CS2-T   TEMPERATURE Indicator

■ DESCRIPTION

CS2-T Temperature Indicator has been designed with high accuracy measurement, display and communication of <u>Thermocouple or Pt100Ω</u>.
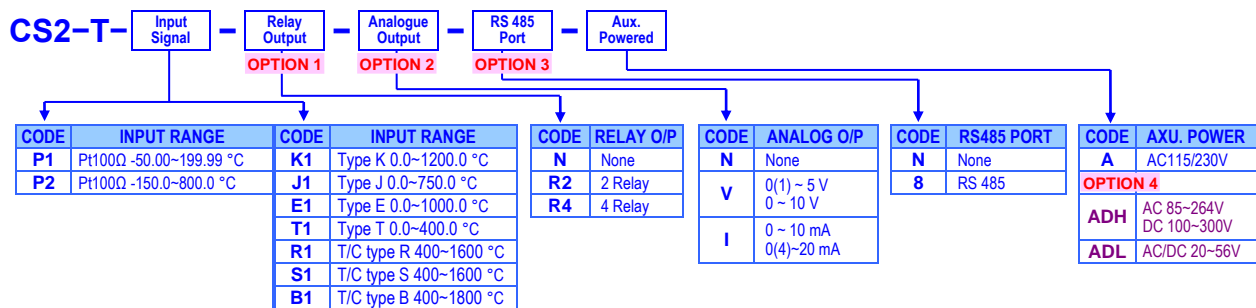
They are also building in 4 Relay outputs, 3 External Control Inputs, 1 Analogue output and 1 RS485 (Modbus RTU Mode) interface with versatile functions such as control, alarm, re-transmission and communication for a wide range of machinery and testing equipments application.

■ FEATURE

- Measuring RTD: Pt100Ω; Thermocouple: K, J, E, T, R, S, B
- 4 relay can be programmed individual to be a Hi / Lo / Hi Latch / Lo Latch / Go energized with Start Delay / Hysteresis / Energized & De-energized Delay functions, or to be a remote control.
- Analogue output and RS 485 communication port in option
- 3 external control inputs can be programmed individual to be Relative PV (Tare) / PV Hold / Maximum or Minimum Hold / DI (remote monitoring) / Reset for Relay Energized Latch….
- CE Approved & RoHS

■ ORDERING INFORMATION

CS2−T− [Input Signal] − [Relay Output] **OPTION 1** − [Analogue Output] **OPTION 2** − [RS 485 Port] **OPTION 3** − [Aux. Powered]

CODE	INPUT RANGE
P1	Pt100Ω -50.00~199.99 °C
P2	Pt100Ω -150.0~800.0 °C

CODE	INPUT RANGE
K1	Type K 0.0~1200.0 °C
J1	Type J 0.0~750.0 °C
E1	Type E 0.0~1000.0 °C
T1	Type T 0.0~400.0 °C
R1	T/C type R 400~1600 °C
S1	T/C type S 400~1600 °C
B1	T/C type B 400~1800 °C

CODE	RELAY O/P
N	None
R2	2 Relay
R4	4 Relay

CODE	ANALOG O/P
N	None
V	0(1) ~ 5 V 0 ~ 10 V
I	0 ~ 10 mA 0(4)~20 mA

CODE	RS485 PORT
N	None
8	RS 485

CODE	AXU. POWER
A	AC115/230V
OPTION 4	
ADH	AC 85~264V DC 100~300V
ADL	AC/DC 20~56V

■ TECHNICAL SPECIFICATION

Input

Measuring Range		Input Impedance	Excitation Supply
P1	Pt100Ω -50.00~199.99 °C	≥ 1M ohm	Sensing Current: 1.6mA
P2	Pt100Ω -150.0~800.0 °C	≥ 1M ohm	
K1	Type K 0.0~1200.0 °C	≥ 1M ohm	
J1	Type J 0.0~750.0 °C	≥ 1M ohm	
E1	Type E 0.0~1000.0 °C	≥ 1M ohm	
T1	Type T 0.0~400.0 °C	≥ 1M ohm	
R1	Type R 400~1600 °C	≥ 1M ohm	
S1	Type S 400~1600 °C	≥ 1M ohm	
B1	Type B 400~1800 °C	≥ 1M ohm	

Calibration: Digital calibration by front key
A/D converter: **16 bits resolution**
Accuracy: Pt100Ω: ≤ ±0.1% of FS ± 1C;
Thermocouple: ≤ ±0.2% of FS ± 1C;
Sampling rate: 15 cycles/sec
Response time: ≤100 m-sec.(when the AvG = "1") in standard
Cold junction in T/C: 25 ± 10˚C, error ≤ 0.5˚C

Display & Functions

LED: **Numeric:** 5 digits, 0.8"(20.0mm)H red high-brightness LED
Relay output indication: 4 square red LED
RS 485 communication: 1 square orange LED
E.C.I. function indication: 3 square green LED
Max/Mini Hold indication: 2 square orange LED
Display range: According to sensor range
Scaling function: Fix range, please don't set.
Fix range, please don't set.
Decimal point: Fix range, please don't set.
Over range indication: ouFL , when input is over 20% of input range Hi
Under range indication: -ouFL , 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: **Relative PV / PV Hold / Reset for maxi(mini) hold /**
Reset for relay energized latch programmable

Low cut: Settable range: -19999~29999 counts
Digital fine adjust: PuPro : Settable range: -19999~+29999
PuSPn : Settable range: -19999~+29999

Reading Stable Function

Average: **Average:**
Moving average: **Moving average:**
Digital filter: **Digital filter:**

Control Functions(option)

