CS2-TM(Analogue Input)
TOTALIZER / BATCH / BATCH COUNTER CONTROLLER
OPERATION MANUAL

CHANG SHUAN ELECTRONICS CO., LTD.
TEL:+886 2 29953100 FAX:+886 2 29953101
EMAIL: sales@csec.com.tw Website: www.csec.com.tw

Document Amend:

2009/11/10: Add step A-21 PLSH **High level time(duty cycle) of pulse 0(Auto)/1~5000 (x 4msec.)**

CS2-TM(Analogue Input) TOTALIZER / BATCH / IMMEDIATE VALUE (for Flowmeter or Amp-Hour) CONTROLLER USER MANUAL

■ DESCRIPTION

The CS2-TM Totalizer controller provide high accuracy measurement, display, control and communication (Modbus RTU mode) of 0~10V/4~20mA from flowmeter or mV from Shunt for Amp-Hour.

There are two display screen and 3 external control input (DI) in standard and the optional 4 Relay, 1 Analogue, 1 Pulse and RS485 port available. They are also support fantastic control function as like as N, C, R mode for totalizer and batch control

■ FEATUTRES

- Measuring DC signal 0~10V or 0(4)~20mA(with square root function); Current Shunt 0~50/60/100mV
- *Dual display screen for 10 digital Totalizer + 4 2/3 Immediate Value(PV) or 6 digital Batch programmable.*
- 4 relay can be individual programmed to relative immediate value, totalizer or batch.
  - Relative to Immediate Value(PV): Functions settable Energized Mode Hi / Lo / Hi(Lo) Hold / Do / Go, Hysteresys, Energized Delay, De-energized Delay, Energized latch or Energized by *RS485 command.*
  - Relative to Totalizer / Batch: N/C/R mode and energized time programmable.
- 3 external control input can be individual programmed for immediate value(PV) or totalizer / batch.
  - Immediate Value(PV): *PV Hold / Reset for Maximum or Minimum Hold / DI / Reset for Relay Energized Latch*
  - Totalizer / Batch: Reset, Gate
- Analogue Output and Pulse Output available in option
- RS485(Modbus RTU mode), Baud Rate is up to 38400bps
- Comply to CE standard

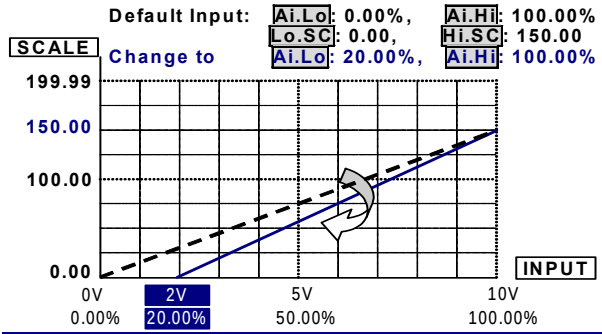
FUNCTIONS

■ Input & Scaling

■ Input Range

The meter has to be specified and fixed according to ordering code (ex. 0~10V or 4(0)~20mA) in factory. If the meter has to install in difference range of input, the meter can be set in function Ai.Lo and Ai.Hi of input group to meet the input signal. For example:

The meter is 0~10Vdc input, and the signal from sensor is 2~10Vdc. Please get into "Input group" to set Ai.Lo(Analogue input Low) to be 20.00%(10V x 20.00% = 2V), then the meter has been changed the input range to 2~10Vdc and the all relative parameters will work base on 2~10V.



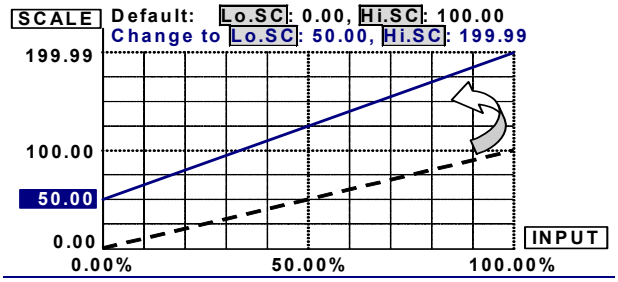
*The setting may course display lower resolution.

■ Square Root Function

The function can be set no or YES in【Input Group】to measure the signal from differential flowmeter.
The formular = √(Pv/HS) x HS

■ Scaling Function

Setting Range: -19999~+29999 counts ;
Setting the Lo.SC(Low scale) and Hi.SC(High scale) in "input group" to relative input signal.
Reverse scaling will be done too.



*Too narrow scale may course display lower resolution.

DISPLAY FUNCTIONS

Dual Display screens

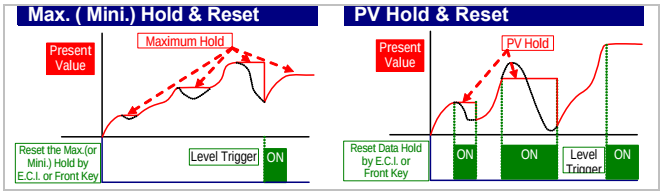
Down screen can be Immediate Value(PV) and Batch programmable; Up screen can be Totalizer and Batch counter programmable.

Maximum Hold or Minimum Hold for PV

When the DSPLY function in【Input Group】set to be MAX.H(Max. Hold) or Mini.H(Mini. Hold), The meter will keep display in maximum (or minimum) value of Immediate Value(PV) during power on, until manual reset by front key in 【User Level】, Up/Down Key function or【External Control Input(E.C.I.)】; The Reset functions will be explan in detail in following.
Please paste the sticker M.H on the red square LED to identify the status of display.

Immediate Value(PV) Hold

When the External Control input set to be Pv. HLd(PV Hold) function in【ECI Gruop】, The display will be hold, when the E.C.I. is closed until the E.C.I. is to be open.
Please paste the sticker PV.H on the green square LED of ECI to identify the status of display.

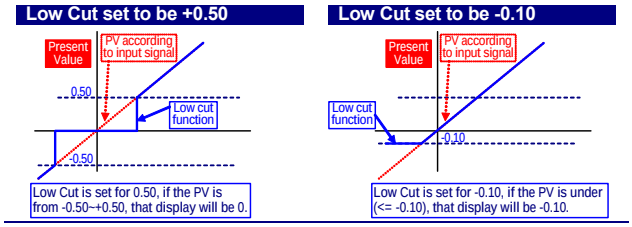


Write to display by RS485 command

The display can be written by RS485 command. At meantime, the display is no longer according to the input signal. In past, The meter normally receive 4~20mA or 0~10V from AO card or BCD card of PLC. We support a new solution by RS485 writing in so that can be save cost and wiring into PLC.

Low Cut

Setting range from -29999~+29999 counts.



- If the setting value is positive, it means the range of absolute value will be 0; PV≤ Setting value, the display will be 0;
  EX：Low Cut is set for 0.10, if the display is from -0.10~+0.10, that will be 0.
- If the setting value is negative, it means the range of under setting value will be 0; PV≤ -Setting value, the display will be 0;
  EX：Low Cut is set for -0.01, if the display is ≤ -0.01, and all the display will be 0.

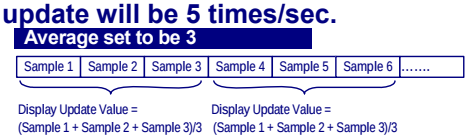
Digital Fine Adjustment

Setting range from -29999~+29999 ; Users can get Fine Adjustment by front key of the meter, and "Just Key In" the value which user want to show in the current input signals.

READING STABLE FUNCTIONS

Average Display update

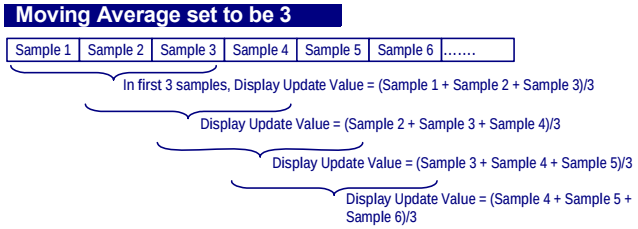
Setting range: 1~99 times;
The meter's sampling is 15cycle/sec. If the AvG(Average) set to be 3, it means the meter is sampling 3 readings, and calculating the average then update display once. At meantime, the display update will be 5 times/sec.



