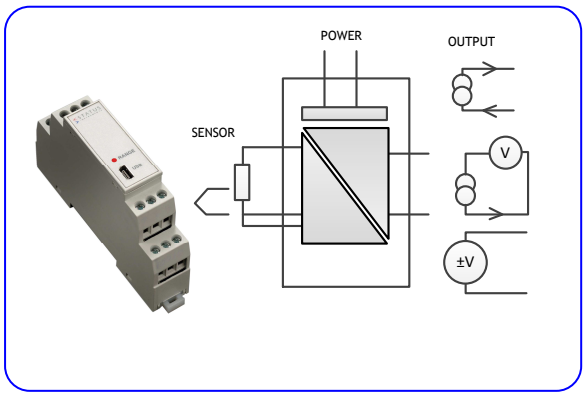
SMART RTD/RESISTANCE/SLIDE WIRE SIGNAL CONDITIONER

SEM1600T

- SUITABLE FOR RTD, THERMOCOUPLE AND SLIDE WIRE SENSORS
- CURRENT, VOLAGE OR BIPOLAR VOLTAGE OUTPUT
- POWERED (10 to 32) V AC / (10 to 48) V DC SUPPLY
- 22 SEGMENT USER LINEARISATION
- SENSOR OFFSET AND OUTPUT ALIGNMENT
- ADJUSTABLE INPUT FILTER
- USB PROGRAMMABLE



