CS2-VA VOLTAGE/CURRENT METER RELAY
CS2-PR DC SIGNAL 10V/20mA INDICATOR
CS2-SG LOAD CELL/STRAIN GAUGE INDICATOR
CS2-PM POTENTIOMETER INDICATOR
CS2-RS RESISTANCE(2-W) INDICATOR
CS2-T TEMPERATURE INDICATOR
OPERATION MANUAL

INDEX

■ DESCRIPTION ---------- 1/41
■ FEATURES ---------- 1/41
■ APPLICATIONS ---------- 2/41
■ FUNCTION DEFINE & DESCRIPTION ---------- 2/41
■ Character Symbol ---------- 2/41
■ Input & Scaling ---------- 2/41
■ Input Range ■ Input type(CS2-PR only) ■ Scaling Function 2/41
■ Display Functions ---------- 3/41
■ Max / Mini recording ■ Maximum Hold or Minimum Hold for PV ■ PV(Present value) Hold 3/41
■ Relative PV(ΔPV) or Tare ■ Remote display by RS485 command ■ Low Cut
■ Digital Fine Adjustment ■ Square root function 4/41
■ Reading Stable Functions ---------- 4/41
■ Average Display update ■ Moving Average ■ Digital filter
■ Relay Functions ---------- 4/41
■ Relay energized mode Hi / Lo / Go-1.2 / Go-2.3 / Hi.HLd / Lo.HLd / DO 4/41
■ Start delay ■ Hysteresis ■ Relay energized delay ■ Relay de-energized delay 5/41
■ 3 External Control Inputs(E.C.I.) ---------- 6/41
■ Relative PV(ΔPV) or Tare ■ PV Hold ■ Reset for Maximum or Minimum Hold
■ DI(Digital input) ■ Reset for relay energized latch ■ Bank selection(for CS2-VA/CS2-RS)
■ Analogue Output Functions ---------- 6/41
■ Relate on various display value ■ High Limited for Analog Output
■ Fine Zero & Span Adjustment for Analog Output
■ RS 485 Communication ---------- 6/41
■ Remote Display function 7/41
■ Field Calibration (for CS2-SG / CS2-PM / CS2-RS) ---------- 7/41
■ Bank Function(Suffix-3BK) for CS2-VA, CS2-RS ---------- 8/41
■ ORDERING INFORMATION ---------- 9/41
■ INSTALLATION ---------- 10/41
■ Dimensions & Panel Cut Out ■ Installation ■ Wiring Diagram
■ OPERATIONS ---------- 12/41
■ Front Panel ---------- 12/41
■ Operating Key ---------- 12/41
■ Error Massage ---------- 13/41
■ Operating Flow Chart ---------- 14/41
■ Operating Steps ---------- 18/41
■ User Level ---------- 18/41
■ Programming Level ---------- 19/41
Input Group ---------- 20/41
Relay Group ---------- 23/41
External Control Input(E.C.I.) Group ---------- 26/41
Analogue Output Group ---------- 27/41
RS485 Group ---------- 28/41
Field Calibration Group ---------- 29/41
■ TROUBLE SHOOTING ---------- 31/41
■ RS485 MODBUS RTU MODE ---------- 34/41
■ ADDRESS TABLE ---------- 34/41
■ User Level ---------- 34/41
■ Programming Level ---------- 36/41
[Input Group] ---------- 35/41
[Relay Group] ---------- 35/41
[ECI Group] ---------- 36/41
[AO Group] ---------- 37/41
[RS485 Group] ---------- 37/41
■ DISCLAIMS ---------- 37/41
■ TRADEMARK ---------- 37/41

Amend 2009/11/14, Add Square root function for PV

■ ADDRESS TABLE For 5-digital Dispaly---------- 38/41
■ User Level ---------- 38/41
■ Programming Level ---------- 38/41
[Input Group] ---------- 38/41
[Relay Group] ---------- 39/41
[ECI Group] ---------- 40/41
[AO Group] ---------- 40/41
[RS485 Group] ---------- 41/41

CS2-VA VOLTAGE / CURRENT METER RELAY
CS2-PR DC SIGNAL (20mA/10V) INDICATORS
CS2-SG STRAIN GAUGE / LOAD CELL INDICATORS
CS2-PM POTENTIOMETER INDICATORS
CS2-RS RESISTANCE (2 W) INDICATORS
CS2-T TEMPERATURE INDICATORS
OPERATION MANUAL

■ DESCRIPTIONS

For the various measuring requirement, the CS2 series' R&D is destined with high accuracy measurement, display, control and communication (Modbus RTU mode) such as AC voltage/Current, DC process signal 0~10V/4~20mA(with square root function), Strain Gauge/Load Cell, Potentiometer, Resistance, Temperature and so on.

The CS2 series designed with 3 external control input (ECI) in standard version and the extra optional with 4 Relay, 1 Analogue and 1 RS485 port which it's available all-in-one together with the display functions, beside above it still available extra the programmable such as max/mini hold, PV hold, relative PV…..etc that it's more flexible & more useful in the testing equipment field & others' territories.

In applications, they are not only indicators but also the I/O interfaces which it's compatible with any systems. ADtek built-in the innovation concept for External Control input(ECI) and Relay output similar as I/O module of PLC. It's very simply & easily to achieve remote monitoring and control simultaneously.

■ FEATURES

- User friendly, easily programmable operated smoothly by the front panel
- 3 external control inputs in standard for Relative PV(ΔPV or Tare) / PV Hold / Maximum or Minimum Hold / DI / Reset for Relay Energized Hold….
- 4 relay in option for Hi / Lo / Hi Latch / Lo Latch / Go / DO energized with Start Delay / Hysteresis / Energized & De-energized Delay / Relay Energized Hold….. functions
- Analogue output and RS 485 communication port are optional.

[CS2-VA VOLT / CURRENT METER RELAY]

- Measuring Voltage 0~600V or Current 0~10A ; DC / AC / TRMS
- Accuracy: AC: ± 0.1% f.s.; DC: ± 0.04% f.s.; Display Range: -19999~+29999
- 4 banks pre-set in option for all relay functions are relative to 4 difference scaling, and be selectable by 3 External Control Inputs (ECI) or front key.

[CS2-PR DC SIGNAL INDICATOR]

- Measuring DC 0~10V or 0(4)~20 mA(with square root function) in one indicator(input code: AV)
- Accuracy: ± 0.04% f.s.; Display Range: -19999~+29999

[CS2-SG STRAIN GAUGE INDICATOR]

- Measuring ranges of Load Cell or Strain Gauge from 0~1.0/~2.0/~4.0 mV/V or 0~10.0/~20.0/~40.0 mV/V and specified with excitation supply DC 5V or 10V, 40mA.
- Accuracy: ± 0.04% f.s. ; Display Range: -19999~+29999
- Field calibration of load cell or strain gauge to meet the system requirement with high/low calibrations which it saved the test time and keep accuracy

[CS2-PM POTENTIOMETER INDICATOR]

- Measuring Potentiometer 0~50Ω/~2.0KΩ; 0~2.0KΩ/~100.0KΩ (3 wires)
- Accuracy: ± 0.04% f.s. ; Display Range: -19999~+29999
- Field calibration of potentiometer to meet the system requirement with high/low calibrations which it saved the test time and keep accuracy

[CS2-RS RESISTANCE INDICATOR]

- **Measuring Resistance 0~200.00Ω/2000.0Ω/20.000KΩ/200.00KΩ (2 wires)**
- **Accuracy: ± 0.04% f.s. ; Display Range: -19999~+99999**
- **Field calibration of resistance to meet the system requirement with high/low calibrations which it saved the test time and keep accuracy**
- **4 banks pre-set in option for all relay functions are relative with 4 difference scaling, and be selectable by 3 External Control Inputs (ECI) or front key.**

[CS2-T TEMPERATURE INDICATOR]

- **Measuring Pt100Ω; T/C: K,J,E,T(the range will be fix, pleases specified the exactly input type in ordering)**
- **Accuracy: Pt100: ± 0.1% f.s.; T/C: ± 0.2% f.s.; Display Range: -19999~+29999**

APPLICATIONS

Models

- **CS2-VA** Switch Boards / Motor Control / Machinery / Testing Equipments
- **CS2-PR** Machinery Control / Process Control Systems for pressure, level,……..sensing transducers Automation System / Testing Equipments
- **CS2-SG** Weighting indication, control and Alarm / Machinery Control / Tension and others test equipment
- **CS2-PM** Position indication, control and Alarm / Machinery Control / Angle of Value Control / Tap of transformer indication
- **CS2-RS** Resistance test as like as coil of transformer or motor indication
- **CS2-T** Temperature measuring

Functions

- **Safety & Protection** Hi/Lo alarm and latch(H.HLd / LoHLd), Analogue output limited(AoLnt)
- **Testing & Measuring** Maximum/Minimum hold(MAXHd / MinHd), PV hold(PuHLd), Relative PV/Tare/ΔPV(rELPu), Banks(bnK-_), Field calibration with sensor
- **Remote Monitoring & Control** RS485 communication port, Remote display(rS485), Remote monitoring(d.i) and Remote control for Relay energized(do)

FUNCTION DEFINE

Character Symbol

A	b	C	d	E	F	G	H	i	J	K	L	M
A	b	C	d	E	F	G	H	ı	J	K	L	M

n	o	P	q	r	S	t	U	v	W	X	y	Z
n	o	P	q	r	S	t	U	u	W	X	y	Z

1	2	3	4	5	6	7	8	9	0	/	.
1	2	3	4	5	6	7	8	9	0	/	.

Input & Scaling

Input Range

Programming range: 0.00~100.00% of input range

The meters had been set the input range as per order code (ex. 0~10V or 4(0)~20mA) in factory. If the meters requested to convert into difference inputs ranges, the meters can be switched function [A.Lo] and [A.Hi] in [inPUt GroUP] to meet the input signal.

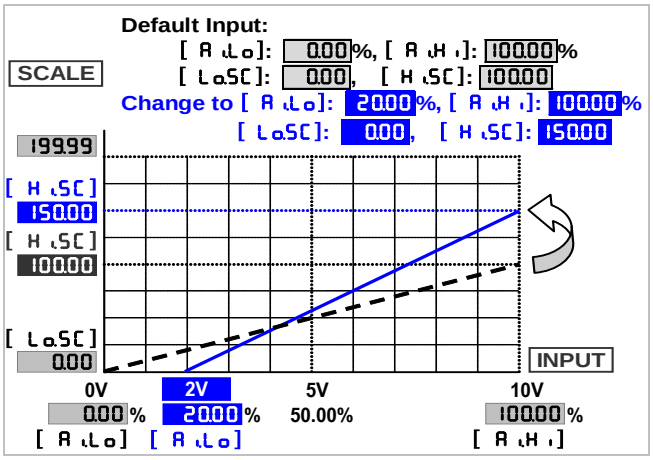
For example:

The meter is 0~10Vdc input, and the signal from sensor is 2~10Vdc. Please enter into the [inPUt GroUP] to set [A.Lo] (Analogue input Low) to be 20.00% (10V x 20.00% = 2V), then the meter has been converted the input range into 2~10Vdc and the all relative parameters be processed by 2~10V.

Input type [A.tYP] for CS2-PR

Programming range: Voltage:0~10V/0~5V/1~5V;
Current: 4~20mA/0~20mA/0~10mA

It supports dual type input 0~10V and 0(4)~20mA between 3 terminals in one meter. Please specify the ordering code AV for input range. And, programming the function [A.tYP] to co-ordinate with the input range and wiring terminals.

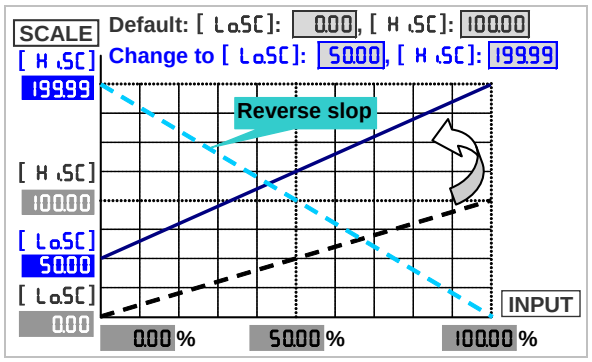


*Lower resolution display may be caused by the setting the less decimal point such as “100”. If requested high resolution must with more decimal point such as “100.00” .

Scaling Function [LoSC] & [H.SC]

Programming range: -19999~+29999counts

Setting the [LoSC](Low scale) and [H.SC] (High scale) in [inPUt GroUP] which are relative to input signal. Reverse scaling will be set too. Please refer to the below figures as following,



*Lower resolution display may be caused by more narrow scale. If the [A iLo] & [A iH i] have been changed, the [LoSC] & [H iSC] will be related to the new setting of [A iLo] & [A iH i].

Display Functions

Max / Mini recording

In order to review & trace the drifting PV, the meters will keep the values of maximum and minimum in **[user level]** during power on. User can reset the values by [rSt] in **[user level]**. And it'll record new maximum and minimum value immediately after reset.

Display function [dSPLY] for display screen

The [dSPLY] function in [inPUt GroUP] can be set to show present value [Pu], Maximum Hold [MAXHd] or Minimum Hold [miHd] or Remote display by RS485 command [rS485]. Please refer to following for detail.

- **Present value [Pu]**

Display screen will show the value that is relative to input and [LoSC](Low scale) and [H iSC] (High scale) setting.

- **Maxi. Hold [MAXHd] or Mini.m Hold [miHd] for PV**

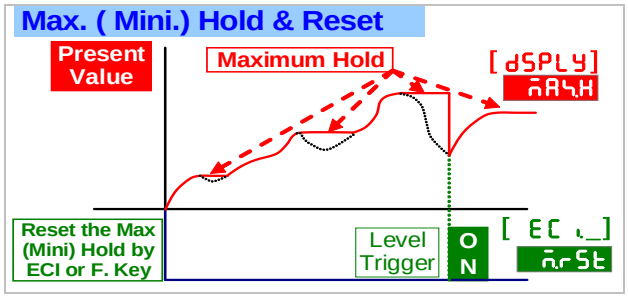
When the [dSPLY] function in [inPUt GroUP] set to be [MAXHd](Max. Hold) or [miHd](Mini. Hold), that the meter will still display the value of PV in maximum (or minimum) and the relative square orange LED will be bright during power on, With manual reset as below:

1)By front key in **[user level]**, Up/Down Key function set.

2)ECI terminals closed.

The meter will update immediately new maximum(minimum) values after ECI is opened, or press Up/Down Key again. The Reset functions will be described in ECI functions.

Please paste the sticker M.H on the right side of orange square LED to identify the status of display.



- **Remote display [rS485] by RS485 command**

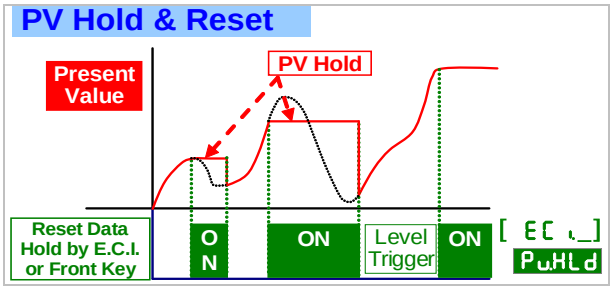
In past, The meter normally receive 4~20mA or 0~10V from AO card or BCD card of PLC. We built-in a new solution by RS485 which it can writing the value to the display screen so that saving costs of AO and wiring connecting to PLC simultaneously.

When the [dSPLY] function set to be [rS485], the LED display no longer appear the input signal on the meter then the PV screen will display the data from RS485 command. The data(number) will be same function as PV which it will compare with set-point, analogue output and ECI functions.

PV(Present value) Hold [PuHLd]

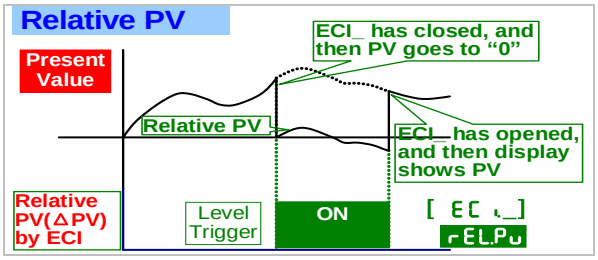
When the [EC i_](External Control input) set to be [PuHLd](PV Hold) function in [EC i GroUP], that display will be hold & kept, and the relative green LED will be bright, when the ECI terminals been closed or pressed Up/Down Key function been set (the 1st times), until the ECI is to be opened or press Up/Down Key again(the 2nd times).

Please paste the sticker ECI PV.H on the right side of green square LED of ECI to identify the status of display.



Relative PV(ΔPV) or Tare [rELPu]

The [EC i_] can be set to be [rELPu](Relative PV) function. When the ECI is closed, the reading will show the differential value with PV or Tare either.



Low Cut [LoCUt]

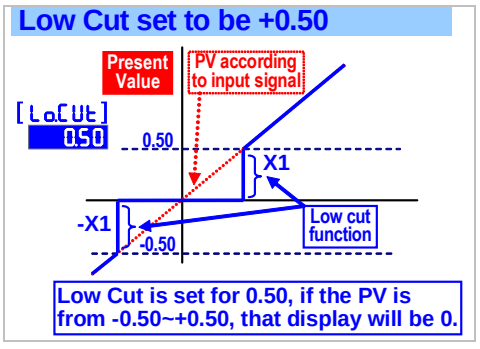
Settable range from -19999~+29999 digits.

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

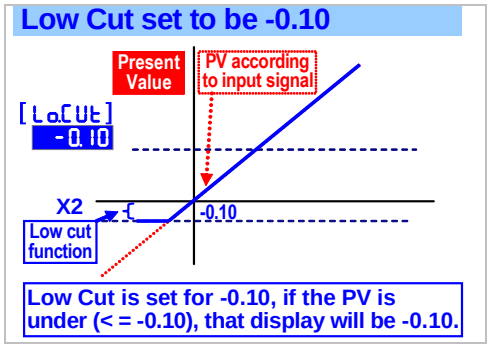
EX: Low Cut is set for 0.50. If the display is from -0.50~+0.50, that will be 0.



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.



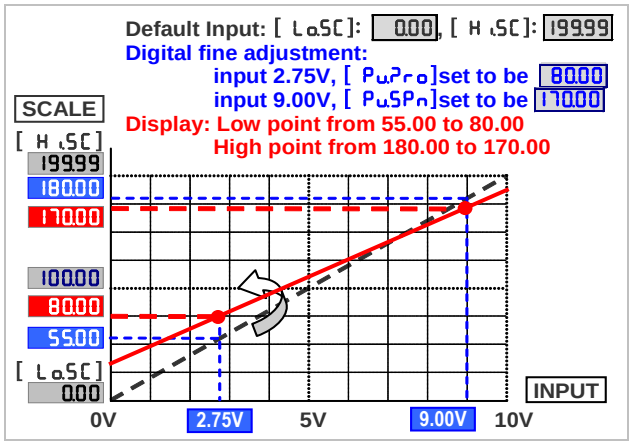
■ Digital Fine Adjustment [PuPro] & [PuSPn]

Settable range from -19999~+29999 ;

Users can get "Fine Adjustment PV" by front key on the meter for lower and/or higher points. “Just Key-In” the value, if user wants to show the value in input signals currently.

