

**CS3-VA**  
**CS3-PR**  
**CS3-SG**  
**CS3-PM**  
**CS3-RS**

# **VOLTAGE / CURRENT METER RELAY** **DC SIGNAL (20mA/10V) INDICATORS** **STRAIN GAUGE / LOAD CELL INDICATORS** **POTENTIOMETER INDICATORS** **RESISTANCE (2 W) INDICATORS** **OPERATION MANUAL**

## ■ DESCRIPTIONS

For the various measuring requirement, the CS3 series' R&D is destined with high accuracy measurement, display, control and communication (Modbus RTU mode) in a miniature case(24x48mm) such as AC voltage/Current, DC process signal 0~10V/4~20mA(with square root function), Strain Gauge/Load Cell, Potentiometer, Resistance and so on.

The CS3 series designed with 1 external control input (ECI) in standard version and the extra optional with 2 Relay, 1 Analogue or 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.

## ■ FEATURES

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



### [ CS3-VA VOLT / CURRENT METER RELAY ]

- Measuring DC / AC Voltage 0~300V or Current 0~2A ;
- Accuracy: AC:  $\pm 0.1\%$  f.s.; DC:  $\pm 0.04\%$  f.s.; Display Range: -19999~+29999

### [ CS3-PR DC SIGNAL INDICATOR ]

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

### [ CS3-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:  $\pm 0.04\%$  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

### [ CS3-PM POTENTIOMETER INDICATOR ]

- Measuring Potentiometer 0~50 $\Omega$ /~2.0K $\Omega$ ; 0~2.0K $\Omega$ /~100.0K $\Omega$  (3 wires)
- Accuracy:  $\pm 0.04\%$  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

### [ CS3-RS RESISTANCE INDICATOR ]

- Measuring Resistance 0~200.00 $\Omega$ /2000.0 $\Omega$ /20.000K $\Omega$ /200.00K $\Omega$  (2 wires)
- Accuracy:  $\pm 0.04\%$  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

## APPLICATIONS

### Models

- CS3-VA Switch Boards / Motor Control / Machinery / Testing Equipments
- CS3-PR Machinery Control / Process Control Systems for pressure, level,.....sensing transducers Automation System / Testing Equipments
- CS3-SG Weighting indication, control and Alarm / Machinery Control / Tension and others test equipment
- CS3-PM Position indication, control and Alarm / Machinery Control / Angle of Valve Control / Tap of transformer indication
- CS3-RS Resistance test as like as coil of transformer or motor indication

### Functions

- Safety & Protection** Hi/Lo alarm and latch (H.HLd / L.HLd), Analogue output limited (P.oL.nE)
- Testing & Measuring** Maximum/Minimum hold (H.R.Hd / H.L.Hd), PV hold (P.u.HLd), Relative PV/Tare/ $\Delta$ PV (F.E.L.P.U), Field calibration with sensor
- Remote Monitoring & Control** RS485 communication port, Remote display (F.5485), Remote monitoring (d.i) and Remote control for Relay energized (d.o)

## FUNCTION DEFINE

### Character Symbol

A	b	C	d	E	F	G	H	i	J	K	L	M
R	b	C	d	E	F	G	H	i	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	v	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 type [R.d.Y.P] for CS3-PR

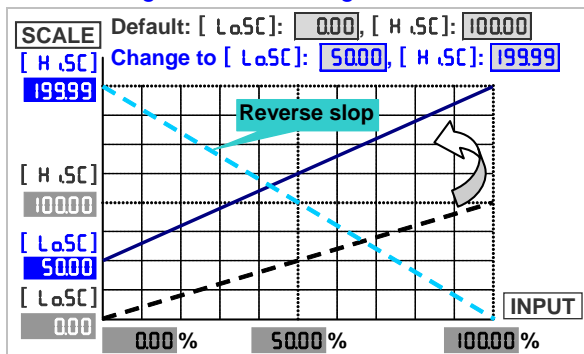
Programming range: Voltage: 0~10V/0~5V/1~5V;  
Current: 4~20mA/0~20mA/0~10mA

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 [R.d.Y.P] to co-ordinate with the input range and wiring terminals.

#### Scaling Function [L.o.S.C] & [H.S.C]

Programming range: -19999~+29999counts

Setting the [L.o.S.C] (Low scale) and [H.S.C] (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.

### 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 [n.r.S.E] in [user level]. And it'll record new maximum and minimum value immediately after reset.

#### Display function [d.S.P.L.Y] for display screen

The [d.S.P.L.Y] function in [INPUt GRoUP] can be set to show present value [P.U], Maximum Hold [H.R.Hd] or Minimum Hold [H.L.Hd] or Remote display by RS485 command F.5485. Please refer to following for detail.

#### Present value [P.U]

Display screen will show the value that is relative to input and [L.o.S.C] (Low scale) and [H.S.C] (High scale) setting.

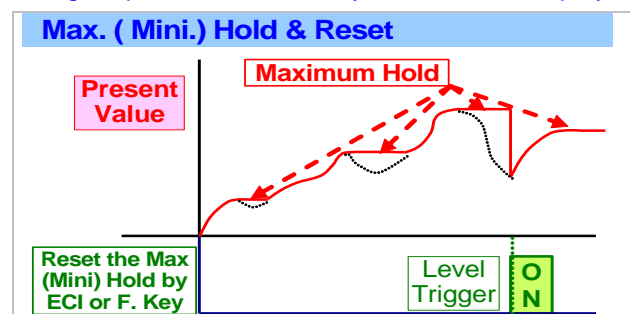
#### Maxi. Hold [H.R.Hd] or Mini.m Hold [H.L.Hd] for PV

When the [d.S.P.L.Y] function in [INPUt GRoUP] set to be [H.R.Hd] (Max. Hold) or [H.L.Hd] (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:

- By front key in [user level], Up/Down Key function set.
- E.C.I terminals closed.

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

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



● **Remote display [5485] 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 [5485], 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.

■ **Square root function for CS3-PR**

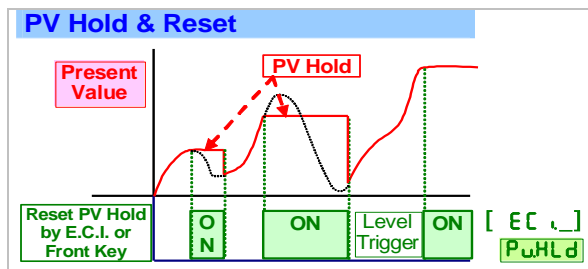
The function can be set [no] or [YES] in [INPUT GROUP] to measure the signal from differential pressure flow-meter.

The formula =  $\sqrt{(Pv/HS)} \times HS$

■ **PV(Present value) Hold [P\_uHLd]**

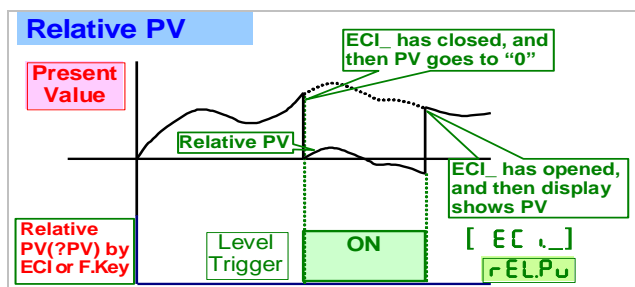
When the [ECI] (External Control input) set to be [P\_uHLd] (PV Hold) function in [ECI GROUP], that display will be hold & kept, and the relative green LED will be bright, when the ECI terminals been closed or pressed Up/Down Key function been set (the 1<sup>st</sup> times), until the ECI is to be opened or press Up/Down Key again( the 2<sup>nd</sup> 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( $\Delta$ PV) or Tare [REL.PV]**

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

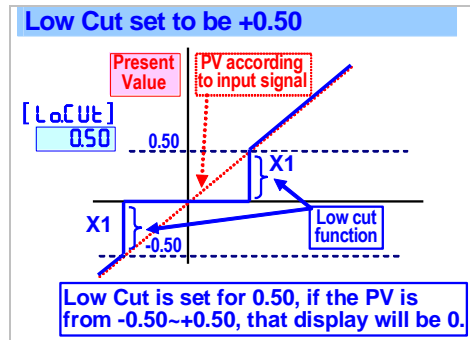


■ **Low Cut [LoCut]**

Settable range from -19999~+29999 digits.

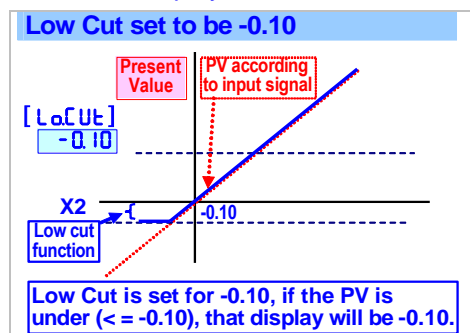
The users can set the value range.

- 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  
 $PV < | \text{Setting value (X1)} |$ , 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.



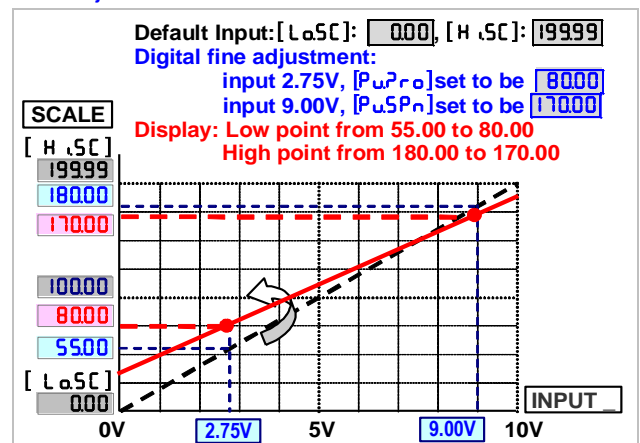
■ **Digital Fine Adjustment [P\_uPrO] & [P\_uSPn]**

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 [P\_uPrO] & [P\_uSPn] are not only in zero & span of PV, but also randomly lower point in function [P\_uPrO] & randomly higher point in function [P\_uSPn]. The meter will be auto-linearization for full scale.

The adjustment can be cleared in function [P\_SCLr].



\*Please make sure that the [P\_uPrO] point must be less than [P\_uSPn] 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,

## Reading Stable Functions

### Average Display update [ $R_{UD}$ ]

Settable range: 1~99 times;

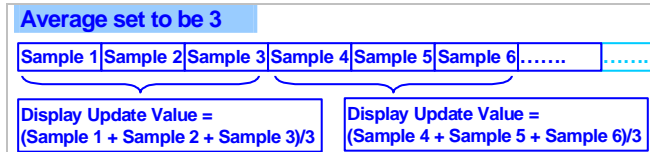
Jittery Display caused by the noise or unstable signal. User can set the times to average the readings, and to get smoothly display.

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 [  $R_{UD}$  ](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.



### Moving Average update [ $M_{RUD}$ ]

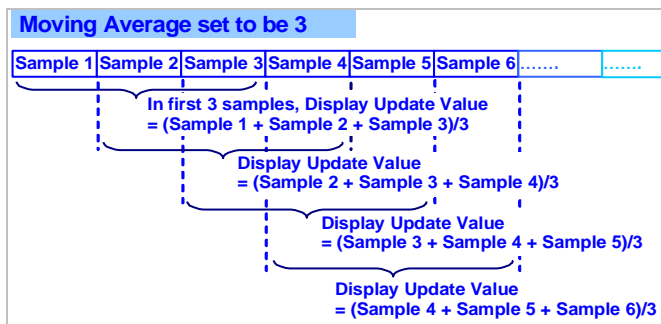
Settable range: 0(no function)/1~10 times;

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 1<sup>st</sup> updated display value will be slower.

The meter's sampling is 15cycle/sec. If the [  $M_{RUD}$  ](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.

