

VAM_(v1.0) VOLT & AMP METER-DUAL DISPLAY OPERATION MANUAL

FEATURE

- Measuring 2 channels Voltage and Current for DC / AC / TRMS with dual display screen for **dual isolated input**
- **Mathematic function Addition / Subtraction / Multiplication / Division / high or low selector in 2 channels input**
- User function, Easily programmable via the front panel
- **4 relay for Hi / Lo / Go / DO energized with Start Delay / Hysteresis / Energized & De-energized Delay / Relay Energized Hold..... functions**
- Analogue output can selected to relative display 1 or display 2
- RS 485 communication port available in optional
- CE Approved



FUNCTIONS

DISPLAY FUNCTIONS

Multi-Cross Function selection:

There are 2 isolated input relative 2 screens with Multi-Cross Functions in difference purposes.

EX: The meter can be set:

- DIS1 relative INPUT1
- DIS2 relative INPUT1 X INPUT2
- or
- DIS1 relative INPUT1 ÷ INPUT2
- DIS1 shows value from RS485 command to write in.

Mathematics Function:

The displays can be set to show the mathematics + - X ÷ in 2 isolated input

Over 99999 count, will display 0.0FL

Maximum Hold or Minimum Hold:

The meter will keep display in maximum (or minimum) value during power on until manual reset by front key in [User Level] or [External Control Input(E.C.I.)]

PV Hold

[External Control Input(E.C.I.)] can be set to be [PV Hold] function. The display will be hold, when the E.C.I. is closed until the E.C.I. is to be open.

Write to display by RS485 command

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.

Low Cut / Digital Filter / Digital Fine Adjustment

Low Cut: setting range from -19999~+19999 counts.

➢ If the setting value is positive, it means the range of absolute value will be 0; $PV \leq \text{Setting value}$, 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; $PV \leq -\text{Setting value}$, 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 filter:** setting range from 0(No filter)/1~99 times. The digital filter can reduce the magnetic noise in field.

● **Digital Fine Adjustment:** setting range from -19999~+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.

RELAY FUNCTIONS

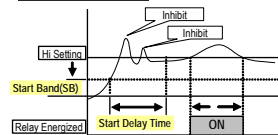
Start Delay

Hysteresis: Settable range from 0~9999 Counts

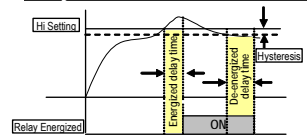
Relay energized delay: Settable range from 0.1(second)~9(minutes)59.9(seconds);

Relay de-energized delay: Settable range from 0.1(second)~9(minutes)59.9(seconds)

Start Delay



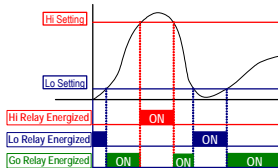
Energized / De-energized Delay & Hysteresis



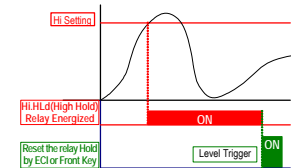
Relay energized mode Hi / Lo / Hi.HLd / Lo.HLd / DO / Go-1.2 / Go-2.3

- **Hi:** Relay will energize when $PV > \text{Set-Point}$
- **Lo:** Relay will energize when $PV < \text{Set-Point}$
- **Hi.HLd (Lo.HLd):** When the PV Higher (or lower) than set-point, the relay will be energized and hold until manual reset by front 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)**

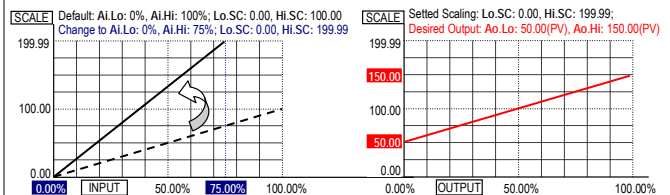
Hi / Lo / Go Relay Energized



Hi(Lo) Energized Hold & Reset



ANALOGUE OUTPUT FUNCTIONS



APPLICATION

Switch Boards, Motor Control Boards, Display Voltage or Amp for Mechanical Equipment, Testing Instruments