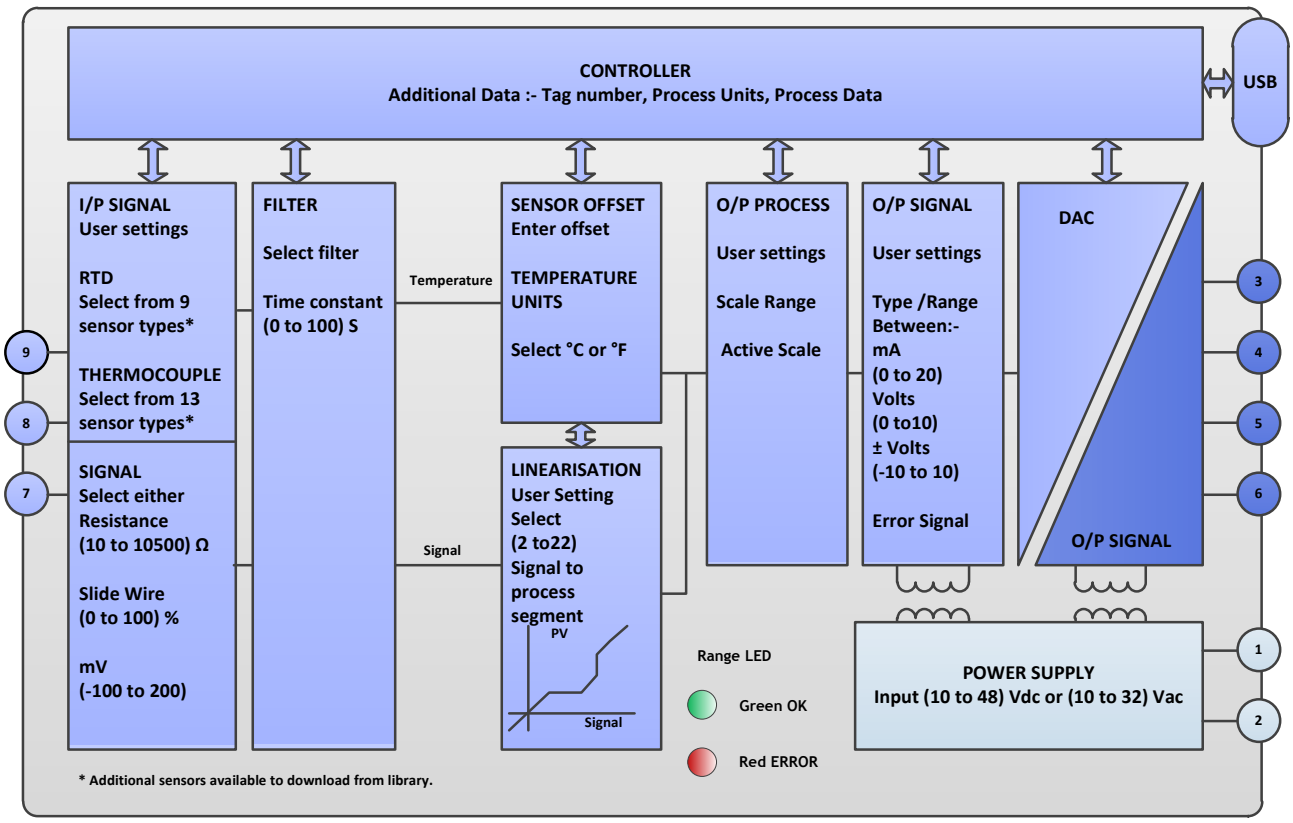
INTRODUCTION

The SEM1600T accepts resistance or mV signals from RTD, Slidewire or Thermocouple sensors. The flexible design allows the use of any resistive sensor within the range of (10 to 10500) Ω. Including Pt100, 500, 1000, Ni or Cu sensors, slide wire sensors up to 100 KΩ and 13 different thermocouple types. Other sensor characteristics or your own 22 point linearisation characteristic (for slidewire, linear resistance or mV) can be downloaded into the product enabling you to adapt it exactly to your application.

The output stage offers either voltage, bipolar voltage or current re-transmission signals. The retransmission signal can be ranged to a scale anywhere within the input process range. A transmitter power supply is provided on the output meaning the product can accept sink or source mA applications. While the voltage output will drive 2 mA into 5 KΩ @ 10 V

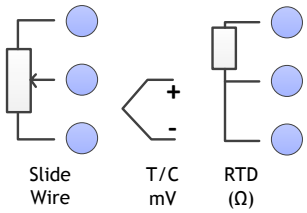
For ease of use, a high efficiency switch mode power supply is fitted as standard and does not require any adjustment between ac or dc applications. Operating voltages are (10 to 48) V dc and (10 to 32) V ac

Our USB interface is fitted for quick and easy configuration. Just connect a standard USB cable between the SEM1600T and your PC. Using our free configuration software, your PC will automatically upload the existing configuration data and guide you through any changes you wish to make. To further help save time, the SEM1600T does not need to be wired to a power supply during the configuration process, it is powered via the USB interface from your PC.



SMART RTD/RESISTANCE/SLIDE WIRE SIGNAL CONDITIONER

SPECIFICATION @20 °C

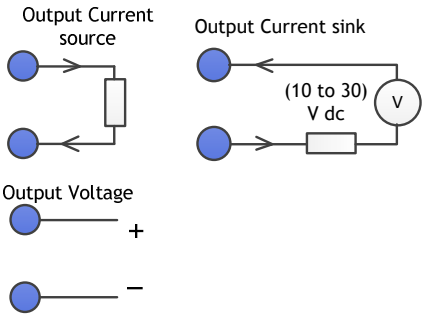


RESISTANCE RTD INPUT

Standard RTD	PT100,PT500,PT1000, Cu100, Cu1000, Ni100, Ni120, Ni1000, Cu53, library
Slide wire	Pot range (1 to 100) KΩ, Signal (0 to 100) %, accuracy 0.1 %
Resistance	10 to 500) Ω ± 0.055 Ω, (500 to 2500) Ω ± 0.5 Ω, (2500 to 10500) Ω ±10.0 Ω.
Thermal Drift	(0 to 500) Ω 0.013 Ω/˚C,(500 to 2500) Ω 0.063 Ω/˚C, (2500 to 10500) Ω 0.27 Ω/˚C
Excitation current	< 200 uA
Lead effect	Max lead resistance 20 Ω per leg, Effect 0.002 ˚C/Ω

THERMOCOUPLE mV INPUT

Standard TC	Types K,J,E,N,T,R,S,L,U,B,C(w5),D(W3),G(W),library
mV	(-100 to 200) mV ± 0.02% of full scale.
Thermal Drift	Thermocouple offset 0.1 ˚C/˚C, span 0.05 ˚C/˚C
Cold Junction	Range (-40 to 85) ˚C, Accuracy ± 0.2 ˚C, ± 0.05 ˚C/˚C



OUTPUT CURRENT

Current Source	Range (0 to 21.5) mA , Max Load 750 Ω
Current Sink	Range (0 to 21.5) mA , Supply (10 to 30) V dc, Voltage effect 0.2 uA/V
Accuracy	(mA Out/ 2000) or 5 uA which ever is the greater, Drift 1 uA/˚C