Set-points: Four set-points
Control relay: Four relays
Relay 2 & Relay 3: Dual FORM-C, 5A/230Vac, 10A/115V
Relay 1 & Relay 4: Dual FORM-A, 1A/230Vac, 3A/115V
Relay energized mode: Energized levels compare with set-points:
Hi / Lo / Go.12 / Go.23 / **Hi.HLd** / **Lo.HLd**; programmable
DO function: Energized by RS485 command of master.
Banks pre-set: **4 banks pre-set for all relay functions to relative 4 difference scaling, and selectable by 3 External Control Inputs(E.C.I.) Or front key**
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

External Control Inputs(ECI)

Input mode: 3 ECI points, Contact or open collect input, Level trigger
Functions: Relative PV (Tare) / PV Hold / Reset for Max or Mini. Hold /
DI / Reset for Relay Energized latch / 4 Banks selection
Debouncing time: Settable range 5 ~255 x (8m seconds)

Analogue output(option)

Accuracy:	≤± 0.1% of F.S.; 16 bits DA converter
Ripple:	≤± 0.1% of F.S.
Response time:	≤100 m-sec. (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: ≥ 1000Ω;**
	Current: 4(0)~20mA: ≤ 600Ω max
Functions:	**AoHS** (output range high): Settable range: -19999~29999
	AoLS (output range Low): Settable range: -19999~29999
	AoLñt (output High Limit): 0.00~110.00% of output High
Digital fine adjust:	**AoPro:** Settable range: -38011~+27524
	AoSPn: 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:	150Ω at last unit.

Electrical Safety

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

Environmental

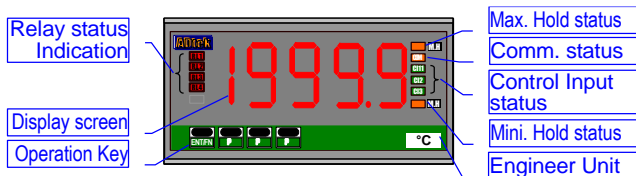|	
Operating temp.:	0~60 ˚C
Operating humidity:	20~95 %RH, Non-condensing
Temp. coefficient:	≤100 PPM/˚C
Storage temp.:	-10~70 ˚C
Enclosure:	Front panel: IEC 549 (IP54); Housing: IP20

Mechanical

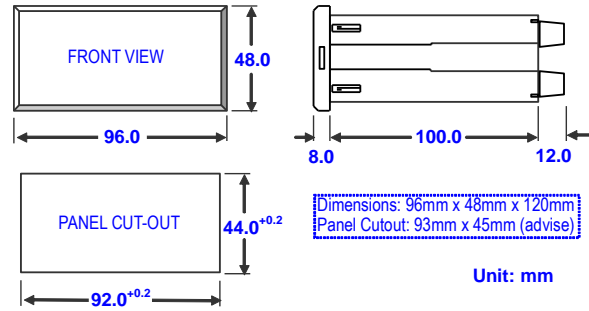|	
Dimensions:	96mm(W) x 48mm(H) x 120mm(D)
Panel cutout:	92mm(W) x 44mm(H)
Case material:	ABS fire-resistance (UL 94V-0)
Mounting:	Panel flush mounting
Terminal block:	Plastic NYLON 66 (UL 94V-0)
	10A 300Vac, M2.6, 1.3~2.0mm²(16~22AWG)
Weight:	550g / 350g(Aux. Power Code: ADH or ADL)

Power

Power supply:	AC115/230V,50/60Hz;
	Optional: AC 85~264V, DC 100~300V, DC 20~56V
Power consumption:	5.0VA maximum
Back up memory:	By EEPROM

■FRONT PANEL

- Relay status Indication
- Display screen
- Operation Key
- Max. Hold status
- Comm. status
- Control Input status
- Mini. Hold status
- Engineer Unit

■DIMENSIONS

FRONT VIEW — 48.0 — 96.0

PANEL CUT-OUT — 44.0⁺⁰·² — 92.0⁺⁰·²

8.0 — 100.0 — 12.0

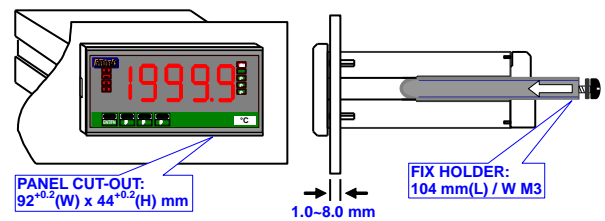Dimensions: 96mm x 48mm x 120mm
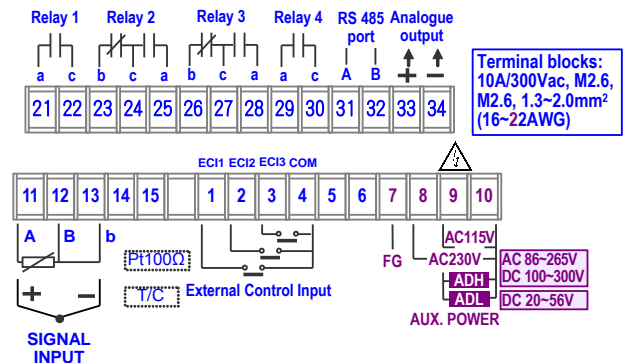Panel Cutout: 93mm x 45mm (advise)

Unit: mm

■INSTALLATION

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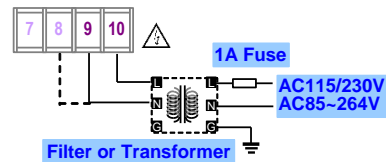

PANEL CUT-OUT:
92⁺⁰·²(W) x 44⁺⁰·²(H) mm

1.0~8.0 mm

FIX HOLDER:
104 mm(L) / W M3

■CONNECTION DIAGRAM

Relay 1 Relay 2 Relay 3 Relay 4 RS 485 port Analogue output

a c b c a b c a a c A B

21 22 23 24 25 26 27 28 29 30 31 32 33 34

Terminal blocks:
10A/300Vac, M2.6,
M2.6, 1.3~2.0mm²
(16~22AWG)