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

Moving Average

Setting range: 0(no function)/1~10 times;
The meter's sampling is 15cycle/sec. If the M.AvG(Moving Average) set to be 3, in the first cycle will be same as average function. In following cycle, the function will get a new fourth reading and throw away first reading to be newer 3 reading, and calculating the average then update display. At meantime, the display update will be 15 times/sec.



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

Digital filter

Setting range from 0(None)/1~99 times. The digital filter can reduce the magnetic noise in field.

RELAY FUNCTIONS

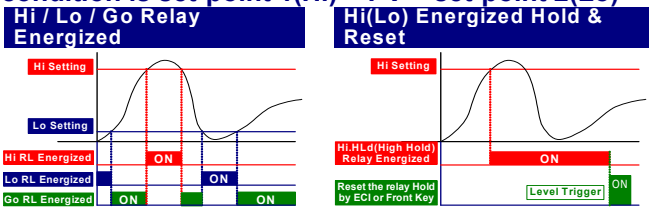
Multi-Cross Function selection

4 relay can be programmable to relative Totalizer, Batch and Immediate Value(PV) with individual functions.

Relative to Immediate Value(PV)

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

- Hi: Relay will energize when PV > Set-Point
- Lo: Relay will energize when PV < Set-Point
- Hi.HLd (Lo.HLd): When the PV Higher (or lower) than set-point, the relay will be energized and hold until manual reset by from key in【User Level】or【E.C.I.】.
- DO: Relay is energized by RS485 command directly, and no longer to compare with set-point of relay
- Go-1.2(or Go-2.3): Go function with【Set-Point 1】and 【Set-point 2】. Go relay energized when the condition is set-point 1(Hi) > PV > set-point 2(Lo)

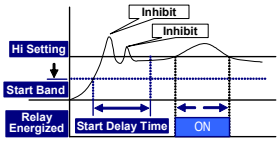


■ **Hysteresis:** Settable range from 0~9999 Counts

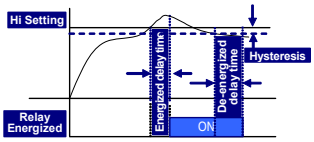
■ **Relay energized delay:** Settable range from 0.0(second)~9(minutes)59.9(seconds);

■ **Relay de-energized delay:** Settable range from 0.0(second)~9(minutes)59.9(seconds)

Start Delay



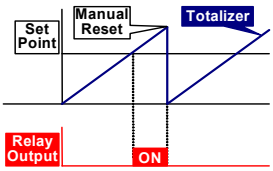
Energized / De-energized Delay & Hysteresis



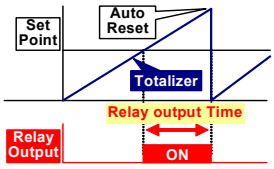
Relative to Totalizer / Batch

■ **N/C/R Mode**

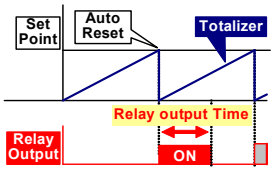
The 3 mode are very useful idea to control the totalizer and batch. The relay energized condition is according to not only energized level, but also time and reset for totalizer and batch.



N MODE:
When the condition of **Set Point** is met:
1. the relay will be energized;
2. The totalizer will run as same as usual; until manual reset by front key or by rear terminal, the totalizer will be reseted to "0" and the relay will be de-energized.



R MODE:
When the condition of **Set Point** is met:
1. The relay will be energized; until the time is over Relay output time rY.1(2).ot(Relay1(2) output time).
2. The totalizer will run as same as usual; until the time is over Relay output time rY.1(2).ot(Relay1(2) output time),The totalizer will be reset to "**0**".



C MODE:
When the condition of **Set Point** is met:
1. The relay will be energized; until the time is over Relay output time rY.1.ot or rY.2.ot.
2. The totalizer will be reset to "**0**", then counts-up from "0".

■ 3 External Control Inputs(E.C.I.)

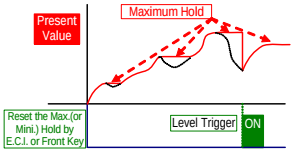
For Immediate Value(PV)

■ **Relative PV or Tare:** The E.C.I. can be set to be Rel.Pv(Relative PV) function. When the E.C.I. is closed, the reading will show the differential value.

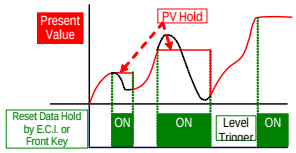
■ **PV Hold:** The E.C.I. can be set to be Pv.HLd(PV Hold) function. The display will be hold when the E.C.I. is closed, until the E.C.I. is to be open. Please refer to the below figure.

■ **Reset for Maximum or Minimum Hold:** Please refer to the below figure.

Max. (Mini.) Hold & Reset



PV Hold & Reset



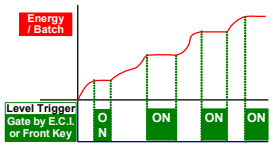
■ **DI(Digital Input):** The E.C.I can be set to be DI(Digital Input) function, when the meter building in RS485 port. The computer is easier to get a switch status through the meter as like as DI of PLC.

■ **Reset for Relay Energized Latch:** If relay energized mode was set to be Energized hold, the E.C.I. can be set to be rY.rSt(Reset Relay function). When the PV meets the condition of relay energizing, the relay will be hold until the E.C.I. is closed.

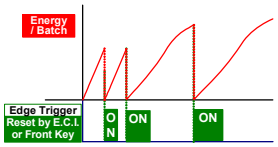
■ **Bank selection:** Please refer to the function section of this manual.

For Totalizer / Batch)

Gate for Energy / Batch Energy



Reset for Energy / Batch Energy



■ **Gate**

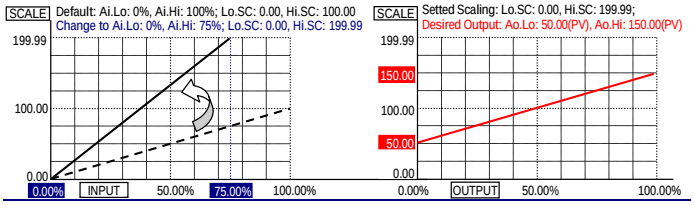
- **Gate GAtE:** Totalizer and Batch will be stop to count, when ECI is closed.
- **Batch Gate bt.GtE:** Batch will be stop to count, when ECI is closed.
- **Totalizer Gate tL.GtE:** Totalizer will be stop to count, when ECI is closed.

■ **Reset**

- **Reset rESEt:** Totalizer and Batch will be reset to "0", when ECI is closed.
- **Totalizer Reset tL.rSt:** Totalizer will be reset to "0", when ECI is closed.
- **Batch Reset bt.rSt:** Batch will be reset to "0", when ECI is closed.

■ ANALOGUE OUTPUT FUNCTIONS

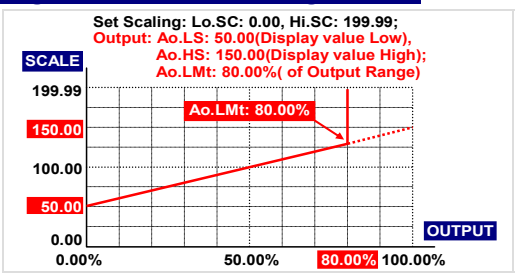
- **Ao.LS:** Setting range: -19999~+29999; Analogue Output Low relative Low Scale
- **Ao.HS:** Setting range: -19999~+29999; Analogue Output relative High Scale



■ **Fine Zero & Span Adjustment for Analog Output:** Users can get Fine Adjustment of analogue output by front key of the meter. Please connect standard meter to the terminal of analogue output. To press the front key(up or down key) of meter to adjust and check the meter the output.

- **Ao.Zro:** Fine Zero Adjustment for Analog Output; Setting range: -38011~27524;
- **Ao.Spn:** Fine Span Adjustment for Analog Output; Setting range: -38011~27524;

■ **High Limited for Analog Output**



■ Pulse Output

■ **Relative to Totalizer**

- **Pulse divider PLS.dv:** Settable range from 1~9999.
  - ➢ PLS.dv set to be 1: It will output 1 pulse, when totalizer increases "1Count". Ex: It will output 1 pulse, when totalizer from 12345.678 increse to 12345.679,

➢ PLS.dv set to be 1000: It will output 1 pulse, when totalizer increases "1000Count". Ex: It will output 1 pulse, when totalizer from 12345.678 increase to 12346.678.

