

# ST-SG STRAIN GAUGE CONDITIONER WITH RS485, A/O & RELAY

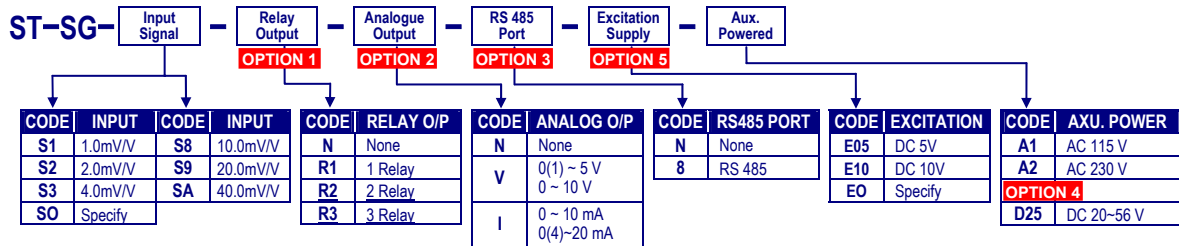
## FEATURE

- Measuring Stain Gauge signal range  
0~1.0/~2.0/~4.0/~10.0/~20.0/~40.0mV/V specify
- Accuracy:  $\pm 0.04\%$ ; Display range: -19999~29999
- User function, easily programmable via the top panel
- Calibration with Strain Gauge in the field capability
- 1 Analogue output, 1 RS 485 port, 3 Relay output and Excitation supply available for multi-cross selection in 4 outputs
- CE Approved



## ORDERING INFORMATION

3 outputs can be specified at most for Analogue, RS485 port, 3 Relay & Excitation Supply



## TECHNICAL SPECIFICATION

Input	Measuring Range	Input Impedance	Excitation Voltage
	0~1.0/~2.0/~4.0 mV/V	$\geq 1M$ ohm	DC 5V, 40mA
	0~10.0/~20.0/~40.0 mV/V		or DC 10V, 40mA

**Calibration:** Digital calibration by front key  
**Field calibration:** Calibration with sensor input high & low to meet system structure. And field calibration reset is not change the accuracy & linear of factory calibration.  
**A/D converter:** 16 bits resolution  
**Accuracy:**  $\leq \pm 0.04\%$  of FS  $\pm 1C$ ;  
**Sampling rate:** 15 cycles/sec  
**High speed mode:** can be 60cycle/sec(scaling:0~6000)  
**Response time:**  $\leq 100$  msec.(when the AvG = "1") in standard  
**Input range:** Input High and Low programmable  
**Ai.Hi:** Settable range: 0.00~100.00% of input range  
**Ai.Lo:** Settable range: 0.00~100.00% of input range

**Display & Functions**  
**LED:** Numeric: 5 digits, 0.28"H red high-brightness LED  
 Relay output indication: 4 square red LED  
 RS 485 communication: 1 square orange LED  
 Max/Mini Hold indication: 2 square orange LED  
**Scaling function:** Lo.SC: Low Scale; Settable range: -19999~+29999  
 Hi.SC: High Scale; Settable range: -19999~+29999  
**Decimal point:** Programmable from 0 / 0.0 / 0.00 / 0.000 / 0.0000  
**Over range indication:** ovFL, when input is over 120% of input range Hi  
**Under range indication:** -ovFL, when input is under -20% of input range Lo  
**Max / Mini recording:** Maximum and Minimum value storage during power on.  
**Display functions:** PV / Max(Mini) Hold / RS 485 Programmable  
**Front key functions:** Up and down key can be set to be a function as ECI.  
**Low cut:** Settable range: -19999~29999 counts  
**Digital fine adjust:** Pv.Zro: Settable range: -19999~+29999  
 Pv.SPn: Settable range: -19999~+29999

**Reading Stable Function**  
**Average:** Settable range: 1~99 times  
**Moving average:** Settable range: 1(None)~10 times  
**Digital filter:** Settable range: 0(None)/1~99 times