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

The adjustment can be cleared in function [PSCLr].



*Please make sure that the [PuPro] point must be less than [PuSPn] during the process of digital fine adjustment. Generally, the interval should be over 50% of input range. If the interval is too narrow, that may be made bigger error between zero and span,

■ Square root function [SqrOt]

Selectable no or YES ;

The function can be set no or YES in [inPUt GroUP] to measure the signal from differential pressure flow-meter. **The formula = √(Pv/HS) x HS**

■ Reading Stable Functions

■ Average Display update [AvG]

Settable range: 1~99 times;

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

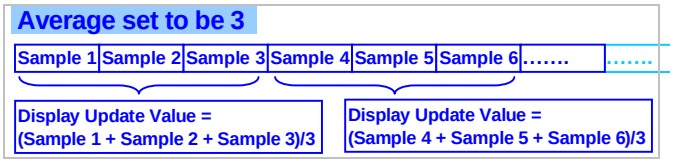
Remark: To set the average times with higher will make the response time slower of Relay and Analogue output.

The meter’s sampling is 15cycle/sec

If the [AvG](Average) set to be 3 to express the display update with 5 times/sec.

Amend 2009/11/14: Add Square root function

The meter will calculate the sampling 1-3 and update the display value. At meantime, the sampling 4-6 will be processed to calculate.



■ Moving Average update [MvAvG]

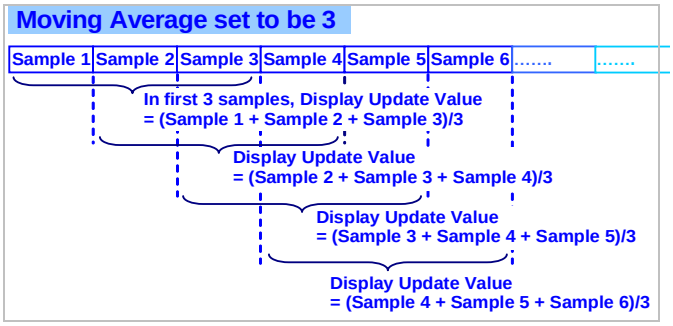
Settable range: 0(no function)/1~10 times;

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.

Remark: To set the moving average times with higher wouldn’t affect the response time of Relay and Analogue output except the 1st updated display value will be slower.

The meter’s sampling is 15cycle/sec. If the [MvAvG](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.

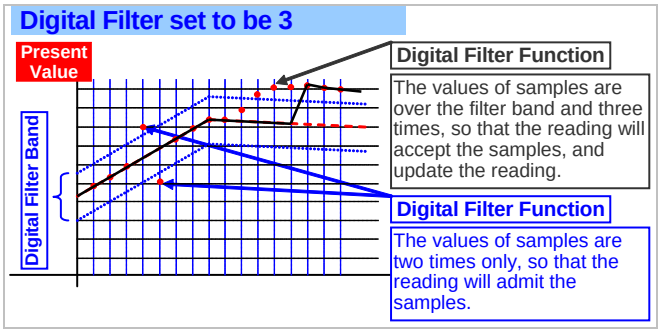


■ Digital filter [dFiLt]

Settable range from 0(None)/1~99 times.

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

If the values of samples are over digital filter band(fixed 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.



■ Relay Functions

CS2 series offer the 4 relay outputs with more flexible and multi-functions. They can be programmable individually in [rELAY GroUP]。Please refer to the description as following;

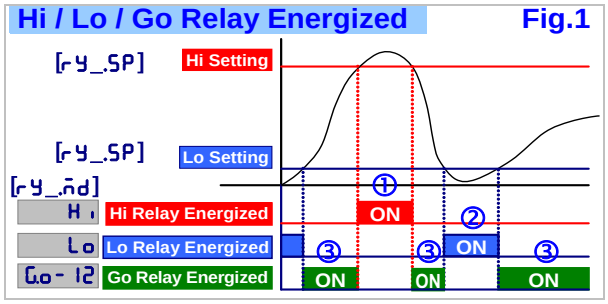
■ Relay energized mode Hi / Lo / Go-1.2 / Go-2.3 / Hi.HLd / Lo.HLd / DO

- **Hi(Fig.1-①) (H i):** Relay will be energized, when PV > Set Point
- **Lo(Fig.1-②) (Lo):** Relay will be energized, when PV < Set Point
- **Go-1.2(Fig.1-③) (Go- 12):** This function is programmable for Relay 3 or 4 only. If the Relay 3 or 4 set to be Go function, the relay will compare between [ry 1.SP] and [ry2.SP].

Go relay energized when the condition is [ry 1.SP] (Hi) > PV > [ry2.SP] (Lo)

- **Go-2.3(Fig.1-③) (Go-2.3):**. This function is programmable for Relay 4 only. If the Relay 4 set to be Go function, the relay will compare between [ry2.SP] and [ry3.SP].

Go relay energized when the condition is. [ry2.SP] (Hi) > PV > [ry3.SP] (Lo)

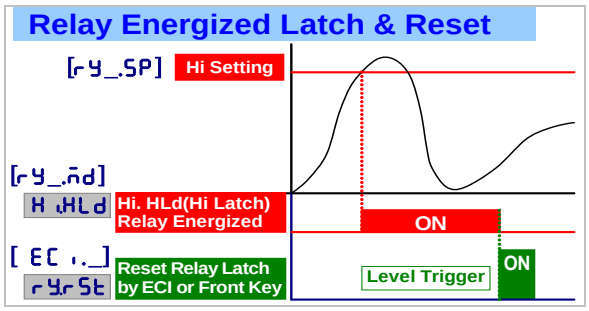


- **Hi alarm & latch / Lo alarm & latch (H i.HLd / Lo.HLd)**

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

For example, a current meter relay installed for the over 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 [EC i](ECI) set to be ry.St is closed.



- **DO(Digital Output) (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_.nd] had been set do, the relay will be energized by RS485 command directly, but no longer to compare with set-point.

■ Start delay band [ry.Sb]and Start delay time [ry.Sd]

The functions have Been designed for,

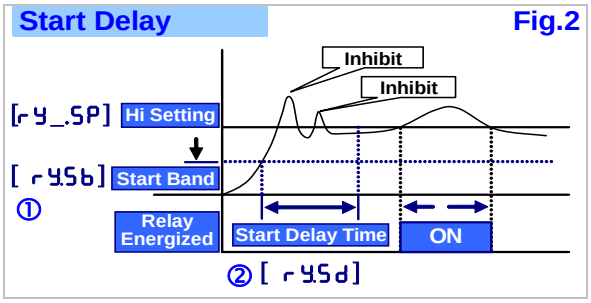
1. To avoid starting current of inductive motor (6 times of rated current) with alarm.
2. If the ry_.nd relay energized mode had been set to be Lo(Lo) or Lo.HLd(Lo & latch). As the meter is power on and no input to display the "0" caused the relay will be energized. User can set a band and delay time to inhibit the energized of relay.

- **Start band [ry.Sb] (Fig.2-①):**

Settable range from 0~9999 Digits

- **Start delay time [ry.Sd] (Fig.2-②):**

Settable range from 0.0(second)~9(minutes)59.9(seconds);



■ Hysteresis [ry_.HY] (Fig.3-①)

Settable range from 0~9999 Digits

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.,

User can set a band to prevent from the relay on and off frequently

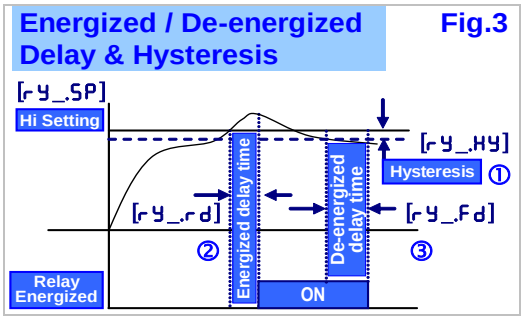
■ Relay energized delay [ry_.rd] (Fig.3-②)

Settable range from 0.0(second)~9(minutes)59.9(seconds);

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(second)~9(minutes)59.9(seconds)



3 External Control Inputs(ECI)

CS2 series offers 3 point external control inputs (ECI). They can be programmable individual with multi display and control functions. The front key function can be set to execute ECI function, but ECI terminals will be disabling. The ECI terminal input was designed by level trigger. Please refer to description as below,

Relative PV(ΔPV) or Tare (rELPv)

The [EC i_] can be set to the rELPv (Relative PV) function. When the ECI is closed, the reading will show the differential value with PV. Please refer to **Display function** section previously.

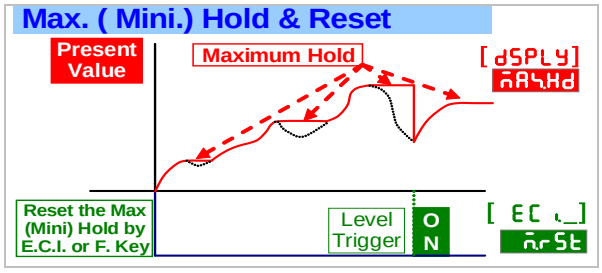
PV(Present value) Hold (PvHLd)

The [EC i_] can be set to the PvHLd (PV Hold) function. The display will be hold when the E.C.I. is closed except the ECI is to be open. Please refer to **Display function** section previously.

Reset Maximum or Minimum Hold(rnrSt) for PV

The [EC i_] function can be set to the rnrSt function to reset the maximum and minimum value by terminal of ECI.

Especially, the [dSPLY] function in [inPUt GroUP] can be set to the rnAXHd or rninHd to operate in coordination with DO of PLC. It is easier to achieve the maximum value testing in automation. Please refer to the below figures.



DI(Digital Input) (di)

The [EC i_] can be set to the di (Digital Input) function when the meter builds in RS485 port. The computer is easier to get a switch status through the meter as like as DI of PLC.

Reset for Relay Energized Latch (rYrSt)

If the relay energized mode has been set to be HiHLd (High energized & latch), and the [EC i_] set to be rYrSt (Reset Relay function). When the PV matches the condition of relay energizing, the relay will be energized with latch except the ECI terminal is closed.

Bank selection (bAnK) (for CS2-VA/CS2-RS)

Please refer to the function section (page 8/38) of this manual.

Analogue Output Functions

Please specify the output type either 0~10V or 4(0)~20mA in ordering code. The output low and high can be programmable which it's related with various display values. Reverse slope output is decided by reversing point positions.

Output range selection ([AotYP])

- **Voltage output specified**

  Programming : u0-10 (0~10V) / u0-5 (0~5V) / u1-5 (1~5V)

- **Currnet output specified**

  Programming : A4-20 (4~20mA) / A0-20 (0~20mA) / A0-10 (0~10mA)

Low Output corresponds to Low display value [AoLS]

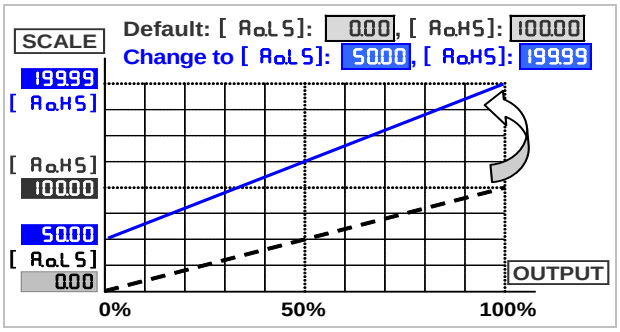
Settable range: -19999~+29999;

Setting the Low Display value versus Low output range (as like as 4mA in A4-20).

High Output corresponds to High display value [AoHS]

Settable range: -19999~+29999;

Setting the High Display value versus High output range (as like as 20mA in A4-20)



*The interval between [AoHS] and [AoLS] should be with minimum over 20% of span; otherwise, it will reflect the less resolution of analogue output.

Fine Zero & Span Adjustment for Analogue Output

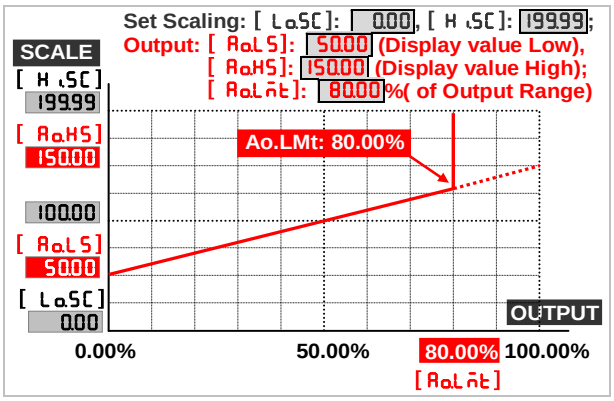
Users can get Fine Adjustment of analogue output by front key on the meter. Please connect standard meter to the terminals of analogue output for measuring the output value. To press the front key(up or down key) of meter for adjusting and checking the output.

- **Fine Zero Adjustment for Analogue Output [Ao2ro]:**
  Settable range: -38011~27524;
- **Fine Span Adjustment for Analogue Output [AoSPn]:**
  Settable range: -38011~27524;

High Limited for Analog Output [AoLnt]

Settable range: 0.00~110.00% of High output;

User can set the output in high limit to avoid destroying the receiver or protection system.



RS 485 Communication

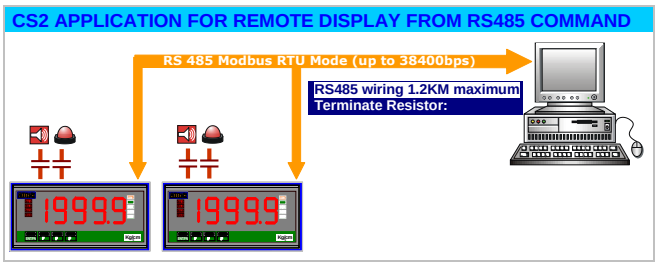
CS2 series can be used as Remote Terminal Unit (RTU) for monitoring and controlling in a SCADA (Supervisor Control And Data Acquisition) system. It's not only can be read the measured value and DI (external control inputs) status but also controls the relays output (DO) by RS485 communication ports.

- **Protocol:** Modbus RTU Mode
- **Baud Rate [bAUd]:** Programmable 1200/2400/4800/ 9600/ 19200/ 38400
- **Data Bits:** 8 bits
- **Stop Bits:** Programmable 1 bit or 2 bits
- **Parity [Pr itY]:** Programmable Even / Odd / None
- **Device Number [AdrES]:** Settable 1~255

Remote Display function [rS485]

CS2 series has been built-in an innovation function called remote display function.

In past, The meter only receive 4~20mA or 0~10V from AO card or BCD card of PLC. We support a new solution by RS485 for replacing the PLC's AO or BCD cards which it can save costs of AO and wiring to PLC.



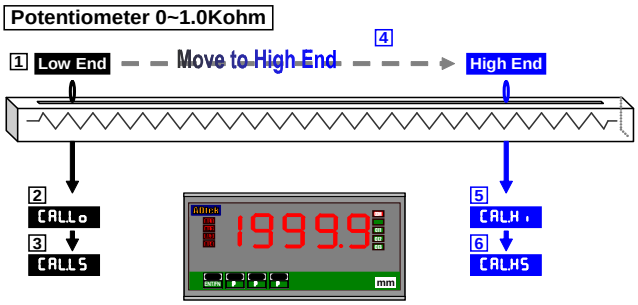
The data(number) will be same as PV that will compare with set-point, analogue output and ECI functions so the data could control analogue output, relay energized and so on.

Field Calibration (for CS2-SG / CS2-PM / CS2-RS)

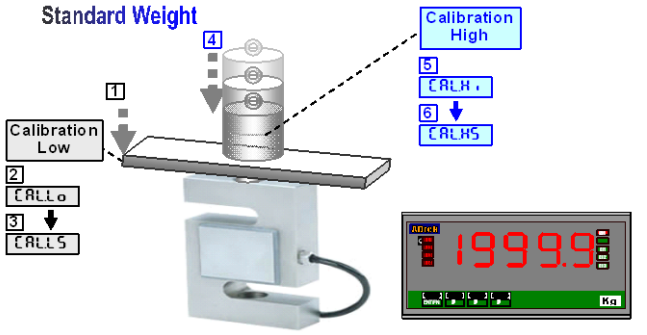
In pass time, the engineers have to take a lot of time to adjust and calibrate meters or converters which the purpose of co-coordinating with zero and span of machinery structure for the Load Cell or Potentiometer measuring. Now, our CS2-SG, CS2-PM and CS2-RS with innovation functions against above to make the engineer operated easily and smoothly that it's called “Field Calibration”. The procedures are descripted as below;

- Enter the right pass code [F.CodE] and access to the Field Calibration Level.
- Adjust the structures of machinery or & equipments to be "lower status".
- The low calibration of machinery structure is not need the exactly "zero" to calibrate, because of the "field calibration" function could be calibrate any lower point.
- Move next page to the [CALLo] and waiting for the value till stable, then pressed FUN ENT Key to read the signal low of sensing device.
- Waiting for above reading stable (around 3~5seconds), press FUN ENT Key again to complete the calibration lower point, and go to [CALLS].
- [CALLS] is the page of low scale setting that is relative to the calibration low point.
- Press ▽ Key to next function index [CALH i].
- Adjust the structures of machinery or & equipments to be "higher status".
- The high calibration of machinery structure is not need the exactly "span" to calibrate because of the "field calibration" function could be calibrating any higher point.
- In [CALH i] page, waiting for the value till stable, then pressed FUN ENT Key to to read the signal high of sensing device.
- Waiting for above reading stable (around 3~5seconds), Press FUN ENT Key again to complete the calibration higher point, and go to [CALHS].
- [CALHS] is the page of high scale setting that is relative to the calibration high point.
- Press ▽ Key to next functions [C.SEL] to select FiELd.
- [C.SEL](Calibration parameter selection): Field calibration wouldn’t change the default calibration. After user completing the field calibration, it can also select default calibration if the user wants.
  - ► As the user finished the procedures of field calibration, the field calibration datum has been saved in EEProm and it can't change the default(factory) calibration datum. Even the field calibration has been done, the user can still select either default calibration or field calibration.
  - ► If the user select field calibration, the [LoSC](step A-4) and [H iSC](A-5) will be replaced by [CALLS] and [CALHS] which it can not to be changed by anyone. If user has to change the scaling, it's the only way to access field calibration level to set in [CALLS](step F-2) and [CALHS](step F-4).
  - ► After selecting the dEFLt or FiELd, please double check the [LoSC](step A-4) and [H iSC](A-5) whether are corrected or not?