- The maximum output is 1000Hz. Please sets lower resolution of totalizer, when the output over 1000Hz.
- Duty Cycle: Settable from 0(Auto: Duty cycle=50%)/1~5000(x 4msec.)
- Please specify Relay or Open Collect output in order

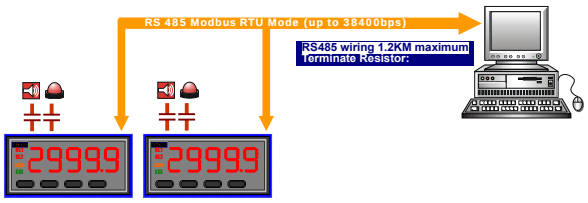
RS485 Communication

- **Protocol:** ModBus RTU Mode
- **Baud Rate:** Setting range:1200/2400/4800/ 9600/ 19200/38400
- **Data Bits:** Selectable 7 or 8 bits
- **Stop Bits:** Selectable 1 or 2 bits
- **Parity:** Selectable Even / Odd / None
- **Divice Number:** 1~255

Remote Display function

The display can be written by RS485 command. In past, the meter normally receive 4~20mA or 0~10V from AO card or BCD card of PLC. We support a new solution by RS485 writing in so that can be save cost and wiring into PLC.

CS2 APPLICATION FOR RS485 WRINTING IN



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

BANK FUNCTION(Suffix-3BK)

The function is for CS2 to control 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 parameter to show difference scale and relay energized in difference set-points. The operator just selects the bank number (bank1) to meet the process (product A). To make easier operating and to avoid mistake in process.
The bank function is available in CS2-TM (optional) too. It's useful to control as like as filling machine, Air flow measurement with difference sensor.

4 banks pre-set for all relay functions relative 4 difference scaling, decimal point, and select by 3 External Control Inputs(E.C.I.) or front key.

Example:

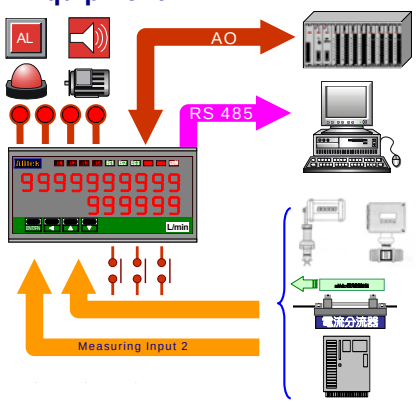
Product A: Flowmeter: 1.0000L/sec; Output: 4~20mA Set-Point: 2.0000L
Product B: Flowmeter: 5.000L/sec; Output: 4~20mA Set-Point: 6.000L
Setting:
BANK1: **dP**:0.0000 **Lo.SC**: 0.0000 **Hi.SC**: 1.0000 **rY1.Md**: **totL.C** **rY1.SP**: 2.0000 **rY1.rd**: 0(M).00.5(S)
BANK2: **dP**:0.000 **Lo.SC**: 0.000 **Hi.SC**: 5.000 **rY1.Md**: **totL.C** **rY1.SP**: 6.0000 **rY1.rd**: 0(M).01.0(S)
ECI.1: Bank.1 **ECI.2**: Bank.2; connect a selector (or DO of PLC) to ECI1 and ECI2

➢ The order want to produce **Product A**, to switch selector to A(Label **A** on panel), and then ECI.1 close, the square green LED bright. The meter will work base on the setting of bank1 and relay1 output on 2.0000.
➢ The second order want to produce **Product B**, to switch selector to B(Label **B** on panel), and then ECI.2 close, the square green LED bright. The meter will work base on the setting of bank2 and relay1 output on 6.000.

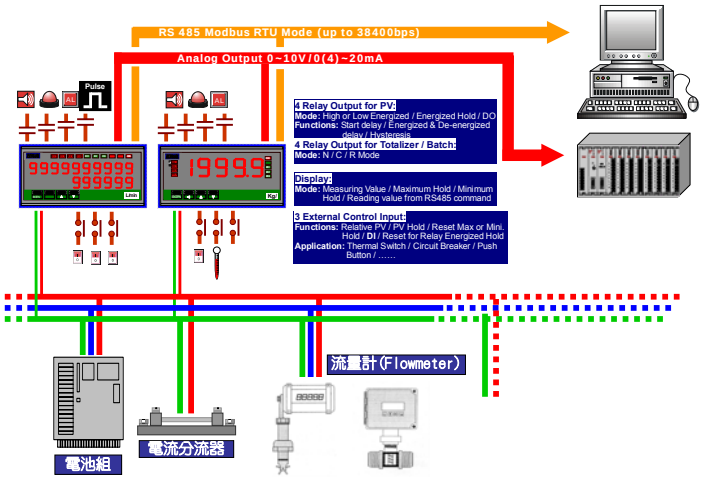
- Only 1 Bank can be selected. The priority is Bank1 > Bank2 > Bank3, if it is double selection.

APPLICATIONS

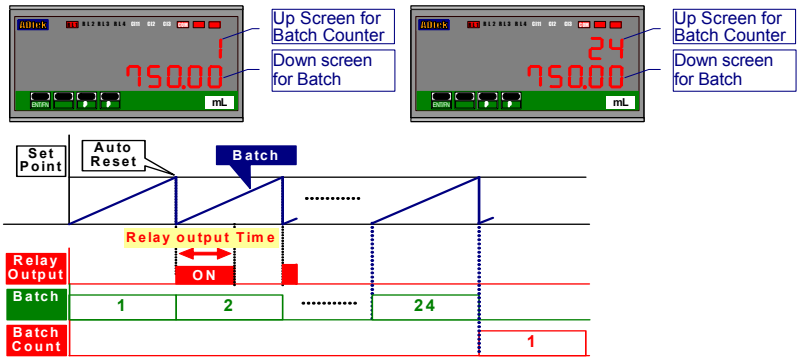
Flowmeter Controller - RS485 communication
Batch Control
Amp-Hour Control
➢ **Plating Equipment、Rectifier, Battery Testing Equipment…….**



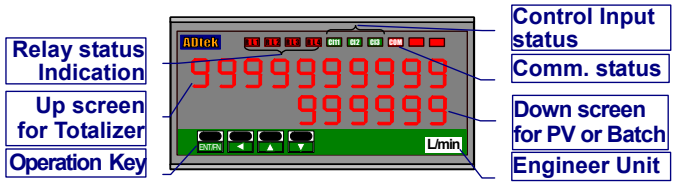
CS2-TM & CS2-PR APPLICATION FOR FLOWNETER / PRESSURE OR AMP-Hr. MEASURING



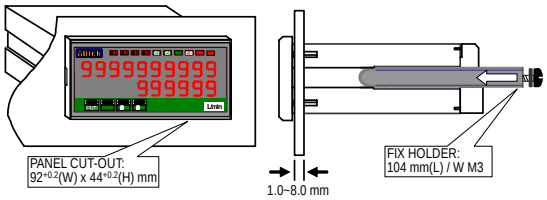
For batch control. Ex. Package Machine for Beer, UP.dSP set to be Bt.Cnt , and dSPLY for down screen set to be bAtCH , Relay 1 energized mode set to be btCH.C , and set-point is 750mL. Relay 2 energized mode set to be totL.C , and set-point is 24.
The Batch counter will count 1 and relay 1 energized when batch increase to 750mL. It mens finishing 1 bottle beer. When Batch counter in up screen increase to 24, the relay 2 energized to pack one box.



