D(W3) *2			
G(W) *2			
Impedance (Thermocouple)			1 MΩ
Open Circuit sensor bias			0.2 uA
Cold junction automatic tracking (-20 to 70) °C		± 0.05 °C	± 0.5 °C
FSR = Full Scale range			
*1 Only over the range (800 to 1600) °C, *2 Cold junction tracking range (0 to 70)°C only			

PROCESS INPUTS		**SPECIFICATIONS @20°C**	
Type	**Range**	**Stability**	**Accuracy**
50 mV	± 50 mV (Max ± 75 mV)	± 0.04 % FSR/ °C	1 Reading/Second ±0.04% + (0.1% of FSR) 4 Readings/Second ± 0.1 % + (0.1 % of FSR) 10 Readings/Second ± 0.2 % + (0.1 % of FSR)
200 mV	±200 mV (Max ± 230 mV)		
1 V	± 1 V (Max ± 1.3 V)		
10 V	± 10 V (Max ± 11 V)		
mA	± 25 mA (Max ±30 mA)		
Slide wire*1	(0 to 100) % of pot travel	± 0.05 % / °C	
Ohms	(20 to 400) Ω Max (0 to 480) Ω	± 0.025 % FSR / °C	
Voltage Input Impedance		1 MΩ	
Current Input Impedance		20 Ω	
Resistance Connection		2 or 3 Wire	
Slide wire pot minimum		(0 to 1) KΩ	
Slide wire pot maximum		(0 to 1) MΩ	
FSR = Full Scale range			

OUTPUT **ANALOGUE mA CURRENT**		**SPECIFICATIONS @20°C**
Type/Function	**Range/Description**	**Accuracy/Notes**
Two wire current Sink or source	(0 to 20) mA (4 to 20) mA User mA	(mA output /2000) or 5 uA (Whichever is the greater)
Calibration Accuracy		± 5 uA
Supply in sink mode	(11 to 30) V dc, 24 V nominal	SELV
Maximum load current source	(0 to 20) mA	Maximum load 550 Ω
Maximum load current sink	Supply voltage @24 Vdc	Maximum load 650 Ω
Response time	< 500 ms to reach 95 % of final value; Start-up time < 3 s	
Loop voltage effect		Loop ripple 0.03 % of FSR;
Supply sensitivity	Supply ripple rejection < ± 5 uA error @ 1 V rms 50 Hz ripple	
Protection	Reverse connection and over-voltage protection. Maximum over-voltage current 100 mA	
Galvanic Isolation	500 V to input: 3750 V to Supply and Relays	
Current Output Damping	Programmable rise and fall (0 to 250) seconds, for a (0 to 20) mA swing.	
Thermal stability	Zero at 20 °C	± 1 uA/°C typically
The mA output range can be set to anywhere within the maximum capability		

OUTPUT **ANALOGUE VOLTAGE**		**SPECIFICATIONS @20°C**
Type/Function	**Range/Description**	**Accuracy/Stability/Notes**
Two wire voltage	(0 to 10) VDC User VDC	± 5 mV
Calibration Accuracy		± 5 mV
Maximum output		10.1 VDC
Min Load	10 KΩ User Configurable correction for Load	
Response time	< 500 ms to reach 95 % of final value; Start-up time < 3 s	
Current drive		± 2 mA, minimum load 5 KΩ @ 10 VDC
Thermal stability	Zero at 20 °C	± 1 mV/°C
Voltage generated across 500 Ω resistor		
The voltage output range can be set to anywhere within the maximum capability		

OUTPUT **RELAY**		**SPECIFICATIONS @20°C**
Type/Function	**Range/Description**	**Accuracy/Stability/Notes**
Form C relay contacts		Dual independent
Contact rating	(240 V ac rms @ 1 A; 30 V dc @ 1 A) Resistive Load	
Isolation	To any other port 3750 V	
Response time	Typically < 2 x selected input reading/second	

USB CONFIGURATION USER INTERFACE		
Type/Options /Function	**Description**	**Notes**
Configuration hardware	USB mini B	Cable not included
Configuration software	USBSpeedLink	Download www.status.co.uk
Operating system	Microsoft Windows	Windows 7 or later
Input configuration Type Scale Configure range	 High, low High, low	 RTD list, T/C list, mA, mV, V, Ohms, Slide wire Any within range Push-button, select option in software