Please according to the numbers to do the field calibration (1⇨2 ⇨3 ⇨4 ⇨5 ⇨6)



Please according to the numbers to do the field calibration (1⇨2 ⇨3 ⇨4 ⇨5 ⇨6)



■ Bank Function(Suffix-3BK) for CS2-VA, CS2-RS

- The function is for CS2-VA and CS2-RS for controlling difference process with a same meter.
- For example; a pressure testing equipment; it has to measure multi-range with difference pressure transducers. The meter can be pre-set 4 groups parameters to show difference scales and relay energized with difference set-points. The operator just selects the bank number (bank1) to meet the process (product A). To make easier operating and to avoid making mistake in process operating.
- 4 banks pre-set for all relay functions are correspondence to 4 difference scaling, decimal point, above select by 3 External Control Inputs(E.C.I.) or front key.
- Example: Current testing

  Product A: Current rated: 5A; NG: over 5A

  Product B: Current rated: 100A; NG: over 100A

  Setting: **BANK1:** [dP]: 0.000 [LoSC]: 0.000 [HiSC]: 5.000
  [rY ind]: Hi [rY 1SP]: 5.000 [rY 1rd]: 0.005
  BANK2: [dP]: 0.00 [LoSC]: 0.00 [HiSC]: 100.00
  [rY ind]: Hi [rY 1SP]: 100.00 [rY 1rd]: 0.0 1.0
  [EC i1]: bAnK.1 [EC i2]: bAnK2; **connect a selector (or DO of PLC) to ECI1 and ECI2 terminals**
  - The order want to produce Product A must switch selector to A(Label A on panel), and ECI.1 close that the square green LED bright to express the meter will work as per bank1 set. When PV is over 5.000A that relay1 will be energized.
  - The second order want to produce Product B must selector to B(Label B on panel), and ECI.2 close that the square green LED bright to express the meter will work as per bank2 set. When PV is over 100.00A that relay1 will be energized..
- Only 1 Bank can be selected, if it is double selection. The priority is Bank1 > Bank2 > Bank3 in order,

ORDERING INFORMATION

CS2-VA-

DC/AC/TRMS | Input Signal – Relay Output (OPTION 1) – Analog Output (OPTION 2) – RS 485 Port (OPTION 3) – Aux. Powered ★ – *Optional Functions

Customize function is welcome. Please contact with our sales window for detail.

CODE	VOLT INPUT
D	DC measuring
A	AC measuring
T	TRMS measuring
V1	0 ~ 199.99 mV
V2	0 ~ 1.9999 V
V3	0 ~ 19.999 V
V4	0 ~ 199.99 V
V5	0 ~ 300.0 V
V6	0 ~ 600 V
VA	0 ~ 50 mV
VB	0 ~ 60 mV
VC	0 ~ 100 mV
VO	Specify V input

CODE	CURRENT INPUT
D	DC measuring
A	AC measuring
T	TRMS measuring
A1	0 ~ 199.99 μA
A2	0 ~ 1.9999 mA
A3	0 ~ 19.999 mA
A4	0 ~ 199.99 mA
A5	0 ~ 1.9999 A
A6	0 ~ 1.0000 A
A7	0 ~ 5.000 A
A8	0 ~ 10.000 A
AO	Specify A input

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 ~ 10mA 0(4)~20 mA

CODE	RS485 PORT
N	None
8	RS 485

CODE	AXU. POWER
A	AC 115/230 V
OPTION 4	
ADH*	AC/DC 85~264V
ADL*	AC/DC 20~56V

* It means RoHS version.

★

CODE	OPTIONAL
3BK	3 Banks
HSM	

Excitation Supply DC24V in build for 2 wire transmitters

CS2-PR-

Input Signal – Relay Output (OPTION 1) – Analogue Output (OPTION 2) – RS 485 Port (OPTION 3) – Aux. Powered ★ – *Optional Function

Customize function is welcome. Please contact with our sales window for detail.

CODE	INPUT RANGE
A1	0(4) ~ 20mA / 0 ~ 10mA
V1	0 ~ 10V / 0(1) ~ 5V
AV	0~10V/0~20mA(all in one)
AO	Specify A input
VO	Specify V input

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 4(0)~20 mA

CODE	RS485 PORT
N	None
8	RS 485

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

CODE	FUNCTION
★ SOP	Sensor Open Protection
SQR	Square root function

* It means RoHS version.

CS2-SG-

Input Signal – Relay Output (OPTION 1) – Analogue Output (OPTION 2) – RS 485 Port (OPTION 3) – Excitation Supply – Aux. Powered ★ – *Optional Function

Customize function is welcome. Please contact with our sales for detail.

CODE	I/P RANGE
S1	1.0mV/V
S2	2.0mV/V
S3	4.0mV/V
SO	Specify

CODE	I/P RANGE
S8	10.0mV/V
S9	20.0mV/V
SA	40.0mV/V

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 4(0)~20 mA

CODE	RS485 PORT
N	None
8	RS 485

CODE	EXCITATION
E05	DC 5V
E10	DC 10V
EO	Specify

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

CODE	OPTION FUNC.
★ HSM	High Speed Mode

* It means RoHS version.

CS2-PM-

Input Signal – Relay Output (OPTION 1) – Analogue Output (OPTION 2) – RS 485 Port (OPTION 3) – Aux. Powered ★ – *Optional Function

Customize function is welcome. Please contact with our sales for detail.

CODE	I/P RANGE
P1	0 Ω ~ 50.0 Ω / ~ 2.0 KΩ
P2	0 Ω ~ 2.0 KΩ / ~ 100.0 KΩ
PO	Specify input

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 4(0)~20 mA

CODE	RS485 PORT
N	None
8	RS 485

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

* It means RoHS version.

CS2-RS-

Input Signal – Relay Output (OPTION 1) – Analogue Output (OPTION 2) – RS 485 Port (OPTION 3) – Aux. Powered ★ – *Optional Function

Customize function is welcome. Please contact with our sales for detail.

CODE	INPUT RANGE
R1	0.00Ω ~ 200.00 Ω
R2	0.0Ω ~ 2000.0 Ω
R3	0.000Ω ~ 20.000 KΩ
R4	0.00Ω ~ 200.00 KΩ
RO	Specify

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 4(0)~20 mA

CODE	RS485 PORT
N	None
8	RS 485

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

CODE	OPTION FUNCTION
3BK	3 Banks

* It means RoHS version.

CS2-T-

Input Signal – Relay Output (OPTION 1) – Analogue Output (OPTION 2) – RS 485 Port (OPTION 3) – Aux. Powered – *Optional Function

Customize function is welcome. Please contact with our sales window for detail.

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

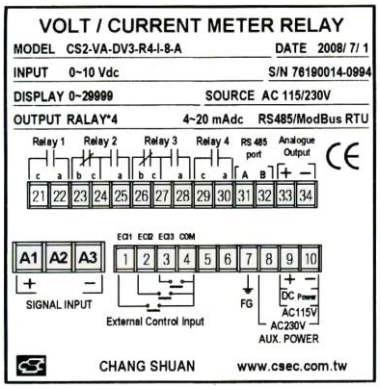
CODE	RS485 PORT
N	None
8	RS 485

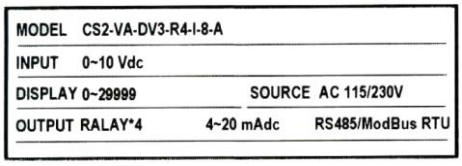
CODE	AXU. POWER
A	AC115/230V
OPTION 4	
ADH*	AC/DC 85~264V
ADL*	AC/DC 20~56V

* It means RoHS version.

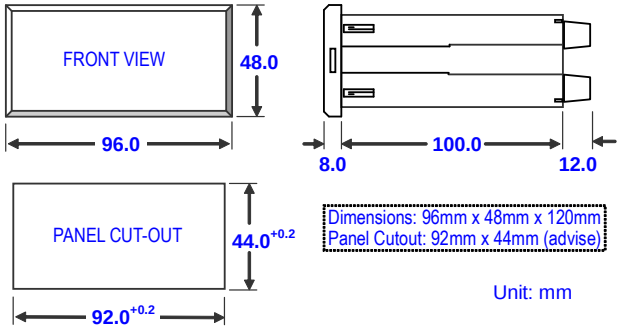
INSTALLATION

Please check the specification, wire diagrams and functions on the label of the meter before installation.

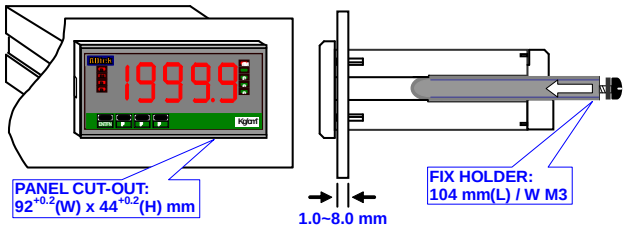




Dimensions & Panel Cut Out



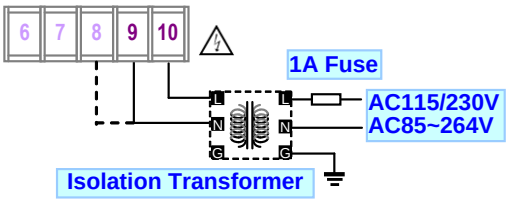
Installation



Wiring Diagram

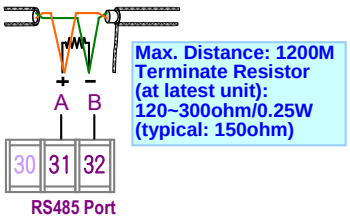
Please check the voltage of power supplied first, and then connect to the specified terminals. Herein, recommended that power supplied with protection by a fuse or circuit breaker to the meter.

Power Supply



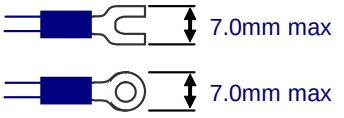
For input, RS485 and ECI wiring, Herein recommended using twin wire with shielding.

RS485 Communication Port

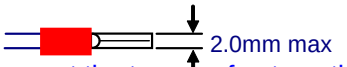


Connector

CS2-VA: #A1~A3(Signal Input): 20A/300Vac, M3.5, 1.3~3.5mm² (22~12AWG); Max torque: 13Kg-cm

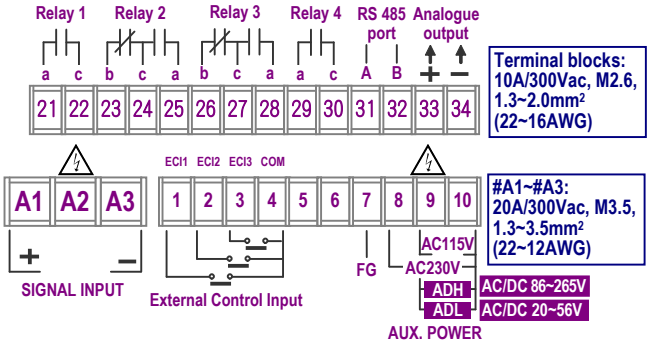


Others: 10A 300Vac, M2.6, 1.3~2.0mm² (22~16AWG), Max torque: 5Kg-cm Please use cord end terminal.

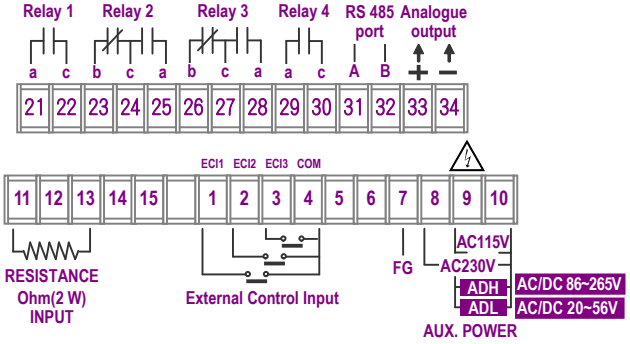


Please set the torque of automotive screwdriver to match the limited of terminals.

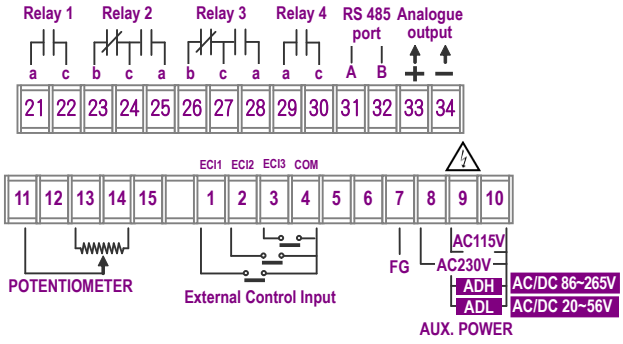
[CS2-VA Voltage / Current Meter Relay]



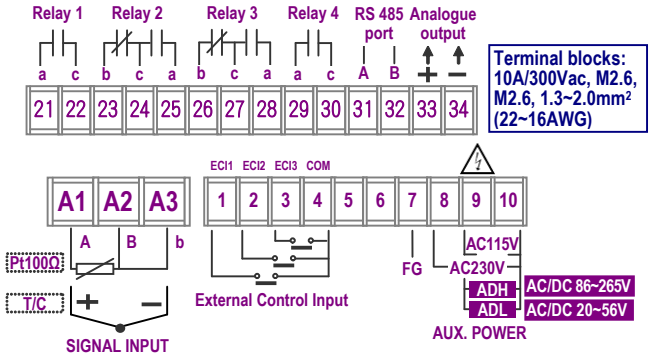
[CS2-RS Resistance Indicator]



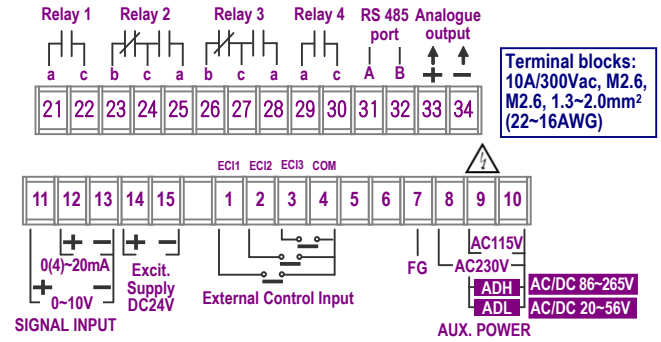
[CS2-PM Potentiometer Indicator]



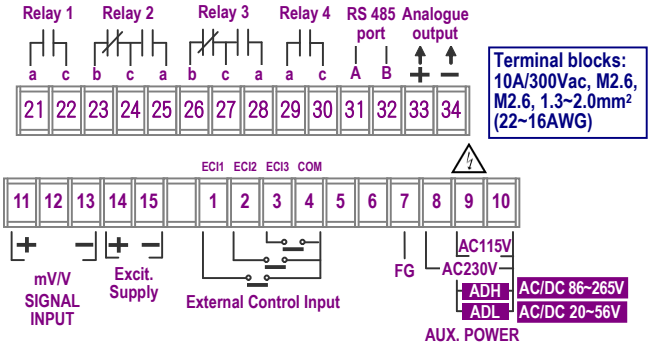
[CS2-T Temperature Indicator]



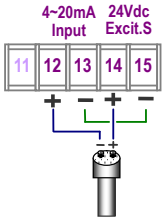
[CS2-PR DC Process (10V/20mA) Indicator]



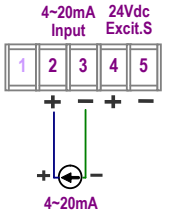
[CS2-SG Strain Gauge / Load Cell Indicator]



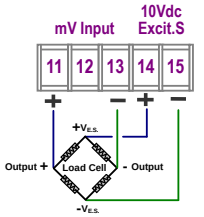
2 wire Transmitter connection



4(0)~20mA Input connection

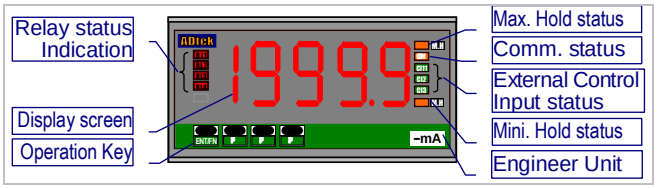


Load Cell connection



OPERATIONS

Front Panel



Numeric Screens

0.8"(20.0mm) red high-brightness LED for 4 2/3 digital present values.

I/O Status Indicators

- **Relay Energized:** 4 square red LED
  - RL1 display when Relay 1 has been energized;
  - RL2 display when Relay 2 has been energized;
  - RL3 display when Relay 3 has been energized;
  - RL4 display when Relay 4 has been energized;
- **External Control Input Energized:** 3 square green LED
  - ECI1 display when E.C.I. 1 has been closed(dry contact)
  - ECI2 display when E.C.I. 2 has been closed(dry contact)
  - ECI3 display when E.C.I. 3 has been closed(dry contact)
- **RS485 Communication:** 1 square orange LED

  COM will flash express 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: To display function expressed it has been selected in Maximum or Minimum Hold function.

Stickers:

Each meter with a sticker to describe what the functions together with engineer label enclosure.

Functions stickers

HH	HI	LO	LL	D.L	D.H	DO	D.H	M.H	Tare
GO	Hi.H	Lo.H	R.PV	R.RS	M.RS	PV.H	BK1	BK2	BK3
DI	RST	DO1	DO2	DO3	DO4	DI1	DI2	DI3	

- **Relay energized:**
  - HH HH Energized
  - Hi Hi Energized
  - Lo Lo Energized
  - LL LL Energized
  - GO Go Energized
  - Hi.H Hi Energized & Latch
  - DO1 RS485 Energized
  - Lo.H Lo Energized & Latch
- **E.C.I. functions:**
  - R.PV Relative PV
  - Tare Tare
  - PV.H PV Hold
  - DI1 Digital Input
  - BK1 Bank 1 selected
  - M.RS Maximum or Minimum Reset
  - R.RS Reset for Relay Latch

- **Engineer Label:** over 80 types.

~μA	~mA	~A	~KA	⎓μA	⎓mA	⎓A	⎓KA	
~μV	~mV	~V	~KV	⎓μV	⎓mV	⎓V	⎓KV	
A hr	A min	A sec	A rms	V rms	A/mA	W/A	Var/A	
W	KW	MW	WH	KWH	MWH	W/WH	W/Var	
Var	KVar	MVar	QH	KQH	MQH	COSθ	Var/VarH	
VA	KVA	MVA	VAH	KVAH	MVAH	θ	KVarH	
Hz	PF	KA	KV	KHz	MVarH	KM/hr		
A	mA	V	mV	Ω	KΩ	°C	°F	%RH
RPM	M/min	Y/min	F/min	M/sec	%	°	MΩ	
Kg/cm²	Bar	mmH₂0	mmHg	KPA	mmAq	PSI	mBar	PA
M³/min	ml/min	Ton/D	L/min	Torr	M³/hr	Kg-cm	cmHg	
mm	cm	M	KM	ft	Yard	ppm	ppb	C.C
g	KG	Ton	T-cm	NT-cm	PH	MPM	L	

Operating Key:

4 keys for ENTER Enter(Function) / Shift(Escape) / Up key / Down key. Please refer to detail description in next page.