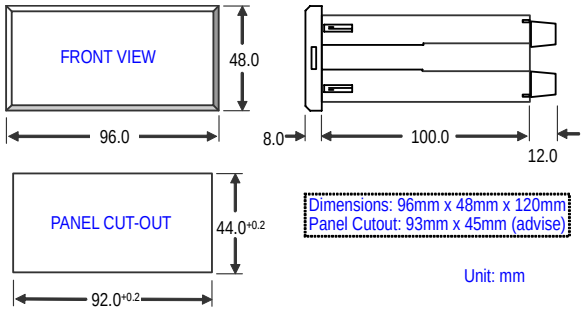
FRONT PANEL



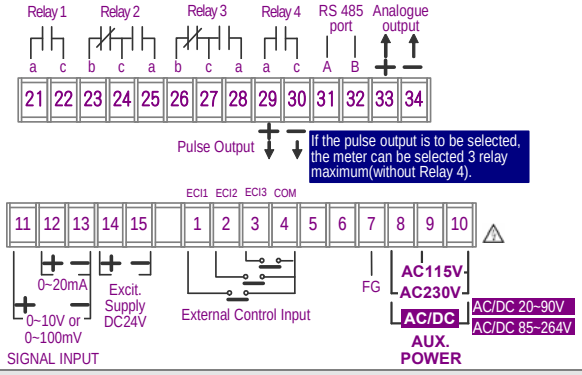
INSTALLATION



DIMENSIONS



WIRING DIAGRAM



ORDERING INFORMATION

ORDERING INFORMATION

CS2-TM- [Input Signal] - [Relay Output] - [OPTION 2 Analogue Output] - [OPTION 3 RS 485 Port] - [OPTION 5 Pulse Output] - [Aux. Powered] - [*Optional Function]

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

OPTION 1

CODE	I/P RANGE
A1	0(4) ~ 20 mA
V1	0 ~ 10 V
VA	0 ~ 50 mV
VB	0 ~ 60 mV
VC	0 ~ 100 mV
AO	Specify A input
VO	Specify V input

CODE	RELAY O/P
N	None
R2	2 Relay
R3	3 Relay
R4	4 Relay*

* If the pulse output is to be selected, the meter can be selected 3 relay maximum.

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	PULSE
N	None
C	Open Collect
R	Relay Contact

CODE	AXU. POWER
A	AC115/230V
OPTION 4	
ADH*	AC/DC85~264V
ADL*	AC/DC20~90V

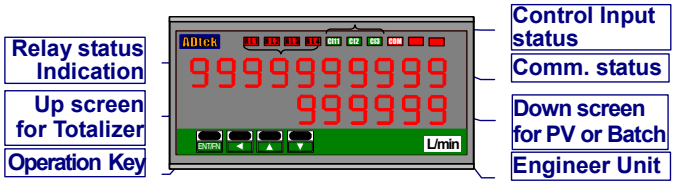
CODE	OPTIONAL FUNC.
3BK	3 Bank Function

■ OPERATION:

■ ERORR MASSAGE

STEP	DESCRIPTION	DISPLAY	FLASH	REMARK
	BEFORE POWER ON, PLEASE CHECK THE SPECIFICATION AND CONNECTION AGAIN.			
	SELF-DIAGNOSIS AND ERROR CODE:			
	ouFL : Display is positive-overflow (Signal is over display range)	ouFL		(Please check the input signal)
	-ouFL : Display is negative-overflow (Signal is under display range)	-ouFL		(Please check the input signal)
	ouFL : ADC is positive-overflow (Signal is higher than input 120%)	ouFL		(Please check the input signal)
	-ouFL : ADC is negative-overflow (Signal is lower than input -120%)	-ouFL		(Please check the input signal)
	EEP / FAIL : EEPROM occurs error	EEP	FAIL	(Please send back to manufactory for repaired)
	AICnG / Pu : Calibrating Input Signal do not process	AICnG	Pu	(Please process Calibrating Input Signal)
	AIC. / FAIL : Calibrating Input Signal error	AIC.	FAIL	(Please check Calibrating Input Signal)
	AoCnG / Pu : Calibrating Output Signal do not process	AoCnG	Pu	(Please process Calibrating Output Signal)
	AIC. / FAIL : Calibrating Output Signal error	AIC.	FAIL	(Please check Calibrating Output Signal)

■ FRONT PANEL:



CS2-TM has two display screens and I/O status indication for purposes.

■ **Numeric Screens**

- **Up screen: 0.28"(0.71cm) red high-brightness LED for 10 digital totalizer.**
- **Down screen: 0.28"(0.71cm) red high-brightness LED for Immediate Value 4 2/3 digital or Batch 6 digital.**

■ **I/O Status Indication**

- **Relay Energized: 4 square red LED**
  - **RL1 display when Relay 1 energized;**
  - **RL2 display when Relay 2 energized;**
  - **RL3 display when Relay 3 energized;**
  - **RL4 display when Relay 4 energized;**
- **External Control Input Energized: 3 square green LED**
  - **ECI1 display when E.C.I. 1 close(dry contact)**
  - **ECI2 display when E.C.I. 2 close(dry contact)**
  - **ECI3 display when E.C.I. 3 close(dry contact)**
- **RS485 Communication: 1 square red LED**
  - **COM will flash when the meter is receive or send data, and COM flash quickly means the data transient quicker.**

■ **Stickers:**

Each meter has a sticker what are functions and engineer label enclosure.

- **Relay energized mode: HH Hi Lo LL DO**
- **E.C.I. functions mode:**
  - **PV.H PV.H(PV Hold) / Tare Tare / DI DI /**
  - **M.RS M.RS(Maximum or Minimum Reset) /**
  - **R.RS R.RS(Reset fo Relay Latch)**
- **Engineer Label: over 80 types.**

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

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

■ **Pass Word:**

Setting range:0000~9999;
User has to key in the right pass word so that get into【Programming Level】. Otherwise, the meter will go back to measuring page. If user forget the password, please contact with the service window.

■ **Function Lock: There are 4 levels selectable for lock.**

- **None: no lock all.**
- **User Level: User level lock. User can get into user level for checking but setting.**
- **Programming Level: Programming level lock. User can get into programming level for checking but setting.**
- **ALL: All lock. User can get into all level for checking but setting.**

■ **Front Key Function**

- **The Key can be set to be the same function as the setting of ECI1.**
- **The Key can be set to be the same function as the setting of ECI2.**
  Ex. The ECI1 set to be Pv.HLd and the function E.1=UP set to be YES in【ECI Group】. When user presses Key, the PV will hold as like as ECI1 close.

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

■ OPERATING DIAGRAM:

➢ USER LEVEL

Power on

Self-diagnosis (All bright)
Totalizer
Batch

uEr 1.0 / CS2.tM — Model number and firmware version

MEASURING PAGE (10digital totalizer + 4 2/3digital PV or 10digital totalizer+6 digital batch)

Press ◀ 1sec. ➡

⬅ Press ◀ 1sec.

EntEr / P.CodE — Enter the password to get into Programming Level
➢ Press ENT to enter & setting

Correct? NO / YES

Default=1000

inPUt / GroUP — ENGINEER LEVEL INPUT GROUP

USER LEVEL

Press ◀ for 1 second can back to Measuring Page

No.	Display	Description
0-01	29999 / Pu	**This page will show up only when bAtCH is setted** **Pv :** Present Value(Immediate Value)
0-02	29999 / bAtCH	**This page will show up only when PV is setted** **bAtCH:** Batch
0-03	10000 / rY1.SP	**rY1.SP: Relay 1 Set-point setting** (Default: PV:10000 Batch: 000000) Range: PV: -19999~+29999 Batch: 000000~999999 ➢ Press ENT to enter & setting
0-04	10000 / rY2.SP	**rY2.SP: Relay 2 Set-point setting** (Default: PV:10000 Batch: 000000) Range: PV: -19999~+29999 Batch: 000000~999999 ➢ Press ENT to enter & setting
0-05	10000 / rY3.SP	**rY3.SP: Relay 3 Set-point setting** (Default: PV:10000 Batch: 000000) Range: PV: -19999~+29999 Batch: 000000~999999 ➢ Press ENT to enter & setting
0-06	10000 / rY4.SP	**This page will show up when pulse output was to specifiedin order.** **rY4.SP: Relay 4 Set-point setting** (Default: PV:10000 Batch: 000000) Range: PV: -19999~+29999 Batch: 000000~999999 ➢ Press ENT to enter & setting
0-05	no / rY.rSt	**This page will not show up when the relay mode was to be set N/R/C mode** **rY.rSt: Reset for energized latch of Relay** Selectable: YES / no ➢ Press ENT to enter & setting
0-06	0 / Min	**Min: PV Minimum storage**
0-07	19999 / MAX	**MAX: PV Maximum storage**
0-08	no / M.rSt	**M.rSt: Reset for Maximum & Minimum storage** Selectable: YES / no ➢ Press ENT to enter & setting
0-09	uEr 1.0 / CS2.tM	**CS2-tM:** Model munber **vEr1.0: firmware version**
0-10	bnK-0 / bAnK	**Optional Function** **bAnK**(Bank): Bank selection Selectable: **bnK-0** / **bnK-1** / **bnK-2** / **bnK-3**
0-01	29999 / Pu	**Cyclic to first page**

➢ ENGINEER LEVEL – INPUT GROUP

MEASURING PAGE

Enter the password to get into Engineer Level

➢ Press ENT to enter & setting

Correct: NO / YES

Default=1000

INPUT GROUP

Press ENT ➡

⬅ Press ◀ 1sec.