ECI1 ECI2 ECI3 COM

11 12 13 14 15 1 2 3 4 5 6 7 8 9 10

A B b Pt100Ω FG AC115V AC86~265V
+ − T/C External Control Input AC230V DC 100~300V
ADH
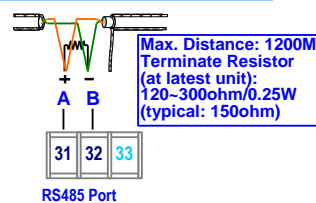ADL DC 20~56V

SIGNAL INPUT AUX. POWER

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

7 8 9 10

1A Fuse

AC115/230V
AC85~264V

Filter or Transformer

RS485 Communication Port

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

A B

31 32 33

RS485 Port

■FUNCTION DESCRIPTION

Display & Functions

Max / Mini recording: The meter will storage the maximum and minimum value in **[user level]** during power on in order to review drifting of PV.

Display functions:
(Please refer to step A-07)

PV / Max(Mini) Hold / RS 485 programmable in [dSPLY] function of **[inPUt GroUP]**

Present Value `Pu` : The display will show the value that Relative to Input signal.

Maximum Hold `MAHd` / **Minimum Hold** `MinHd` :

The meter will keep display in maximum(minimum) value during power on, until manual reset by front key in **[User level]**, rear terminal is close **[External Control Input(ECI)]** or press front down or up key to reset (according to setting, please refer to the function of the ECI Group)

▶ Please find the 🟧 **M.H** sticker that enclosure the package of the meter to stick on the right side of square orange LED

Max. (Mini.) Hold & Reset
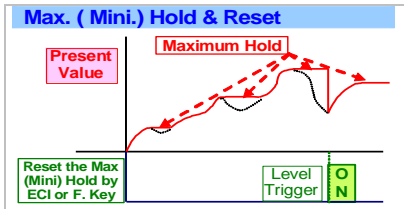
Remote Display by RS485 command `rS485` :

The meter will show the value that received from RS485 sending. In past, The meter normally receive 4~20mA or 0~10V from AO or digital output from BCD module of PLC. We support a new solution that PV shows the value from RS485 command of master can so that can be **save cost and wiring** from PLC.

Other functions : The meter is also support relative PV (ΔPV) and PV hold functions that set in **[ECi GroUP]. Please refer to explain of ECI functions.**

Low cut: Settable range from -19999~+99999 counts.
The users can set the value range.

1. If set the positive value (X1) here to display "0" which it expressed to be low-cut the PV between "+X1 (plus)" & "-X1(minus)" /absolute value

   PV< I Setting value (X1) I, the display will be shown 0
   EX: Low Cut is set for 0.50. If the display is from -0.50~+0.50, that will be 0.

Low Cut set to be +0.50

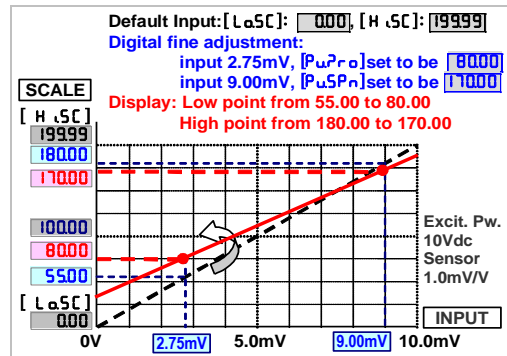**Low Cut is set for 0.50, if the PV is from -0.50~+0.50, that display will be 0.**
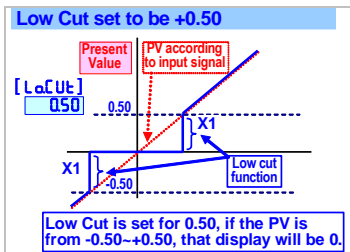
2. If set the negative value (X2) here to display "X2" which it expressed to be low-cut the PV that it's under the X2 setting value;

   PV< Setting value(X2), the display will be shown X2.
   EX: Low Cut is set for -0.01. If the display is < -0.01, and all the display will be -0.01.

Low Cut set to be -0.10

Low Cut is set for -0.10, if the PV is under (< = -0.10), that display will be -0.10.
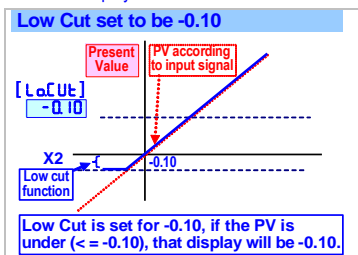
Digital fine adjust: Settable range: -19999~+29999

Users can get Fine Adjustment for Zero & Span of PV by front key of the meter, and "**Just Key In**" the value which user want to show in the current input signals.

Especially, the **[PuPro]** & **[PuSPn]** are not only in zero & span of PV, but also any lower point for **[PuPro]** & higher point for **[PuSPn]**. The meter will be linearization for full scale.

Default Input: `[LoSC]`: `0.00`, `[H iSC]`: `19999`

Digital fine adjustment:
input 2.75mV, `[PuPro]`set to be `80.00`
input 9.00mV, `[PuSPn]`set to be `170.00`
Display: Low point from 55.00 to 80.00
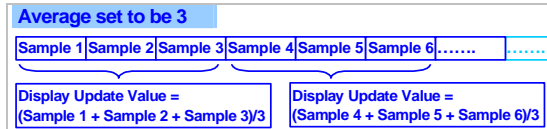High point from 180.00 to 170.00

Reading Stable Function

Average display:

Jittery Display caused by the noise or unstable signal. User can set the times to average the readings, and to get smoothly display.