Any Mathematics + - X ÷ in 2 isolated input

EX: $kWdc = Vdc(\text{Input 1}) \times Adc(\text{Input 2})$;

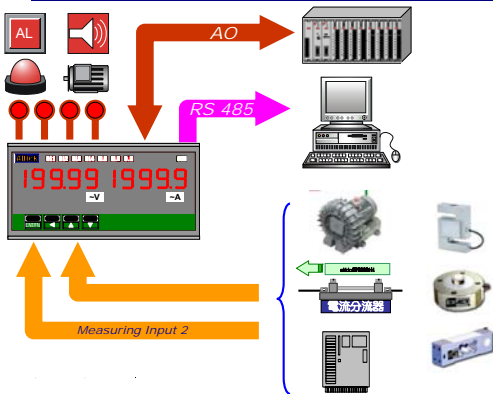
Total Weight = Input 1(mV/V 1) + Input 2(mV/V 2)

APPLICATION

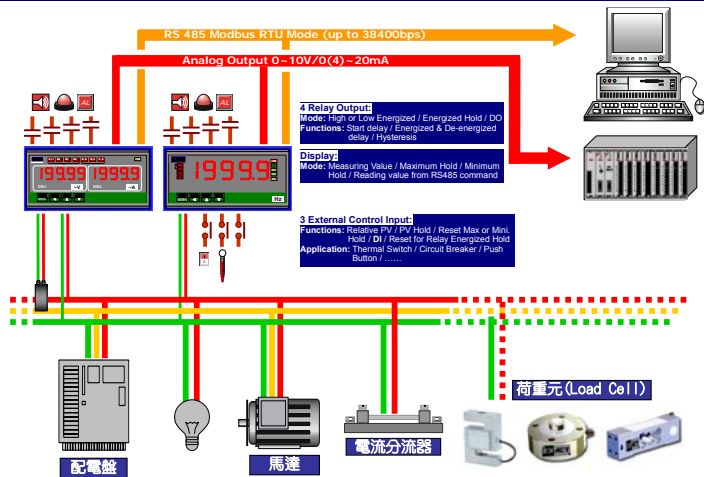
Switch Boards
 Motor Control Boards
 Display Voltage or Amp for Mechanical Equipment
 Testing Instruments

Any Mathematics $+ - \times \div$ in 2 isolated input

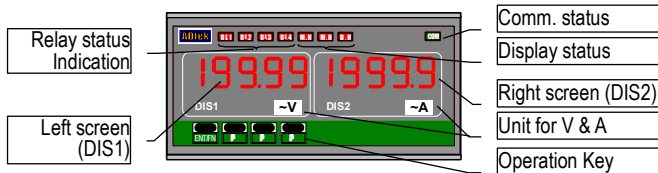
EX: $KWdc = Vdc(Input\ 1) \times Adc(Input\ 2)$
 Total Weight = Input 1(mV/V) + Input 2(mV/V 2)