ENGINEER LEVEL

In **Function Index Page**, press ENT to enter **Function Setting Page** for setting;
press ◀ over 1 second to return **Function Group Page**.

A-01 Ai.Lo: Analogue input low
(Default: 0.00%);
Range: 0.00%~100.00%
➢ Press ENT to enter & setting

A-02 AiHi: Analogue input high
(Default: 100.00%);
Range: 0.00%~100.00%
➢ Press ENT to enter & setting

A-03 Pv.dP: Decimal Point of PV
(Default: 0);
Selectable:
0 / 0.0 / 0.00 / 0.000 / 0.0000
➢ Press ENT to enter & setting

A-04 Lo.SC: Low scale to relative input low
(Default: 0);
Range: -29999~+29999
➢ Press ENT to enter & setting

A-05 Hi.SC: High scale to relative input high
(Default: 19999);
Range: -19999~+29999
➢ Press ENT to enter & setting

A-06 Square Root function
(Default: no);
Selectable: no / YES
Formular: √(Pv/HS) x HS
➢ Press ENT to enter & setting

➢

A-07 Pv.Zro: Fine Zero Adjustment for PV display
(Default: 0);
Range: -29999~+29999
➢ Press ENT to enter & setting

A-08 Pv.SPn: Fine Span Adjustment for PV display
(Default: 0);
Range: -29999~+29999
➢ Press ENT to enter & setting

A-09 Z.S.CLr: Clear Fine Zero & Span Adjustment for PV display
(Default: nonE);
Selectable:
none: None
Pv.Zro: Clear PV Zero adj
Pv.SPn: Clear PV Span adj
Both: Clear PV Zero & Span adj
➢ Press ENT to enter & setting

A-10 ttL.dP: Decimal Point of Totalizer
(Default: 0);
Selectable:
0 / 0.0 / 0.00 / 0.000 / 0.0000 / 0.0000 / 0.00000
※ **The Meter was design in Decimal Point of Totalizer ≦ Decimal Point of PV**
➢ Press ENT to enter & setting

A-11 ttL.Md: Display Mode of up screen
(Default: noMAL);
Selectable: noMAL / bt.Cnt
noMAL(Normal): Up screen will show up **Totalizer.**
bt.Cnt(Batch Counter): Up screen will show up **Batch Counter**.
➢ Press ENT to enter & setting

A-12 oFL.Md: Run mode after overflow for Totalizer & Batch/Batch counter
(Default: ovFL);
Selectable: r.CYCL / ovFL
r.CYCL(Re-Cycle): It will be re-count from "0" when it is overflow.
ovFL(Overflow): It will be show up "ovFL" when it is overflow.
➢ Press ENT to enter & setting

A-13 SiGn: Positive or Bi-polar selection to make totalizer/Batch up / up and down count.
(Default: PStvE);
Selectable: PStvE / dUAL
PStvE(Postive):Totalizer/Batch will up count, when the PV is positive(PV>0).
dUAL(Dual):Totalizer/Batch will up count, when the PV is positive(PV>0). And Totalizer/Batch will down count, when the PV is negative(PV<0).
➢ Press ENT to enter & setting

A-14 t.bASE: Time Base of Totalizer & Batch
(Default: Min);
Selectable: SEC/Min/HoUr/dAY
➢ Press ENT to enter & setting

A-15 dSPLY: Display selection in down screen
(Default: Pv);
Selectable:
Pv / Mini.H / MAx.H / RS485 / bAtCH
Pv: PV display
Mini.H(Minimum. Hold): PV display with **Minimum Hold function**
MAx.H(Maximum Hold): PV display with **Maximum Hold function**
RS485(RS485): Writing value to display from RS485 command. Totalizer/Batch will count according to the value.
bAtCH(Batch): Batch display
➢ Press ENT to enter & setting

A-16 Lo.Cut: Low Cut level to show "0"
(Default: 0);
Range: -19999~+29999 counts
➢ Press ENT to enter & setting

A-17 AvG: Average for display smooth
(Default: 5 times);
Range: 1(No function)~99 times
➢ Press ENT to enter & setting

A-18 M.AvG: Moving Average for display smooth
(Default: 1 time);
Range: 1(No function)~10 times
➢ Press ENT to enter & setting

A-19 d.FiLt: Digital filter for display to reduce noise influence
(Default: 0);
Selectable:0(No function)/1~99 times
➢ Press ENT to enter & setting

Next Page

Pre. Page

A20 PLS.dv: Pulse output divider
(Default: 1);
Range: 1~9999
※ The maximum output frequency is 1KHz
➢ Press ENT to enter & setting

A21 PLS.Hi: High level time(duty cycle) of pulse
(Default: 0);
Range: 0(Auto)/1~5000 (x 4msec.)
➢ Press ENT to enter & setting

A22 P.CodE: Pass Code Setting for enter Engineer Level
(Default: 0000);
Range: 0000~9999
➢ Press ENT to enter & setting

A23 F.LoCK: Function Level Lock
(Default: nonE);
Selectable: nonE / USEr / EnG / ALL
nonE**(None):** No lock
USEr**(User Level):** User Level lock
EnG**(Engineer Level):** Engineer Level Lock
ALL**(All Level):** All Level lock
➢ Press ENT to enter & setting

A1 Cyclic to first page

➢ ENGINEER LEVEL --- RELAY GROUP (The group will be hidden, if the meter without relay out)

RELAY GROUP
Press ENT FN ➡
⬅ Press ◀ 1sec.

ENGINEER LEVEL

In **Function Index Page**, press ENT to enter **Function Setting Page** for setting;
press ◀ over 1 second to return **Function Group Page**.

B11 rY.Sb: Start band of Relay energized
(Default: 0);
Range: 0~9999 counts
➢ Press ENT to enter & setting

B12 rY.Sd: Start delay time of Relay energized
(Default: 0:00.0);
Range: 0:00.0~**9(m):59.9(s)**
➢ Press ENT to enter & setting

B13 rY1.Md: Relay 1 energized mode
(Default: totL.n);
Selectable:
oFF / Lo / Hi / Lo.HLd / Hi.HLd / do / btcH.n / btCH.r / btCH.C / totL.n / totL.r / totL.C
oFF**:** Turn off the Relay
Lo**(Low Level Energized):** The relay energized when PV< Setpoint.
Hi**(High Level Energized):** The relay energized when PV> Setpoint.
Lo.HLd**(Low Level energized latch):** When the PV lower than set-point, the relay will be energized and latch until manual reset by from key in **User Level** or **E.C.I.**
Hi.HLd**(High Level energized latch):** When the PV higher than set-point, the relay will be energized and latch until manual reset by from key in **User Level** or **E.C.I.**
do**(Digital Output):** Relay energized by RS485 command
btcH.n**: Batch control with N mode energized**
btCH.r**: Batch control with R mode energized**
btCH.C**: Batch control with C mode energized**
totL.n**: Totalizer control with N mode energized**
totL.r**: Totalizer control with R mode energized**
totL.C**: Totalizer control with C mode energized**
➢ Press ENT to enter & setting