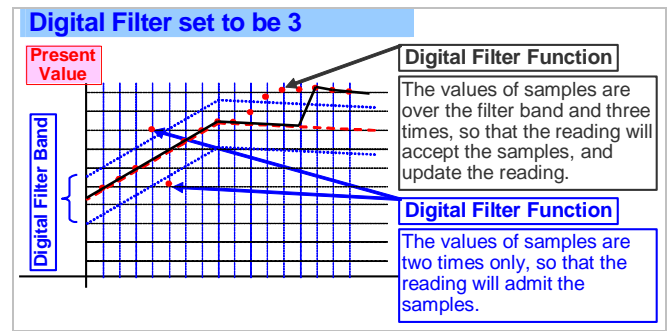


### Digital filter [ $dF_{ILT}$ ]

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.

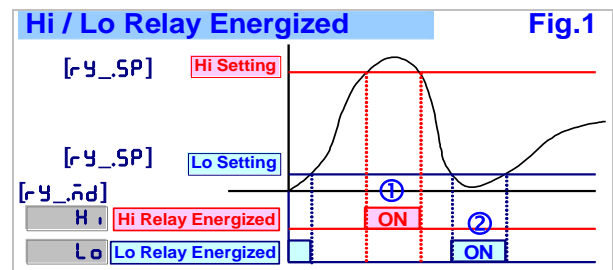


## Relay Functions

CS3 series offer the 2 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 / Hi.HLd / Lo.HLd / DO

- **Hi(Fig.1-①) (  $H_{Hi}$  )**: Relay will be energized, when PV > Set Point
- **Lo(Fig.1-②) (  $L_{Lo}$  )**: Relay will be energized, when PV < Set Point

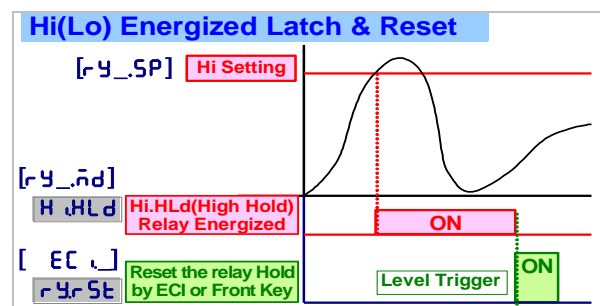


### Hi alarm & latch / Lo alarm & latch ( $H_{HLd}$ / $L_{oHLd}$ )

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 [  $r_{y\_St}$  ] is closed.



● **DO(Digital Output) ([d\_o])**

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 CS3 series with RS485 function.

If the [r\_y\_n\_d] had been set [d\_o], the relay will be energized by RS485 command directly, but no longer to compare with set-point.

■ **Start delay band [r\_45b] and Start delay time [r\_45d]**

The functions have Been designed for,

1. To avoid starting current of inductive motor (6 times of rated current) with alarm.
2. If the [r\_y\_n\_d] relay energized mode had been set to be [Lo] (Lo) or [LoHLd] (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.

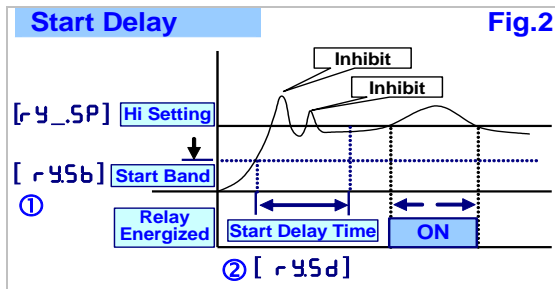
● **Start band [r\_45b] (Fig.2-①):**

Settable range from 0~9999 Digits

● **Start delay time [r\_45d] (Fig.2-②):**

Settable range from

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



■ **Hysteresis [r\_y\_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 [r\_y\_r\_d] (Fig.3-②)**

Settable range from

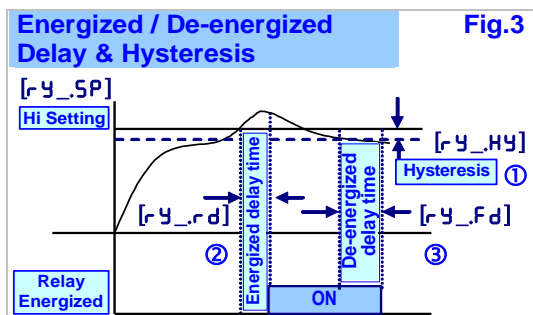
0.0(second)~9(minutes)59.9(seconds);

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 [r\_y\_f\_d] (Fig.3-③)**

Settable range from

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



■ **1 External Control Inputs(ECI)**

The one external control input is programmable to perform specific meter control or display functions. The E.C.I. has been designed in level trigger actions. Please pay attention, the ECI input will be disable while UP or Down Key has been set to be "YES". The ECI terminal input was designed by level trigger. Please refer to description as below,

■ **Relative PV(ΔPV) or Tare (r\_EL.P\_u)**

The [EC\_ ] can be set to the r\_EL.P\_u (Relative PV) function. When the ECI is closed, the reading will show the differential value with PV. Please refer to Display function section previously.

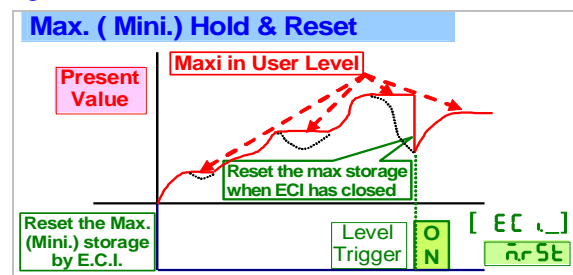
■ **PV(Present value) Hold (P\_uHL\_d)**

The [EC\_ ] can be set to the P\_uHL\_d (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(̄r\_5t) for PV**

The [EC\_ ] function can be set to the ̄r\_5t function to reset the maximum and minimum value by terminal of ECI.

Especially, the [dSP\_LY] function in [nPUt Gr oUP] can be set to the ̄r\_5t or ̄r\_5t 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.

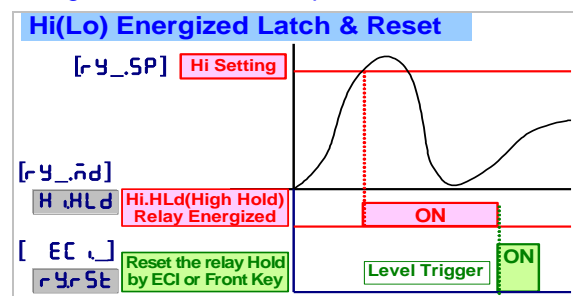


■ **DI(Digital Input) ([d\_i])**

The [EC\_ ] can be set to the [d\_i] (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 (r\_4r\_5t)**

If the relay energized mode has been set to be H\_uHL\_d (High energized & latch), and the [EC\_ ] set to be r\_4r\_5t (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.



## ■ 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 ([R<sub>oL</sub>Y<sub>P</sub>])

- **Voltage output specified, Programming :**  
[0-10](0~10V) / [0-5](0~5V) / [1-5](1~5V)
- **Current output specified Programming :**  
[4-20](4~20mA) / [0-20](0~20mA) / [0-10](0~10mA)

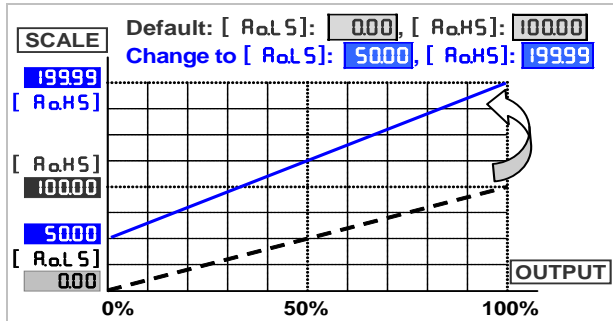
### ■ Output signal corresponds to display value

#### ● Low Output corresponds to Low display value

[R<sub>oL</sub>S] : Settable range: -19999~+29999;  
Setting the Low Display value versus Low output range (as like as 4mA in [4-20]).

#### ● High Output corresponds to High display value

[R<sub>oH</sub>S] : Settable range: -19999~+29999;  
Setting the High Display value versus High output range (as like as 20mA in [4-20]).



\*The interval between [R<sub>oH</sub>S] and [R<sub>oL</sub>S] 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 [R<sub>oP</sub>r<sub>o</sub>]:

Settable range: -38011~27524;

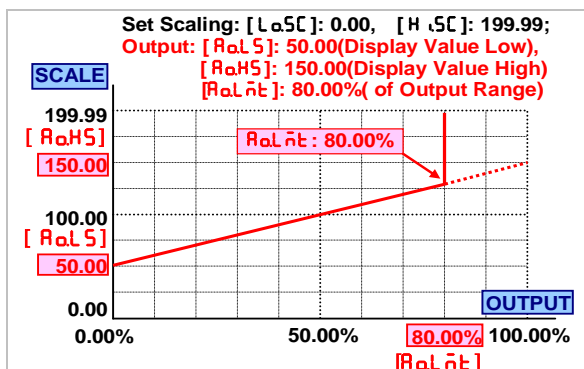
#### ● Fine Span Adjustment for Analogue Output [R<sub>o</sub>S<sub>P</sub>n]:

Settable range: -38011~27524;

#### ■ High Limited for Analog Output [R<sub>oL</sub>n<sub>t</sub>]

Settable range: 0.00~110.00% of High output;

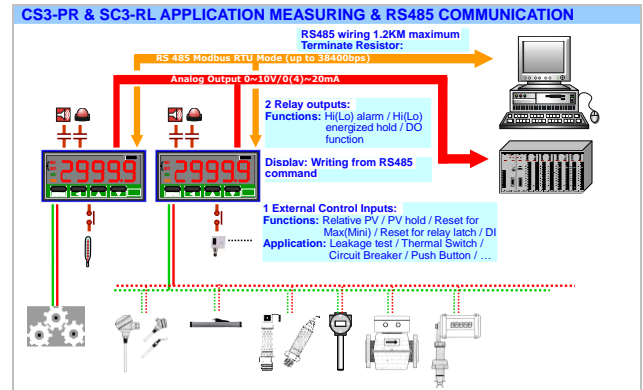
User can set the output in high limit to avoid destroying the receiver or protection system.



## ■ RS 485 Communication

CS3 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.

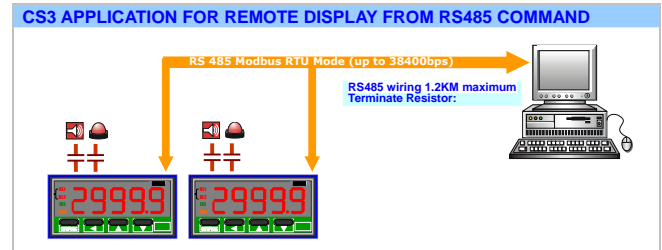
- **Protocol:** Modbus RTU Mode
- **Baud Rate [b<sub>R</sub>U<sub>d</sub>]:**  
Programmable 1200/2400/4800/ 9600/ 19200/ 38400
- **Data Bits:** 8 bits
- **Stop Bits:** Programmable 1 bit or 2 bits
- **Parity [P<sub>r</sub> ,E<sub>y</sub>]:** Programmable Even / Odd / None
- **Device Number [R<sub>d</sub>r<sub>E</sub>S]:** Settable 1~255



### ■ Remote Display function [r<sub>S</sub>485]

CS3 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.



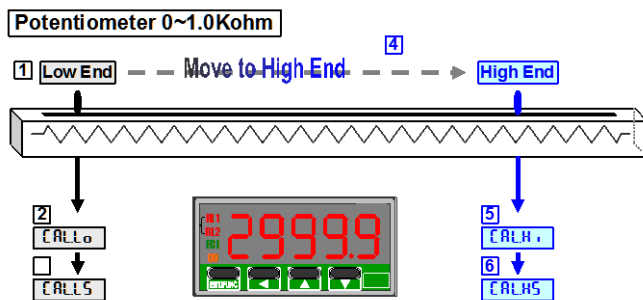
The data(number) will be same as PV that will compare with set-point, analogue output and ECI functions so the data could control analogue output, relay energized and so on.