Pass Code:

Settable range:0000~9999;

User must key-in the exactly pass code for access to **[Programming Level]**. Otherwise, the meter will return to measuring page. If user forgets the pass code, please contact with your service window.

Function Lock:

There are 4 levels programmable.

- **None(nonE):** no lock at all. User can access to all level for checking and setting.
- **User Level(USEr):** User Level lock. User can access to User Level for checking, but can not setting.
- **Programming Level(EnG):** Programming level lock. User can access to programming level for checking, but can not setting.
- **ALL(ALL):** All lock. User can access to all level for checking but can not setting.

Front Key Function [E.1:UP] & [E.2:dn]

- The Key can be set to be the same function as the setting of [EC.1](ECI).

  Ex. The [EC.1] set to be PuHLd and the function [E.1:UP] set to be YES in [EC.1 GroUP]. When user presses Key, the PV will hold as like as terminals of ECI1 close.
- The Key can be set to be the same function as the setting of [EC.2].

  Ex. The [EC.2] set to be rEL.Pu and the function [E.2:dn] set to be YES in [EC.1 GroUP]. When user presses Key, the PV will show relative value as like as terminals of ECI2 close.

If the front key function has been set, the terminal input for ECI will be disabling.

■ Error Massage

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 120%)	(Please check the input signal)
-ouFL	ADC is negative-overflow (Signal is lower than input -120%)	(Please check the input signal)
EEP ⇄ FAiL	EEPROM occurs error	(Please send back to manufactory for repaired)
AiCnG ⇄ Pu	Didn't execute the calibrate of Input Signal	(Please process Calibrating Input Signal)
AiC ⇄ FAiL	Input signal calibrated error	(Please check Calibrating Input Signal)
AoCnG ⇄ Pu	Didn't execute the calibrate of output Signal	(Please process Calibrating Output Signal)
AoC ⇄ FAiL	Output Signal calibrated error	(Please check Calibrating Output Signal)

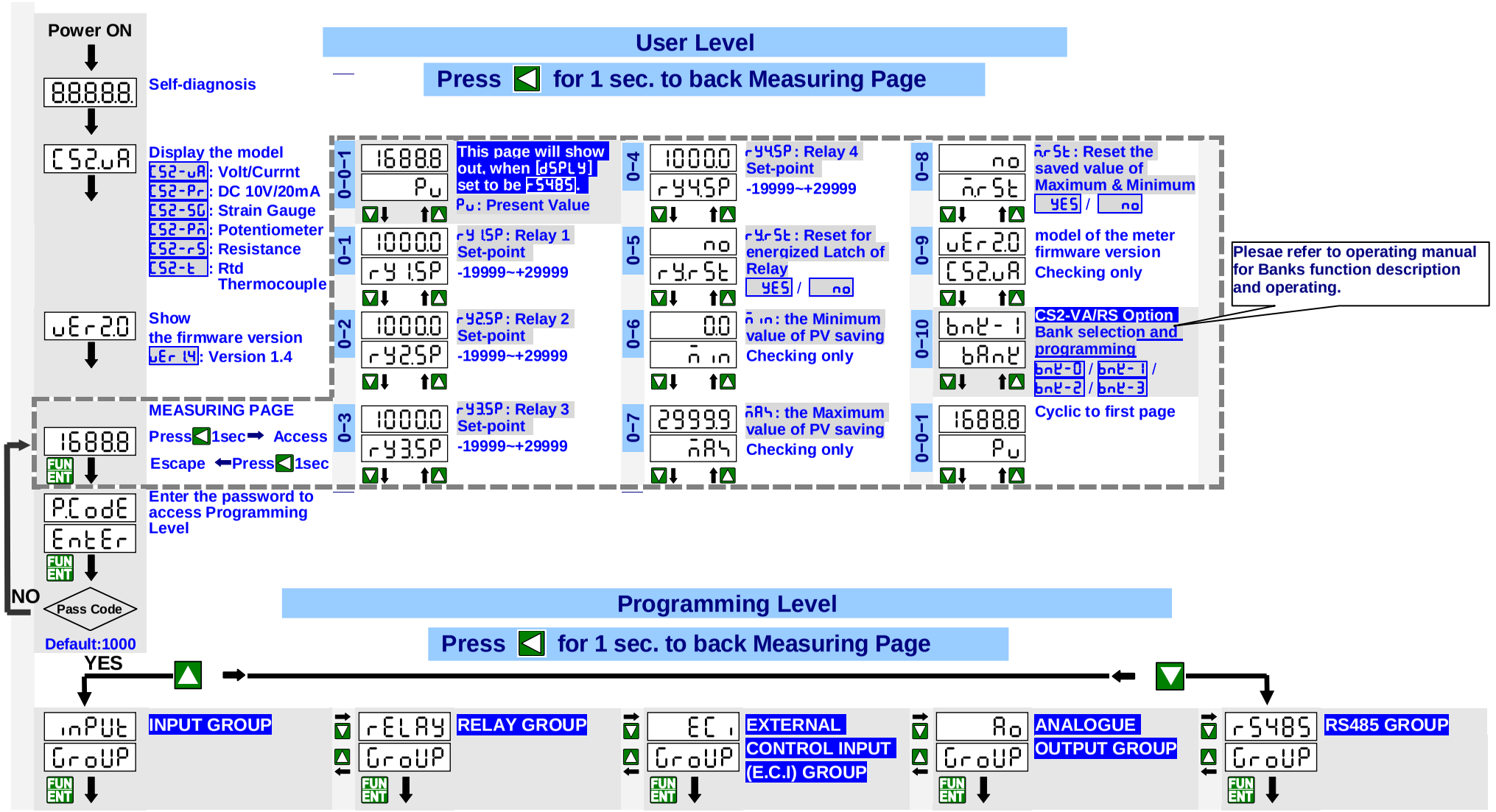
■ Operating Key:

*Please access to the Programming Level to check and set the parameters when users start to run the meter

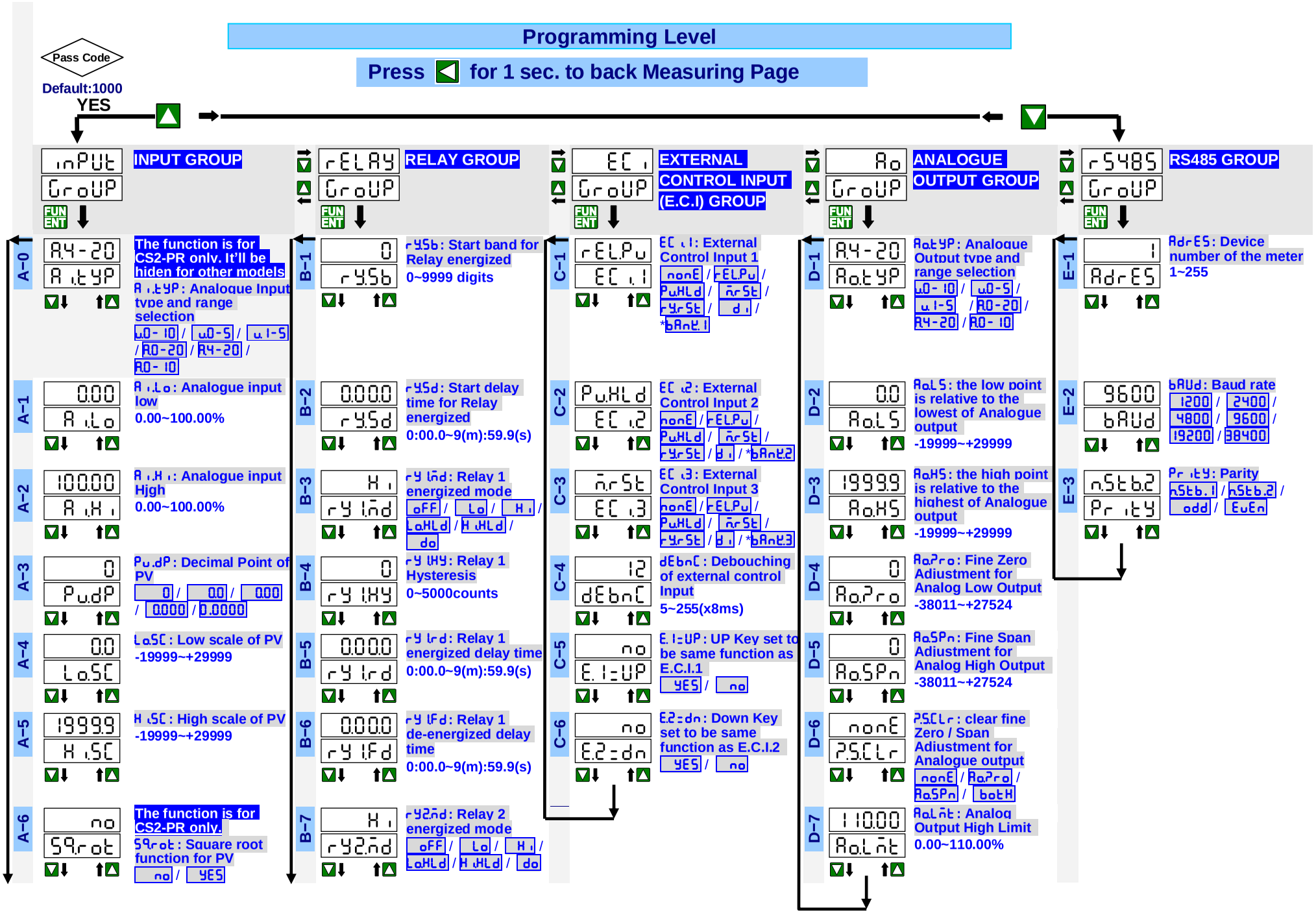
- Operating Key: 4 keys for Enter(Function) / Shift(Escape) / Up key / Down key
- The meter has designed operation similar as PC's ⇦ ⇨ and Enter. In any page, press Enter key means "enter" or "confirm setting", and press key means "escape(Esc)" or "shift".
- In Programming Level, the screen will return to Measuring Page after do not press any key over 2 minutes, or press for 1 second.

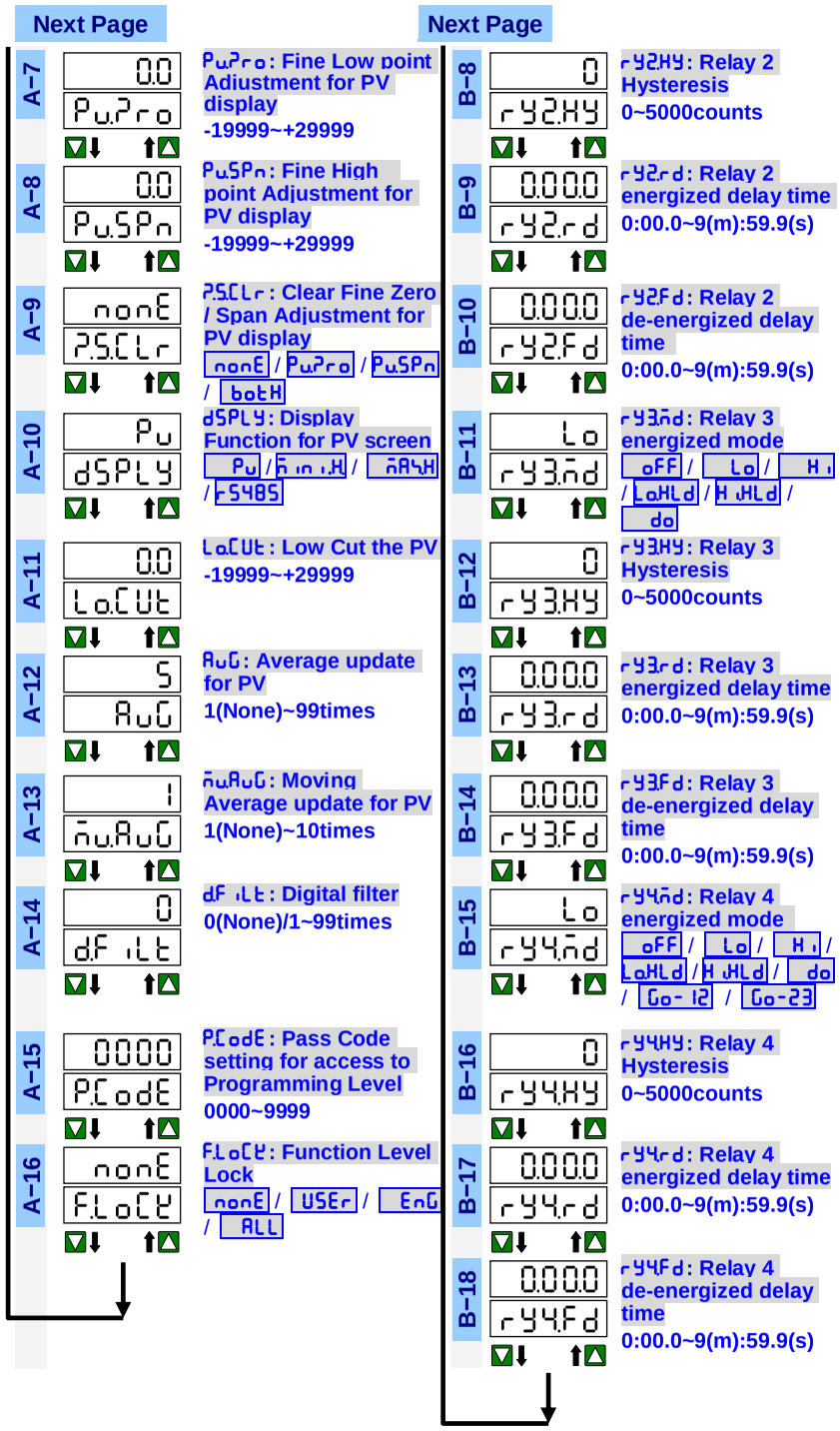
	Function Index	**Setting Status**
(= FUN ENT) Enter/Fun key	(1) In any page, press Enter to access the level or function index (2) From the function index to access setting status	(3) Setting Confirmed, save to EEProm and go to next function index
(= ◀) Shift key	(1) In measuring page, press ◀ for 1 second to access user level. (2) In function index, press ◀ for 1 second to go back upper level. (3) In function group index, press ◀ for 1 second to go back measuring page	(4) In setting status, press ◀ to Shift the setting position. (5) In setting status, press ◀ for 1 second to abort setting and go back this function index.
(= ▲) Up key	(1) In function index, press ▲ to go back to previous function index	(2) In setting status for function, press ▲ to select function (3) During number Setting, press ▲ can roll the digit up
(= ▼) Down key	(1) In Function Index Page, press ▼ will go to the next Function Index Page.	(2) In setting status for function, press ▼ to select function (3) During number Setting, press ▼ can roll the digit down.