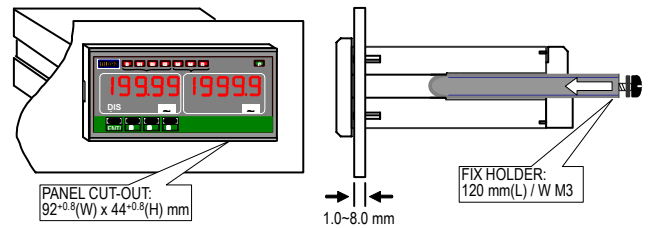
VAM & CS2-F APPLICATION FOR VOLTAGE / CURRENT & FREQUENCY MEASURING



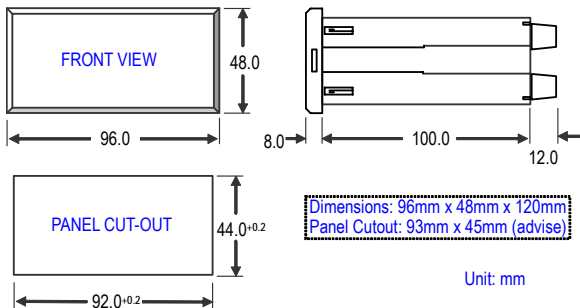
FRONT PANEL



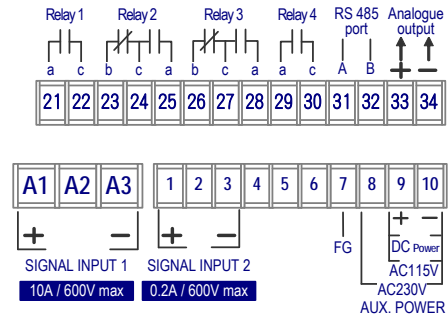
INSTALLATION



DIMENSIONS



WIRING DIAGRAM








ORDER INFORMATION

ORDER INFORMATION



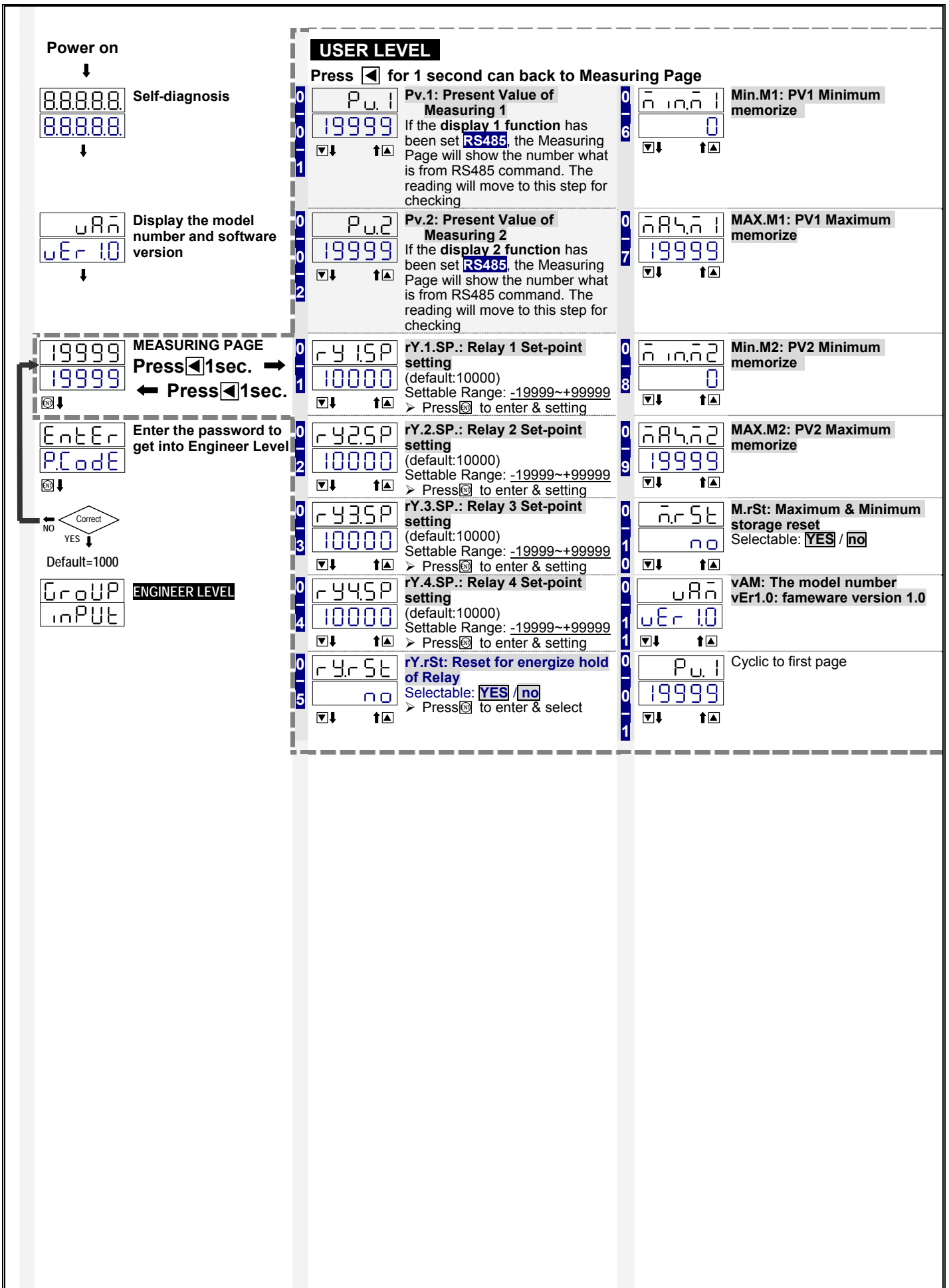
CODE	VOLT INPUT	CODE	CURRENT INPUT	CODE	RELAY O/P	CODE	ANALOG O/P	CODE	RS485 PORT	CODE	AXU. POWER
D	DC measuring	D	DC measuring	N	None	N	None	N	None	A	AC 115/230 V
A	AC measuring	A	AC measuring	R2	2 Relay	V	0-10V	8	RS 485		
T	TRMS measuring	T	TRMS measuring	R4	4 Relay	I	0(4)-20mA				
V1	0 ~ 199.99 mV	A1	0 ~ 199.99 μA								
V2	0 ~ 1.9999 V	A2	0 ~ 1.9999 mA								
V3	0 ~ 19.999 V	A3	0 ~ 19.999 mA								
V4	0 ~ 199.99 V	A4	0 ~ 199.99 mA								
V5	0 ~ 300.0 V	A5	0 ~ 1.9999 A								
V6	0 ~ 600 V	A6	0 ~ 1.0000 A								
VO	Specify V input	A7	0 ~ 5.000 A								
	* Input 2: Max current input will be a under 199.99mA.	A8	0 ~ 10.000 A								
		AO	Specify A input								