## Field Calibration (for CS3-SG / CS3-PM / CS3-RS)

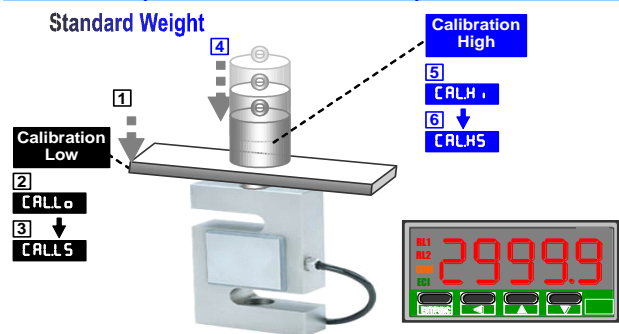
In past time, the engineers have to take a lot of time to adjust and calibrate meters or converters which the purpose of co-ordinating with zero and span of machinery structure for the Load Cell or Potentiometer measuring. Now, our CS3-SG, CS3-PM and CS3-RS with innovation functions against above to make the engineer operated easily and smoothly that it's called "Field Calibration". The procedures are described as below;

- Enter the right pass code [F.CalE] 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 [ENT]Key to read the signal low of sensing device.
- Waiting for above reading stable (around 3~5seconds), press [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.].
- 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.] page, waiting for the value till stable, then pressed [ENT]Key to to read the signal high of sensing device.
- Waiting for above reading stable (around 3~5seconds), Press [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 [CSEL] to select [FELd].
- [CSEL](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.Sc](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 [FELd], please double check the [LoSc](step A-4) and [H.Sc](A-5) whether are corrected or not?

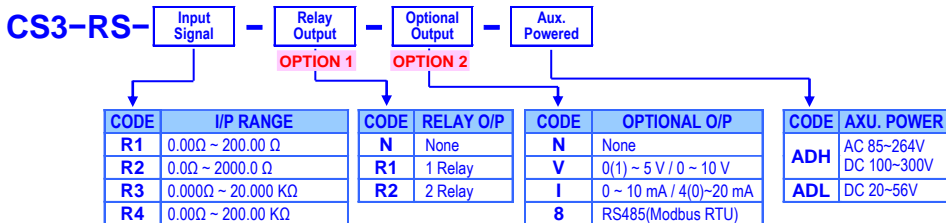
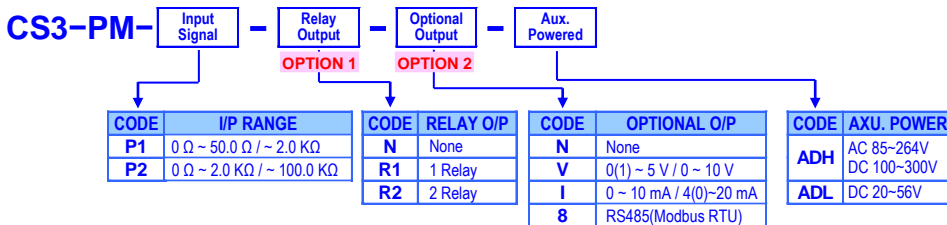
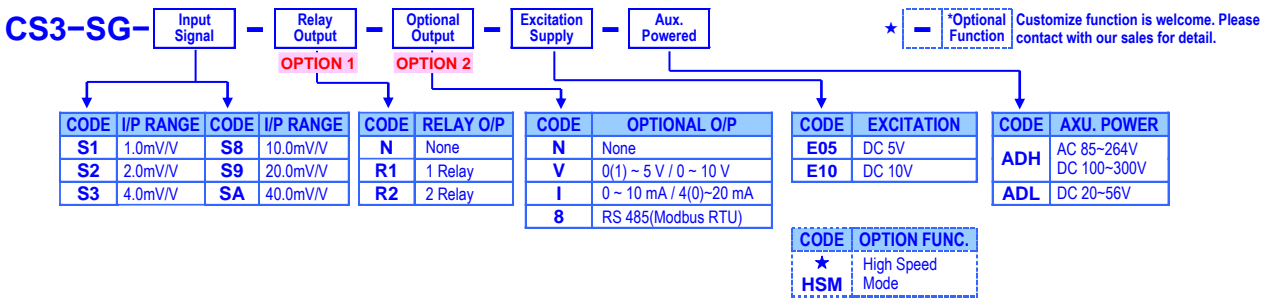
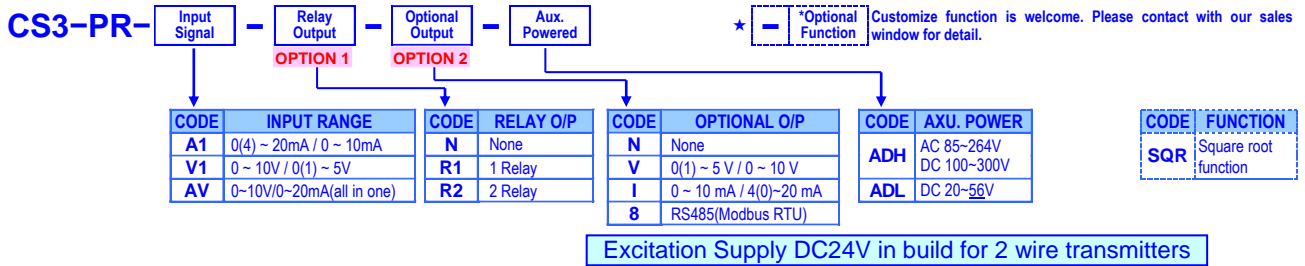
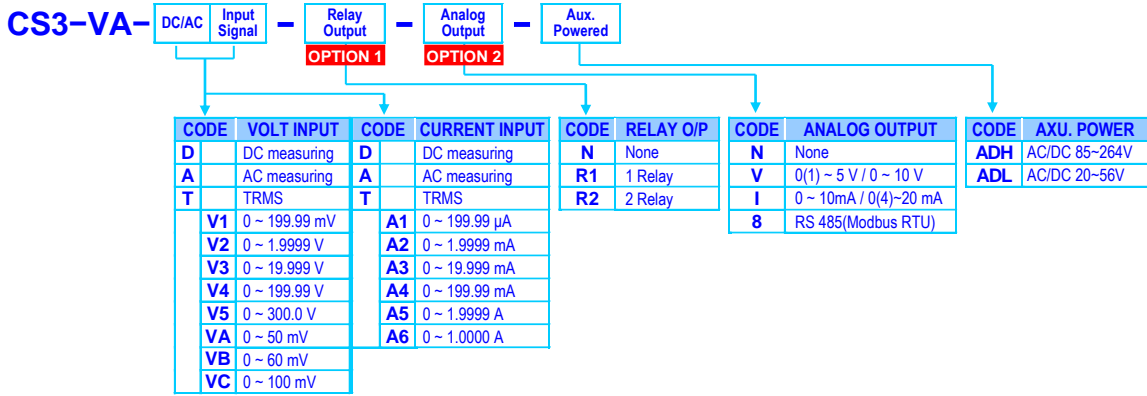
Please according to the numbers to do the field calibration (1⇒2⇒3⇒4⇒5⇒6)



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



# ORDERING INFORMATION



# INSTALLATION

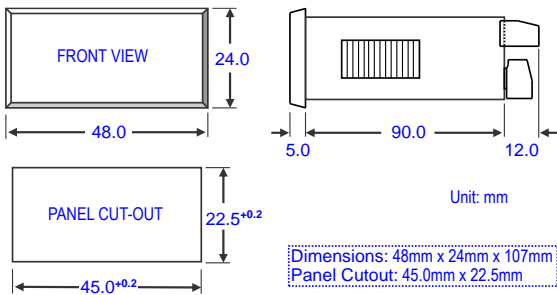
Please check the specification, wire diagrams and functions on the label of the meter before installation.



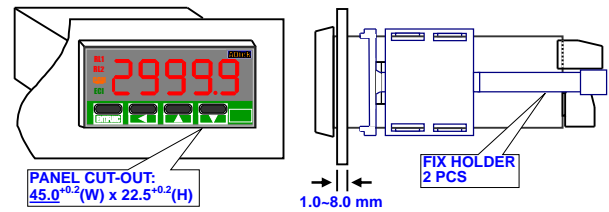
MODEL	: CS3-VA-DV3-R2-I-ADH
INPUT	: 0~19.999 Vdc
DISPLAY	: 0.0~19.999 Vdc
OUTPUT1	: Relay *2
OUTPUT2	: 4~20mA
SOURCE	: AC 85~264VDC 100~300V
SER.NO.	: 1803090019-6368

MODEL	: CS3-VA-DV3-R2-I-ADH
INPUT	: 0~19.999 Vdc
DISPLAY	: 0.0~19.999 Vdc
OUTPUT1	: Relay *2
OUTPUT2	: 4~20mA
SOURCE	: AC 85~264V/DC 100~300V

## Dimensions & Panel Cut Out

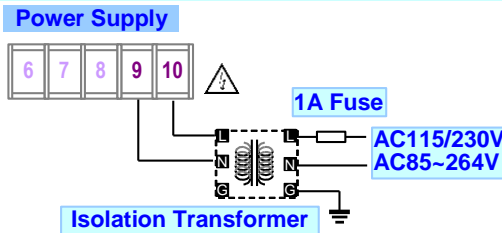


## Installation



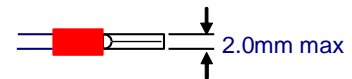
## Wiring Diagram

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.



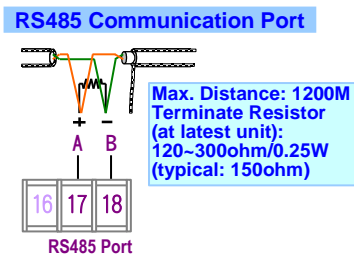
### Connector

5A 300Vac,  
M2.6, 0.5~1.3mm<sup>2</sup> (22~16AWG),  
Max torque: 5Kg-cm  
Please use cord end terminal.

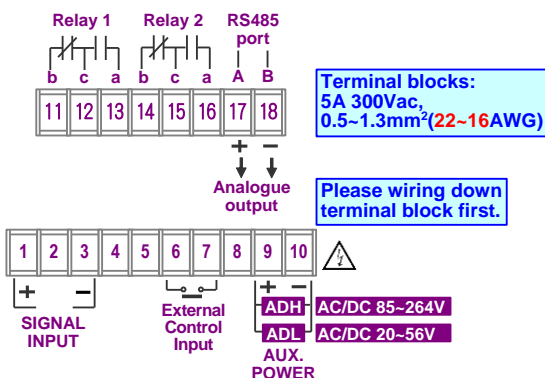


Please set the torque of automotive screwdriver to match the limited of terminals.

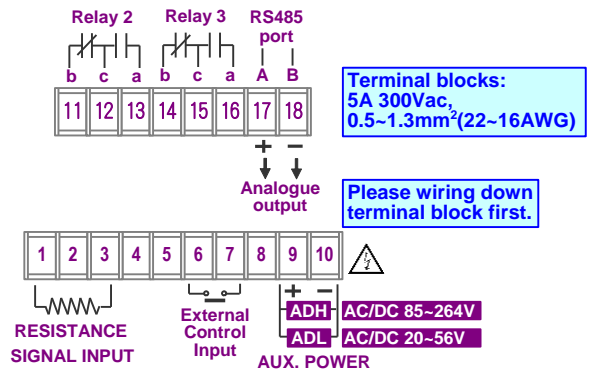
For input, RS485 and ECI wiring, Herein recommended using twin wire with shielding.