OUTPUT VOLTAGE

Range	(0 to 10.1) V or (-10.1 to 10.1) V, Accuracy ± 5 mV
Current Drive	± 2 mA, Min load 5000 Ω @ 10 V

SUPPLY

Range	(10 to 48) VDC , (10 to 32) VAC Protected by internal 500 mA resettable fuse.
Power	< 1W Full Power

GENERAL

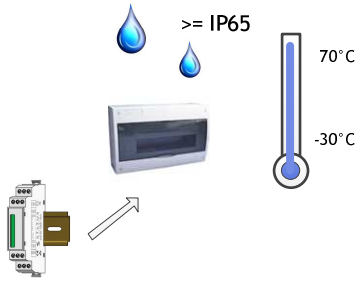
Response time	Start up 5 seconds, Update 300 mS, Response 400 mS, Warm up 2 minutes.
Isolation	Supply to input to output 500 V dc.
Indication	LED, Green when output (-0.1 to 100.1) %, else red

USER INTERFACE

Type	USB 2.0
Baud rate	19,200 baud
Equipment	PC running windows XP or later, USB cable.

USER INTERFACE FUNCTIONS

Scaling	User signal to process value scaling, for simplified setup.
Filter	Adjustable time constant (0 to100) Seconds.
User Linearisation (Profile)	(2 to 22) segments Ω (slide wire) and mV to process.
Process Units	4 Characters (signal input only)
Temperature units	˚C or ˚F (TC, RTD inputs only)
Tag Number	20 Characters
Process Output	Range in process units
Signal Output	Select type, signal range and (temperature only) error signal.
User offset	Enter sensor offset (Temperature mode only).
Active scaling	Set output process range against active sensor input



ENVIRONMENT

Operating Ambient	(-30 to 70) ˚C; (10 to 90) %RH (non condensing)
Storage Ambient	(-30 to 70) ˚C; (10 to 90) %RH (non condensing)
Configuration Ambient	(10 to 30) ˚C
Installation Enclosure	DIN Rail enclosure offering Protection >= IP65.

APPROVALS

CE	BS EN 61326

MECHANICAL

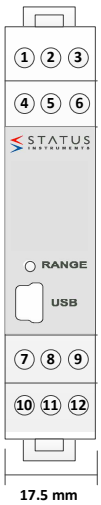
Style	DIN 43880, Colour grey, material Polymide 6.6, weight < 70 grams
Terminals	2.5 mm Maximum

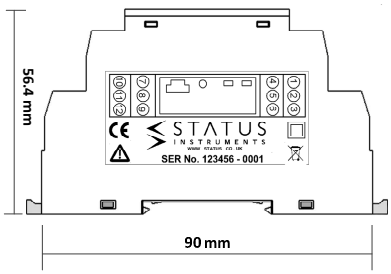
SENSORS RTD

	Accuracy = 0.2˚C + (˚0.05% of reading) (Plus sensor)
Platinum IEC	Pt100 (-200 to 850), Pt500 (-200 to 750), Pt1000 (-200 to 600)
Platinum IPTS-68	Pt100 (0.00391) + Pt100 (0.00392) (-200 to 630)
Ni100 DIN 0.00618	(-60 to 180)
Ni120 0.00672	(-80 to 260)
Ni 1000	(-60 to 180)
Ni1000 Tk5000	(-50 to 150)
Ni 507.5	(-80 to 360)
Ni 604	(-200 to 200)
Cu 53	(-50 to 180)
Cu100 0.00427	(-80 to 260)
Cu1000	(-80 to 260)
Silicon	KTY81-110 -120-121-122-150-210-220-221-222-250 (-55 to 175)
	KTY82-110 -120-121-122-150-210-220-221-222-250 (-55 to 175)
	KTY81-151, KTY82-151, KTY83-210-220-250-121-122 (-55 to 175)
	KTY84-130-150 (-40 to 300)

SENSORS THERMOCOUPLE

Types	Accuracy ±0.1 % of full scale ± 0.5 ˚C (plus sensor error)
	K (-200 to 1370), J (-100 to 1200), E (-200 to 1000), N (-180 to 1300)
	L (-100 to 600), U (0 to 600), B (0 to 1800), C - D - W (0 to 2300)
	Accuracy ±0.2 % of full scale ± 0.5 ˚C (plus sensor error)
	T (-200 to 400)
	Accuracy ± 0.1 % of full scale plus ± 0.5 ˚C (range 800 to 1600)
	R (0 to 1760), S (0 to 1760)





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