OPERATING STEPS:

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 reparaire)
	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)
	RoCnG / Pu : Calibrating Output Signal do not process	RoCnG	Pu	(Please process Calibrating Output Signal)
	AiC / FAiL : Calibrating Output Signal error	AiC	FAiL	(Please check Calibrating Output Signal)
	*Please enter to Engineer Level to check and set the parameters when users start to install the meter *KEY FUNCTIONS:  SHIFT: (1) In each Function Index Page , press this key about 1 second will return to the Function Group . (2) In Function Setting Page , press this key about 1 second will return to the Function Index page . (3) During Setting, press this key will move the bright digit (i.e. can be adjusted digit)  UP: (1) During number Setting, press this key can roll the digit up. (2) In Function Setting Page , press this key can switch functions. (3) In Function Index Page , press this key will back to the last Function Index Page .  DOWN: (1) During number Setting, press this key can roll the digit down. (2) In Function Setting Page , press this key can switch functions. (3) In Function Index Page , press this key will go to the next Function Index Page .  ENTER: Press this key to confirm and save the setting.			➤ In Engineer Level , the screen will return to Measuring Page after do not press any key over 2 minutes, or press  for 1 second.

OPERATING DIAGRAM:

USER LEVEL



ENGINEER LEVEL – INPUT 1 GROUP

ENGINEER LEVEL

In Function Index Page, press **[FNC]** to enter **Function Setting Page** for setting; press **[←]** over 1 second to return **Function Group Page**.

GROUP INPUT 1 GROUP
 Press **[FNC]** →
 ← Press **[←]** 1sec.