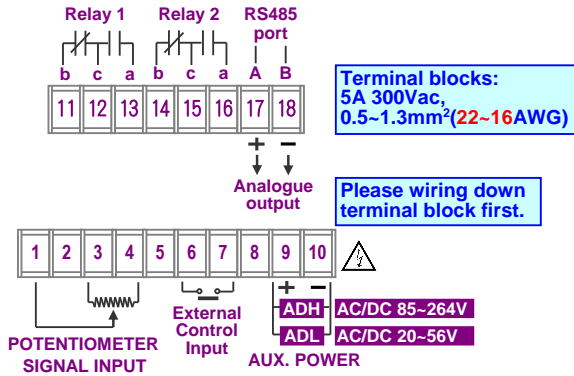
## [CS3-VA Voltage / Current Meter Relay]



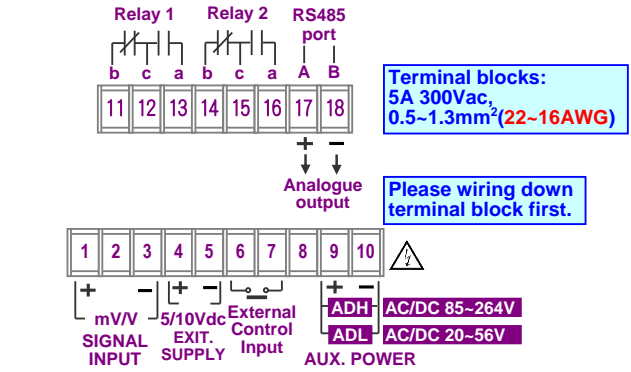
## [CS3-RS Resistance Indicator]



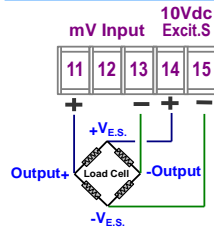
### [CS3-PM Potentiometer Indicator]



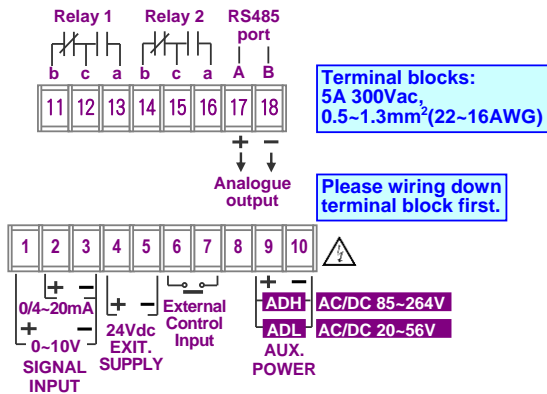
### [CS3-SG Strain Gauge / Load Cell Indicator]



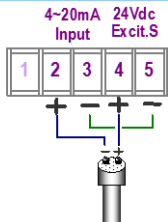
#### Load Cell connection



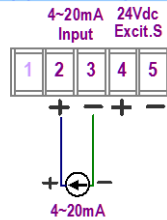
### [CS3-PR DC Process (10V/20mA) Indicator]



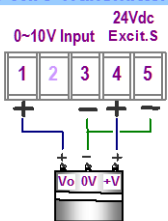
#### 2 wire Transmitter connection



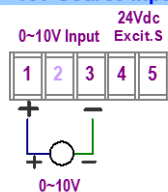
#### 4(0)~20mA Input connection



#### 3 Wire Transmitter

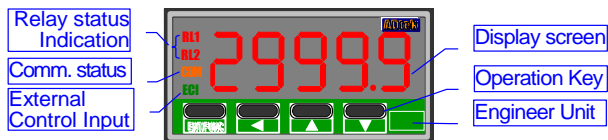


#### 0~10V Source Input connection



# OPERATIONS

## Front Panel



### Numeric Screens

5 digits, 0.4"(10.0mm)H red high-brightness LED for 4 2/3 digital present values.

### I/O Status Indicators

- **Relay Energized:** 2 square red LED  
**RL1** display when Relay 1 has been energized;  
**RL2** display when Relay 2 has been energized;
- **External Control Input Energized:** 1 square green LED  
**ECI1** display when E.C.I. 1 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.

### 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      **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	mmH <sub>2</sub> O	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(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( U5Er):** 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( RLL):** All lock. User can access to all level for checking but can not setting.
- **Front Key Function [E. I=UP]**
  - The Key can be set to be the same function as the setting of [EC ↓](ECI).  
 Ex. The [EC ↓] set to be **Pu.HLd** and the function [E. I=UP] set to be **YES** in [ EC ↓ GROUP]. When user presses Key, the PV will hold as like as terminals of ECI1 close.  
**If the front key function has been set, the terminal input for ECI will be disabling.**

## ■ ERROR MESSAGE

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

**SELF-DIAGNOSIS AND ERROR CODE:**

DISPLAY	DESCRIPTION	REMARK
ouFL	Display is positive-overflow (Signal is over display range)	(Please check the input signal)
-ouFL	Display is negative-overflow (Signal is under display range)	(Please check the input signal)
ouFL	ADC is positive-overflow (Signal is higher than input 120%)	(Please check the input signal)
-ouFL	ADC is negative-overflow (Signal is lower than input -120%)	(Please check the input signal)
EEP → FA.iL	EEPROM occurs error	(Please send back to manufactory for repaired)
A.i.nG ← Pu	Didn't execute the calibrate of Input Signal	(Please process Calibrating Input Signal)
A.i.C ← FA.iL	Input signal calibrated error	(Please check Calibrating Input Signal)
A.o.nG ← Pu	Didn't execute the calibrate of output Signal	(Please process Calibrating Output Signal)
A.o.C ← FA.iL	Output Signal calibrated error	(Please check Calibrating Output Signal)

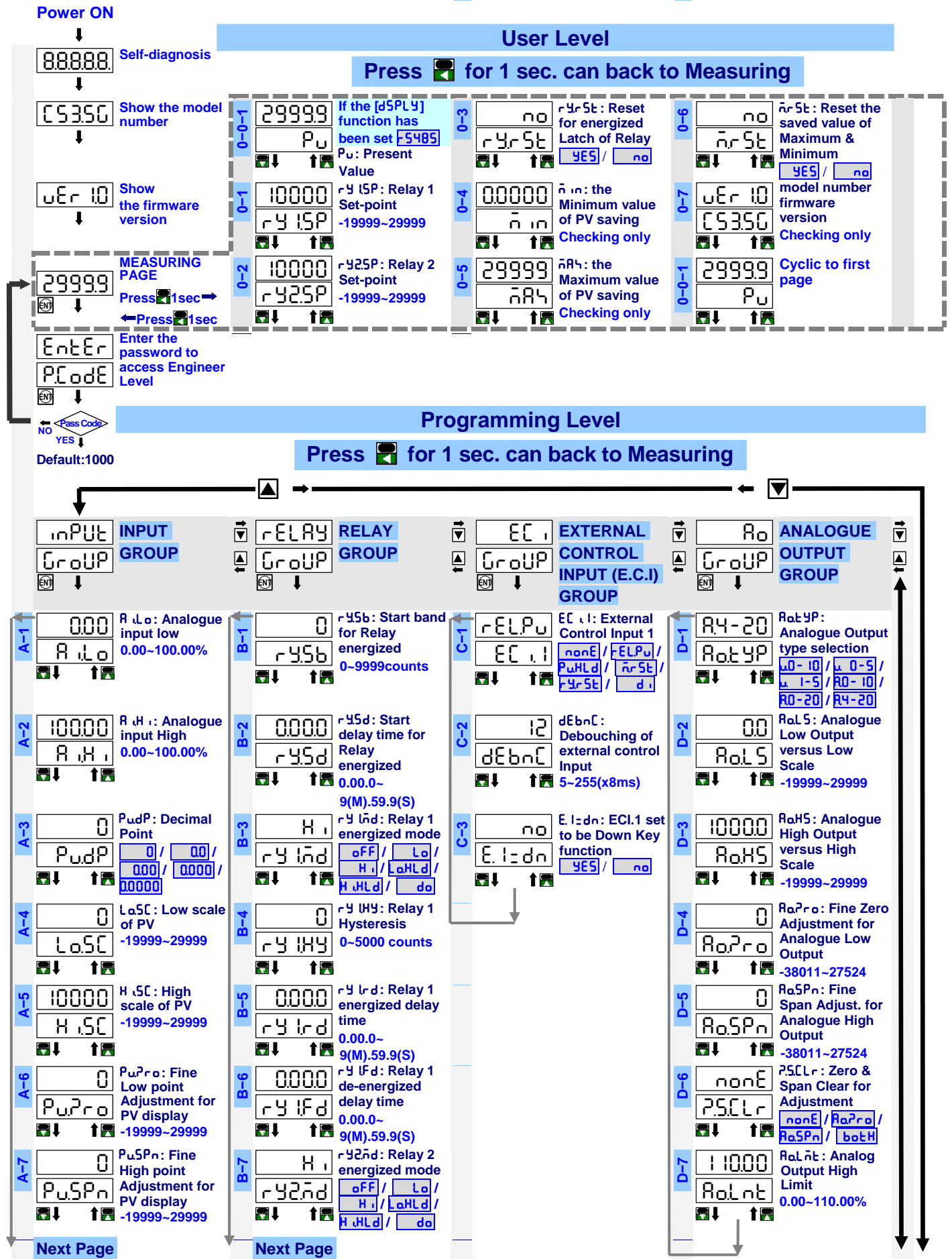
## ■ OPERATING KEY:

\*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 . In any page, press key means "enter" or "confirm setting", and press key means "escape()" 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
(= ) <b>Enter/Fun key</b>	(1) In any page, press  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
(= ) <b>Shift key</b>	(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.
(= ) <b>Up key</b>	(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
(= ) <b>Down key</b>	(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 DIAGRAM (The detail description of operation, please refer to operating manual.)

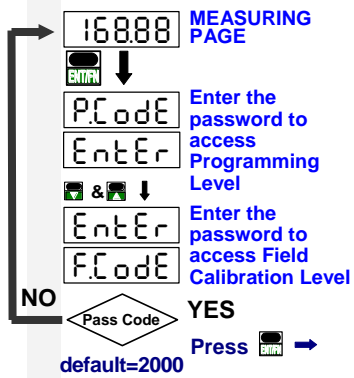


A-8	nonE P5CLr	P5CLr: Clear Fine Zero & Span Adjustment for PV display nonE / PuPrd / PuSPn / both	B-8	0 rY2HY	rY2HY: Relay 2 Hysteresis 0~5000 counts
A-9	Pu dSPLY	dSPLY: Display Function Pu / rYnHd / rYnHd / r5485	B-9	0000 rY2rd	rY2rd: Relay 2 energized delay time 0.00.0~9(M).59.9(S)
A-10	0 LoCUT	LoCUT: Low Cut Function -19999~29999	B-10	0000 rY2Fd	rY2Fd: Relay 2 de-energized delay time 0.00.0~9(M).59.9(S)
A-11	S RUG	RUG: Average update for PV 1(None)~99 times			
A-12	1 rRUG	rRUG: Moving Average update for PV 1(None)~10 times			
A-13	0 dFILT	dFILT: Digital filter 0(None)/1~99 times			
A-14	0 PCode	PCode: Pass Code for enter Engineer Level 0000~9999			
A-15	nonE FLoCK	FLoCK: Function Level Lock nonE / USEr / EnG / ALL			

	r5485 GROUP	RS485 GROUP
E-1	1 AdRES	AdRES: Device number of the meter 1~255
E-2	9600 bAUD	bAUD: Baud rate 1200 / 2400 / 4800 / 9600 / 19200 / 38400
E-3	r5tb2 PrTY	PrTY: Parity r5tb1 / r5tb2 / odd / EvEn