### Control Functions(option)

**Set-points:** Three set-points  
**Control relay:** Three relays(Maximum); FORM-A, 1A/230Vac, 3A/115V  
**Relay energized mode:** Energized levels compare with set-points:  
 Hi / Lo / Hi.HLd / Lo.HLd programmable  
**DO function: Energized by RS485 command of**  
**Energizing functions:** Start delay / Energized & De-energized delay / Hysteresis  
 Energized Latch  
**Start band**(Minimum level for Energizing): 0~9999counts  
**Start delay time:** 0:00.0~9(Minutes):59.9(Second)  
**Energized delay time:** 0:00.0~9(Minutes):59.9(Second)  
**De-energized delay time:** 0:00.0~9(Minutes):59.9(Second)  
 Hysteresis: 0~5000 counts

### Analogue output(option)

**Accuracy:**  $\leq \pm 0.1\%$  of F.S.; 16 bits DA converter  
**Ripple:**  $\leq \pm 0.1\%$  of F.S.  
**Response time:**  $\leq 100$  msec. (10~90% of input)  
**Isolation:** AC 2.0 KV between input and output  
**Output range:** Specify either Voltage or Current output in ordering  
**Voltage:** 0~5V / 0~10V / 1~5V programmable  
**Current:** 0~10mA / 0~20mA / 4~20mA programmable  
**Output capability:** Voltage: 0~10V:  $\geq 1000\Omega$ ;  
 Current: 4(0)~20mA:  $\leq 600\Omega$  max  
**Functions:** Ao.HS(output range high): Settable range: -19999~29999  
 Ao.LS(output range Low): Settable range: -19999~29999  
 Ao.LM(output High Limit): 0.00~110.00% of output High  
**Digital fine adjust:** Ao.Zro: Settable range: -38011~+27524  
 Ao.SPn: Settable range: -38011~+27524

### RS 485 Communication(option)

**Protocol:** Modbus RTU mode  
**Baud rate:** 1200/2400/4800/9600/19200/38400 programmable  
**Data bits:** 8 bits  
**Parity:** Even, odd or none (with 1 or 2 stop bit) programmable  
**Address:** 1 ~ 255 programmable  
**Remote display:** to show the value from RS485 command of master  
**Distance:** 1200M

**Terminate resistor:** 150 $\Omega$  at last unit.

### Electrical Safety

**Dielectric strength:** AC 2.0 KV for 1 min, Between Power / Input / Output / Case  
**Insulation resistance:**  $\geq 100M$  ohm at 500Vdc, Between Power / Input / Output  
**Isolation:** Between Power / Input / Relay / Analogue / RS485  
**EMC:** EN 55011:2002; EN 61326:2003  
**Safety(LVD):** EN 61010-1:2001

### Environmental

**Operating temp.:** 0~60 °C  
**Operating humidity:** 20~95 %RH, Non-condensing  
**Temp. coefficient:** ≤100 PPM/°C  
**Storage temp.:** -10~70 °C

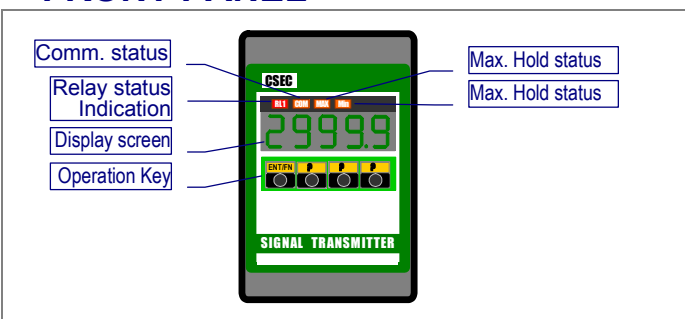
### Mechanical

**Dimensions:** 50mm(W) x 134mm(H) x 80mm(D) with socket  
**Case materiel:** ABS fire-resistance (UL 94V-0)  
**Mounting:** DIN rail mounting (35mm standard)  
**Terminal block:** 11 pin Socket, 10A/500Vac, M2.6, 16~22AWG  
**Weight:** Under 480g(without socket)