The meter's sampling is 15cycle/sec. If the `[ AuG]`(Average) set to be `3` to express the display update with 5 times/sec. The meter will calculate the sampling 1-3 and update the display value. At meantime, the sampling 4-6 will be processed to calculate.
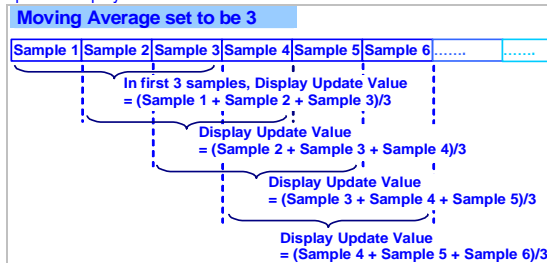
Average set to be 3

Remark: The higher average setting will cause the response time of Relay and Analogue output slower.

Moving average:

Jittery Display caused by the reasons as like as noise or unstable signal. User can set the times to average the readings, and get smoothly display.

The meter's sampling is 15cycle/sec. If the `[MAuG]`(Moving Average) set to be `3` expressed the display update with 15 times/sec.,

In the first updated display value will be same as average function. In the next updated display value, the function will get the new fourth sample (sample 4) then throw away the first sample (sample 1) that the newest 3 samples(sample 2,3,4) will be calculated for the updated display value.

Moving Average set to be 3

Remark: The higher moving average setting wouldn't cause the response time of Relay and Analogue output slower after first 3 samples.

Digital Filter: The digital filter can reduce the magnetic noise in field.

The digital filter can reduce the influence of spark noise caused by magnetic of coil.

If the values of samples are over digital filter band (fix in firmware and about 5% of stable reading) 3 times (Digital Filter set to be 3) continuously, the meter will admit the samples and update the new reading. Otherwise, it will be as treat as a noise and skip the samples.

Control Functions(option)

Relay energized mode: Hi / Lo / **Go-1.2 / Go-2.3** / **Hi.HLd** / **Lo.HLd** / **DO** programmable
Hi `Hi`(Fig.1-①):   Relay will energize when **PV > Set-Point**
Lo `Lo`(Fig.1-②):   Relay will energize when **PV < Set-Point**

Hi / Lo Relay Energized — Fig.1
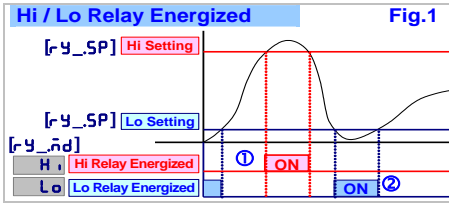
Go-1.2 `Go-12`: This function is programmable in Relay 4 only.
If the Relay 4 set to be Go function, the relay will compare with
`rY1SP` and `rY2SP`.
Go relay energized when the condition is
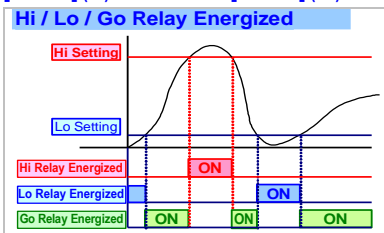`rY1SP` (Hi) > PV > `rY2SP` (Lo)

Go-2.3 `Go-23`: This function is programmable in Relay 4 only.
If the Relay 4 set to be Go function, the relay will compare with
`rY2SP` and `rY3SP`.
Go relay energized when the condition is
`rY2SP` (Hi) > PV > `rY3SP` (Lo)

Hi / Lo / Go Relay Energized

Hi.HLd `Hi.HLd` (Lo.HLd `Lo.HLd`) :

The relay energized with latched function is for electrical safety and human protection.

For example, a current meter relay installed for the current alarm of motor. Generally, over current of motor caused by over load, mechanical dead lock, aging of insulation and so on.

Above cases will alarm in the meter, if the user doesn't figure out the real reason and re-start the motor. It may damage the motor. The functions of Hi.HLd & Lo.HLd are designed must be manual reset the alarm after checking out and solving the issue. It's very important idea for electrical safety and human protection.

As the PV Higher (or lower) than set-point, the relay will be energized to latch except manual reset by from key in [**user level**] or [`ECi`](ECI) set to be `rYrSt` is closed.

Hi(Lo) Energized Latch & Reset
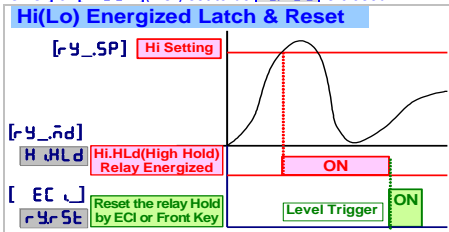
DO function `do`: The function has been designed not only a meter but also an I/O interface. In the case of motor control cabinet can't get the remote function. It's very easily to get the ON/OFF status of switch from CS2 series with RS485 function.
If the [`rY_md`] had been set `do`, the relay will be energized by RS485 command directly, but no longer to compare with set-point.

Start delay band and Start delay time:

The functions have Been designed for,
► To avoid starting current of inductive motor (6 times of rated current) with alarm.
► If the `rY_md` relay energized mode had been set to be `Lo`(Lo) or `Lo.HLd`(Lo & latch). As the meter is power on and no input to display the "0" caused the relay will be energized. User can set a band and delay time to inhibit the energized of relay.