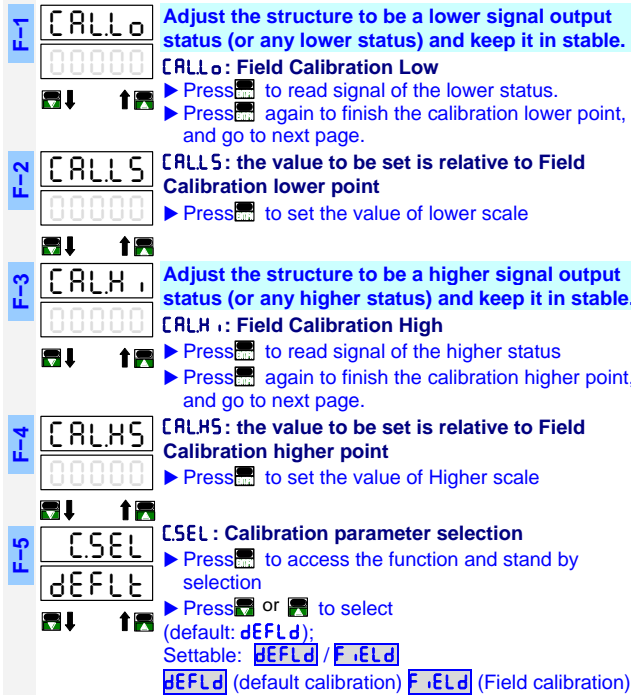
▶ Please refer to operating manual for detail description

## ■ FIELD CALIBRATION(For CS3-SG/CS3-PM/CS3-RS only)



Once the user select field calibration, the [LoSC](step A-2) and [HiSC](A-3) will be instead of [CALLS] and [CALHS], and can not be change. 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-2) and [HiSC](A-3) are correct after selection the DEFLE or F.ELd



# OPERATING STEPS:

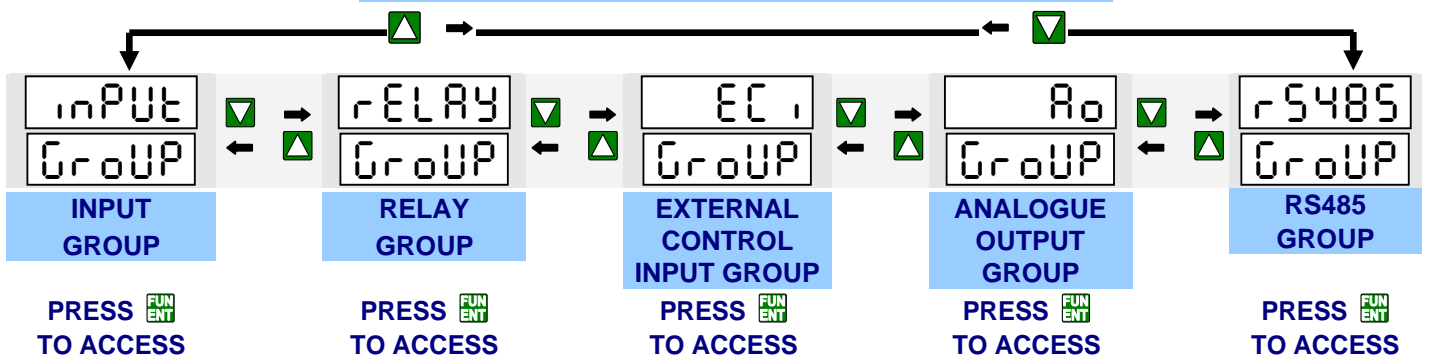
## User Level

INDEX	FUNCTION DESCRIPTION	PARAMETERS & SETTING	SET
POWER ON		Please check the specification and wiring diagrams firstly.	
88888	Self-diagnosis (LED All bright)		
↓			
C53Pr	Model		
↓			
uEr 10	Firmware version		
↓			
16888	Measuring Page		
Press  for 1 second return to Measuring Page			
Pu	This page will be shown out when [d5PLy](step A-9) function has not set to be Pu.		
16888	Pu(Pv): Present Value;		
0-0-1			
rY 1SP	rY 1SP (rY1.SP):Relay 1 Set-point	Settable range: -19999~+29999	
10000	Please confirm the energized mode of relay 1 before setting.	Shift Up Down Enter	
10000			
0-1			
rY25P	rY25P (rY2.SP):Relay 2 Set-point	Settable range: -19999~+29999	
10000	Please confirm the energized mode of relay 2 before setting.	Shift Up Down Enter	
10000			
0-2			
rY.rSt	rY.rSt (rY.rSt): Reset for energizing latch of Relay;	Programmable: <input type="checkbox"/> YES / <input type="checkbox"/> no	
no	If the [rY_n] (step B-3/7/11/15) set to be <input type="checkbox"/> HLd or <input type="checkbox"/> oHLd, and the present value(PV) reach to the condition of relay energizing that the relay will be energized and latching.	YES(Yes): reset the relay latching.	
no	At mean time, user can reset the relay latching in here.	no(No): abort to reset the relay latching.	
YES		Up Down Enter	
0-3		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,	
n in	n in (Min): the Minimum value of PV saving;	Review only	
0.0	The meter will save the minimum of PV during power on, until reset in [n.rSt](step 0-8). It will save newest minimum PV after reset.		
0-4			
nR4	nR4 (Max): the Maximum value of PV saving;	Review only	
29999	The meter will save the maximum of PV during power on, until reset in [n.rSt](step 0-8). It will save newest maximum PV after reset.		
0-5			
NEXT PAGE			

0-6		<b>M.rSt (M.rSt): reset the saved value of Maximum &amp; Minimum;</b> The values of maximum and minimum can be reset in here. It will save newest maximum and minimum after reset.	<b>Programmable:</b> <input checked="" type="checkbox"/> YES / <input type="checkbox"/> no YES(Yes): to reset the saved value of maximum and minimum. no(No): abort to reset the saved values of maximum and minimum.
0-7		<b>Model of the meters</b> CS3uA (CS3-VA): Volt/Current CS3Pr (CS3-PR): DC 0~10V / 4~20mA CS3SG (CS3-SG): Strain Gauge / Load Cell CS3Pā (CS3-PM): Potentiometer CS3rS (CS3-RS): Resistance uEr 10 (Ver 1.0): Firmware version	<b>Review only</b> It will be announced in our website <a href="http://www.adtek.com.tw">www.adtek.com.tw</a> , when it had been versions updated.
0-0-1		<b>Return to the first page</b> Press  for 1 second to back to Measuring Page in any page.	

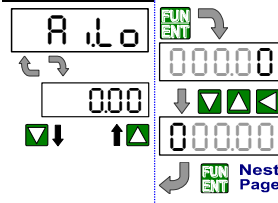
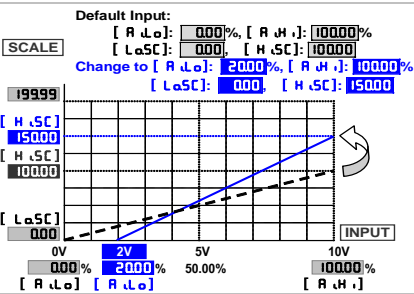
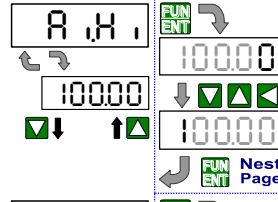
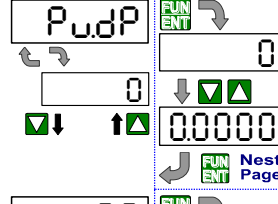
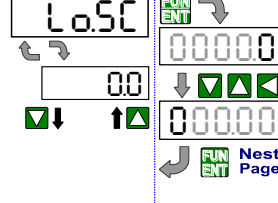
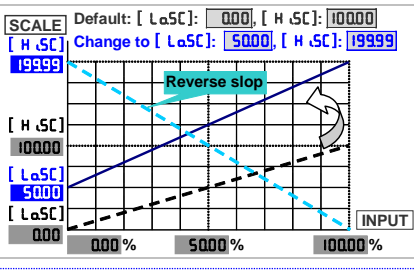
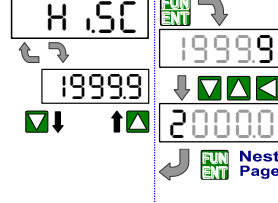
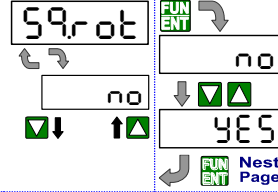
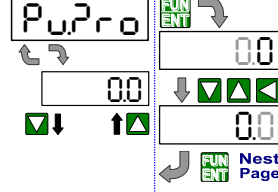
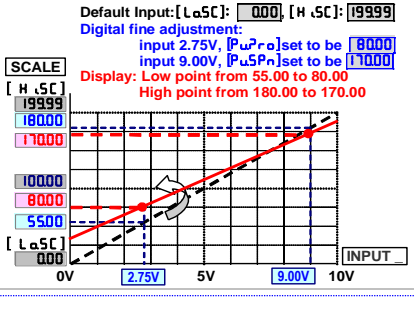
### ■ Programming Level

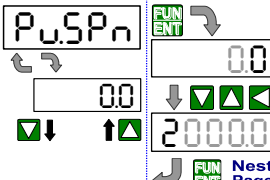
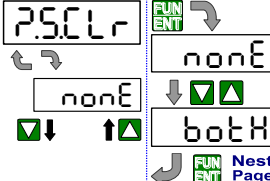
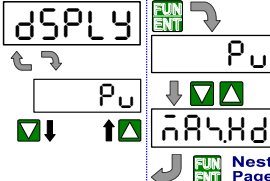
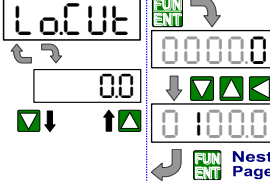
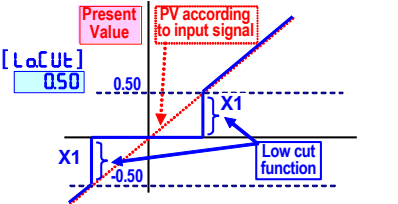
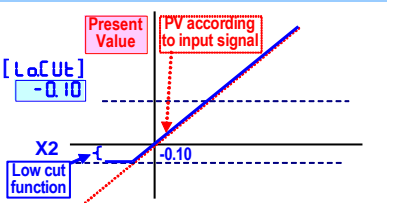
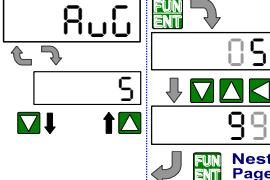
INDEX	FUNCTION DESCRIPTION	PARAMETERS & SETTING	SET
16888	MEASURING PAGE		
	<b>Enter the pass code to access Programming Level</b>	If user wants to change the pass code, please go to step A-14 to set. Please remind the new pass code.	
	<b>Enter the pass code to access programming level.</b> Press  for 1 second to back Measuring Page		

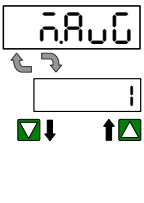
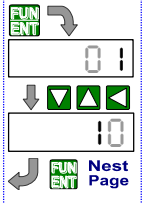

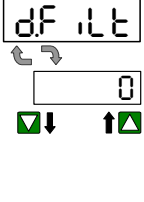
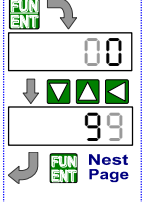

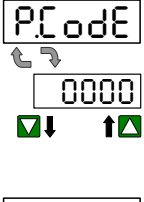
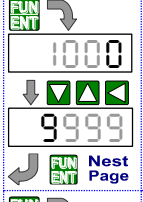

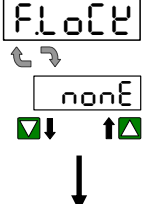
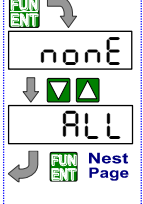



### ■ Input Group

INDEX	FUNCTION DESCRIPTION	PARAMETERS & SETTING	SET
	INPUT GROUP INDEX PAGE	In following pages, press  for 1 second to back INPUT GROUP INDEX PAGE.	
	<b>The function is only for CS3-PR</b> <b>A.tYP (Ai.tYP): Analog input type &amp; range selection</b> 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.	<b>Programmable:</b> <input type="checkbox"/> u0-10(0~10V) / <input type="checkbox"/> u0-5(0~5V) / <input type="checkbox"/> u1-5(1~5V) / <input type="checkbox"/> R0-10(0~10mA) / <input type="checkbox"/> R0-20(0~20mA) / <input type="checkbox"/> R4-20(4~20mA) <input checked="" type="checkbox"/> Up <input checked="" type="checkbox"/> Down    Enter	