B40 This page will only show up when rY1.Md set N/R/C mode
rY1.ot: Relay 1 energized time
(Default: 0:00.0);
Range: 0:00.0~**9(m):59.9(s)**
➢ Press ENT to enter & setting

B4 This page will only show up when rY1.Md set Hi/Lo mode
rY1.HY: Relay 1 Hysteresis
(Default: 0);
Range: 0~5000 counts
➢ Press ENT to enter & setting

B5 This page will only show up when rY1.Md set Hi/Lo mode
rY1.rd: Relay 1 energized delay
(Default: 0:00.0);
Range: 0:00.0~**9(m):59.9(s)**
➢ Press ENT to enter & setting

B6 This page will only show up when rY1.Md set Hi/Lo mode
rY1.Fd: Relay 1 de-energized delay
(Default: 0:00.0);
Range: 0:00.0~**9(m):59.9(s)**
➢ Press ENT to enter & setting

B17 rY.2.Md: Relay 2 energized mode
(Default: Hi);
Range: oFF / Lo / Hi / Lo.HLd / Hi.HLd / do / btcH.n / btCH.r / btCH.C / totL.n / totL.r / totL.C
……as samr as rY1.Md……
➢ Press ENT to enter & setting

B80 This page will only show up when rY2.Md set N/R/C mode
rY2.ot: Relay 2 energized time
(Default: 0:00.0);
Range: 0:00.0~**9(m):59.9(s)**
➢ Press ENT to enter & setting

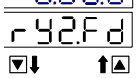
B8 This page will only show up when rY2.Md set Hi/Lo mode
rY.2.HY: Relay 2 Hysteresis
(Default: 0);
Range: 0~5000 counts
➢ Press ENT to enter & setting

B9 This page will only show up when rY2.Md set Hi/Lo mode
rY2.rd: Relay 2 energized delay
(Default: 0:00.0);
Range: 0:00.0~**9(m):59.9(s)**
➢ Press ENT to enter & setting

Next Page

Pre. Page

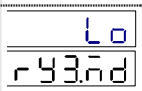
B_110



This page will only show up when rY2.Md set Hi/Lo mode

rY2.Fd: Relay 2 de-energized delay
(Default: 0:00.0);
Range: 0:00.0~**9(m):59.9(s)**
➢ Press ENT to enter & setting

B_111



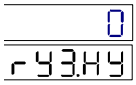
rY3.Md: Relay 3 energized mode
(Default: Lo);
Selectable:
oFF / Lo / Hi / Lo.HLd / Hi.HLd / do / btcH.n / btCH.r / btCH.C / totL.n / totL.r / totL.C / Go-1.2
Go-1.2(Go compare with SP1 & SP2): Go function with Set-Point 1 and Set-point 2. Go relay energized when the condition is **set-point 1(Hi) > reading > set-point 2(Lo)**
…..as same as rY1.Md……
➢ Press ENT to enter & setting

B_1110

This page will only show up when rY3.Md set N/R/C mode

rY3.ot: Relay 3 energized time
(Default: 0:00.0);
Range: 0:00.0~**9(m):59.9(s)**
➢ Press ENT to enter & setting

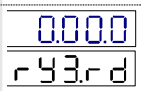
B_112



This page will only show up when rY3.Md set Hi/Lo mode

rY3.HY: Relay 3 Hysteresis
(Default: 0);
Range: 0~5000 counts
➢ Press ENT to enter & setting

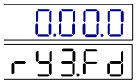
B_113



This page will only show up when rY3.Md set Hi/Lo mode

rY3.rd: Relay 3 energized delay
(Default: 0:00.0);
Range: 0:00.0~**9(m):59.9(s)**
➢ Press ENT to enter & setting

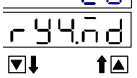
B_114



This page will only show up when rY3.Md set Hi/Lo mode

rY3.Fd: Relay 3 de-energized delay
(Default: 0:00.0);
Range: 0:00.0~**9(m):59.9(s)**
➢ Press ENT to enter & setting

B_115



This page will not show up when the meter to specify with pulse output in order.

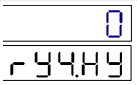
rY4.Md: Relay 4 energized mode
(Default: Lo);
Range: oFF / Lo / Hi / Lo.HLd / Hi.HLd / do / btcH.n / btCH.r / btCH.C / totL.n / totL.r / totL.C
….as same as rY3.Md……
➢ Press ENT to enter & setting

B_116_0

This page will only show up when rY4.Md set N/R/C mode

rY4.ot: Relay 4 energized time
(Default: 0:00.0);
Range: 0:00.0~**9(m):59.9(s)**
➢ Press ENT to enter & setting

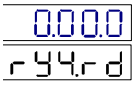
B_116



This page will only show up when rY4.Md set Hi/Lo mode

rY4.HY: Relay 4 Hysteresis
(Default: 0);
Range: 0~5000 counts
➢ Press ENT to enter & setting

B_117



This page will only show up when rY4.Md set Hi/Lo mode

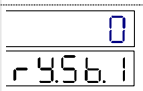
rY4.rd: Relay 4 energized delay
(Default: 0:00.0);
Range: 0:00.0~**9(m):59.9(s)**
➢ Press ENT to enter & setting

B_118

This page will only show up when rY4.Md set Hi/Lo mode

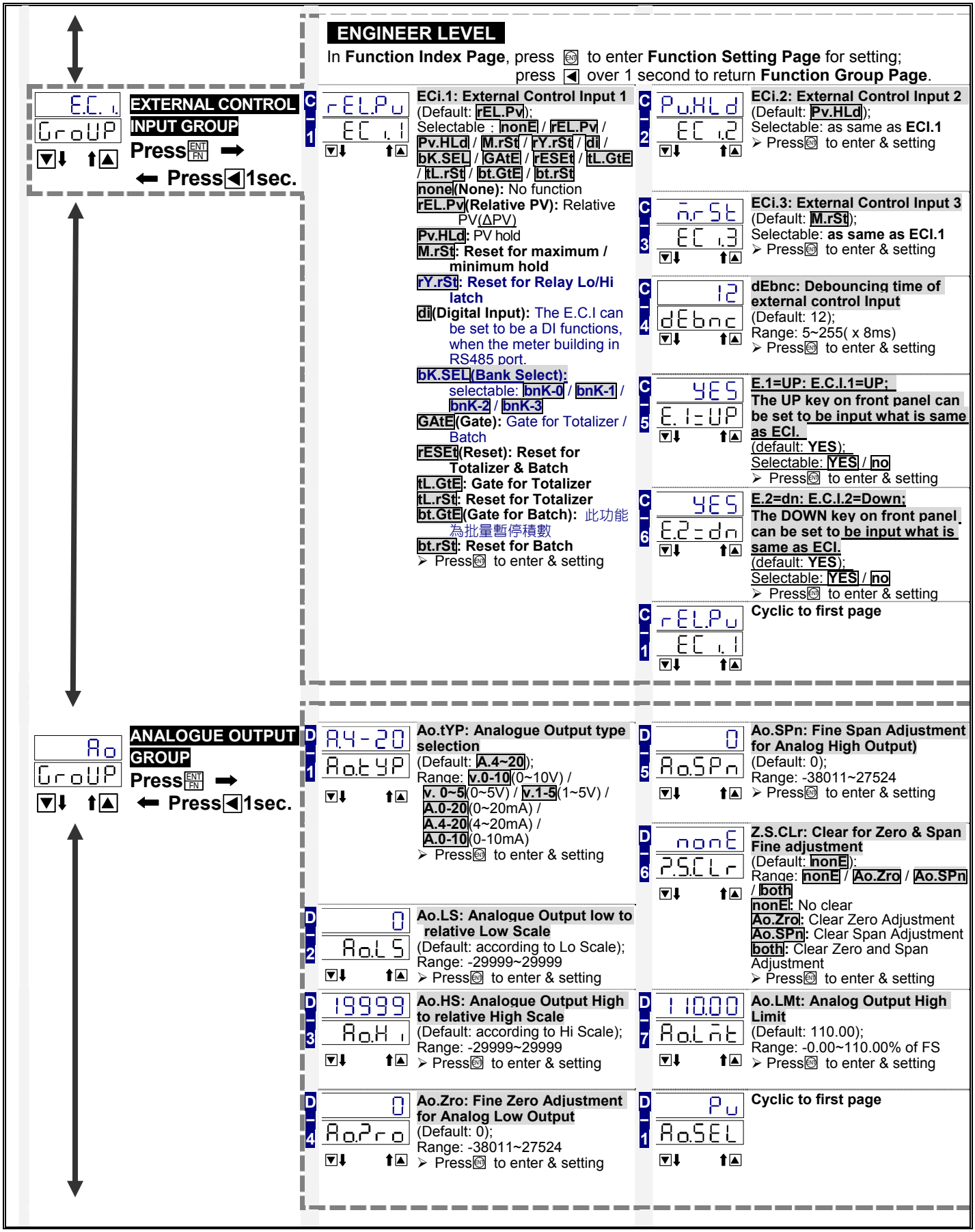
rY4.Fd: Relay 4 de-energized delay
(Default: 0:00.0);
Range: 0:00.0~**9(m):59.9(s)**
➢ Press ENT to enter & setting