A1-1-1	Ai.Lo	Ai1.Lo: Analogue input 1 low (Default: 0.00%); Range: 0.00%~100.00% > Press [FNC] to enter & setting	A1-1-0	dPLY.1	dPLY1: Display 1 [DS1] Function (default: Pv.M1); Selectable: Pv.M1 / Min.M1 / Max.M1 / RS485 Pv.M1 : Present Value of Pv.M1 Min.M1 : Minimum. Hold of Pv.M1 Max.M1 : Maximum Hold of Pv.M1 RS485 : Writing to display from RS485 command > Press [FNC] to enter & setting
A1-1-2	Ai.Hi	Ai1.Hi: Analogue input 1 high (Default: 100.00%); Range: 0.00%~100.00% > Press [FNC] to enter & setting	A1-1-1	Lo.Ct.1	Lo.Ct.1: Low Cut level to show "0" for display 1 [DS1] (default: 0); Settable: ±19999 counts > Press [FNC] to enter & setting
A1-1-3	Pv.dP	Pv1.dP: Decimal Point of PV1 (Default: 0); Range: 0 / 0.0 / 0.00 / 0.000 / 0.0000 > Press [FNC] to enter & setting	A1-1-2	AvG	AvG: Average for display 1 [DS1] and display 2 [DS2] smooth (default: 5 time); Settable: 1(no function)~99times > Press [FNC] to enter & setting
A1-1-4	Lo.SC.1	Lo.SC.1: Low scale to relative input 1 low (Default: 0); Range: -19999~+29999 > Press [FNC] to enter & setting	A1-1-3	d.FiLt	d.FiLt: Digital filter for display 1 [DS1] and display 2 [DS2] (default: 0); Selectable: 0(no function)/1~99times > Press [FNC] to enter & setting
A1-1-5	Hi.SC.1	Hi.SC.1: High scale to relative input 1 high (Default: 19999); Range: -19999~+29999 > Press [FNC] to enter & setting	A1-1-4	dn.KEY	dn.KEY: Down key function (default: nonE); 選擇範圍: nonE / REL.Pv / Pv.HLd / M.rSt / rY.rSt nonE (None): no function REL.Pv : Relative PV(ΔPV) Pv.HLd : PV hold M.rSt : Reset for max./mini. memorize rY.rSt : Reset for Relay Lo/Hi energized hold. > Press [FNC] to enter & setting
A1-1-6	Pv1.zo	Pv1.zo: Fine Zero Adjustment for PV display 1 (Default: 0); Range: -19999~29999 > Press [FNC] to enter & setting	A1-1-5	P.CodE	P.CodE: Pass Code for enter Engineer Level (default: 0000); Selectable: 0000~9999 > Press [FNC] to enter & setting
A1-1-7	Pv1.SPn	Pv1.SPn: Fine Span Adjustment for PV display 1 (Default: 0); Range: -19999~29999 > Press [FNC] to enter & setting	A1-1-6	F.LoCk	F.LoCk: Function Level Lock (default: nonE); Selectable: nonE / USER / EnG / ALL nonE : No lock USER : User Level lock EnG : Engineer Level lock ALL : All Level lock > Press [FNC] to enter & setting
A1-1-8	Z.S.CL1	Z.S.CL1: Clear Fine Zero & Span Adjustment for PV display 1 (Default: nonE); Range: nonE / Pv.Zro / Pv.SPn / both > Press [FNC] to enter & setting	A1-1-7	Ai.Lo	Cyclic to first page
A1-1-9	Pv.M1	Pv.M1=: Mathematic function for PV display 1 [DS1] (default: Pv.1); Selectable: Pv.1 /1. Add.2 /1. Sub.2 / 2. Sub.1 / 1. MUL.2 / 1. div.2 / 2. div.1 Pv.1 : [DS1] relative input 1 1. Add.2 : [DS1] shows PV1+ PV 2 2. Sub.1 : [DS1] shows PV2 - PV 1 1. MUL.2 : [DS1] shows PV1xPV 2 1. div.2 : [DS1] shows PV1÷ PV 2 2. div.1 : [DS1] shows PV2÷ PV 1 > Press [FNC] to enter & select	A1-1-8	Ai.Lo	

ENGINEER LEVEL – INPUT 2 GROUP

GROUP INPUT 2 GROUP

Press **ENT** →

← Press **1** 1sec.