■ OPERATING FLOW CHART: Plesae refer to operating manual for detail description

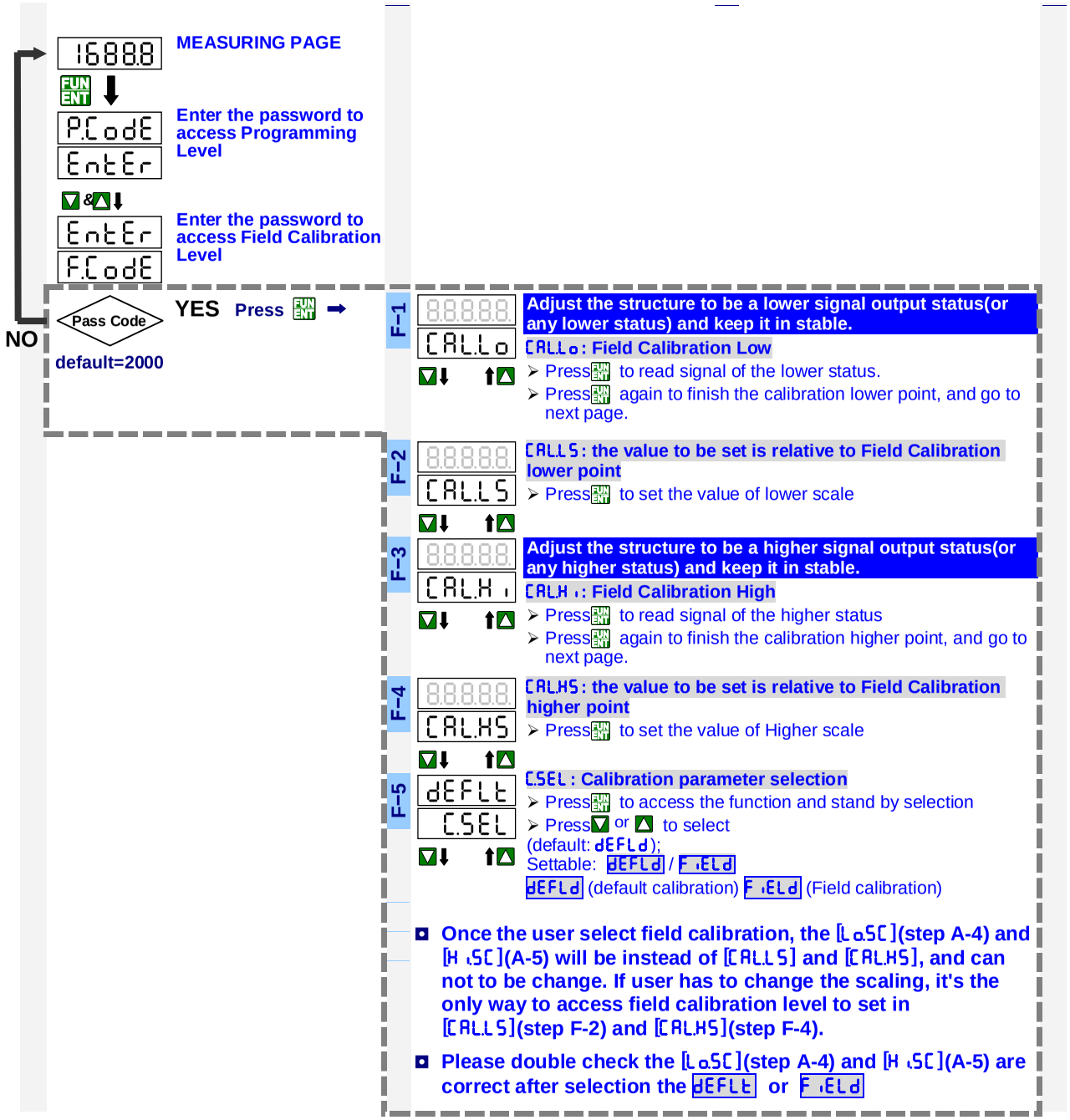


Amend 2009/11/14: Add Square root function


Programming Level
Press for 1 sec. to back Measuring Page
Pass Code
Default:1000
YES
INPUT GROUP
RELAY GROUP
EXTERNAL CONTROL INPUT (E.C.I) GROUP
ANALOGUE OUTPUT GROUP
RS485 GROUP
A-0 The function is for CS2-PR only. It'll be hiden for other models
A.tYP: Analogue Input type and range selection
uO-10 / uO-5 / u1-5 / AO-20 / A4-20 / AO-10
A-1 A.Lo: Analogue input low
0.00~100.00%
A-2 A.Hi: Analogue input Hjgh
0.00~100.00%
A-3 Pu.dP: Decimal Point of PV
0 / 0.0 / 0.00 / 0.000 / 0.0000
A-4 LoSC: Low scale of PV
-19999~+29999
A-5 HiSC: High scale of PV
-19999~+29999
A-6 The function is for CS2-PR only.
Sqrot: Square root function for PV
no / YES
B-1 rYSb: Start band for Relay energized
0~9999 digits
B-2 rYSd: Start delay time for Relay energized
0:00.0~9(m):59.9(s)
B-3 rY 1Md: Relay 1 energized mode
oFF / Lo / Hi / LoHLd / HiHLd / do
B-4 rY 1HY: Relay 1 Hysteresis
0~5000counts
B-5 rY 1rd: Relay 1 energized delay time
0:00.0~9(m):59.9(s)
B-6 rY 1Fd: Relay 1 de-energized delay time
0:00.0~9(m):59.9(s)
B-7 rY2Md: Relay 2 energized mode
oFF / Lo / Hi / LoHLd / HiHLd / do
C-1 EC i1: External Control Input 1
nonE / rELPu / PuHLd / ArSt / rYrSt / di / *bAnd1
C-2 EC i2: External Control Input 2
nonE / rELPu / PuHLd / ArSt / rYrSt / di / *bAnd2
C-3 EC i3: External Control Input 3
nonE / rELPu / PuHLd / ArSt / rYrSt / di / *bAnd3
C-4 dEbnC: Debouching of external control Input
5~255(x8ms)
C-5 E.I-UP: UP Key set to be same function as E.C.I.1
YES / no
C-6 E2-dn: Down Key set to be same function as E.C.I.2
YES / no
D-1 AotYP: Analogue Output type and range selection
uO-10 / uO-5 / u1-5 / AO-20 / A4-20 / AO-10
D-2 AoLS: the low point is relative to the lowest of Analogue output
-19999~+29999
D-3 AoHS: the high point is relative to the highest of Analogue output
-19999~+29999
D-4 AoPro: Fine Zero Adiustment for Analog Low Output
-38011~+27524
D-5 AoSPn: Fine Span Adiustment for Analog High Output
-38011~+27524
D-6 PSCLr: clear fine Zero / Span Adiustment for Analogue output
nonE / AoPro / AoSPn / botH
D-7 AoLit: Analog Output High Limit
0.00~110.00%
E-1 AdrES: Device number of the meter
1~255
E-2 bAUd: Baud rate
1200 / 2400 / 4800 / 9600 / 19200 / 38400
E-3 Prty: Parity
nStb.1 / nStb.2 / odd / EuEn


Next Page
A-7
0.0
PuPro
PuPro: Fine Low point Adiustment for PV display
-19999~+29999
A-8
0.0
PuSPn
PuSPn: Fine High point Adjustment for PV display
-19999~+29999
A-9
nonE
PSCLr
PSCLr: Clear Fine Zero / Span Adjustment for PV display
nonE / PuPro / PuSPn / botH
A-10
Pu
dSPLY
dSPLY: Display Function for PV screen
Pu / Hi.H / diFH / rS485
A-11
0.0
LoCUt
LoCUt: Low Cut the PV
-19999~+29999
A-12
5
AuG
AuG: Average update for PV
1(None)~99times
A-13
1
diAuG
diAuG: Moving Average update for PV
1(None)~10times
A-14
0
dFilt
dFilt: Digital filter
0(None)/1~99times
A-15
0000
PCodE
PCodE: Pass Code setting for access to Programming Level
0000~9999
A-16
nonE
FLoCK
FLoCK: Function Level Lock
nonE / USEr / EnG / ALL
Next Page
B-8
0
ry2HY
ry2HY: Relay 2 Hysteresis
0~5000counts
B-9
0.00.0
ry2rd
ry2rd: Relay 2 energized delay time
0:00.0~9(m):59.9(s)
B-10
0.00.0
ry2Fd
ry2Fd: Relay 2 de-energized delay time
0:00.0~9(m):59.9(s)
B-11
Lo
ry3md
ry3md: Relay 3 energized mode
oFF / Lo / Hi / LoHLd / HiHLd / do
B-12
0
ry3HY
ry3HY: Relay 3 Hysteresis
0~5000counts
B-13
0.00.0
ry3rd
ry3rd: Relay 3 energized delay time
0:00.0~9(m):59.9(s)
B-14
0.00.0
ry3Fd
ry3Fd: Relay 3 de-energized delay time
0:00.0~9(m):59.9(s)
B-15
Lo
ry4md
ry4md: Relay 4 energized mode
oFF / Lo / Hi / LoHLd / HiHLd / do / Go-12 / Go-23
B-16
0
ry4HY
ry4HY: Relay 4 Hysteresis
0~5000counts
B-17
0.00.0
ry4rd
ry4rd: Relay 4 energized delay time
0:00.0~9(m):59.9(s)
B-18
0.00.0
ry4Fd
ry4Fd: Relay 4 de-energized delay time
0:00.0~9(m):59.9(s)

■ FIELD CALIBRATION (The function is only for CS2-SG / CS2-PM / CS2-RS)



■ Operating Steps:

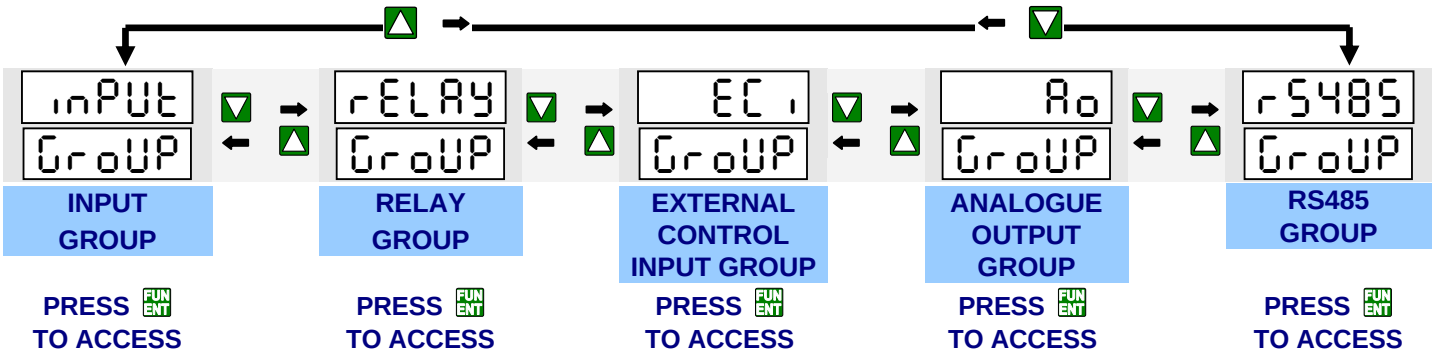
■ User Level

INDEX		FUNCTION DESCRIPTION	PARAMETERS & SETTING	SET
POWER ON			**Please check the specification and wiring diagrams firstly.**	
8.8.8.8.8.		**Self-diagnosis (LED All bright)**		
CS2.Pr		**Model** CS2.uA: Amp / Volt CS2.rS: Resistance CS2.Pr: 0~(5)10V / 0(4)~20mA CS2.SG: Load Cell / Strain Gauge CS2.Pn: Potentiometer CS2.t: Temperature		
uEr2.0		**Firmware version**		
16888		**Measuring Page**		
		Press ◀ for 1 second return to Measuring Page		
0-0-1 Pu / 16888		**This page will be shown out when [dSPLY](step A-9) function has not set to be Pu .** **Pu (Pv): Present Value;**		
0-1 rY1.SP / 1000.0	FUN ENT → 1000.0 ▼▲◀ 2000.0 FUN ENT Nest Page	**rY1.SP (rY1.SP):Relay 1 Set-point** Please confirm the energized mode of relay 1 before setting.	**Settable range: -19999~+29999** **◀Shift ▲Up ▼Down FUN ENT Enter**	
0-2 rY2.SP / 1000.0	FUN ENT → 1000.0 ▼▲◀ 1000.0 FUN ENT Nest Page	**rY2.SP (rY2.SP):Relay 2 Set-point** Please confirm the energized mode of relay 2 before setting.	**Settable range: -19999~+29999** **◀Shift ▲Up ▼Down FUN ENT Enter**	
0-3 rY3.SP / 1000.0	FUN ENT → 1000.0 ▼▲◀ 800.0 FUN ENT Nest Page	**rY3.SP (rY3.SP):Relay 3 Set-point** Please confirm the energized mode of relay 3 before setting.	**Settable range: -19999~+29999** **◀Shift ▲Up ▼Down FUN ENT Enter**	
0-4 rY4.SP / 1000.0	FUN ENT → 1000.0 ▼▲◀ 500.0 FUN ENT Nest Page	**rY4.SP (rY4.SP):Relay 4 Set-point** Please confirm the energized mode of relay 4 before setting.	**Settable range: -19999~+29999** **◀Shift ▲Up ▼Down FUN ENT Enter**	
0-5 rY.rSt / no	FUN ENT → no ▼▲ YES FUN ENT Nest Page	**rY.rSt (rY.rSt): Reset for energizing latch of Relay;** If the [rY_.Md](step B-3/7/11/15) set to be H.HLd or Lo.HLd, and the present value(PV) reach to the condition of relay energizing that the relay will be energized and latching. At mean time, user can reset the relay latching in here.	**Programmable: YES / no** **YES (Yes):** reset the relay latching. **no (No):** abort to reset the relay latching. **▲Up ▼Down FUN ENT Enter** ▪ Be careful, the relay has been energizing and latching again even user had set here to reset the relay latching.. if the PV still reach to the condition of relay energized,	
NEXT	PAGE			

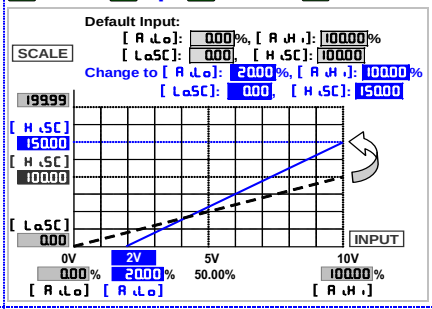
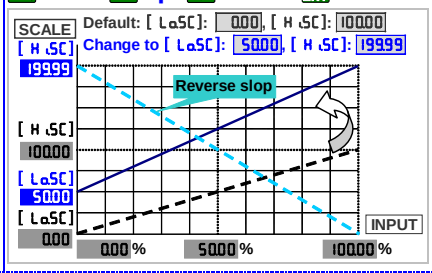
0-6	mIn 0.0		**mIn (Min): the Minimum value of PV saving;** The meter will save the minimum of PV during power on, until reset in [mrSt](step 0-8). It will save newest minimum PV after reset.	**Review only**
0-7	mAX 29999		**mAX (Max): the Maximum value of PV saving;** The meter will save the maximum of PV during power on, until reset in [mrSt](step 0-8). It will save newest maximum PV after reset.	**Review only**
0-8	mrSt no	FUN ENT no YES FUN ENT Nest Page	**mrSt (M.rSt): reset the saved value of Maximum & Minimum;** The values of maximum and minimum can be reset in here. It will save newest maximum and minimum after reset.	**Programmable:** YES / no **YES (Yes):** to reset the saved value of maximum and minimum. **no (No):** abort to reset the saved values of maximum and minimum.
0-9	CS2Pr uEr2.0		**Model of the meters** CS2uA (CS2-VA): Volt/Current CS2Pr (CS2-PR): DC 0~10V / 4~20mA CS2SG (CS2-SG): Strain Gauge / Load Cell CS2PM (CS2-PM): Potentiometer CS2rS (CS2-RS): Resistance CS2t (CS2-T): Rtd /Thermocouple uEr2.0 (Ver 2.0): Firmware version	**Review only** **It will be announced in our website www.adtek.com.tw, when it had been versions updated.**
0-10	bAnK bnK-0	FUN ENT bnK-0 bnK-2 FUN ENT Nest Page	**This page will be shown out when Bank function was to specified in order (option suffix-3BK) for CS2-VA and CS2-RS only** **bAnK (Bank): Bank selection and programming**	**Programmable:** bnK-0 / bnK-1 / bnK-2 / bnK-3 **Up** **Down** FUN ENT **Enter** Please refer to the description in Page 8/38.
0-0-1	Pu 1688.8		**Return to the first page** **Press ◀ for 1 second to back to**	**Measuring Page in any page.**

■ Programming Level

INDEX		FUNCTION DESCRIPTION	PARAMETERS & SETTING	SET
1688.8 FUN ENT		**MEASURING PAGE**		
EntEr PCodE Default:1000	FUN ENT 0000 1000 FUN ENT Nest Page	**Enter the pass code to access Programming Level**	**If user wants to change the pass code, please go to step A-14 to set. Please remind the new pass code.**	
Pass Code NO YES		**Enter the pass code to access programming level.** **Press ◀ for 1 second to back Measuring Page**		



■ Input Group

INDEX		FUNCTION DESCRIPTION	PARAMETERS & SETTING	SET
inPUt GroUP FUN ENT ↓		**INPUT GROUP INDEX PAGE**	**In following pages, press ◀ for 1 second to back INPUT GROUP INDEX PAGE.**	
A-0 Ai.tYP A.4-20 ▼↓ ↑▲	FUN ENT A.4-20 ↓ ▼▲ u.0-10 FUN ENT Nest Page	**The function is only for CS2-PR** **Ai.tYP (Ai.tyP): Analog input type & range selection** There are 3 terminals for mA and V input, if user selects ordering code in input for "AV" from input. Please confirm the wiring is correct or not to set.	**Programmable:** u.0-10 (0~10V) / u.0-5 (0~5V) / u.1-5 (1~5V) / A.0-10 (0~10mA) / A.0-20 (0~20mA) / A.4-20 (4~20mA) ▲Up ▼Down FUN ENT Enter	
A-1 Ai.Lo 0.00 ▼↓ ↑▲	FUN ENT 000.00 ↓ ▼▲◀ 000.00 FUN ENT Nest Page	**Ai.Lo (Ai.Lo): Analogue input low** Please refer to the explanations in **INPUT & SCALING** of **FUNCTION DEFINE**(page 2/38).	**Settable range: 0.00%~100.00%** ◀Shift ▲Up ▼Down FUN ENT Enter 	
A-2 Ai.Hi 100.00 ▼↓ ↑▲	FUN ENT 100.00 ↓ ▼▲◀ 100.00 FUN ENT Nest Page	**Ai.Hi (Ai.Hi): Analogue input high** Please refer to the explanations in **INPUT & SCALING** of **FUNCTION DEFINE**(page 2/38).	**Settable range: 0.00%~100.00%** ◀Shift ▲Up ▼Down FUN ENT Enter	
A-3 Pu.dP 0 ▼↓ ↑▲	FUN ENT 0 ↓ ▼▲ 0.0000 FUN ENT Nest Page	**Pu.dP (Pv.dP): Decimal Point of PV**	**Programmable:** 0 / 0.0 / 0.00 / 0.000 / 0.0000 ▲Up ▼Down FUN ENT Enter	
A-4 Lo.SC 0.0 ▼↓ ↑▲	FUN ENT 0000.0 ↓ ▼▲◀ 000.00 FUN ENT Nest Page	**Lo.SC (Lo.SC): Low scale of PV** ▪ CS2-SG/PM/RS: If the field calibration has be done and then the [C.SEL] (Calibration parameter selection) selected to be FiELd (field calibration), the [Lo.SC] will be replaced by [CAL.LS], and it can not to be set.	**Programmable: -19999~29999** ◀Shift ▲Up ▼Down FUN ENT Enter 	
A-5 Hi.SC 1999.9 ▼↓ ↑▲	FUN ENT 1999.9 ↓ ▼▲◀ 2000.0 FUN ENT Nest Page	**Hi.SC (Hi.SC): high scale of PV** ▪ CS2-SG/PM/RS: If the field calibration has be done and then the [C.SEL] (Calibration parameter selection) selected to be FiELd (field calibration), the [Hi.SC] will be replaced by [CAL.HS],, and it can not to be set.	**Settable range: -19999~29999** ◀Shift ▲Up ▼Down FUN ENT Enter	
A-6 Sq.rot no ▼↓ ↑▲	FUN ENT no ↓ ▼▲ YES FUN ENT Nest Page	**The function is only for CS2-PR** **Sq.rot (Square root): Square root function of PV** The function used to applicate with differencial pressure transducers for flow measuuring	**Programmable:** no **(No):** Do not exclusive square root function. YES **(Yes):** Exclusive square root function. ▲Up ▼Down FUN ENT Enter	A-6
NEXT	PAGE			

Amend 2009/11/14, Add Square root function

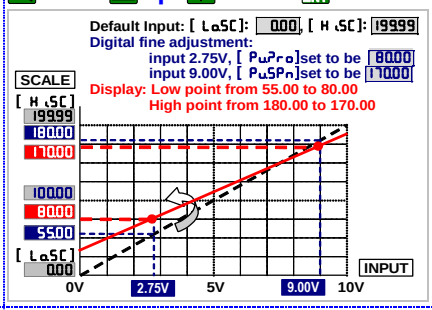
A-7 PuPro

PuPro (Pv.Zro): Fine Adjustment low point for PV display;

For Zero & Span of PV, users can get the "Fine Adjustment" by front key. It's an easy way to "Just Key-In" the value that the user wants to show in the current input signal. 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 linear for full scale.

Settable range: -19999~+29999

Shift Up Down Enter



A-8 PuSPn

PuSPn (Pv.SPn): Fine Adjustment high point for PV display;

It's same function as like as [PuPro].

Settable range: -19999~+29999

Shift Up Down Enter

A-9 P.S.CLr

P.S.CLr (Z.S.CLr): Clear Fine Adjustment of Low / High points for PV display;

Programmable:

nonE (None): Do not clear the fine adjustment of Low / High.

Pu..Pro (PV.Zro): To clear the fine adjustment Low.