Start band `rYSb` (Fig.2-①): Settable range from 0~9999 Counts
Start delay time `rYSd` (Fig.2-②): Settable range from 0.0(s)~9(m)59.9(s);

Start Delay — Fig.2
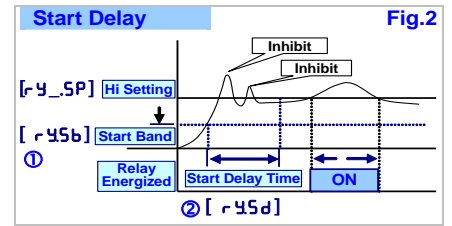
Hysteresis `rY_.HY` (Fig.3-①): Settable range from 0~9999 Counts
As the display value is swing near by the set point to cause the relay on and off frequently. The function is to avoid the relay on and off frequently such as compressor…….etc.,

Relay energized delay `rY_.rd` (Fig.3-②): Settable range from 0.0(s)~9(m)59.9(s);
The function is to avoid the miss action caused by noise. Sometime, the display value will swing caused by spark of contactor…etc.. User can set a period to delay the relay energized.

Relay de-energized delay `rY_.Fd` (Fig.3-③): Settable range from 0.0(s)~9(m)59.9(s);

Energized / De-energized Delay & Hysteresis — Fig.3
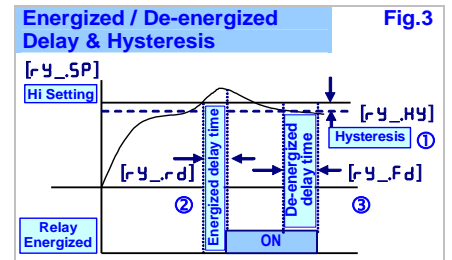
External Control Inputs(ECI)

The three external control inputs are individually programmable to perform specific meter control or display functions. All E.C.I. have been designed in level trigger actions. Please pay attention, the ECI1 or ECI2 input will be disable while UP or Down Key has been set to be " `YES`".

Functions: Relative PV / PV Hold / Reset Max or Mini. Hold / **DI** / Reset for Relay Energized latch **programmable.**

Relative PV `rELPu`: The [`ECi`] can be set to be `rELPu` function. When the E.C.I. is closed, the reading will show the differential value.

Relative PV
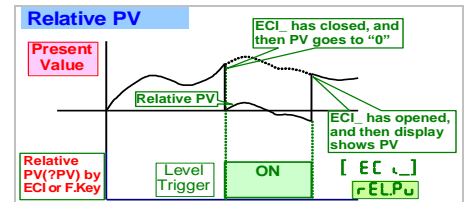
PV Hold `PuHLd`: The [`ECi`] can be set to be `PuHLd`(PV Hold) function. The display will be hold when the E CI is closed, until the ECI is to be open. Please refer to the below figures,

PV Hold & Reset
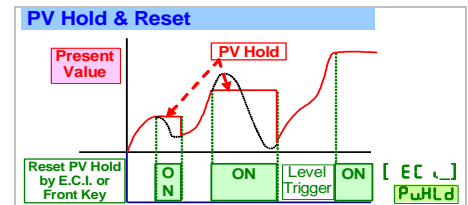
Reset for Maximum or Minimum Hold `mrSt`:
When the [`dSPLY`] function in [`inPut GroUP`] selected `mAxHd` or `minHd`, the display will show Maximum or Minimum value.
The [`ECi`] function can be set to be `mrSt` function to reset the maximum and minimum value in [**User Level**] by terminals of ECI (close). Please refer to the figure as below.

Max. (Mini.) Hold & Reset
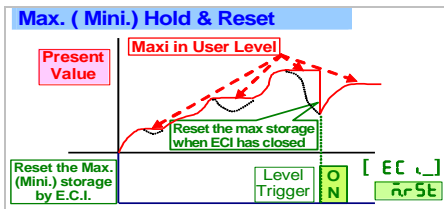
DI `d ı` :
The E.C.I can be set to be `d ı` function, when the meter building in RS485 port. It is easier to get remote monitoring a switch status through the meter as like as DI of PLC.

Reset for Relay Energized Latch `r Yr St` :
If the relay energized mode has been set to be `H ıHLd`(Energized latch), and the `[ EC ı ]` can be set to be `r Yr St`(Reset the Relay energized latch). When the PV meets the condition of relay energizing, the relay will be energized and latch until the ECI is to be closed.

Hi(Lo) Energized Latch & Reset
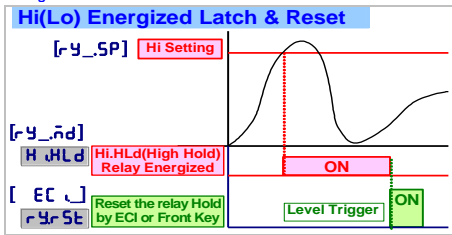
Debouncing time:
The function is for avoiding noise signal to into the meter. And The basic period is 8mseconds. It means you set the number that has to multiple 8 m-seconds.
For example: `[dEbnC]`set to be 5, it means 5 x 8mseconds = 40mseconds

Analogue output(option)

Please specify the output type either an 0~10V or 4(0) ~ 20mA in ordering. The programmable output low and high scaling can be based on various display values. Reverse slope output is possible by reversing point positions.

Output range:
Voltage: 0~5V / 0~10V / 1~5V programmable
Current: 0~10mA / 0~20mA / 4~20mA programmable

Functions:
Output High / Low scale, output limit, fine adjustment

Output range high [AoHS]:
To setting the Display value High to versus output range High(as like as 20mA in 4~20)

**Output range low [AoLS]:**
To setting the Display value Low to versus output range Low(as like as 4mA in 4~20)
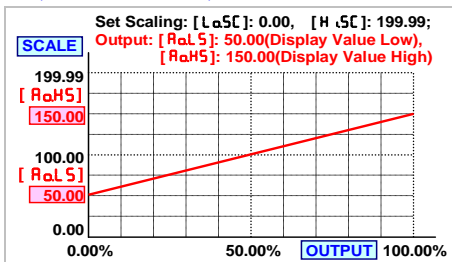
The range between **[AoHS]** and **[AoLS]** should be over 20% of span at least; otherwise, it will be got less resolution of analogue output.