GROUP

INPUT 2 GROUP

↓ ↑

ENGINEER LEVEL

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

A 2 1	A i2Lo 0.00	Ai2.Lo: Analogue input 2 low (Default: 0.00%); Range: 0.00%~100.00% > Press ENT to enter & setting	A 2 1 0	dPLY2 Pv.M2	dPLY2: Display 2 [DS2] Function (default: Pv.M2); Selectable: Pv.M2 / Min.M2 / Max.M2 / RS485 Pv.M2 : Present Value of Pv.M2 Min.M2 : Minimum. Hold of Pv.M2 Max.M2 : Maximum Hold of Pv.M2 RS485 : Writing value to display from RS485 command > Press ENT to enter & setting	
A 2 2	A i2Hi 100.00	Ai2.Hi: Analogue input 2 high (Default: 100.00%); Range: 0.00%~100.00% > Press ENT to enter & setting				
A 2 3	Pv2.dP 0	Pv2.dP: Decimal Point of PV2 (Default: 0); Range: 0 / 0.0 / 0.00 / 0.000 / 0.0000 > Press ENT to enter & setting				
A 2 4	Lo.SC.2 0	Lo.SC.2: Low scale to relative input 2 low (Default: 0); Range: -19999~+29999 > Press ENT to enter & setting		A 2 1 1	Lo.Ct.2 0	Lo.Ct.2: Low Cut level to show "0" for display 2 [DS2] (default: 0); Settable: ±19999 counts > Press ENT to enter & setting
A 2 5	Hi.SC.2 19999	Hi.SC.2: High scale to relative input 2 high (Default: 19999); Range: -19999~+29999 > Press ENT to enter & setting		A 2 1 2	AvG 5	AvG: Average for display 1 [DS1] and display 2 [DS2] smooth (default: 5 time); Range: 1(no function)~99times > Press ENT to enter & setting
A 2 6	Pv2.Zo 0	Pv2.Zo: Fine Zero Adjustment for PV display 2 (Default: 0); Range: -19999~29999 > Press ENT to enter & setting		A 2 1 3	d.FiLt 0	d.FiLt: Digital filter for display 1 [DS1] and display 2 [DS2] to reduce noise influence (default: 0); Selectable: 0(no function)/1~99times > Press ENT to enter & setting
A 2 7	Pv2.Sn 0	Pv2.Sn: Fine Span Adjustment for PV display 2 (Default: 0); Range: -19999~29999 > Press ENT to enter & setting		A 2 1 4	dn.KEY none	dn.KEY: Down key function (default: none); 選擇範圍: none / rEL.Pv / Pv.HLd / M.rSt / rY.rSt none (None): no function rEL.Pv : Relative PV(ΔPV) Pv.HLd : PV hold M.rSt : Reset for max./mini. memorize rY.rSt : Reset for Relay Lo/Hi energized hold. > Press ENT to enter & setting
A 2 8	Z.S.CL2 none	Z.S.CL2: Clear Fine Zero & Span Adjustment for PV display 2 (Default: none); Range: none / Pv.Zro / Pv.SPn / both > Press ENT to enter & setting				
A 2 9	Pv.M2 Pv.2	Pv.M2=: Mathematic function for PV display 2 [DS2] (default: Pv.2); Selectable: Pv.2 / 1.Add.2 / 1.Sub.2 / 2.Sub.1 / 1.MUL.2 / 1.div.2 / 2.div.1 Pv.2 : [DS2] relative input 2 1.Add.2 : [DS1] shows PV1+ PV 2 1.Sub.2 : [DS1] shows PV1 - PV 2 2.Sub.1 : [DS1] shows PV2 - PV 1 1.MUL.2 : [DS1] shows PV1xPV 2 1.div.2 : [DS1] shows PV1÷ PV2 2.div.1 : [DS1] shows PV2÷ PV1 > Press ENT to enter & select		A 2 1 5	P.Code 0	P.Code: Pass Code Setting for enter Engineer Level (default: 0000); Selectable: 0000~9999 > Press ENT to enter & setting
				A 2 1 6	F.LoCk none	F.LoCk: Function Level Lock (default: none); Selectable: none / USER / EnG / ALL none : No lock USER : User Level lock EnG : Engineer Level lock ALL : All Level lock > Press ENT to enter & setting
				A 2 1	A i2Lo 0.00	Cyclic to first page