Pu..SPn (PV.SPn): To clear the fine adjustment High

botH (Both): To clear the fine adjustment of Low and High.

Up Down Enter

A-10 dSPLY

dSPLY (dSPLY): Display Function for PV screen

When the [dSPLY] function set to be rS485, At meantime, the input signal (PV) no longer display now. The PV screen will show the number from RS485 command & data directly. The data(number) will be same as PV that it will compare with set-point, analogue output and ECI functions are correspondent to control analogue output, relay energized and so on.

Programmable:

Pu (PV): shows PV

MiN.Hd (MiN.Hd): Minimum Hold of PV

MAX.H (MAX.H): Maximum Hold of PV

rS485 (RS485): Remote displayed from RS485 command of master.

Up Down Enter

A-11 LoCUt

LoCUt (Lo.CUt): Low Cut the PV

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 I, the display will be 0.

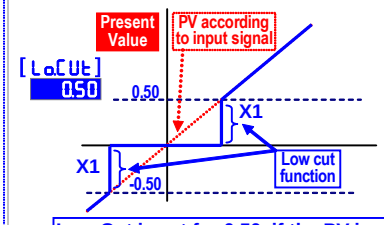
If set the negative value (X2) here to display "X2" which it expressed to be low-cut the PV that it's under the X2 setting value;

PV< Setting value, the display will be X2(Setting value).

Settable range: -19999~+29999

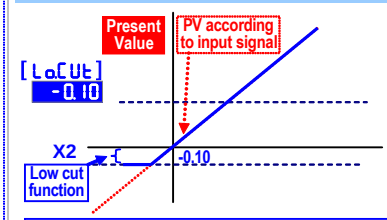
Shift Up Down Enter

Low Cut set to be +0.50



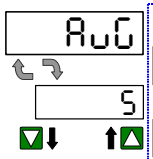
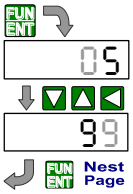
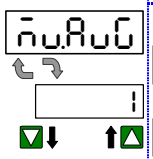
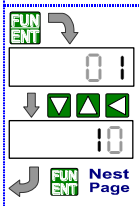
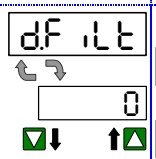
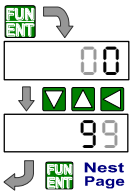
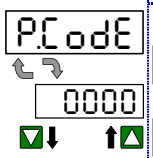
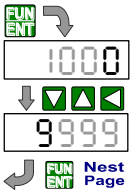
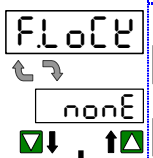
Low Cut is set for 0.50, if the PV is from -0.50~+0.50, that display will be 0.

Low Cut set to be -0.10

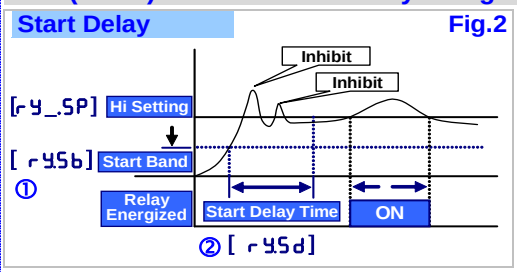
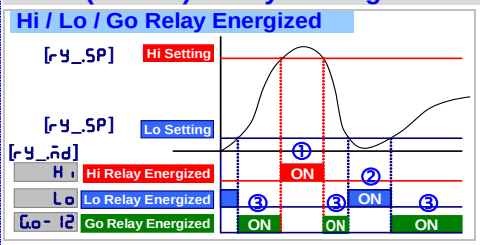
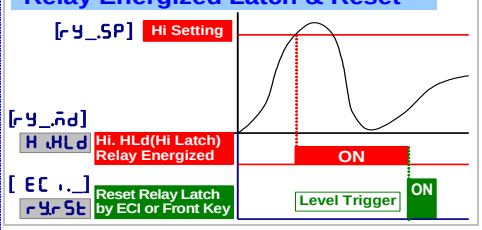
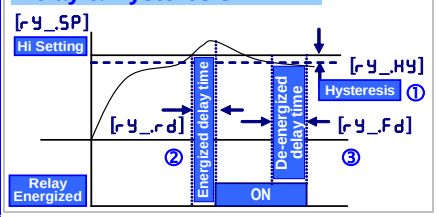


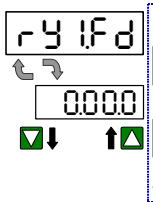
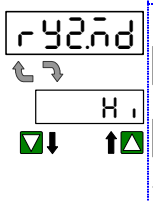
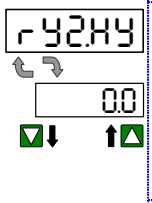
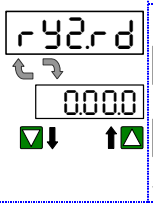
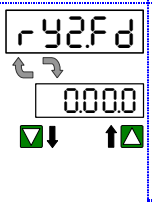
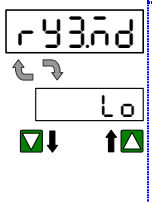
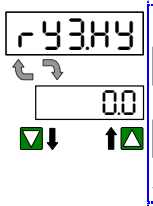
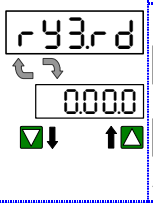
Low Cut is set for -0.10, if the PV is under (< = -0.10), that display will be -0.10.

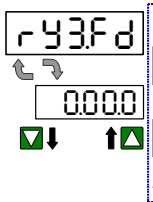
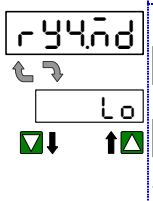
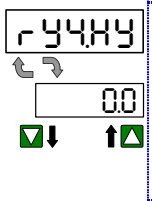
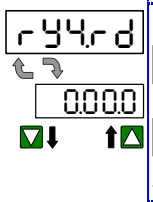
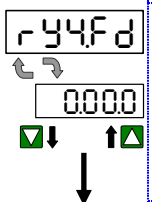
NEXT PAGE

A-12			**AvG (AvG): Average update for PV** The meter's sampling is 15cycle/sec If the [AvG](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.	**Settable range:** **1(no function)~99 times** **Shift Up Down Enter**
A-13			**mAvG (M.AvG): Moving Average update for PV** The meter's sampling is 15cycle/sec. If the [mAvG](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.	**Settable range:** **0(no function)/1~10 times;** **Shift Up Down Enter**
A-14			**dFiLt (d.FiLt): Digital filter** The digital filter can reduce the influence of spark noise by magnetic of coil. If the values of samples are over digital filter band(fixed 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.	**Settable range:** **0(no function)/1~99 times.** **Shift Up Down Enter**
A-15			**PCodE (P.CodE): Pass Code setting for access to programming level** Please remind and write down the new pass code so that access to programming level.	**Settable range: 0000~9999** **Shift Up Down Enter**
A-16			**FLoCK (F.LoCk): Function level Lock** There are 4 levels programmable for lock that the function is to avoid miss-setting.	**Programming:** **nonE (None):** no lock at all. User can access to user level for checking and setting. **USEr (User Level):** User level lock. User can access to user level for checking, but can not setting. **EnG (Programming Level):** Programming level lock. User can access to programming level for checking, but can not setting. **ALL (All Level):** All lock. User can access to all level for checking, but can not setting. **Up Down Enter**

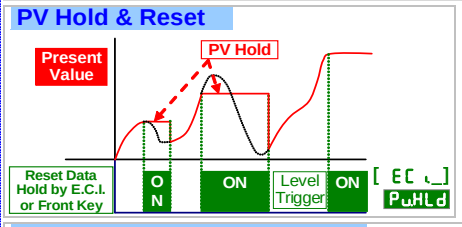
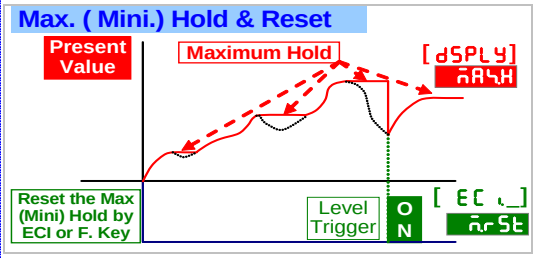
■ Relay Group (The group will not be displayed except the relay function is to be specified)

INDEX		FUNCTION DESCRIPTION	PARAMETERS & SETTING	SET
rELAY GroUP		RELAY GROUP INDEX PAGE	In following pages, press ◀ for 1 second to return the RELAY GROUP INDEX PAGE.	
B-1 rY.Sb 0.0	FUN ENT 000.0 ▼▲◀ 999.9 FUN ENT Nest Page	rY.Sb (rY.Sb): Start band of Relay energized Start Delay Fig.2 	Settable range: 0~9999 digits ◀Shift ▲Up ▼Down FUN ENTEnter	
B-2 rY.Sd 0.00.0	FUN ENT 0.00.0 ▼▲◀ 9.59.9 FUN ENT Nest Page	rY.Sd (rY.Sd): start delay time for Relay energized	Settable range: 0:00.0~9(M):59.9(S) ◀Shift ▲Up ▼Down FUN ENTEnter	
B-3 rY1.Md Hi	FUN ENT Hi ▼▲ Hi.HLd FUN ENT Nest Page	rY1.Md (rY1.Md): Relay 1 energized mode Hi / Lo / Go Relay Energized  Relay Energized Latch & Reset 	Programmable: oFF (Off): Turn off the Relay and indication LED. Lo (Lo): Low Level Energized; Relay will energize when PV < Set-Point. Hi (Hi): High Level Energized; Relay will energize when PV > Set-Point. Hi.HLd (Hi.HLd)/Lo.HLd (Lo.HLd): High / Low Level energize and latch; 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], front key function or terminals of E.C.I. closed do (DO): Digital Output; Relay is energized by RS485 command directly, but no longer to compare with set-point of relay. ▲Up ▼Down FUN ENTEnter	
B-4 rY1.HY 0.0	FUN ENT 000.0 ▼▲◀ 500.0 FUN ENT Nest Page	rY1.HY (rY1.HY): Relay 1 Hysteresis Energized / De-energized Delay & Hysteresis Fig.3 	Settable range: 0~5000 digits ◀Shift ▲Up ▼Down FUN ENTEnter	
B-5 rY1.rd 0.00.0	FUN ENT 0.00.0 ▼▲◀ 9.59.9 FUN ENT Nest Page	rY1.rd (rY1.rd): Relay 1 energized delay time	Settable range: 0:00.0~9(M):59.9(S) ◀Shift ▲Up ▼Down FUN ENTEnter	
NEXT	PAGE			

B-6		**rY 1.Fd (rY1.Fd): Relay 1 de-energized delay time**	**Settable range: 0:00.0~9(M):59.9(S)** **Shift Up Down Enter**	
B-7		**rY2.Md (rY2.Md): Relay 2 energized mode**	….as same as Relay 1 Energized Mode… **Programmable: oFF (off) / Lo (Lo) / Hi (Hi) / Hi.HLd (Hi.HLd) / Lo.HLd (Lo.HLd) / do (DO)** **Up Down Enter**	
B-8		**rY2.HY (rY2.HY): Relay 2 Hysteresis**	**Settable range: 0~5000 digits** **Shift Up Down Enter**	
B-9		**rY2.rd (rY2.rd): Relay 2 energized delay time**	**Settable range: 0:00.0~9(M):59.9(S)** **Shift Up Down Enter**	
B-10		**rY2.Fd (rY2.Fd): Relay 2 de-energized delay time**	**Settable range: 0:00.0~9(M):59.9(S)** **Shift Up Down Enter**	
B-11		**rY3.Md (rY3.Md): Relay 3 energized mode**	**Programmable: oFF (off) / Lo (Lo) / Hi (Hi) / Hi.HLd (Hi.HLd) / Lo.HLd (Lo.HLd) / do (DO),** These functions are same as rY 1.Md and add Go- 12 **Go- 12 (Go-12):** This function is programmable in Relay 3 or 4 only. If the Relay 3 or 4 set to be Go- 12 functions, the relay will compare with [rY 1.SP] and [rY2.SP]. Go relay energized when the condition is [rY 1.SP](Hi)>PV>[rY2.SP](Lo) **Up Down Enter**	
B-12		**rY3.HY (rY3.HY): Relay 3 Hysteresis**	**Settable range: 0~5000 digits** **Shift Up Down Enter**	
B-13		**rY3.rd (rY3.rd): Relay 3 energized delay time**	**Settable range: 0:00.0~9(M):59.9(S)** **Shift Up Down Enter**	
NEXT PAGE				

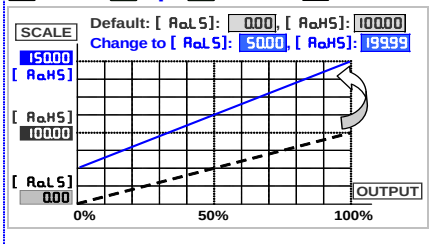
B-14		rY3.Fd (rY3.Fd): Relay 3 de-energized delay time	**Settable range:** **0:00.0~9(M):59.9(S)** **Shift Up Down Enter**	
B-15		rY4.Md(rY4.Md): Relay 4 energized mode	**Programmable:** oFF(Off) / Lo(Lo) / Hi(Hi) / Hi.HLd(Hi.HLd) / Lo.HLd(Lo.HLd) / do(DO), **These function are same as** rY1.Md **and more** Go-1.2 / Go-2.3 **Go-1.2(Go-1.2):** This function is programmable in Relay 3 or 4 only. If the Relay 3 or 4 set to be Go-1.2 functions, the relay will compare with [rY1.SP] and [rY2.SP]. Go relay energized when the condition is [rY1.SP](Hi)>PV>[rY2.SP](Lo) **Go-2.3(Go-2.3):** This function is programmable in Relay 4 only. If the Relay 4 set to be Go function, the relay will compare with [rY2.SP] and [rY3.SP]. Go-2.3 relay energized when the condition is [rY2.SP](Hi)>PV>[rY3.SP](Lo) **Up Down Enter**	
B-16		rY4.HY(rY4.HY): Relay 4 Hysteresis	**Settable range: 0~5000 digits** **Shift Up Down Enter**	
B-17		rY4.rd (rY4.rd): Relay 4 energized delay time	**Settable range:** **0:00.0~9(M):59.9(S)** **Shift Up Down Enter**	
B-18		rY4.Fd (rY4.Fd): Relay 4 de-energized delay time	**Settable range:** **0:00.0~9(M):59.9(S)** **Shift Up Down Enter**	

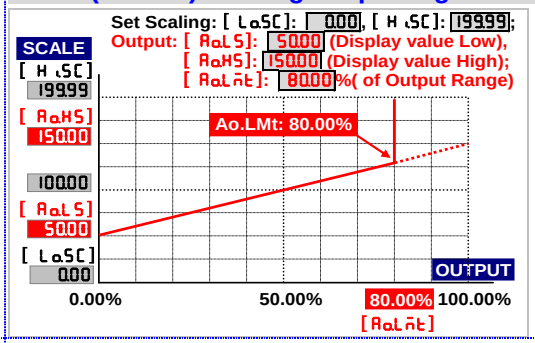
■ External Control Input(E.C.I.) Group (standard function)

INDEX		FUNCTION DESCRIPTION	PARAMETERS & SETTING	SET
EC i GroUP FUN ENT ↓		**EXTERNAL CONTROL INPUT GROUP INDEX PAGE**	**In following pages, press ◀ for 1 second to return the ECI GROUP INDEX PAGE.**	
C-1 EC i.1 rELPu bAnK.1 FUN ENT Nest Page	FUN ENT rELPu ▼ ▲ bAnK.1 FUN ENT Nest Page	**EC i.1(ECi.1): External Control Input 1** **PV Hold & Reset**  **Max. (Mini.) Hold & Reset** 	**Programmable:** **nonE (None):** No function; **rELPu (rEL.Pv):** Relative PV function; the reading will show the differential value with PV as the ECI has closed. **PuHLd (Pv.HLd):** The ECI can be set to be PV Hold function. The display will be hold when the ECI has closed except the ECI is open. Please refer to the left figure. **MrSt (M.rSt):** Reset for max./mini. Hold in PV screen; When the [dSPLY](dsply) function set to be HimHd / MAXHd that max./mini value be saved in **[User level]**, and the saved values can be reset in this function too. **rYrSt (rY.rSt):** If [rY_Md] the relay energized mode has been set to be HiHLd / LoHLd (High or Low energized & latch), and the [EC i_] set to be rYrSt(Reset Relay function) when the PV match the condition of relay energizing, the relay will be energized with latch except the ECI terminal is closed. **di (DI):** Digital Input; The E.C.I can be set to the Digital Input function, when the meter building in RS485 port. The master is easier to get a switch status through the meter as like as DI module of PLC. **Optional function for CS2-VA/RS** **bAnK.1 (Bank 1):** when the ECI.1 specified the Bank 1 function & the ECI 1 terminal closed that the relay reach to the Bank 1 set point to energize the relay. **▲Up ▼Down FUN ENT Enter**	
C-2 EC i.2 PuHLd rYrSt FUN ENT Nest Page	FUN ENT PuHLd ▼ ▲ rYrSt FUN ENT Nest Page	**EC i.2(ECi.2): External Control Input 2**	**Programmable:** nonE / rELPu / PuHLd / MrSt / rYrSt / di, These functions are same as EC i.1 and more bAnK.2 **Optional function for CS2-VA/RS** **bAnK.2 (Bank 2):** same as function bAnK.1(Bank 1) **▲Up ▼Down FUN ENT Enter**	
NEXT PAGE				

C-3	EC i.3 / n.rSt	FUN ENT / n.rSt / di / FUN ENT Nest Page	**EC i.3 (ECi.3): External Control Input 3**	**Programmable:** nonE / rEL.Pu / Pu.HLd / n.rSt / rY.rSt / di, These functions are same as EC i.1 and more bAnk.3 **Optional function for CS2-VA/RS** **bAnk.3 (Bank 3):** as same function as bAnk.1 (Bank 1) **Up Down Enter**
C-4	dEbnC / 12	FUN ENT / 012 / 255 / FUN ENT Nest Page	**dEbnC (dEbnc): Debouncing of external control Input**	**Settable range: 5~255(x 8ms)** **Shift Up Down Enter**
C-5	E.1=UP / no	FUN ENT / no / YES / FUN ENT Nest Page	**E.1=UP (E.1=UP): The Up Key can be set to be the same function as the setting for [EC i.1].** Ex. The [EC i.1] set to be Pu.HLd (Pv.HLd) and the function [E.1=UP] set to be YES simultaneously. The user presses Up Key to replace the manual ECI 1 terminal closed,	**Programmable:** YES **(YES):** Up Key is to be same function as ECI1 no **(NO) :** Up Key isn't to be same function as ECI1 **Up Down Enter**
C-6	E.2=dn / no	FUN ENT / no / YES / FUN ENT Nest Page	**E.2=dn (E.2=DN): The Down Key can be set to be the same function as the setting for [EC i.2].** Ex. The [EC i.2] set to be Pu.HLd (Pv.HLd) and the function [E.2=dn] set to be YES simultaneously. The user presses Down Key to replace the manual ECI 2 terminal closed,	**Programmable:** YES **(YES):** Down Key is to be same function as ECI2. no **(NO):** Down Key isn't to be same function as ECI2. **Up Down Enter**