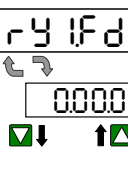
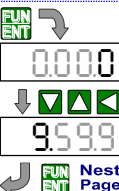
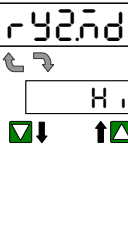

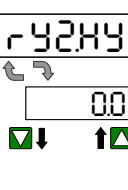
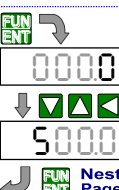
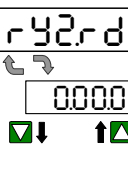
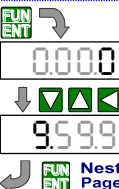
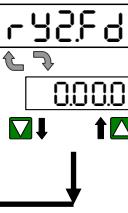
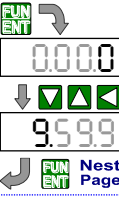
<p>A-1</p> 	<p><b>R.Lo (Ai.Lo): Analogue input low</b>  Please refer to the explanations in <b>INPUT &amp; SCALING</b> of <b>FUNCTION DEFINE</b>(page 2/38).</p>	<p><b>Settable range: 0.00%~100.00%</b>  <b>◀Shift ▲Up ▼Down ▶Enter</b></p> 
<p>A-2</p> 	<p><b>R.Hi (Ai.Hi): Analogue input high</b>  Please refer to the explanations in <b>INPUT &amp; SCALING</b> of <b>FUNCTION DEFINE</b>(page 2/38).</p>	<p><b>Settable range: 0.00%~100.00%</b>  <b>◀Shift ▲Up ▼Down ▶Enter</b></p>
<p>A-3</p> 	<p><b>PvdP (Pv.dP): Decimal Point of PV</b></p>	<p><b>Programmable:</b> <input type="text" value="0"/> / <input type="text" value="00"/> / <input type="text" value="000"/> / <input type="text" value="0000"/> / <input type="text" value="0.0000"/>  <b>▲Up ▼Down ▶Enter</b></p>
<p>A-4</p> 	<p><b>LoSC (Lo.SC): Low scale of PV</b>  <ul style="list-style-type: none"> <li>CS3-SG/PM/RS: If the field calibration has been done and then the [CSEL] (Calibration parameter selection) selected to be <b>FELd</b>(field calibration), the [LoSC] will be replaced by [ALLS], and it can not to be set.</li> </ul> </p>	<p><b>Programmable: -19999~29999</b>  <b>◀Shift ▲Up ▼Down ▶Enter</b></p> 
<p>A-5</p> 	<p><b>HiSC (Hi.SC): high scale of PV</b>  <ul style="list-style-type: none"> <li>CS3-SG/PM/RS: If the field calibration has been done and then the [CSEL] (Calibration parameter selection) selected to be <b>FELd</b>(field calibration), the [HiSC] will be replaced by [RLHS], and it can not to be set.</li> </ul> </p>	<p><b>Settable range: -19999~29999</b>  <b>◀Shift ▲Up ▼Down ▶Enter</b></p>
<p>A-6</p> 	<p><b>The function is only for CS3-PR</b>  <b>Sqrrot (Square root): Square root function of PV</b>  The function used to applicate with differential pressure transducers for flow measuring</p>	<p><b>Programmable:</b>  <input type="text" value="no"/> (No): Do not exclusive square root function.  <input type="text" value="yes"/> (Yes): Exclusive square root function.  <b>▲Up ▼Down ▶Enter</b></p>
<p>A-7</p> 	<p><b>PvZro (Pv.Zro): Fine Adjustment low point for PV display;</b>  For Zero &amp; 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 [PvZro] &amp; [PvSPn] are not only in zero &amp; span of PV, but also any lower point for [PvZro] &amp; higher point for [PvSPn]. The meter will be linear for full scale.</p>	<p><b>Settable range: -19999~+29999</b>  <b>◀Shift ▲Up ▼Down ▶Enter</b></p> 
<p><b>NEXT PAGE</b></p>		

<p>A-8</p>  <p>Pu.SPn</p> <p>00</p> <p>20000</p>	<p><b>Pu.SPn (Pv.SPn): Fine Adjustment high point for PV display;</b> It's same function as like as [Pu.Pro].</p>	<p>Settable range: -19999~+29999</p> <p>◀Shift ▲Up ▼Down ▶Enter</p>
<p>A-9</p>  <p>P5.Clr</p> <p>nonE</p> <p>both</p>	<p><b>P5.Clr (Z.S.Clr): Clear Fine Adjustment of Low / High points for PV display;</b></p>	<p>Programmable:</p> <p><b>nonE (None):</b> Do not clear the fine adjustment of Low / High.</p> <p><b>Pu.Pro (PV.Zro):</b> To clear the fine adjustment Low.</p> <p><b>Pu.SPn (PV.SPn):</b> To clear the fine adjustment High</p> <p><b>both (Both):</b> To clear the fine adjustment of Low and High.</p> <p>▲Up ▼Down ▶Enter</p>
<p>A-10</p>  <p>dSPly</p> <p>Pu</p> <p>RS485</p>	<p><b>dSPly (dSPly): Display Function for PV screen</b></p> <p>When the [dSPly] function set to be <b>RS485</b>, At meantime, the input signal (PV) no longer display now. The PV screen will show the number from RS485 command &amp; 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.</p>	<p>Programmable:</p> <p><b>Pu (PV):</b> shows PV</p> <p><b>MinHd (MiN.Hd):</b> Minimum Hold of PV</p> <p><b>MaxHd (MAX.H):</b> Maximum Hold of PV</p> <p><b>RS485 (RS485):</b> Remote displayed from RS485 command of master.</p> <p>▲Up ▼Down ▶Enter</p>
<p>A-11</p>  <p>Lo.Cut</p> <p>00000</p> <p>0.1000</p>	<p><b>Lo.Cut (Lo.CUt): Low Cut the PV</b></p> <p>if set the positive value (X1) here to display "0" which it expressed to be low-cut the PV between "+X1 (plus)" &amp; "-X1(minus)" /absolute value</p> <p><math>PV \leq   \text{Setting value}  </math>, the display will be 0.</p> <p>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;</p> <p><math>PV &lt; \text{Setting value}</math>, the display will be <u>X2(Setting value)</u>.</p>	<p>Settable range: -19999~+29999</p> <p>◀Shift ▲Up ▼Down ▶Enter</p> <p><b>Low Cut set to be +0.50</b></p>  <p><b>Low Cut set to be -0.10</b></p>  <p>Low Cut is set for 0.50, if the PV is from -0.50~+0.50, that display will be 0.</p> <p>Low Cut is set for -0.10, if the PV is under (<math>\leq</math> -0.10), that display will be -0.10.</p>
<p>A-12</p>  <p>Avg</p> <p>05</p> <p>99</p>	<p><b>Avg (AvG): Average update for PV</b></p> <p>The meter's sampling is 15cycle/sec</p> <p>If the [ Avg](Average) set to be <b>3</b> to express the display update with 5 times/sec.</p> <p>The meter will calculate the sampling 1-3 and update the display value. At meantime, the sampling 4-6 will be processed to calculate.</p>	<p>Settable range:</p> <p><b>1(no function)~99 times</b></p> <p>◀Shift ▲Up ▼Down ▶Enter</p>
<p><b>NEXT PAGE</b></p>		

<p>A-13</p> 		<p><b>M.AVG (M.AVG): Moving Average update for PV</b></p> <p>The meter's sampling is 15cycle/sec. If the [M.AVG](Moving Average) set to be 3 expressed the display update with 15 times/sec.,</p> <p>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.</p>	<p><b>Settable range:</b> 0(no function)/1~10 times;</p> <p>◀Shift ▲Up ▼Down Enter</p>
<p>A-14</p> 		<p><b>dFiLt (d.FiLt): Digital filter</b></p> <p>The digital filter can reduce the influence of spark noise by magnetic of coil.</p> <p>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.</p>	<p><b>Settable range:</b> 0(no function)/1~99 times.</p> <p>◀Shift ▲Up ▼Down Enter</p>
<p>A-15</p> 		<p><b>P.CoDE (P.CoDE): Pass Code setting for access to programming level</b></p> <p>Please remind and write down the new pass code so that access to programming level.</p>	<p><b>Settable range: 0000~9999</b></p> <p>◀Shift ▲Up ▼Down Enter</p>
<p>A-16</p> 		<p><b>F.LoCk (F.LoCk): Function level Lock</b></p> <p>There are 4 levels programmable for lock that the function is to avoid miss-setting.</p>	<p><b>Programming:</b></p> <p><b>nonE (None):</b> no lock at all. User can access to user level for checking and setting.</p> <p><b>USEr (User Level):</b> User level lock. User can access to user level for checking, but can not setting.</p> <p><b>EnG (Programming Level):</b> Programming level lock. User can access to programming level for checking, but can not setting.</p> <p><b>ALL (All Level):</b> All lock. User can access to all level for checking, but can not setting.</p> <p>▲Up ▼Down Enter</p>

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

INDEX	FUNCTION DESCRIPTION	PARAMETERS & SETTING	SET
<p>rELAY</p> <p>GROUP</p> <p>↓</p> <p>B-1</p> <p>rY5b</p> <p>0000</p> <p>00</p> <p>9999</p> <p>Next Page</p>	<p>RELAY GROUP INDEX PAGE</p> <p>rY5b (rY.Sb): Start band of Relay energized</p> <p>Start Delay Fig.2</p> <p>[rY_SP] Hi Setting</p> <p>[rY5b] Start Band</p> <p>Relay Energized</p> <p>Start Delay Time</p> <p>ON</p> <p>Inhibit</p> <p>Inhibit</p> <p>①</p> <p>② [rY5d]</p>	<p>In following pages, press ◀ for 1 second to return the RELAY GROUP INDEX PAGE.</p> <p>Settable range: 0~9999 digits</p> <p>◀Shift ▲Up ▼Down ▶Enter</p>	
<p>B-2</p> <p>rY5d</p> <p>0000</p> <p>0000</p> <p>9.599</p> <p>Next Page</p>	<p>rY5d (rY.Sd): start delay time for Relay energized</p>	<p>Settable range: 0:00.0~9(M):59.9(S)</p> <p>◀Shift ▲Up ▼Down ▶Enter</p>	
<p>B-3</p> <p>rY1nd</p> <p>H</p> <p>H</p> <p>H.HLd</p> <p>Next Page</p>	<p>rY1nd (rY1.Md): Relay 1 energized mode</p> <p>Hi(Lo) Energized Latch &amp; Reset</p> <p>[rY_SP] Hi Setting</p> <p>[rY_nd] H.HLd</p> <p>Hi.HLd(High Hold) Relay Energized</p> <p>ON</p> <p>[EC] Reset the relay Hold by ECI or Front Key</p> <p>Level Trigger</p> <p>ON</p> <p>Hi(Lo) Energized Latch &amp; Reset</p> <p>[rY_SP] Hi Setting</p> <p>[rY_nd] H.HLd</p> <p>Hi.HLd(High Hold) Relay Energized</p> <p>ON</p> <p>[EC] Reset the relay Hold by ECI or Front Key</p> <p>Level Trigger</p> <p>ON</p>	<p>Programmable:</p> <p>oFF (Off): Turn off the Relay and indication LED.</p> <p>Lo (Lo): Low Level Energized; Relay will energize when PV &lt; Set-Point.</p> <p>H (Hi): High Level Energized; Relay will energize when PV &gt; Set-Point.</p> <p>H.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 front key in [User Level], front key function or terminals of E.C.I. closed</p> <p>do (DO): Digital Output; Relay is energized by RS485 command directly, but no longer to compare with set-point of relay.</p> <p>▲Up ▼Down ▶Enter</p>	
<p>B-4</p> <p>rY1HY</p> <p>0000</p> <p>00</p> <p>5000</p> <p>Next Page</p>	<p>rY1HY (rY1.HY): Relay 1 Hysteresis</p> <p>Energized / De-energized Delay &amp; Hysteresis Fig.3</p> <p>[rY_SP] Hi Setting</p> <p>[rY_HY] Hysteresis</p> <p>[rY_r d] Energized delay time</p> <p>[rY_F d] De-energized delay time</p> <p>Relay Energized</p> <p>ON</p> <p>①</p> <p>②</p> <p>③</p>	<p>Settable range: 0~5000 digits</p> <p>◀Shift ▲Up ▼Down ▶Enter</p>	
<p>B-5</p> <p>rY1rd</p> <p>0000</p> <p>0000</p> <p>9.599</p> <p>Next Page</p>	<p>rY1rd (rY1.rd): Relay 1 energized delay time</p>	<p>Settable range: 0:00.0~9(M):59.9(S)</p> <p>◀Shift ▲Up ▼Down ▶Enter</p>	
NEXT PAGE			