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

GROUP

RELAY 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**.

B 1	rY5b.1	rY.Sb.1: Start band of Relay energized for display 1 [DS1] (default: 0); Range: 0~9999 counts > Press ENT to enter & setting	B 9	rY1Fd	rY1.Fd: Relay 1 de-energized delay time (default: 0:00.0); Settable: 0:00.0~9(m):59.9(s) > Press ENT to enter & setting
B 2	rY5d.1	rY.Sd.1: Start delay time of Relay energized for display 1 [DS1] (default: 0:00.0); Range: 0:00.0~9(m):59.9(s) > Press ENT to enter & setting	B 10	r2.SEL	r2.SEL: Multi-Cross Selection (PV1 or PV2) for Relay 2 Output (default: Pv.M1); Selectable: Pv.M1 / Pv.M2 Pv.M1 : Present Value 1 [DS1] Pv.M2 : Present Value 2 [DS2] > Press ENT to enter & select
B 3	rY5b.2	rY.Sb.2: Start band of Relay energized for display 2 [DS2] (default: 0); Settable: 0~9999 counts > Press ENT to enter & setting	B 11	rY2Md	rY2.Md: Relay 2 energized mode (default: Hi); Selectable: oFF / Lo / Hi / Lo.HLd / Hi.HLd / dosame as rY1.Md..... > Press ENT to enter & select
B 4	rY5d.2	rY.Sd.2: Start delay time of Relay energized for display 2 [DS2] (default: 0:00.0); Settable: 0:00.0~9(m):59.9(s) > Press ENT to enter & setting	B 12	rY2HY	rY2.HY: Relay 2 Hysteresis (default: 0); Settable: 0~5000 counts > Press ENT to enter & setting
B 5	r1SEL	r1.SEL: Multi-Cross Selection (PV1 or PV2) for Relay 1 Output (default: Pv.M1); Selectable: Pv.M1 / Pv.M2 Pv.M1 : Present Value 1 [DS1] Pv.M2 : Present Value 2 [DS2] > Press ENT to enter & select	B 13	rY2rd	rY2.rd: Relay 2 energized delay time (default: 0:00.0); Settable: 0:00.0~9(m):59.9(s) > Press ENT to enter & setting
B 6	rY1Md	rY1.Md: Relay 1 energized mode (default: Hi); Selectable: oFF / Lo / Hi / Lo.HLd / Hi.HLd / do 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 > Press ENT to enter & select	B 14	rY2Fd	rY2.rd: Relay 2 energized delay time (default: 0:00.0); Settable: 0:00.0~9(m):59.9(s) > Press ENT to enter & setting
B 7	rY1HY	rY1.HY.: Relay 1 Hysteresis (default: 0); Settable: 0~5000 counts > Press ENT to enter & setting	B 15	r3SEL	r3.SEL: Multi-Cross Selection (PV1 or PV2) for Relay 3 Output (default: Pv.M2); Selectable: Pv.M1 / Pv.M2 Pv.M1 : Present Value 1 [DS1] Pv.M2 : Present Value 2 [DS2] > Press ENT to enter & select
B 8	rY1rd	rY1.rd: Relay 1 energized delay time (default: 0:00.0); Settable: 0:00.0~9(m):59.9(s) > Press ENT to enter & setting	B 16	rY3Md	rY3.Md: Relay 3 energized mode (default: Lo); Selectable: oFF / Lo / Hi / Lo.HLd / Hi.HLd / dosame as rY1.Md..... > Press ENT to enter & setting
B 9	rY1Fd	rY1.Fd: Relay 1 de-energized delay time (default: 0:00.0); Settable: 0:00.0~9(m):59.9(s) > Press ENT to enter & setting	B 17	rY3HY	rY3.HY: Relay 3 Hysteresis (default: 0); Settable: 0~5000 counts > Press ENT to enter & setting
B 10	r4SEL	r4.SEL: Multi-Cross Selection (PV1 or PV2) for Relay 4 Output (default: Pv.M2); Selectable: Pv.M1 / Pv.M2 Pv.M1 : Present Value 1 [DS1] Pv.M2 : Present Value 2 [DS2] > Press ENT to enter & select	B 18	rY3rd	rY3.rd: Relay 3 energized delay time (default: 0:00.0); Settable: 0:00.0~9(m):59.9(s) > Press ENT to enter & setting
B 11	rY3HY	rY3.HY: Relay 3 Hysteresis (default: 0); Settable: 0~5000 counts > Press ENT to enter & setting	B 19	rY3Fd	rY3.Fd: Relay 3 de-energized delay time (default: 0:00.0); Settable: 0:00.0~9(m):59.9(s) > Press ENT to enter & setting
B 12	rY3rd	rY3.rd: Relay 3 energized delay time (default: 0:00.0); Settable: 0:00.0~9(m):59.9(s) > Press ENT to enter & setting	B 20	rY3Fd	rY3.Fd: Relay 3 de-energized delay time (default: 0:00.0); Settable: 0:00.0~9(m):59.9(s) > Press ENT to enter & setting