USB CONFIGURATION USER INTERFACE (continued)		
Type/Options/Function	**Description**	**Notes**
Output configuration Type Scale Error signal Load correction Damping mA, V User trim	 Output signal High, low Up, down, user For voltage output Rise/fall for full range At 4 mA and 20 mA	 mA, V mA, V any value within output range User = any value within output range In ohms (0 to 250) s Push-button, select option in software
Relay Action Set point Dead band Relay delay	Change-over type Hi, low, inverted Any value within range Relay on, relay off	Two independently settable In engineering units In engineering units (0 to 250) s
Live data	Input Signal Output signal Cold junction Record live data Store configuration to PC	Value mA, V value °C Save data to CSV file Save data to file
Configuration with push button	Button function selection	Configure range, user trim, off
Other device options	Tag number	15 Characters

ANDROID USER INTERFACE		
Type/Function	**Range/Description**	**Accuracy/Stability/Notes**
Hardware	USB Lead	OTG plus A to Mini B
Software	USBVeiwLink	Download from Google play store
Read live data	Signal Output	°C, °F, Ω, mV, V, Ω , %, mA, V, Relay state

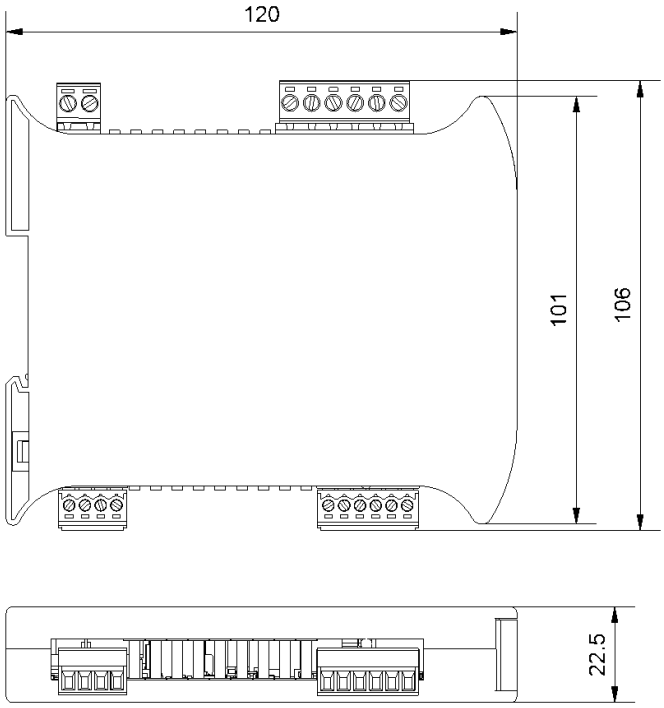
GENERAL	
Function	**Description**
Power supply	(20 to 240) V DC SELV, (20 to 240) V AC 50/60 Hz
Power	3 W max
Protection	Internal fuse, Over-voltage
Galvanic Isolation Supply	Supply to any port 3750 V
Galvanic Isolation Supply	Relays to any port 3750 V
Galvanic Isolation I/P to O/P	500 VDC **/** 48 VDC working
Update Rate (Resolution)	1 readings/second (16 Bits); 4 Readings/second (14 Bits); 10 readings/second (12 Bits)
Indication (State LED)	Green Flashing = OK Green Solid = input/output/configuration error indication
Relay 1, Relay 2 LEDs	Red LEDs: Not in alarm = LED off, in alarm = LED on

MECHANICAL	
Function	**Description**
Dimensions	120 mm (from back of rail) x 22.5 mm wide x 106 mm high
Enclosure colour	Grey
Material	Blend PC/ABS self-extinguishing
Connections	Two-part screw connectors for power, inputs, outputs, relays
Weight	145 g approximate
Rail mount	DIN 60715

ENVIRONMENTAL	
Function	**Description**
Ambient temperature	Operating/Storage (-30 to 70) °C
Ambient Humidity	Operating/Storage (10 to 90) %RH non-condensing
Protection requirement	Device must be installed in an enclosure offering >IP65 Protection
USB configuration ambient	(10 to 30) °C

APPROVALS	
EMC	BS EN 61326: Note - Sensor input wires to be less than 30 m to comply
Ingress protection	BS EN 60529
Electrical Saftey	BS EN 61010-1
RoHS	Directive 2011/65/EU

MECHANICAL



ORDER CODE	SEM1700

ACCESSORIES	
USB configuration software	USBSpeedLink free of charge from www.status.co.uk
Android live data view	USBViewLink (free of charge from Google play store)
Loop powered display	Refer to www.status.co.uk
USB Leads	Contact sales@status.co.uk

To maintain full accuracy, annual calibration is required. Contact support@status.co.uk for details
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