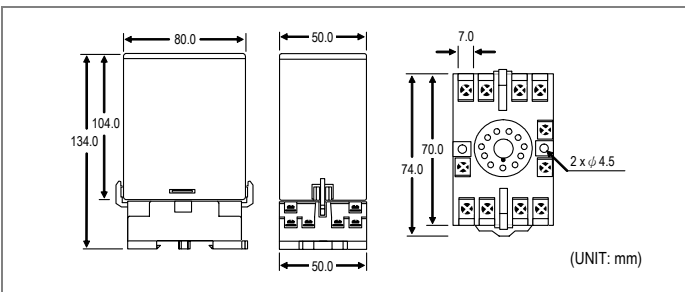
### Power

**Power supply:** AC 115 or 230V ± 15%, 50/60Hz; **Optional DC20~56V**  
**Excitation supply:** DC 5/10V, 30mA maximum in standard  
**Power consumption:** 5.0VA maximum  
**Back up memory:** By EEPROM

## FRONT PANEL

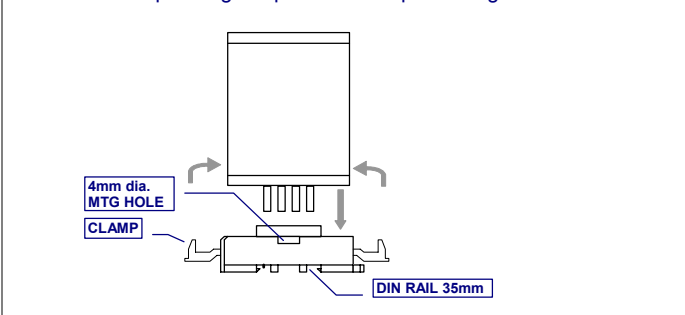


## DIMENSIONS

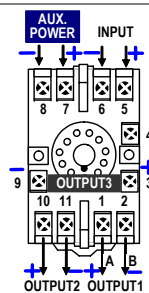


## INSTALLATION

The meter should be installed in a location that dose not exceed the maximum operating temperature and provides good air circulation.



## CONNECTION DIAGRAM(11 PIN)



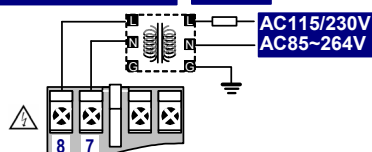
Remark: ST series has been designed in multi-output with limited terminals. Please check the output functions and specify terminals as label on product before wiring.

	OUTPUT 1	OUTPUT 2	OUTPUT 3
	TERMINAL 1+ & 2-	TERMINAL 10+ & 11-	TERMINAL 3+ & 4-
3 O/P	RS485	ANALOGUE	EXCITATION
3 O/P	ANALOGUE	RELAY	EXCITATION
3 O/P	RS485	RELAY	EXCITATION
3 O/P	RELAY	RELAY	EXCITATION
3 O/P	RS485	ANALOGUE	RELAY
3 O/P	ANALOGUE	RELAY	RELAY
3 O/P	RS485	RELAY	RELAY
3 O/P	RELAY	RELAY	RELAY
2 O/P	ANALOGUE		EXCITATION
2 O/P	RS485		EXCITATION
2 O/P	RELAY		
2 O/P	ANALOGUE	RELAY	
2 O/P	RS485	RELAY	
2 O/P	RS485	ANALOGUE	

Please check the voltage of power supplied first, and then connect to the specified terminals. It is recommended that power supplied to the meter be protected by a fuse or circuit breaker.

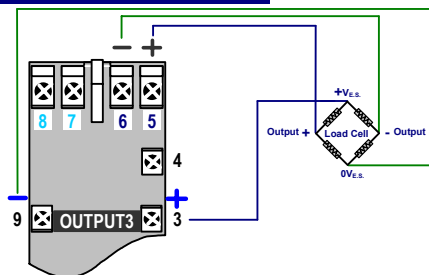
### Power Supply

#### Filter or Transformer 1A Fuse



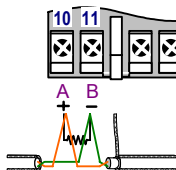
Due to the limited terminals for four outputs (Analogue, RS485, Relay, Excitation Supply), the outputs will be assigned as label on the product and above table. Please check it out before wiring.

### 4 wire Load Cell connection



### RS485 Communication Port

#### RS485 Port



Max. Distance: 1200M Terminate Resistor (at latest unit): 120~300ohm/0.25W; (typical: 150ohm)