■ Analogue Output Group (The group will not be displayed except the AO function is to be specified)

INDEX		FUNCTION DESCRIPTION	PARAMETERS & SETTING	SET
Ao / GroUP / FUN ENT		**AO GROUP INDEX PAGE**	**In following pages, press for 1 second to return the AO GROUP INDEX PAGE.**	
D-1 Ao.tYP / A.4-20	FUN ENT / A.4-20 / u.0-10 / FUN ENT Nest Page	**Ao.tYP (Ao.tYP): Analogue Output type and range selection;** Analogue output type had been fixed in mA or V as customer ordering requested. Therefore, the type selection is only for the ranges in same type(Voltage or Current).	**Programmable:** **Voltage Output:** u.0-10 **(0~10V) /** u.0-5 **(0~5V) /** u.1-5 **(1~5V)** **Current Output:** A.0-10 **(0~10mA) /** A.0-20 **(0~20mA) /** A.4-20 **(4~20mA)** **Up Down Enter**	
D-2 Ao.LS / 0.0	FUN ENT / 0000.0 / 500.0 / FUN ENT Nest Page	**Ao.LS (Ao.LS): the Low point is relative to Analogue Output low;** To set the lower display value versus low output range (as like as 4mA in A.4-20) Ex. Output range set to be A.4-20 (4~20mA) is relative to display 0~199.99. User can set the [Ao.LS] (Ao.LS) to be 50.00. At meantime, the output signal will be 4mA when the present value is 50.00.	**Settable range: -19999~29999** **Shift Up Down Enter** 	
NEXT	PAGE			

D-3	AoHS 19999 15000 will be changed according to H.SC set.		**AoHS (Ao.HS): the High point is relative to Analogue Output high;** To set the higher display value versus high output range (as like as 20mA in R4-20) Ex. Output range set to be R4-20 (4~20mA) is relative to display 0~199.99. User can set the [AoHS] (Ao.HS) to be 15000. At meantime, the output signal will be 20mA when the present value(PV) is 150.00.	**Settable range: -19999~29999** ◀Shift ▲Up ▼Down ENT Enter
D-4	AoZro 0 47233		**AoZro (Ao.Zro): Fine Zero Adjustment for Analog Low Output;** Users can get Fine zero Adjustment for analogue output by front key. Please connect standard meter to the terminal of analogue output for measuring the output value. To press the front key(up or down key) to adjust and check the output of meter.	**Settable range: -38011~27524** ◀Shift ▲Up ▼Down ENT Enter
D-5	AoSPn 0 32767		**AoSPn (Ao.SPn): Fine Span Adjustment for Analog high Output;** Users can get Fine span Adjustment for analogue output by front key of the meter as like as [AoZro] (Ao.Zro).	**Settable range: -38011~27524** ◀Shift ▲Up ▼Down ENT Enter
D-6	Z.SCLr nonE botH		**Z.SCLr (Z.S.CLr): Clear the Fine Zero / Span Adjustment for Analog Output**	**Programmable:** nonE **(None):** Do not clear AoZro **(Ao.Zro):** Clear low adjust AoSPn **(Ao.SPn):** Clear high adjust botH **(both):** Clear low & high adjust ▲Up ▼Down ENT Enter
D-7	AoLMt 110.00 100.00		**AoLMt (Ao.LMt): Analog Output High Limit** 	**Settable range:** **0.00~ 110.00% of FS** ◀Shift ▲Up ▼Down ENT Enter

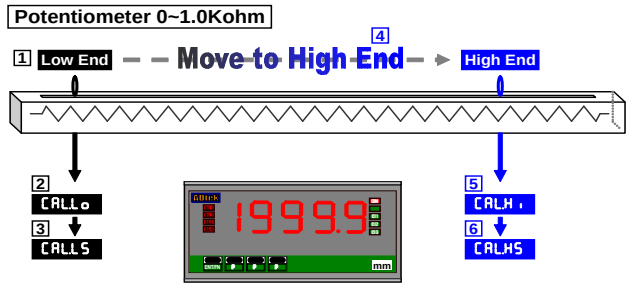
■ RS485 Group (The group will be hidden, if the relay function is not to be specify)

INDEX		FUNCTION DESCRIPTION	PARAMETERS & SETTING	SET
rS485 GroUP		RS485 GROUP INDEX PAGE	In following pages, press ◀ for 1 second to return the RS485 GROUP INDEX PAGE.	
E-1 AdrES 1 255		AdrES (Address): Device number of the meter.	**Settable range: 1~255** ◀Shift ▲Up ▼Down ENT Enter	
E-2 bAUd 9600 38400		bAUd (bAUd): Baud rate	**Programmable:** 1200 / 2400 / 4800 / 9600 / 19200 / 38400 ▲Up ▼Down ENT Enter	
NEXT PAGE				

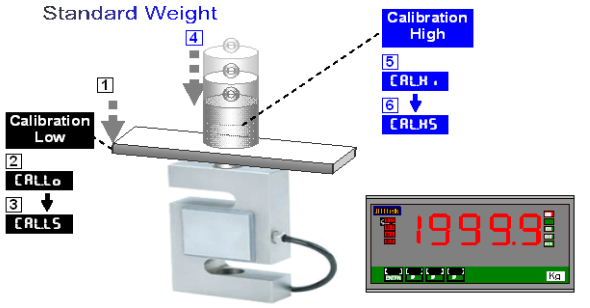
E-3	PritY n.Stb.2	FUN ENT n.Stb.2 EuEn FUN ENT Nest Page	PritY(PritY): Parity	**Programmable:** n.Stb.1(n.Stb.1): None, 1 stop bit n.Stb.2(n.Stb.2): None, 2 stop bit odd(odd): odd EuEn(Even): Even Up Down FUN ENT Enter

■ Field Calibration Group [for CS2-SG / CS2-PM / CS2-RS only]

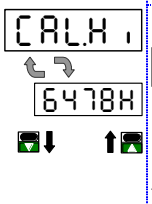
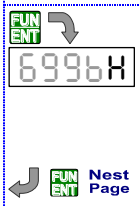
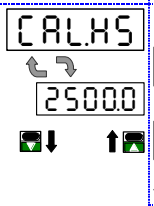
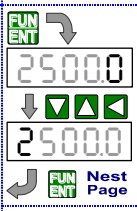
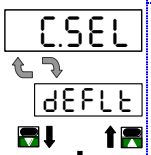
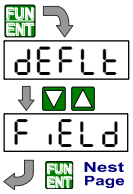
Please according to the numbers to do the field calibration (1⇨2⇨3⇨4⇨5⇨6)



Please according to the numbers to do the field calibration (1⇨2⇨3⇨4⇨5⇨6)



INDEX		FUNCTION DESCRIPTION	PARAMETERS & SETTING	SET
1688.8 FUN ENT		**Measuring Page**		
EntEr P.CodE & EntEr F.CodE	FUN ENT 0000 2000 FUN ENT Nest Page	**Pass Code Page**		
		Pass Code Page for Field Calibration Level	Enter the exactly pass code of the meter to access the Field Calibration Level. Otherwise, it will be turning back to measuring page.	
NO Pass Code FUN ENT YES				
		Adjust the structure of machinery to the lower signal output status(or any lower status).		
F-1 CAL.Lo 0022H	FUN ENT 052EH FUN ENT Nest Page	**CAL.Lo(CAL.Lo): Field Calibration Low.** The low calibration is not need the exactly "zero" to calibrate because of the "field calibration" function could be calibrate any lower point.	➢ Waiting for the value till stable, pressed FUN ENT Key to read signal low of sensing device. ➢ Waiting for above reading stable (around 3~5seconds), press FUN ENT Key again to complete the calibration lower point, and go to [CAL.LS].	
F-2 CAL.LS 0.0	FUN ENT 0000.0 0000.0 FUN ENT Nest Page	**CAL.LS(CAL.LS): the value to be set is relative to Field Calibration low point.**	**Settable range: -19999~29999** Shift Up Down FUN ENT Enter	
NEXT	PAGE			

		Adjust the machinery structure to the higher signal output status(or any higher status).		
F-3			**CALH i(CAL.Hi): Field Calibration High**. The high calibration is not need the exactly "span" to calibrate because of the "field calibration" function could be calibrating any higher point.	➢ Waiting for the value till stable, pressed Key to read signal high of sensing device. ➢ Waiting for above reading stable (around 3~5seconds), press Key again to complete the calibration higher point, and go to [CAL.HS].
F-4			**CAL.HS(CAL.HS): the value to be set is relative to Field Calibration high point.**	**Settable range: -19999~29999** **Shift Up Down Enter**
F-5			**C.SEL (C.SEL): Calibration parameter selection;** As the user finished the procedures of field calibration, the field calibration datum has been saved in EEProm and it can't change the default(factory) calibration datum . Even the field calibration has been done, the user can still select either default calibration or field calibration.	**Programmable:** **dEFLt(default):** factory calibration points and factors **F iELd(field):** field calibration points and factors **Up Down Enter** ◘ **If the user select field calibration of the [LoSC](step A-4) and [H iSC](A-5) will be** replaced by **the [CALLS] and [CALHS]** which it **can not to be change by anyone. If user has to change the scaling, it's the only way to access field calibration level to set in [CALLS](step F-2) and [CALHS](step F-4).** ◘ **Please double check the [LoSC](step A-4) and [H iSC](A-5)** whether **are correct after selection the dEFLt or F iELd.**
		Go back to Measuring Page		

■ TROUBLE SHOOTING

Display Issue:

PROBLEM	CHECKING LIST	REMEDY
Display shows ouFL -ouFL	**1.**To inspect whether did the input signal type (V/A/mA..) of meter match with field signal or not?	Please change another meter that is matching in the field. ►For CS2-PR, input range can be programmed in same type(mA or V). Please check the [A i.tYP] in [inPUt GroUP].
	2.To inspect whether the input signal is over +120% (input high limit) or -120% (input low limit)?	**A.**Please check the [A i.Lo] and [A i.H i] in [inPUt GroUP] are correct or not. **B.**Please changes another meter that is matching in the field.
	3. To inspect whether did the wires connect correct and secure or not?	**A.**Please checks carefully the connection diagram of label on the meter. **B.**Please uses the terminals(Y, Ring or cord end terminal) to avoid the risk of insecure.
Incorrect ion display value or out of accuracy	**1.** To inspect the input signal type (V/A/mA..) or range of meter whether did match with signal in the field or not?	**A.**Please check the [A i.Lo] and [A i.H i] in the [inPUt GroUP] whether did the both set correct or not ? Generally, the [A i.Lo] is 0.00% and [A i.H i] is 100.00%, if the input specification of meter is same as range of signal in field. **B.**Please changes another meter that is matching in field.
	2.To inspect the settings of high and low scale whether did it correct or not?	Please check the [H i.SC]**(A-05)** and [Lo.SC]**(A-04)** in [inPUt GroUP].
	3.To inspect the high and low fine adjustments of PV are changed or not?	Please check the [Pu.SPn]**(A-07)** and [Pu.Pro]**(A-06)** in [inPUt GroUP] whether did the values can be cleared in [P.S.CLr]**(A-08)**.
	CS2-Pr:	
	4.To inspect the input signal range whether did it match with signal in the field or not?	Please check the [A i.tYP]**(A-00)** that has to match the signal in the field.
	CS2-SG/CS2-PM	
	5.To inspect the field calibration whether did it match with sensor in the field or not?	Please check the [CAL.LS]**(F-02)** and [CAL.HS]**(F-04)** both are matched the measuring range of sensor.
Jittery Display	**1.**To inspect the input signal is jittery or not?	**A.**If the input signal is jittery continuously, please set higher value in [AuG]**(A-11)** or [ñu.AuG]**(A-12)** **B.**If the input signal is jittery uncertain period that caused by the inductive load actions, please set higher value in [d.F iLt]**(A-13)** **C.**Please does not lay the wires of input together with high-voltage lines or power lines. As a general rule, wire the meter in a separate system, use an independent metal conduit, or use shielded cable.
	2.To inspect the input signal is stable.	**A.**If the input signal is jittery continuously, please set higher value in [AuG]**(A-11)** or [ñu.AuG]**(A-12)** **B.**If the input signal is jittery uncertain period that caused by the inductive load actions, please set higher value in [d.F iLt]**(A-13)** **C.**Please connects an isolation transformer as close as meter in power lines.
Display shows "-----"	To inspect display function [dSPLY]. It's maybe to be set to rS485	Please check the [dSPLY]**(A-09)** in [inPUt GroUP] and change the function setting from rS485 to Pu.
display value doesn't change	**1.**To inspect display function [dSPLY]. It's maybe to be set to ñAh.Hd(maximum hold) or ñ in.Hd(minimum hold), and the M.H LED is brighten.	Please check the [dSPLY]**(A-09)** in [inPUt GroUP] and change the function set from ñAh.Hd or ñ in.Hd to Pu.
	2.To inspect external control input function [EC i._]. It's maybe to be set to Pu.HLd, and the relate LED is brighten.	**A.**Please check the [EC i._]**(C-01/02/03)** in [EC i GroUP] and change the function setting from Pu.HLd to Pu. **B.**ECI function has been energized by terminals close. Please open the terminals.

Relay Output Issue:

PROBLEM	CHECKING LIST	REMEDY
The parameters of Relay doesn't shown	Check if the label of meter for detail specification.	**A.**Please check the product number and output(O/P:_____) description again for confirmation the relay output is specified or not? **B.**Please send back to our sales window, or order another meter with relay function.
Relay cans not action.	**The relay energized, but square red LED doesn't bright**	
	1.Check the energized mode	Please check the [rY Ind]**(B-03/07/11/15)** in the [rELAY GroUP]
	2.Check the delay time and delay band in the start delay function.	Please check whether the [rYsb] (B-01) did is too wide and [rYSd]**(B-02)** is too long in [rELAY GroUP] or not?
	3. Check the energized delay time	Please check whether did the [rY Ird]**(B-05/09/13/17)** is too long in [rELAY GroUP] or not?
	The relay energized, but square red LED dose bright	
	1.Check the wiring of relay output	According to the label of meter, please check again the connection wire of relay. Be careful to check the number of relay is matching the setting.
	2.Check the voltage of supply power	

Analogue Output Issue:

PROBLEM	CHECKING LIST	REMEDY
Incorrect ion analogue output value or out of accuracy	**1.** To inspect the output signal type (V/A/mA..) or range of meter whether did match with signal in the field or not?	**A.**Please check the product number and output(O/P:_____) description again for confirmation the analogue output is specified or not? If it was not specified, please send back to our sales window, or order another product with relay function. **B.**Please confirm the output type is correct and check the range in [AotYP]**(D-01)** of [Ao GroUP]
	2. Check the Analogue output high and low setting.	**A.**Please check the [AoLS]**(D-02)** and [AoHS]**(D-03)** in [Ao GroUP].
Jittery Analogue Output	**Analogue output is according to the display**	
	1.Check if the display is jittery	**A.**If the input signal was jittery continuously, please set higher value in [AuG]**(A-11)** or [FuAuG]**(A-12)** **B.**If the input signal is jittery with a uncertain period that caused by the inductive load actions, please set higher value in [dF iLt]**(A-13)** **C.**Please does not lay the wires of input together with high-voltage lines or power lines. As a general rule, wire connecting with the meter has to be in a separate system, use an independent metal conduit, or use shielded cable.
	2.Check if the display is stable	Please do not lay the wires of output together with high-voltage lines or power lines. As a general rule, wire connecting with the meter has to be in a separate system, use an independent metal conduit, or use shielded cable.

RS485 Communication Issue:

PROBLEM	CHECKING LIST	REMEDY
Can not link	Check if the square orange LED of RS485 doesn't bright.	**A.**Please check the [AdrES]**(E-01)**、[bAUd]**(E-02)** and [Pr itY]**(E-03)** in [rS485 GroUP] that both have to match the Host. **B.**Please check the wiring A(+) and B(-) are correct or not? **C.**If user uses a converter (RS485/RS232 or RS485/USB..), please check the converter of setting and wiring is correct or not? **D.**Please check the protocol of host is Modbus RTU Mode
Reply wrong data from the meter	**1.**Check if the square orange LED of RS485 dose bright, but no reply.	**A.**Please confirms the CHECH SUM program is correct. **B.**Please check the interval of each command has to over 3.5byte.

	2. Check if the square orange LED of RS485 dose bright, but reply Error.	**A.**Please checks the address table of RS485 to assume whether did the address right or not? **B.**Please checks the start address and data format are correct. **C.** Please do not lay the wires of RS485 together with high-voltage lines or power lines. As a general rule, wire the meter in a separate system, use an independent metal conduit, or use shielded cable.