B_11

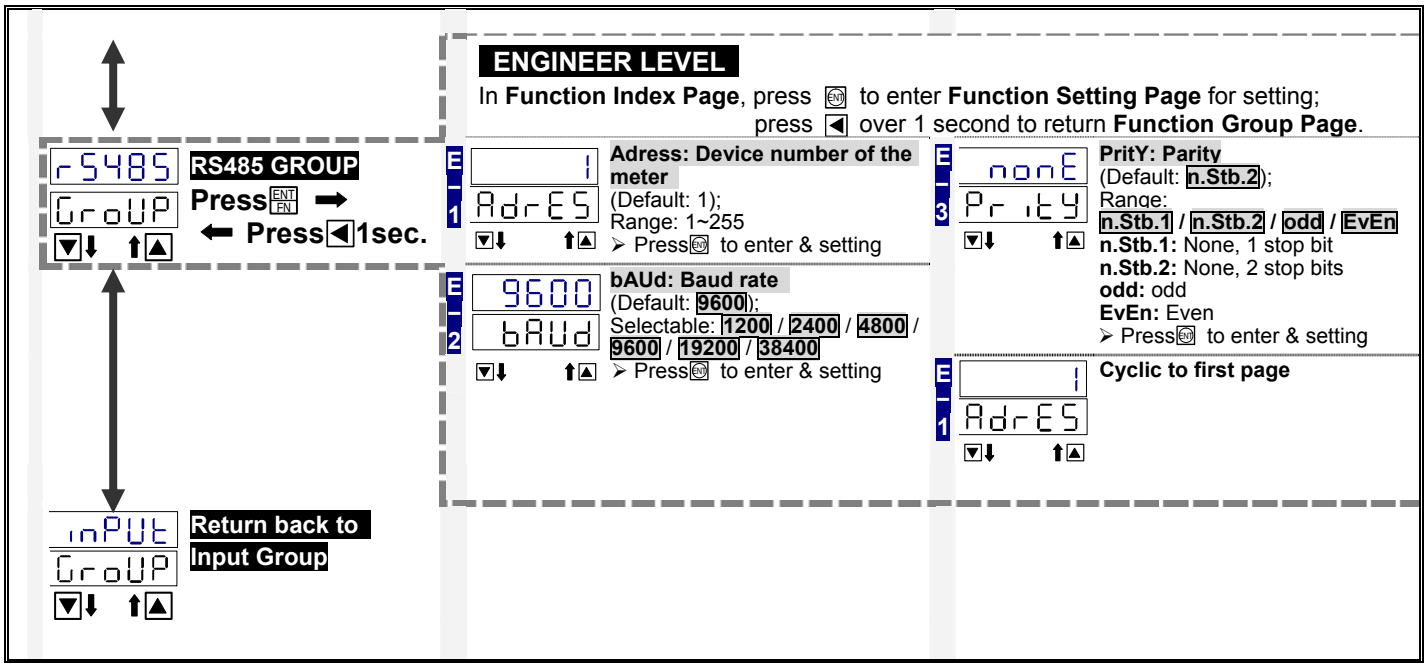


Cyclic to first page

➢ ENGINEER LEVEL --- E.C.I and ANALOGUE OUTOUT
(The group will be hidden, if the meter without analogue output



➢ ENGINEER LEVEL --- RS485 GROUP(The group will be hidden, if the meter without RS485



■ RS485 ModBus RTU Mode

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
		Three Word Area				
TOTAL*	0000h	-1999999999~ 9999999999	Totalizer ***(High Word)**		R	
TOTAL*	0001h		Totalizer ***(Mid Word)**		R	
TOTAL*	0002h		Totalizer ***(Low Word)**		R	
BATCH*	0003h	-1999999999~ 9999999999	Batch ***(High Word)**		R	
BATCH*	0004h		Batch ***(Mid Word)**		R	
BATCH*	0005h		Batch ***(Low Word)**		R	
r1.SP*	0006h	-1999999999~ 9999999999	Relay1 Set Point ***(High Word)**	10000	R/W	
r1.SP*	0007h		Relay1 Set Point ***(Mid Word)**	10000	R/W	
r1.SP*	0008h		Relay1 Set Point ***(Low Word)**	10000	R/W	
r2.SP*	0009h	-1999999999~ 9999999999	Relay2 Set Point ***(High Word)**	10000	R/W	
r2.SP*	000Ah		Relay2 Set Point ***(Mid Word)**	10000	R/W	
r2.SP*	000Bh		Relay2 Set Point ***(Low Word)**	10000	R/W	
r3.SP*	000Ch	-1999999999~ 9999999999	Relay3 Set Point ***(High Word)**	10000	R/W	
r3.SP*	000Dh		Relay3 Set Point ***(Mid Word)**	10000	R/W	
r3.SP*	000Eh		Relay3 Set Point ***(Low Word)**	10000	R/W	
r4.SP*	000Fh	-1999999999~ 9999999999	Relay4 Set Point ***(High Word)**	10000	R/W	
r4.SP*	0010h		Relay4 Set Point ***(Mid Word)**	10000	R/W	
r4.SP*	0011h		Relay4 Set Point ***(Low Word)**	10000	R/W	
AoLS*	0012h	-29999~29999	Analogue Output Low Scale ***(High Word)**	0	R/W	
AoLS*	0013h		Analogue Output Low Scale ***(Mid Word)**	0	R/W	
AoLS*	0014h		Analogue Output Low Scale ***(Low Word)**	0	R/W	
AoH1*	0015h	-29999~99999	Analogue Output High Scale ***(High Word)**	19999	R/W	
AoH1*	0016h		Analogue Output High Scale ***(Mid Word)**		R/W	
AoH1*	0017h		Analogue Output High Scale ***(Low Word)**		R/W	
		One Word Area				
PV	0018h		Present Value		R	
RELAY STATUS	0019h	0~1	RELAY STATUS **bit0~bit3:** relay1~relay4; **0**=Relay off **1**=Relay on	00h	R/W	
E.C.I. STATUS	001Ah	0~1	External Control Input STATUS **bit0~bit2:** E.C.I.1~ E.C.I.3; **0**=Un-triged **1**=Triged	00h	R/W	
PuHLd	001Bh		PV Hold	0	R	
-in	001Ch		The Minimum of PV		R	
-AS	001Dh		The Maximum of PV		R	
SYSTEM STATUS	001Eh		SYSTEM STATUS **bit0**=1, Input EEP fail; **bit1**=1, Analogue Input calibration fail; **bit2**=1, Analogue Input calibration NG; **bit3**=1, Analogue Output calibration fail; **bit4**=1, Analogue Output calibration NG	00h	R	
-rSt	001Fh	0~1	Reset Maximum & Minimum Value storage **0:**No **1:**Yes	00h	R/W	
ttLnd	0020h	0~1	Mode of Totalizer; **0:**Normal **1:**batch counter	00h	R/W	

Name	Address	Range	Explain	Initial	Write/Read	Note
oFLnd	0021h	0~1	Run mode after overflow **0:**Overflow **1:**Re-Cycle	00h	R/W	
SiGn	0022h	0~1	Sign: Totalizer & Batch increase or increase+decrease with +/- PV **0:**Positive **1:**Dual(Positive and negative)	00h	R/W	
TB.RST	0023h	0~1	The Reset for Totalizer and Batch **0:**No **1:**Yes	00h	R/W	
RS485	0024h	-29999~29999	PV will be written in by RS485	00h	W	