<p>B-6</p> 		<p>rY1Fd (rY1.Fd): Relay 1 de-energized delay time</p>	<p>Settable range: 0:00.0~9(M):59.9(S) ◀Shift ▲Up ▼Down FUN ENT Enter</p>
<p>B-7</p> 		<p>rY2nd (rY2.Md): Relay 2 energized mode</p>	<p>...as same as Relay 1 Energized Mode... Programmable: <input type="checkbox"/>oFF(off) / <input type="checkbox"/>Lo(Lo) / <input type="checkbox"/>Hi(Hi) / <input type="checkbox"/>H.HLd(Hi.HLd) / <input type="checkbox"/>LoHLd(Lo.HLd) / <input type="checkbox"/>do(DO) ▲Up ▼Down FUN ENT Enter</p>
<p>B-8</p> 		<p>rY2HY (rY2.HY): Relay 2 Hysteresis</p>	<p>Settable range: 0~5000 digits ◀Shift ▲Up ▼Down FUN ENT Enter</p>
<p>B-9</p> 		<p>rY2rd (rY2.rd): Relay 2 energized delay time</p>	<p>Settable range: 0:00.0~9(M):59.9(S) ◀Shift ▲Up ▼Down FUN ENT Enter</p>
<p>B-10</p> 		<p>rY2Fd (rY2.Fd): Relay 2 de-energized delay time</p>	<p>Settable range: 0:00.0~9(M):59.9(S) ◀Shift ▲Up ▼Down FUN ENT Enter</p>

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

INDEX		FUNCTION DESCRIPTION	PARAMETERS & SETTING	SET
<p>EC 1 Group</p>		<p>EXTERNAL CONTROL INPUT GROUP INDEX PAGE</p>	<p>In following pages, press  for 1 second to return the ECI GROUP INDEX PAGE.</p>	
<p>C-1 EC 1.1 rELPv PvHLd</p>	<p>          Nest Page</p>	<p>EC 1.1(E.Ci.1): External Control Input 1</p> <p><b>PV Hold &amp; Reset</b></p> <p><b>Max. (Mini.) Hold &amp; Reset</b></p>	<p><b>Programmable:</b></p> <p><b>nonE</b>(None): No function;</p> <p><b>rELPv</b>(rEL.Pv): Relative PV function; the reading will show the differential value with PV as the ECI has closed.</p> <p><b>PvHLd</b>(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.</p> <p><b>rSt</b>(M.rSt): Reset for max./mini. Hold in PV screen; When the <b>[dSPly]</b>(dsply) function set to be <b>rHLd</b> / <b>rLHLd</b> that max./mini value be saved in <b>[User level]</b>, and the saved values can be reset in this function too.</p> <p><b>rYrSt</b>(rY.rSt): If <b>[rY_nD]</b> the relay energized mode has been set to be <b>rHLd</b> / <b>rLHLd</b> (High or Low energized &amp; latch), and the <b>[EC 1.1]</b> set to be <b>rYrSt</b>(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.</p> <p><b>d</b>(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.</p> <p> </p>	
<p>C-2 dEbnc</p>	<p>          Nest Page</p>	<p>dEbnc (dEbnc): Debouncing of external control input</p>	<p>Settable range: 5~255( x 8ms)</p> <p> </p>	
<p>C-3 E.1=dN</p>	<p>          Nest Page</p>	<p>E.1=dN(E.1=DN): The  Key can be set to be the same function as the setting for <b>[EC 1.1]</b>.</p> <p>Ex. The <b>[EC 1.1]</b> set to be <b>PvHLd</b>(Pv.HLd) and the function <b>[E.1=dN]</b> set to be <b>YES</b> simultaneously. The user presses  Key to replace the manual ECI 1 terminal closed,</p>	<p><b>Programmable:</b></p> <p><b>YES</b>(YES): Down Key is to be same function as ECI1</p> <p><b>no</b>(NO) : Down Key isn't to be same function as ECI1</p> <p> </p>	

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

INDEX	FUNCTION DESCRIPTION	PARAMETERS & SETTING	SET
<p>Ro</p> <p>GROUP</p> <p>↓</p> <p>Ro.tYP</p> <p>R4-20</p> <p>u0-10</p> <p>Nest Page</p>	<p><b>AO GROUP INDEX PAGE</b></p>	<p>In following pages, press ◀ for 1 second to return the AO GROUP INDEX PAGE.</p>	
<p>D-1</p> <p>Ro.tYP</p> <p>R4-20</p> <p>u0-10</p> <p>Nest Page</p>	<p><b>Ro.tYP (Ao.tYP): Analogue Output type and range selection;</b></p> <p>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).</p>	<p><b>Programmable:</b></p> <p><b>Voltage Output:</b></p> <p>u0-10(0~10V) / u.0-5(0~5V) / u.1-5(1~5V)</p> <p><b>Current Output:</b></p> <p>R0-10(0~10mA) / R0-20(0~20mA) / R4-20(4~20mA)</p> <p>▲Up ▼Down  Enter</p>	
<p>D-2</p> <p>Ro.L5</p> <p>00000</p> <p>5000</p> <p>Nest Page</p>	<p><b>Ro.L5 (Ao.LS): the Low point is relative to Analogue Output low;</b></p> <p>To set the lower display value versus low output range (as like as 4mA in R4-20) Ex. Output range set to be R4-20 (4~20mA) is relative to display 0~199.99. User can set the [Ro.L5] (Ao.LS) to be 5000. At meantime, the output signal will be 4mA when the present value is 50.00.</p>	<p><b>Settable range: -19999~29999</b></p> <p>◀Shift ▲Up ▼Down  Enter</p> <p>Default: [ Ro.L5]: 0.00, [ Ro.H5]: 10000 Change to [ Ro.L5]: 5000, [ Ro.H5]: 19999</p>	
<p>D-3</p> <p>Ro.H5</p> <p>19999</p> <p>15000</p> <p>Nest Page</p> <p>will be changed according to H.S.C set.</p>	<p><b>Ro.H5 (Ao.HS): the High point is relative to Analogue Output high;</b></p> <p>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 [Ro.H5] (Ao.HS) to be 15000. At meantime, the output signal will be 20mA when the present value(PV) is 150.00.</p>	<p><b>Settable range: -19999~29999</b></p> <p>◀Shift ▲Up ▼Down  Enter</p>	
<p>D-4</p> <p>Ro.Zro</p> <p>00000</p> <p>17233</p> <p>Nest Page</p>	<p><b>Ro.Zro (Ao.Zro): Fine Zero Adjustment for Analog Low Output;</b></p> <p>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.</p>	<p><b>Settable range: -38011~27524</b></p> <p>◀Shift ▲Up ▼Down  Enter</p>	
<p>D-5</p> <p>Ro.SPn</p> <p>00000</p> <p>32767</p> <p>Nest Page</p>	<p><b>Ro.SPn (Ao.SPn): Fine Span Adjustment for Analog high Output;</b></p> <p>Users can get Fine span Adjustment for analogue output by front key of the meter as like as [Ro.Zro] (Ao.Zro).</p>	<p><b>Settable range: -38011~27524</b></p> <p>◀Shift ▲Up ▼Down  Enter</p>	
<p>D-6</p> <p>Z.S.Clr</p> <p>nonE</p> <p>both</p> <p>Nest Page</p>	<p><b>Z.S.Clr (Z.S.Clr): Clear the Fine Zero / Span Adjustment for Analog Output</b></p>	<p><b>Programmable:</b></p> <p>nonE (None): Do not clear</p> <p>Ra.Zro (Ao.Zro): Clear low adjust</p> <p>Ra.SPn (Ao.SPn): Clear high adjust</p> <p>both (both): Clear low &amp; high adjust</p> <p>▲Up ▼Down  Enter</p>	
<p><b>NEXT PAGE</b></p>			

**D-7**

**RoL nT (Ao.LMt): Analog Output High Limit**

Set Scaling: [LoSC]: 0.00, [HiSC]: 199.99;  
 Output: [RoLS]: 50.00(Display Value Low),  
 [RoHS]: 150.00(Display Value High)  
 [RoL nT]: 80.00%( of Output Range)

**Settable range:**  
 0.00~ 110.00% of FS

◀Shift ▲Up ▼Down ▶Enter

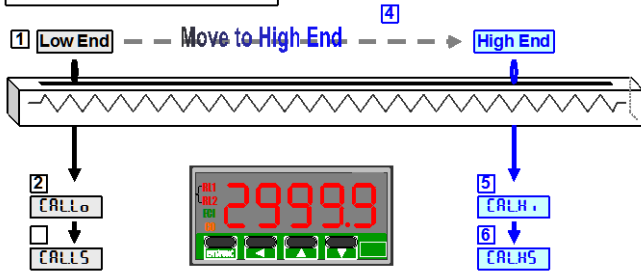
■ RS485 Group (The group will be hidden, if the relay function is not to be specify )

INDEX	FUNCTION DESCRIPTION	PARAMETERS & SETTING	SET
<p>r5485</p> <p>Group</p> <p><b>E-1</b></p> <p>AdRES</p> <p>001</p> <p>255</p>	<p><b>RS485 GROUP INDEX PAGE</b></p> <p>AdRES(Address): Device number of the meter.</p>	<p>In following pages, press ◀ for 1 second to return the RS485 GROUP INDEX PAGE.</p> <p>Settable range: 1~255</p> <p>◀Shift ▲Up ▼Down ▶Enter</p>	
<p><b>E-2</b></p> <p>bAUd</p> <p>9600</p> <p>38400</p>	<p><b>bAUd(bAUd): Baud rate</b></p>	<p>Programmable:</p> <p>1200 / 2400 / 4800 / 9600 / 19200 / 38400</p> <p>▲Up ▼Down ▶Enter</p>	
<p><b>E-3</b></p> <p>Pr itY</p> <p>nStb2</p> <p>EuEn</p>	<p><b>Pr itY(PritY): Parity</b></p>	<p>Programmable:</p> <p>nStb.1(n.Stb.1): None, 1 stop bit</p> <p>nStb.2(n.Stb.2): None, 2 stop bit</p> <p>odd(odd): odd</p> <p>EuEn(Even): Even</p> <p>▲Up ▼Down ▶Enter</p>	

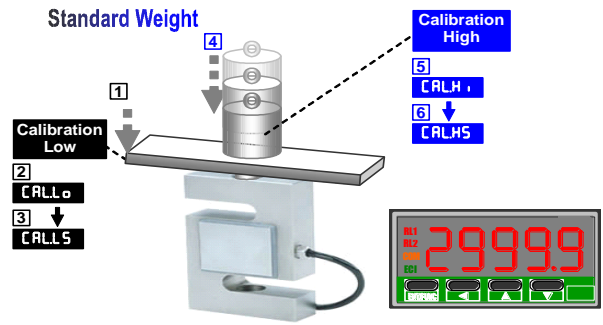
## Field Calibration Group [for CS3-SG / CS3-PM / CS3-RS only]