■ RS485 MODBUS RTU MODE

■ Modbus RTU Mode protocol

1. Function 03H (Read Holding Registers)

Request Data Frame; EX: Read the data of display value(0000H starts from 1 Word)

SLAVE Address	FUNCTION	Starting Address Hi	Starting Address Lo	No. of Word Hi	No. of Word Lo	CRC Lo	CRC Hi
01H	03H	00H	00H	00H	01H	84H	0AH

Response Data Frame; EX: The response value is ”0”

SLAVE Address	FUNCTION	Byte count	Data Hi	Data Lo	CRC Lo	CRC Hi
01H	03H	02H	00H	00H	B8H	44H

Request Data Frame (EX: Continue to request the data of 10 points)

SLAVE Address	FUNCTION	Starting Address Hi	Starting Address Lo	No. of Word Hi	No. of Word Lo	CRC Lo	CRC Hi
01H	03H	00H	00H	00H	0AH	C5H	CDH

Response Data Frame

SLAVE Address	FUNCTION	Byte count	Data(1) Hi	Data(1) Lo	…	…	Data(10) Hi	Data(10) Lo	CRC Lo	CRC Hi
01H	03H	14H	00H	00H	…	…	01H	00H	--	--

2. Writing Command by Function 06H (Preset Single Register)

Request Data Frame

SLAVE Address	FUNCTION Code	Starting Address Hi	Starting Address Lo	Preset DATA Hi	Preset DATA Lo	CRC Lo	CRC Hi
01H	06H	00H	00H	00H	02H	08H	0BH

Response Data Frame

SLAVE Address	FUNCTION Code	Starting Address Hi	Starting Address Lo	Preset DATA Hi	Preset DATA Lo	CRC Lo	CRC Hi
01H	06H	00H	00H	00H	02H	08H	0BH

■ ADDRESS TABLE **Address number are Hexadecimal

■ User level

Name	Address	Range	Explain	Initial	Write/Read	Note
PV	0000h	-19999~29999	Present Value		R	
rY 1SP	0001h	-19999~29999	Relay1 Set Point	10000	R/W	
rY2SP	0002h	-19999~29999	Relay2 Set Point	10000	R/W	
rY3SP	0003h	-19999~29999	Relay3 Set Point	10000	R/W	
rY4SP	0004h	-19999~29999	Relay4 Set Point	10000	R/W	
RELAY STATUS	0005h	0~1	RELAY STATUS **bit0~bit3:**relay1~relay4; **0**=Relay off **1**=Relay on		R/W	
ECI STATUS	0006h	0~1	ECI STATUS **bit0~bit2:**ECI.1~ECI.3; **0**=untriged **1**:triged		R	
PuHLd	0007h	-19999~29999	PV Hold		R	
n in	0008h	-19999~29999	The Minimum of PV	0	R	
nAX	0009h	-19999~29999	The Maximum of PV	0	R	
SYSTEM STATUS	000Ah		SYSTEM STATUS **bit0**=1 EEP fail; **bit1**=1 Input calibration fail; **bit2**=1 Input calibration NG; **bit3**=1 Analogue Output calibration fail; **bit4**=1 Analogue Output calibration NG		R	
nrSt	000Bh	0~1	Reset Maximum & Minimum Value **0:**No **1:**Yes	0	R/W	
rS485	000Ch	-19999~29999	PV showing from RS485 command(data)	0.00%	R/W	

■ Programming Level

[Input Group]

Name	Address	Range	Explain	Initial	Write/Read	Note
RESERVED	000Dh		No use unless CS2-PR	0	R/W	
A.tYP		0~5	**The address is for CS2-PR only** Analogue Input Type **0:**0~10V **1:**0~5V **2:**1~5V **3:**0~20mA **4:**4~20mA **5:**0~10mA			
A.Lo	000Eh	0.00~100.00%	Input Low	0.00%	R/W	
A.Hi	000Fh	0.00~100.00%	Input High	100.0%	R/W	
Pu.dP	0010h	0~4	PV Decimal Point **0:** 00000 **1:** 0000.0 **2:** 000.00 **3:** 00.000 **4:** 0.0000	0	R/W	
Lo.SC	0011h	-19999~29999	Low Scale	0	R/W	
Hi.SC	0012h	-19999~29999	High Scale	19999	R/W	
Pu.Pro	0013h	-19999~29999	PV ZERO	0	R/W	
Pu.SPn	0014h	-19999~29999	PV SPAN	0	R/W	
P.SrSt	0015h	0~3	The clear of PV_ZERO and PV_SPAN **0:**None **1:**PV_ZERO **2:**PV_SPAN **3:** Both	0	R/W	
dSPLY	0016h	0~3	Display Mode **0:**PV **1:** Minimum Hold **2:** Maximum Hold **3:** RS485	0	R/W	
LoCUt	0017h	-19999~19999	Low Cut	0	R/W	
AuG	0018h	1~99	Average	5	R/W	
dFiLt	0019h	0~99	Digital Filter	0	R/W	
P.CodE	001Ah	0000~9999	Pass Code	1000	R/W	
FLoCY	001Bh	0~3	Function Lock **0:** none **1:** User Level **2:** Engineer Level **3:** All	0	R/W	

[Relay Group]

Name	Address	Range	Explain	Initial	Write/Read	Note
ry.Sb	001Ch	0000~9999	Start Band of Relay	0	R/W	
ry.Sd	001Dh	0000~5999 (0.1second)	Start Delay Time of Relay	0	R/W	
ry1nd	001Eh	0~5	Relay1 Energized Mode **0: oFF**(no use); **1: Lo**(Low Energized); **2: Hi**(High Energized) **3: Lo Hold**(Low Energized Hold) **4: High Hold**(High Energized Hold) **5: DO**(Digital Output);	2	R/W	
ry1HY	001Fh	0000~5000	Hysteresis of Relay1	0	R/W	
ry1rd	0020h	0000~5999 (0.1second)	Energized Delay Time of Relay1	0	R/W	
ry1Fd	0021h	0000~5999 (0.1second)	De-Energized Delay Time of Relay1	0	R/W	
ry2nd	0022h	0~5	Relay2 Energized Mode **0: oFF**(no use); **1: Lo**(Low Energized); **2: Hi**(High Energized) **3: Lo Hold**(Low Energized Hold) **4: High Hold**(High Energized Hold) **5: DO**(Digital Output);	2	R/W	
ry2HY	0023h	0000~5000	Hysteresis of Relay2	0	R/W	

Name	Address	Range	Explain	Initial	Write/Read	Note
r2.rd	0024h	0000~5999 (0.1second)	Energized Delay Time of Relay2	0	R/W	
r2.Fd	0025h	0000~5999 (0.1second)	De-Energized Delay Time of Relay2	0	R/W	
r3.md	0026h	0~5	Relay3 Energized Mode **0: oFF**(no use); **1: Lo**(Low Energized) **2: Hi**(High Energized) **3: Lo Hold**(Low Energized Hold) **4: High Hold**(High Energized Hold) **5: DO**(Digital Output);	1	R/W	
r3.HY	0027h	0000~5000	Hysteresis of Relay3	0	R/W	
r3.rd	0028h	0000~5999 (0.1second)	Energized Delay Time of Relay3	0	R/W	
r3.Fd	0029h	0000~5999 (0.1second)	De-Energized Delay Time of Relay3	0	R/W	
r4.md	002Ah	0~5	Relay4 Energized Mode **0: oFF**(no use); **1: Lo**(Low Energized); **2: Hi**(High Energized) **3: Lo Hold**(Low Energized Hold) **4: High Hold**(High Energized Hold) **5: DO**(Digital Output); **6: Go-1.2**(Go function compare with SP1 & SP2); **7: Go-2.3**(Go function compare with SP2 & SP3);	1	R/W	
r4.HY	002Bh	0000~5000	Hysteresis of Relay4	0	R/W	
r4.rd	002Ch	0000~5999 (0.1second)	Energized Delay Time of Relay4	0	R/W	
r4.Fd	002Dh	0000~5999 (0.1second)	De-Energized Delay Time of Relay4	0	R/W	
r.rSt	002Eh		Reset for Relay Energized Hold **0:** No **1:** Yes	0	R/W	
RESERVED	002Fh		**No use unless CS2-VA & CS2-RS**			
bAnK			**The addres is for CS2-VA & CS2-RS** **bit1**=1; Bank2 selected **bit2**=1; Bank3 selected **bit0**=bit1-bit2=0; Bank0 selected	0	R/W	

[ECI Group]

Name	Address	Range	Explain	Initial	Write/Read	Note
EC.I1	0030h	0~5	External Control Input 1 **0:nonE** (None); **1:rEL.PV**(Relative PV); **2:PV.HLd**(PV Hold); **3: M.rSt**(Reset for Maximum & Minimum); **4:rY.rSt**(Reset for Relay Hold); **5:di**(Digital Input);	1	R/W	
EC.I2	0031h	0~5	External Control Input 1 **0:nonE** (None); **1:rEL.PV**(Relative PV); **2:PV.HLd**(PV Hold); **3: M.rSt**(Reset for Maximum & Minimum); **4:rY.rSt**(Reset for Relay Hold); **5:di**(Digital Input);	2	R/W	

ECi3	0032h	0~5	External Control Input 1 **0:nonE** (None); **1:rEL.PV**(Relative PV); **2:PV.HLd**(PV Hold); **3: M.rSt**(Reset for Maximum & Minimum); **4:rY.rSt**(Reset for Relay Hold); **5:di**(Digital Input);	3	R/W	
dEbnC	0033h	5~255	ECI debouncing 5~255 *8mSec	12	R/W	

[AO Group]

Name	Address	Range	Explain	Initial	Write/Read	Note
AoTYP	0034h	0~5	Analog Output Type **0:** 0~10V **1:** 0~5V **2:**1~5V **3:** 0~20mA **4:** 4~20mA **5:** 0~10mA	4	R/W	
AoLS	0035h	-19999~29999	Analogue Output Low Scale	0	R/W	
AoHS	0036h	-19999~29999	Analogue Output High Scale	19999	R/W	
AoLnt	0037h	00.00%~110.00%	Analogue Output High Limit	110.00%	R/W	
P.SrSt	0038h	0~3	The clear of AO_ZERO and AO_SPAN **0:** None **1:** AO_ZERO **2:** AO_SPAN **3:** Both	0	R/W	

[RS485 Group]

Name	Address	Range	Explain	Initial	Write/Read	Note
AdrES	0039h	1~255	RS485 address	1	R/W	
bAUd	003Ah	0~5	RS485 baud rate **0:**1200 **1:**2400 **2:**4800 **3:**9600 **4:**19200 **5:**38400	3	R/W	
Pr itY	003Bh	0~3	RS485 parity **0:** n-8-1 **1:** n-8-2, **2:** odd, **3:** even,	1	R/W	

SQrot	003Ch	0~1	Square root function **0:** no **1:** yes	0	R/W	

Amend 2009/11/14, Add Square root function

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■ ADDRESS TABLE **Address number are Hexadecimal For 5-digital Dispaly

■ User level

Name	Address	Range	Explain	Initial	Write/Read	Note
PV_H	0000h	-19999~99999	Present Value		R	
PV_L	0001h					
r Y 1.SP_H	0002h	-19999~99999	Relay1 Set Point	50000	R/W	
r Y 1.SP_L	0003h					
r Y2.SP_H	0004h	-19999~99999	Relay2 Set Point	50000	R/W	
r Y2.SP_L	0005h					
r Y3.SP_H	0006h	-19999~99999	Relay3 Set Point	50000	R/W	
r Y3.SP_L	0007h					
r Y4.SP_H	0008h	-19999~99999	Relay4 Set Point	50000	R/W	
r Y4.SP_L	0009h					
Pu.HLd_H	000Ah	-19999~99999	PV Hold		R	
Pu.HLd_L	000BH					
n. in_H	000Ch	-19999~99999	The Minimum of PV	0	R	
n. in_L	000Dh					
n.AY_H	000Eh	-19999~99999	The Maximum of PV	0	R	
n.AY_L	000Fh					

■ Programming Level

【Input Group】

Name	Address	Range	Explain	Initial	Write/Read	Note
Lo.SC_H	0010h	-19999~99999	Low Scale	0	R/W	
Lo.SC_L	0011h					
H i.SC_H	0012h	-19999~99999	High Scale	19999	R/W	
H i.SC_L	0013h					
Pu.Pro_H	0014h	-19999~99999	PV ZERO	0	R/W	
Pu.Pro_L	0015h					
Pu.SPn_H	0016h	-19999~99999	PV SPAN	0	R/W	
Pu.SPn_L	0017h					
r S485_H	0018h	-19999~99999	PV showing from RS485 command(data)	0	R/W	
r S485_L	0019h					
Ao.LS_H	001Ah	-19999~99999	Analogue Output Low Scale	0	R/W	
Ao.LS_L	001Bh					
Ao.HS_H	001Ch	-19999~99999	Analogue Output High Scale	99999	R/W	
Ao.HS_L	001Dh					
RELAY STATUS	001Eh	0~1	RELAY STATUS **bit0~bit3:**relay1~relay4; **0**=Relay off **1**=Relay on		R/W	
ECI STATUS	001Fh	0~1	ECI STATUS **bit0~bit2:**ECI.1~ECI.3; **0**=untriged **1**:triged		R	
SYSTEM STATUS	0020h		SYSTEM STATUS **bit0**=1 EEP fail; **bit1**=1 Input calibration fail; **bit2**=1 Input calibration NG; **bit3**=1 Analogue Output calibration fail; **bit4**=1 Analogue Output calibration NG		R	
n.r St	0021h	0~1	Reset Maximum & Minimum Value	0	R/W	

			0:No **1:**Yes			
A.tYP	0022h	0~5	**The address is for CS2-PR only** Analogue Input Type **0:**0~10V **1:**0~5V **2:**1~5V **3:**0~20mA **4:**4~20mA **5:**0~10mA	4	R/W	
A.Lo	0023h	0.00~100.00%	Input Low	0.00%	R/W	
A.Hi	0024h	0.00~100.00%	Input High	100.00%	R/W	
Pu.dP	0025h	0~4	PV Decimal Point **0:** 00000 **1:** 0000.0 **2:** 000.00 **3:** 00.000 **4:** 0.0000	0	R/W	
P.SrSt	0026h	0~3	The clear of PV_ZERO and PV_SPAN **0:** None **1:** PV_ZERO **2:** PV_SPAN **3:** Both	0	R/W	
dSPLY	0027h	0~3	Display Mode **0:** PV **1:** Minimum Hold **2:** Maximum Hold **3:** RS485	0	R/W	
LoCUt	0028h	-19999~19999	Low Cut	0	R/W	
AuG	0029h	1~99	Average	5	R/W	
dF.iLt	002Ah	0~99	Digital Filter	0	R/W	
P.CodE	002Bh	0000~9999	Pass Code	1000	R/W	
F.LoCt	002Ch	0~3	Function Lock **0:** none **1:** User Level **2:** Engineer Level **3:** All	0	R/W	

【Relay Group】

Name	Address	Range	Explain	Initial	Write/Read	Note
ry.Sb	002Dh	0000~9999	Start Band of Relay	0	R/W	
ry.Sd	002Eh	0000~5999 (0.1second)	Start Delay Time of Relay	0	R/W	
ry 1nd	002Fh	0~5	Relay1 Energized Mode **0: oFF**(no use); **1: Lo**(Low Energized); **2: Hi**(High Energized) **3: Lo Hold**(Low Energized Hold) **4: High Hold**(High Energized Hold) **5: DO**(Digital Output);	2	R/W	
ry 1HY	0030h	0000~5000	Hysteresis of Relay1	0	R/W	
ry 1rd	0031h	0000~5999 (0.1second)	Energized Delay Time of Relay1	0	R/W	
ry 1Fd	0032h	0000~5999 (0.1second)	De-Energized Delay Time of Relay1	0	R/W	
ry2.nd	0033h	0~5	Relay2 Energized Mode **0: oFF**(no use); **1: Lo**(Low Energized); **2: Hi**(High Energized) **3: Lo Hold**(Low Energized Hold) **4: High Hold**(High Energized Hold) **5: DO**(Digital Output);	1	R/W	
ry2.HY	0034h	0000~5000	Hysteresis of Relay2	0	R/W	
ry2.rd	0035h	0000~5999 (0.1second)	Energized Delay Time of Relay2	0	R/W	
ry2.Fd	0036h	0000~5999 (0.1second)	De-Energized Delay Time of Relay2	0	R/W	
ry3.nd	0037h	0~5	Relay3 Energized Mode **0: oFF**(no use); **1: Lo**(Low Energized) **2: Hi**(High Energized) **3: Lo Hold**(Low Energized Hold)	0	R/W	

			4: High Hold(High Energized Hold) **5: DO**(Digital Output);			
r3.HY	0038h	0000~5000	Hysteresis of Relay3	0	R/W	
r3.rd	0039h	0000~5999 (0.1second)	Energized Delay Time of Relay3	0	R/W	
r3.Fd	003Ah	0000~5999 (0.1second)	De-Energized Delay Time of Relay3	0	R/W	
r4.md	003Bh	0~5	Relay4 Energized Mode **0: oFF**(no use); **1: Lo**(Low Energized); **2: Hi**(High Energized) **3: Lo Hold**(Low Energized Hold) **4: High Hold**(High Energized Hold) **5: DO**(Digital Output); **6: Go-1.2**(Go function compare with SP1 & SP2); **7: Go-2.3**(Go function compare with SP2 & SP3);	0	R/W	
r4.HY	003Ch	0000~5000	Hysteresis of Relay4	0	R/W	
r4.rd	003Dh	0000~5999 (0.1second)	Energized Delay Time of Relay4	0	R/W	
r4.Fd	003Eh	0000~5999 (0.1second)	De-Energized Delay Time of Relay4	0	R/W	
r.rSt	003Fh		Reset for Relay Energized Hold **0:** No **1:** Yes	0	R/W	
bAnK	0040h		**The addres is for CS2-VA、CS2-RS & CS2-PR** Bank selection **bit0**=1; Bank1 selected **bit1**=1; Bank2 selected **bit2**=1; Bank3 selected **bit0=bit1=bit2=0**; Bank0 selected	0	R/W	

【ECI Group】

Name	Address	Range	Explain	Initial	Write/Read	Note
EC.1	0041h	0~5	External Control Input 1 **0: nonE** (None); **1: rEL.PV**(Relative PV); **2: PV.HLd**(PV Hold); **3: M.rSt**(Reset for Maximum & Minimum); **4: rY.rSt**(Reset for Relay Hold); **5: di**(Digital Input);	1	R/W	
EC.2	0042h	0~5	External Control Input 1 **0: nonE** (None); **1: rEL.PV**(Relative PV); **2: PV.HLd**(PV Hold); **3: M.rSt**(Reset for Maximum & Minimum); **4: rY.rSt**(Reset for Relay Hold); **5: di**(Digital Input);	2	R/W	
EC.3	0043h	0~5	External Control Input 1 **0:** nonE (None); **1:** rEL.PV(Relative PV); **2:** PV.HLd(PV Hold); **3:** M.rSt(Reset for Maximum & Minimum); **4:** rY.rSt(Reset for Relay Hold); **5:** di(Digital Input);	3	R/W	
dEbnC	0044h	5~255	ECI debouncing 5~255 *8mSec	12	R/W	

【AO Group】

Name	Address	Range	Explain	Initial	Write/Read	Note
Ao.tYP	0045h	0~5	Analog Output Type	4	R/W	

			0: 0~10V **1:** 0~5V **2:**1~5V **3:** 0~20mA **4:** 4~20mA **5:** 0~10mA			
PSrSt	0046h	0~3	The clear of AO_ZERO and AO_SPAN **0:** None **1:** AO_ZERO **2:** AO_SPAN **3:** Both	0	R/W	
AoLnt	0047h	00.00%~110.00%	Analogue Output High Limit	110.00%	R/W	

【RS485 Group】						
Name	**Address**	**Range**	**Explain**	**Initial**	**Write/Read**	**Note**
AdrES	0048h	1~255	RS485 address	1	R/W	
bAUd	0049h	0~5	RS485 baud rate **0:** 1200 **1:** 2400 **2:** 4800 **3:** 9600 **4:**19200 **5:**38400	3	R/W	
Prity	004Ah	0~3	RS485 parity **0:** n-8-1 **1:** n-8-2, **2:** odd, **3:** even,	1	R/W	

※ Moving Average feature is not enlisted in the RS485 communication address table, to read or change the settings in the direct view instrument.