Output High Limit [AoLmt]:
0.00~110.00% of output High User can set the high limit of output to avoid a damage of receiver or protection system.
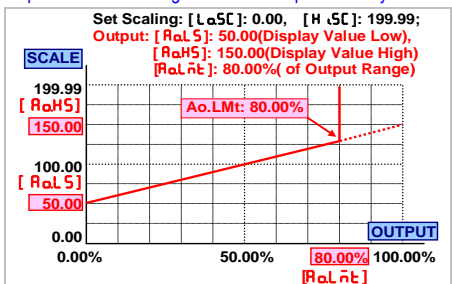
Fine zero & span adjustment:

Users can get Fine Adjustment of analogue output by front key of the meter. Please connect standard meter to the terminal of analogue output. To press the front key(up or down key) of meter to adjust and check the output.

Zero adjust [AoPro]: Fine Zero Adjustment for Analog Output;
Settable range: -38011~27524;

Span adjust [AoSPn]: Fine Span Adjustment for Analog Output;
Settable range: -38011~27524;

RS 485 communication(option)

CS2 series supports Modbus RTU mode protocol to be used as Remote Terminal Unit (RTU) for monitoring and controlling in a SCADA (Supervisor Control And Data Acquisition) system. The baud rate can be up to 38400 bps. It's not only can be read the measured value and DI (external control inputs) status but also controls the relays output (DO) by RS485 communication ports.
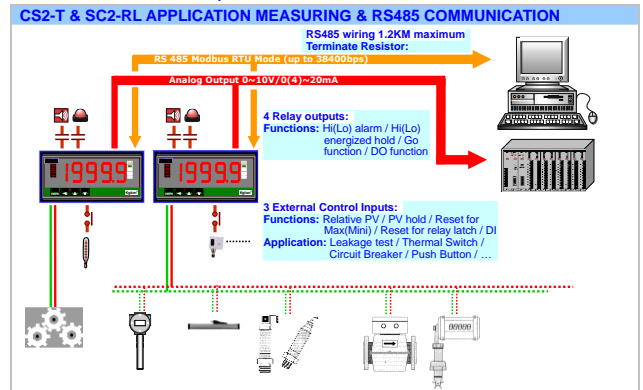
Remote Display:

The meter will show the value that received from RS485 command. In past, The meter normally receive 4~20mA or 0~10V from AO or digital output from BCD module of PLC .We support a new solution that PV shows the value from RS485 command of master so that can be **save cost and wiring** from PLC.

When the `[ dSPLY]` set to be RS485, it means, the PV screen will show the number from RS485 command & data. The data (number) will be same as PV that will compare with set-point, analogue output and ECI functions so that is to control analogue output, relay energized and so on.
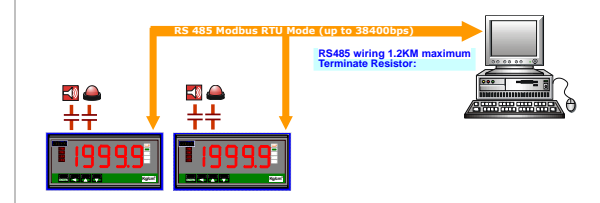
Calibration

System calibration by front key. The process of calibration, please refer to the operating manual

■ERROR MESSAGE

BEFORE POWER ON, PLEASE CHECK THE SPECIFICATION AND CONNECTION AGAIN.

SELF-DIAGNOSIS AND ERROR CODE:

DISPLAY	DESCRIPTION	REMARK
`ouFL`	Display is positive-overflow (Signal is over display range)	**(Please check the input signal)**
`-ouFL`	Display is negative-overflow (Signal is under display range)	**(Please check the input signal)**
`ouFL`	ADC is positive-overflow (Signal is higher than input range high 20%)	**(Please check the input signal)**
`-ouFL`	ADC is negative-overflow (Signal is lower than input range low -20%)	**(Please check the input signal)**
`EEP` ⇄ `FAiL`	EEPROM occurs error	**(Please send back to manufactory for repaired)**
`AiCnG` ⇄ `Pu`	Calibrating Input Signal do not process	**(Please process Calibrating Input Signal)**
`AiC` ⇄ `FAiL`	Calibrating Input Signal error	**(Please check Calibrating Input Signal)**
`AoCnG` ⇄ `Pu`	Calibrating Output Signal do not process	**(Please process Calibrating Output Signal)**
`AoC` ⇄ `FAiL`	Calibrating Output Signal error	**(Please check Calibrating Output Signal)**

■ FRONT PANEL:
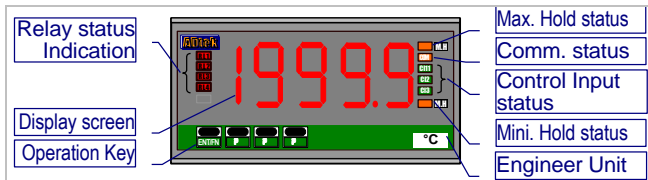
Numeric Screens
0.8"(20.0mm) red high-brightness LED for 4 2/3 digital present value.

■ **I/O Status Indication**
● **Relay Energized:** 4 square red LED
`RL1` display when Relay 1 energized;
`RL2` display when Relay 2 energized;
`RL3` display when Relay 3 energized;
`RL4` display when Relay 4 energized;
● **External Control Input Energized:** 3 square green LED
`ECI1` display when E.C.I. 1 close(dry contact)
`ECI2` display when E.C.I. 2 close(dry contact)
`ECI3` display when E.C.I. 3 close(dry contact)
● **RS485 Communication:** 1 square orange LED
`COM` will flash when the meter is receive or send data, and `COM` flash quickly means the data transient quicker.
● **Max/Mini Hold indication:** 2 square orange LEDs
`M.H` displayed: When the display function has been selected in Maximum or Minimum Hold function.