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

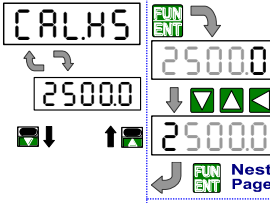
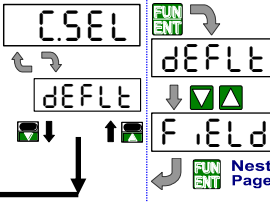
Potentiometer 0~1.0Kohm



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




INDEX	FUNCTION DESCRIPTION	PARAMETERS & SETTING	SET
16888	Measuring Page		
EntEr	Pass Code Page		
P.CodE			
EntEr	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.	
F.CodE			
Pass Code			
YES			
CALLo	Adjust the structure of machinery to the lower signal output status(or any lower status). <b>CALLo (CAL.Lo): Field Calibration Low.</b> The low calibration is not need the exactly "zero" to calibrate because of the "field calibration" function could be calibrate any lower point.	<ul style="list-style-type: none"> <li>Waiting for the value till stable, pressed <b>ENT</b> Key to read signal low of sensing device.</li> <li>Waiting for above reading stable (around 3~5seconds), press <b>ENT</b> Key again to complete the calibration lower point, and go to [CALLS].</li> </ul>	
CALLS	<b>CALLS (CAL.LS):</b> the value to be set is relative to Field Calibration low point.	Settable range: -19999~29999 <b>Shift Up Down Enter</b>	
CALH.	Adjust the machinery structure to the higher signal output status(or any higher status). <b>CALH. (CAL.Hi): Field Calibration High.</b> The high calibration is not need the exactly "span" to calibrate because of the "field calibration" function could be calibrating any higher point.	<ul style="list-style-type: none"> <li>Waiting for the value till stable, pressed <b>ENT</b> Key to read signal high of sensing device.</li> <li>Waiting for above reading stable (around 3~5seconds), press <b>ENT</b> Key again to complete the calibration higher point, and go to [CALHS].</li> </ul>	
<b>NEXT PAGE</b>			

<p>F-4</p> 	<p><b>CAL.H5 (CAL.HS):</b> the value to be set is relative to Field Calibration high point.</p>	<p>Settable range: -19999~29999        ◀Shift ▲Up ▼Down ▶<b>ENT</b>Enter</p>
<p>F-5</p> 	<p><b>C.SEL (C.SEL):</b> Calibration parameter selection;</p> <p>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.</p>	<p><b>Programmable:</b>  <b>dEFLt</b>(default): factory calibration points and factors  <b>F.iELd</b>(field): field calibration points and factors        ▲Up ▼Down ▶<b>ENT</b>Enter</p> <ul style="list-style-type: none"> <li>▣ If the user select field calibration of the [L o5C](step A-4) and [H i5C](A-5) will be replaced by the [C.RLL5] and [C.ALH5] 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 [C.RLL5](step F-2) and [C.ALH5](step F-4).</li> <li>▣ Please double check the [L o5C](step A-4) and [H i5C](A-5) whether are correct after selection the <b>dEFLt</b> or <b>F.iELd</b>.</li> </ul>
<p><b>Go back to Measuring Page</b></p>		

## ■ TROUBLE SHOOTING

### Display Issue:

PROBLEM	CHECKING LIST	REMEDY
<b>Display shows</b> 	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 CS3-PR, input range can be programmed in same type(mA or V). Please check the [R 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 [R tLo] and [R tHi] 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(cord end terminal) to avoid the risk of insecure.
<b>Incorrect ion display value or out of accuracy</b>	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 [R tLo] and [R tHi] in the [inPUt GrOUP] whether did the both set correct or not ? Generally, the [R tLo] is <input type="text" value="000"/> % and [R tHi] is <input type="text" value="10000"/> %, 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 tSC](A-05) and [LoSC](A-04) in [inPUt GrOUP].
	3.To inspect the high and low fine adjustments of PV are changed or not?	Please check the [P uSPn](A-07) and [P u?ro](A-06) in [inPUt GrOUP] whether did the values can be cleared in [P5CLr](A-08).
	<b>CS3-Pr:</b> 4.To inspect the input signal range whether did it match with signal in the field or not?	A.Please check the [R tYP](A-00) that has to match the signal in the field. B.Please check the [S9rot](A-06) has set <input type="text" value="YES"/> or <input type="text" value="no"/> .
	<b>CS3-SG/CS3-PM</b> 5.To inspect the field calibration whether did it match with sensor in the field or not?	Please check the [CALLS](F-02) and [CALHS](F-04) both are matched the measuring range of sensor.
<b>Jittery Display</b>	1.To inspect the input signal is jittery or not?	A.If the input signal is jittery continuously, please set higher value in [R uG](A-11) or [nRuG](A-12) B.If the input signal is jittery uncertain period that caused by the inductive load actions, please set higher value in [dF tL](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 [R uG](A-11) or [nRuG](A-12) B.If the input signal is jittery uncertain period that caused by the inductive load actions, please set higher value in [dF tL](A-13) C.Please connects an isolation transformer as close as meter in power lines.
<b>Display shows "-----"</b>	To inspect display function [dSPLY]. It's maybe to be set to <input type="text" value="F5485"/>	Please check the [dSPLY](A-09) in [inPUt GrOUP] and change the function setting from <input type="text" value="F5485"/> to <input type="text" value="Pu"/> .
<b>display value doesn't change</b>	1.To inspect display function [dSPLY]. It's maybe to be set to <input type="text" value="nRvHd"/> (maximum hold) or <input type="text" value="nInHd"/> (minimum hold), and the M.H LED is brighten.	Please check the [dSPLY](A-09) in [inPUt GrOUP] and change the function set from <input type="text" value="nRvHd"/> or <input type="text" value="nInHd"/> to <input type="text" value="Pu"/> .
	2.To inspect external control input function [EC tI]. It's maybe to be set to <input type="text" value="PuHLd"/> , and the relate LED is brighten.	A.Please check the [EC tI](C-01) in [EC t GrOUP] and change the function setting from <input type="text" value="PuHLd"/> to <input type="text" value="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.	<b>The relay energized, but square red LED doesn't bright</b>	
	1.Check the energized mode	Please check the [rY lnd](B-03/07) 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 [rY5d](B-02) is too long in [rELAY GrOUP] or not?
	3. Check the energized delay time	Please check whether did the [rY lrd](B-05/09) is too long in [rELAY GrOUP] or not?
	<b>The relay energized, but square red LED dose bright</b>	
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 [RoltYP](D-01) of [ Ro GrOUP]
	2. Check the Analogue output high and low setting.	A.Please check the [RoltS](D-02) and [RoltH](D-03) in [ Ro GrOUP].
Jittery Analogue Output	<b>Analogue output is according to the display</b>	
	1.Check if the display is jittery	A.If the input signal was jittery continuously, please set higher value in [ RUG](A-11) or [hURUG](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 lLl](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 [RdrE5](E-01) \ [ bRUd](E-02) and [Pr lty](E-03) in [r5485 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.

<p>2. Check if the square orange LED of RS485 dose bright, but reply Error.</p>	<p><b>A.</b>Please checks the address table of RS485 to assume whether did the address right or not? <b>B.</b>Please checks the start address and data format are correct. <b>C.</b> 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.</p>
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## ■ 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	
r 4 1SP	0001h	-19999~29999	Relay1 Set Point	10000	R/W	
r 4 2SP	0002h	-19999~29999	Relay2 Set Point	10000	R/W	
RELAY STATUS	0003h	0~1	RELAY STATUS bit0~bit1:relay1~relay2; 0=Relay off 1=Relay on		R/W	
ECI STATUS	0004h	0~1	ECI STATUS 0=untriged(Off) 1:triged(On)		R	
P u H L d	0005h	-19999~29999	PV Hold		R	
n i n	0006h	-19999~29999	The Minimum of PV	0	R	
n A h	0007h	-19999~29999	The Maximum of PV	0	R	
SYSTEM STATUS	0008h		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 5 t	0009h	0~1	Reset Maximum & Minimum Value 0:No 1:Yes	0	R/W	
r 5 4 8 5	000Ah	-19999~29999	PV showing from RS485 command(data)	0.00%	R/W	
RESERVED	000Bh					
RESERVED	000Ch					

## ■ Programming Level

[Input Group]						
Name	Address	Range	Explain	Initial	Write/Read	Note
RiLYP	000Dh	0~5	<b>The address is for CS3-PR only</b> Analogue Input Type 0:0~10V 1:0~5V 2:1~5V 3:0~20mA 4:4~20mA 5:0~10mA			
RiLo	000Eh	0.00~100.00%	Input Low	0.00%	R/W	
RiHi	000Fh	0.00~100.00%	Input High	100.0%	R/W	
PuDP	0010h	0~4	PV Decimal Point 0: 00000 1: 0000.0 2: 000.00 3: 00.000 4: 0.0000	0	R/W	
LoSC	0011h	-19999~29999	Low Scale	0	R/W	
HiSC	0012h	-19999~29999	High Scale	19999	R/W	
Sqrot	0013h	0~1	Square root function 0: Disable 1: Enable			
PuZro	0014h	-19999~29999	PV ZERO	0	R/W	
PuSPn	0015h	-19999~29999	PV SPAN	0	R/W	
PSClr	0016h	0~3	The clear of PV_ZERO and PV_SPAN 0:None 1:PV_ZERO 2:PV_SPAN 3: Both	0	R/W	
dSPLY	0017h	0~3	Display Mode 0:PV 1: Minimum Hold 2: Maximum Hold 3: RS485	0	R/W	
LoCut	0018h	-19999~19999	Low Cut	0	R/W	
Avg	0019h	1~99	Average	5	R/W	
MAvg	001Ah	0~10	Moving average	1	R/W	
dFilt	001Bh	0~99	Digital Filter	0	R/W	
PCode	001Ch	0000~9999	Pass Code	1000	R/W	
FLoCK	001Dh	0~3	Function Lock 0: none 1: User Level 2: Engineer Level 3: All	0	R/W	
RESERVED	000Eh					
RESERVED	000Fh					
[Relay Group]						
Name	Address	Range	Explain	Initial	Write/Read	Note
rYsb	0020h	0000~9999	Start Band of Relay	0	R/W	
rYsd	0021h	0000~5999 (0.1second)	Start Delay Time of Relay	0	R/W	
rY1nd	0022h	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	0023h	0000~5000	Hysteresis of Relay1	0	R/W	
rY1rd	0024h	0000~5999 (0.1second)	Energized Delay Time of Relay1	0	R/W	
rY1fd	0025h	0000~5999 (0.1second)	De-Energized Delay Time of Relay1	0	R/W	

Name	Address	Range	Explain	Initial	Write/Read	Note
rY2nd	0026h	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	0027h	0000~5000	Hysteresis of Relay2	0	R/W	
rY2rd	0028h	0000~5999 (0.1second)	Energized Delay Time of Relay2	0	R/W	
rY2Fd	0029h	0000~5999 (0.1second)	De-Energized Delay Time of Relay2	0	R/W	
rYrSt	002Ah		Reset for Relay Energized Hold 0: No 1: Yes	0	R/W	
RESERVED	002Bh					
RESERVED	002Ch					
RESERVED	002Dh					

### [ECI Group]

Name	Address	Range	Explain	Initial	Write/Read	Note
EC rI	002Eh	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	
dEbnc	002Fh	5~255	ECI debouncing 5~255 *8mSec	12	R/W	
RESERVED	0030h					
RESERVED	0031h					

### [RS485 Group]

Name	Address	Range	Explain	Initial	Write/Read	Note
AdrES	0032h	1~255	RS485 address	1	R/W	
baud	0033h	0~5	RS485 baud rate 0:1200 1:2400 2:4800 3:9600 4:19200 5:38400	3	R/W	
Pr itY	0034h	0~3	RS485 parity 0: n-8-1 1: n-8-2, 2: odd, 3: even,	1	R/W	

Amend 2009/11/14, Add Square root function

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