➢ Engineer Level

【Input Group】

Name	Address	Range	Explain	Initial	Write/Read	Note
		One Word Area				
AiLo	0025h	00.00~100.00%	Analogue Input Low	0	R/W	
AiHi	0026h	00.00~100.00%	Analogue Input High	10000	R/W	
PudP	0027h	0~4	Decimal Point of PV **0:** 00000 **1:** 0000.0 **2:** 000.00 **3:** 00.000 **4:** 0.0000	00h	R/W	
ttLdP	0028h	0~4	Decimal Point of Totalizer **0:** 00000 **1:** 0000.0 **2:** 000.00 **3:** 00.000 **4:** 0.0000	00h	R/W	
tbASE	0029h	0~3	Time Base of Totalizer & Batch **0:** Second **1:** Minute **2:** Hour **3:** Day	01h	R/W	
LoSC	002Ah	-19999~29999	Low Scale vs. Input Low	0	R/W	
HiSC	002Bh	-19999~29999	High Scale vs. Input High	19999	R/W	
PuPro	002Ch	-19999~29999	PV Zero	0	R/W	
PuSPn	002Dh	-19999~29999	PV Span	0	R/W	
P.S.CLr	002Eh	0~3		0	R/W	
dSPLY	002Fh	0~4	Display Mode **0:** PV **1:** Minimum Hold **2:** Maximum Hold **3:** RS485 **4:** Batch	00h	R	
LoCUt	0030h	-29999~29999	Low Cut	0	R/W	
AvG	0031h	1~99	Average display for PV	5	R/W	
dFiLt	0032h	0~99	Digital Filter for PV	0	R/W	
P.CodE	0033h	0000~9999	Pass Code	1000	R/W	
PLSdv	0034h	1~9999	Pulse devider	1	R/W	
F.LoCK	0035h	0~3	Function Lock **0:** none **1:** User Level **2:** Engineer Level **3:** All	00h	R/W	

【Relay Group】

Name	Address	Range	Explain	Initial	Write/Read	Note
ry5b	0036h	0000~9999	Start Band of input 1 for relay energized	0	R/W	
ry5d	0037h	0000~5999 (0.1second)	Start Delay Time of input 1 for relay energized	0	R/W	
ry1nd	0038h	0~11	Relay 1 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: btCH.n**(Batch with N Mode) **7: btCH.r**(Batch with R Mode) **8: btCH.C**(Batch with C Mode) **9: totL.n**(Totalizer with N Mode) **10: totL.r**(Totalizer with R Mode) **11: totL.C**(Totalizer with C Mode)	9	R/W	

Name	Address	Range	Explain	Initial	Write/Read	Note
ry1.HY	0039h	0000~5000	Hysteresis of Relay 1	0	R/W	
ry1.rd	003Ah	0000~5999 (0.1second)	Energized Delay Time of Relay 1	0	R/W	
ry1.Fd	003Bh	0000~5999 (0.1second)	De-Energized Delay Time of Relay 1	0	R/W	
ry2.nd	003Ch	0~11	Relay 2 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: btCH.n**(Batch with N Mode) **7: btCH.r**(Batch with R Mode) **8: btCH.C**(Batch with C Mode) **9: totL.n**(Totalizer with N Mode) **10: totL.r**(Totalizer with R Mode) **11: totL.C**(Totalizer with C Mode)	6	R/W	
ry2.HY	003Dh	0000~5000	Hysteresis of Relay 2	0	R/W	
ry2.rd	003Eh	0000~5999 (0.1second)	Energized Delay Time of Relay 2	0	R/W	
ry2.Fd	003Fh	0000~5999 (0.1second)	De-Energized Delay Time of Relay 2	0	R/W	
ry3.nd	0040h	0~11	Relay 3 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: btCH.n**(Batch with N Mode) **7: btCH.r**(Batch with R Mode) **8: btCH.C**(Batch with C Mode) **9: totL.n**(Totalizer with N Mode) **10: totL.r**(Totalizer with R Mode) **11: totL.C**(Totalizer with C Mode)	0	R/W	
ry3.HY	0041h	0000~5000	Hysteresis of Relay 3	0	R/W	
ry3.rd	0042h	0000~5999 (0.1second)	Energized Delay Time of Relay 3	0	R/W	
ry3.Fd	0043h	0000~5999 (0.1second)	De-Energized Delay Time of Relay 3	0	R/W	
ry4.nd	0044h	0~11	Relay 4 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: btCH.n**(Batch with N Mode) **7: btCH.r**(Batch with R Mode) **8: btCH.C**(Batch with C Mode) **9: totL.n**(Totalizer with N Mode) **10: totL.r**(Totalizer with R Mode) **11: totL.C**(Totalizer with C Mode)	0	R/W	
ry4.HY	0045h	0000~5000	Hysteresis of Relay 4	0	R/W	
ry4.rd	0046h	0000~5999 (0.1second)	Energized Delay Time of Relay 4	0	R/W	
ry4.Fd	0047h	0000~5999 (0.1second)	De-Energized Delay Time of Relay 4	0	R/W	

Name	Address	Range	Explain	Initial	Write/Read	Note
rY.rSt	0048h		Reset for Relay Energized Hold **0:** No **1:** Yes	0	R/W	
bAnK	0049h	0~3	Select the Banks of storage **bit0**=1; Bank1 selected **bit1**=1; Bank2 selected **bit2**=1; Bank3 selected **bit0**=bit1-bit2=0; Bank0 selected	00h	R/W	

【ECI Group】

Name	Address	Range	Explain	Initial	Write/Read	Note
EC i.1	004Ah	0~12	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); **6: bK.SEL**(Bank selection) **7: GAtE**(Gate for Totalizer & Batch) **8: rESEt**(Reset for Totalizer & Batch) **9: tL.GtE**(Gate for Totalizer) **10: tL.rSt**(Reset for Totalizer) **11: bt.GtE**(Gate for Batch) **12: bt.rSt**(Reset for Batch)	1	R/W	
EC i.2	004Bh	0~12	External Control Input 2 **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); **6: bK.SEL**(Bank selection) **7: GAtE**(Gate for Totalizer & Batch) **8: rESEt**(Reset for Totalizer & Batch) **9: tL.GtE**(Gate for Totalizer) **10: tL.rSt**(Reset for Totalizer) **11: bt.GtE**(Gate for Batch) **12: bt.rSt**(Reset for Batch)	8	R/W	
EC i.3	004Ch	0~12	External Control Input 3 **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); **6: bK.SEL**(Bank selection) **7: GAtE**(Gate for Totalizer & Batch) **8: rESEt**(Reset for Totalizer & Batch) **9: tL.GtE**(Gate for Totalizer) **10: tL.rSt**(Reset for Totalizer) **11: bt.GtE**(Gate for Batch) **12: bt.rSt**(Reset for Batch)	7	R/W	
dEbnc	004Dh	5~255	ECI debouncing 5~255 *8mSec	12	R/W	

【Analogue Output Group】

Name	Address	Range	Explain	Initial	Write/Read	Note
Reserved	004Eh				R	
Ao.tYP	004Fh	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	
P.SCLr	0050h	0~3	The clear of AO_ZERO and AO_SPAN **0:** None **1:** AO_ZERO **2:** AO_SPAN **3:** Both	0	R/W	
Ao.Lnt	0051h	00.00%~110.00%	Analogue Output High Limit	11000	R/W	

【RS485 Group】						
Name	**Address**	**Range**	**Explain**	**Initial**	**Write/Read**	**Note**
AdrES	0052h	1~255	RS485 address	1	R/W	
bAUd	0053h	0~5	RS485 baud rate **0:**1200 **1:**2400 **2:**4800 **3:**9600 **4:**19200 **5:**38400	03h	R/W	
Pr.tY	0054h	0~3	RS485 parity **0:** n-8-1 **1:** n-8-2, **2:** odd, **3:** even,	01h	R/W	
SQrot	0055h	0~1	Square Root function **0:** No **1:** Yes	0h	R/W	