■ **Stickers:**
Each meter has a sticker what are functions and engineer label enclosure.
● **Relay energized mode:** `HH` `Hi` `Lo` `LL` `DO`
● **E.C.I. functions mode:**
`PV.H` PV.H(PV Hold) / `Tare` Tare / `DI` DI(Digital Input)
`M.RS` M.RS(Maximum or Minimum Reset) /
`R.RS` R.RS(Reset for Relay Latch)
● **Engineer Label:** over 80 types.

■ **Operating Key:** 4 keys for 🔲Enter(Function) / ◀Shift(Escape) / 🔼Up key / 🔽Down key

	Setting Status	Function Index
🔼**Up key**	Increase number	Go back to previous function index
🔽**Down key**	Decrease number	Go to next function index
◀**Shift key**	Shift the setting position	Go back to this function index, and abort the setting
🔲**Enter/Fun key**	Setting Confirmed and save to EEProm	From the function index to get into setting status

■ **Pass Word** `P.CodE`: Settable range: 0000~9999;
User has to key in the right pass word so that get into【Programming Level】. Otherwise, the meter will go back to measuring page. If user forgets the password, please contact with the service window.

■ **Function Lock:** There are 4 levels programmable.
● **None** `nonE`: no lock all.
● **User Level** `USEr`: User Level lock. User can get into User Level for checking but setting.
● **Programming Level** `EnG`: Programming level lock. User can get into programming level for checking but setting.
● **ALL** `ALL`: All lock. User can get into all level for checking but setting.

■ **Front Key Function**
● The 🔼Key can be set to be the same function as the setting of ECI1. Ex. The ECI1 set to be `PuHLd` and the function [E.1=UP] set to be `YES` in 〖 ECi GroUP〗. When user presses 🔼Key, the PV will hold as like as ECI1 close.
● The 🔽Key can be set to be the same function as the setting of ECI2. Ex. The ECI2 set to be `rELPu` and the function [E.2=dn] set to be `YES` in 〖 ECi GroUP〗. When user presses 🔽Key, the PV will show relative value as like as ECI2 close.
▶ **If the front key function has been set, the terminal input for ECI will be disabling.**

■ OPERATING DIAGRAM (The detail description of operation, please refer to operating manual.)

User Level

Press [◄] for 1 sec. can back to Measuring

Power ON
↓
`88888` **Self-diagnosis**
↓
`CS2.t` **Show the model number**
↓
`uEr 1.4` **Show the firmware version**
↓
`29999` **MEASURING PAGE** Press [◄]1sec → ← Press [◄]1sec
↓ [ENT]
`EntEr` / `P.CodE` **Enter the password to access Engineer Level** [ENT]
↓
◄ **Pass Code** ► NO / YES
Default:1000

Columns (User Level)

0-0-1 `29999` / `Pu` — If the [dSPLY] function has been set `rS485` Pu: Present Value

0-1 `10000` / `rY1.SP` — rY1.SP: Relay 1 Set-point -19999~29999

0-2 `10000` / `rY2.SP` — rY2.SP: Relay 2 Set-point -19999~29999

0-3 `10000` / `rY3.SP` — rY3.SP: Relay 3 Set-point -19999~29999

0-4 `10000` / `rY4.SP` — rY4.SP: Relay 4 Set-point -19999~29999

0-5 `no` / `rYrSt` — rYrSt: Reset for energized Latch of Relay YES / no

0-6 `0.0000` / `ñ in` — ñin: the Minimum value of PV saving Checking only

0-7 `29999` / `ñAh` — ñAh: the Maximum value of PV saving Checking only

0-8 `no` / `ñrSt` — ñrSt: Reset the saved value of Maximum & Minimum YES / no

0-9 `uEr 1.4` / `CS2.t` — model number firmware version Checking only

0-01 `29999` / `Pu` — Cyclic to first page

Programming Level

Press [◄] for 1 sec. can back to Measuring

[▲] → ← [▼]

`inPUt` / `GroUP` **INPUT GROUP** [ENT]
`rELAY` / `GroUP` **RELAY GROUP** [ENT]
`EC i` / `GroUP` **EXTERNAL CONTROL INPUT (E.C.I) GROUP** [ENT]
`Ao` / `GroUP` **ANALOGUE OUTPUT GROUP** [ENT]

INPUT GROUP

A-1 `0` / `PudP` — PudP: Decimal Point Don't set

A-2 `0` / `Lo.SC` — Lo.SC: Low scale of PV Don't set

A-3 `10000` / `Hi.SC` — Hi.SC: High scale of PV Don't set

A-4 `0` / `Pu.Pro` — Pu.Pro: Fine Low point Adjustment for PV display -19999~29999

A-5 `0` / `Pu.SPn` — Pu.SPn: Fine High point Adjustment for PV display -19999~29999

A-6 `nonE` / `P.S.CLr` — P.S.CLr: Clear Fine Zero & Span Adjustment for PV display nonE / PuPro / PuSPn / botH

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RELAY GROUP

B-1 `0` / `rY.Sb` — rY.Sb: Start band for Relay energized 0~9999counts

B-2 `0.00.0` / `rY.Sd` — rY.Sd: Start delay time for Relay energized 0.00.0~ 9(M).59.9(S)

B-3 `Hi` / `rY1.ind` — rY1.ind: Relay 1 energized mode oFF / Lo / Hi / LoHLd / HiHLd / do

B-4 `0` / `rY1.HY` — rY1.HY: Relay 1 Hysteresis 0~5000 counts

B-5 `0.00.0` / `rY1.rd` — rY1.rd: Relay 1 energized delay time 0.00.0~ 9(M).59.9(S)

B-6 `0.00.0` / `rY1.Fd` — rY1.Fd: Relay 1 de-energized delay time 0.00.0~ 9(M).59.9(S)

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EXTERNAL CONTROL INPUT (E.C.I) GROUP

C-1 `rEL.Pu` / `EC i.1` — EC i.1: External Control Input 1 nonE / rELPu / PuHLd / ñrSt / rYrSt / d i

C-2 `PuHLd` / `EC i.2` — EC i.2: External Control Input 2 nonE / rELPu / PuHLd / ñrSt / rYrSt / d i

C-3 `ñrSt` / `EC i.3` — EC i.3: External Control Input 3 nonE / rELPu / PuHLd / ñrSt / rYrSt / d i

C-4 `12` / `dEbnC` — dEbnC: Debouching of external control Input 5~255(x8ms)

C-5 `no` / `E.1=UP` — E.1=UP: ECI.1 set to be UP Key function YES / no

C-6 `no` / `E.2=dn` — E.2=dn: ECI.2 set to be Down Key function YES / no

ANALOGUE OUTPUT GROUP

D-1 `A.4-20` / `Ao.tYP` — Ao.tYP: Analogue Output type selection u0-10 / u.0-5 / u.1-5 / A0-10 / A0-20 / A.4-20

D-2 `0.0` / `Ao.LS` — Ao.LS: Analogue Low Output versus Low Scale -19999~29999

D-3 `10000` / `Ao.HS` — Ao.HS: Analogue High Output versus High Scale -19999~29999

D-4 `0` / `Ao.Pro` — Ao.Pro: Fine Zero Adjustment for Analogue Low Output -38011~27524

D-5 `0` / `Ao.SPn` — Ao.SPn: Fine Span Adjust. for Analogue High Output -38011~27524

D-6 `nonE` / `P.S.CLr` — P.S.CLr: Zero & Span Clear for Adjustment nonE / AoPro / AoSPn / botH

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CS2-T

CS2-T

A-7 — **dSPLY: Display Function**
Display: `Pu` / `dSPLY`
Options: `Pu` / `h inHd` / `hAhHd` / `rS485`

A-8 — **LoCUt: Low Cut Function**
Display: `0` / `LoCUt`
-19999~29999

A-9 — **AuG: Average update for PV**
Display: `5` / `AuG`
1(None)~99 times

A-10 — **mAuG: Moving Average update for PV**
Display: `1` / `mAuG`
1(None)~10 times

A-11 — **dF iLt: Digital filter**
Display: `0` / `dF iLt`
0(None)/1~99 times

A-12 — **PCodE: Pass Code for enter Engineer Level**
Display: `0` / `PCodE`
0000~9999

A-13 — **FLoCK: Function Level Lock**
Display: `nonE` / `FLoCK`
Options: `nonE` / `USEr` / `EnG` / `ALL`

B-7 — **ry2md: Relay 2 energized mode**
Display: `H i` / `ry2md`
Options: `oFF` / `Lo` / `H i` / `LoHLd` / `H iHLd` / `do`

B-8 — **ry2HY: Relay 2 Hysteresis**
Display: `0` / `ry2HY`
0~5000 counts

B-9 — **ry2rd: Relay 2 energized delay time**
Display: `0.00.0` / `ry2rd`
0.00.0~9(M).59.9(S)

B-10 — **ry2Fd: Relay 2 de-energized delay time**
Display: `0.00.0` / `ry2Fd`
0.00.0~9(M).59.9(S)

B-11 — **ry3md: Relay 3 energized mode**
Display: `H i` / `ry3md`
Options: `oFF` / `Lo` / `H i` / `LoHLd` / `H iHLd` / `do`

B-12 — **ry3HY: Relay 3 Hysteresis**
Display: `0` / `ry3HY`
0~5000 counts

B-13 — **ry3rd: Relay 3 energized delay time**
Display: `0.00.0` / `ry3rd`
0.00.0~9(M).59.9(S)

B-14 — **ry3Fd: Relay 3 de-energized delay time**
Display: `0.00.0` / `ry3Fd`
0.00.0~9(M).59.9(S)

B-15 — **ry4md: Relay 4 energized mode**
Display: `H i` / `ry4md`
Options: `oFF` / `Lo` / `H i` / `LoHLd` / `H iHLd` / `do` / `Go- i2` / `Go-34`

B-16 — **ry4HY: Relay 4 Hysteresis**
Display: `0` / `ry4HY`
0~5000 counts

B-17 — **ry4rd: Relay 4 energized delay time**
Display: `0.00.0` / `ry4rd`
0.00.0~9(M).59.9(S)

B-18 — **ry4Fd: Relay 4 de-energized delay time**
Display: `0.00.0` / `ry4Fd`
0.00.0~9(M).59.9(S)

D-7 — **AoLht: Analog Output High Limit**
Display: `110.00` / `AoLnt`
0.00~110.00%

rS485 GROUP
Display: `rS485` / `GroUP`

E-1 — **AdrES: Device number of the meter**
Display: `1` / `AdrES`
1~255

E-2 — **bAUd: Baud rate**
Display: `9600` / `bAUd`
Options: `1200` / `2400` / `4800` / `9600` / `19200` / `38400`

E-3 — **Pr ity: Parity**
Display: `n.Stb2` / `Pr ity`
Options: `n.Stb i` / `n.Stb2` / `odd` / `EuEn`
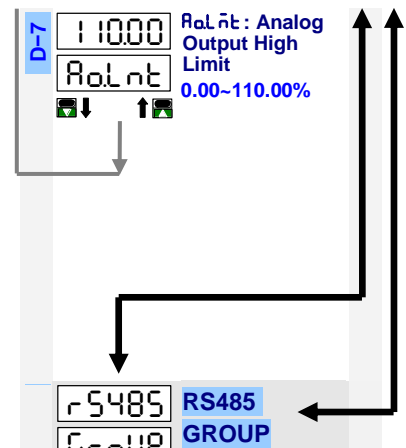
▶ **Plesae refer to operating manual for detail description**