Next page

Pre. Page

B	rY4.nD	rY4.Md: Relay 4 energized mode (default: Lo); Settable: OFF/Lo/Hi/Lo.HLd/Hi.HLd /do/Go.12/Go.23	B	rY4.HY	rY4.HY: Relay 4 Hysteresis (default: 0); Settable: 0~5000 counts > Press ENT to enter & setting
2	H		2	0	
1	▼	▲	2	▼	▲
			3	rY4.rD	rY4.rD: Relay 4 energized delay time (default: 0:00.0); Settable: 0:00.0~9(m):59.9(s) > Press ENT to enter & setting
			2	0.00.0	
			3	▼	▲
			4	rY4.FD	rY4.FD: Relay 4 de-energized delay time (default: 0:00.0); Settable: 0:00.0~9(m):59.9(s) > Press ENT to enter & setting
			2	0.00.0	
			4	▼	▲
			1	rY5b.1	Cyclic to first page
			1	0	
			1	▼	▲

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)

Go-2.3: Go compare with SP2 & SP3: Go function with Set-Point 2 and Set-point 3. Go relay energized when the condition is set-point 2(Hi) > reading > set-point 3(Lo)

.....same as rY1.Md.....
> Press **ENT** to enter & setting

➤ **ENGINEER LEVEL --- ANALOGUE OUTOUT and RS485 GROUP**
(The group will be hidden, if the meter without analogue output or RS485)

ENGINEER LEVEL

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

GROUP	ANALOGUE OUTPUT GROUP	D	Ao.SEL	Ao.SEL: Multi-Cross Selection of Analogue Output (default: Pv.M1); Settable: Pv.M1 / Pv.M2 > Press ENT to enter & select	D	Ao.SPn	Ao.SPn: Fine Span Adjustment for Analog High Output (default: 0); Settable: -19999~32768 > Press ENT to enter & setting
Ao	Press ENT → ← Press ◀ 1sec.	1	Pu.n1		6	0	
▼	▲	2	Ao.tYP	Ao.tYP: Analogue Output type selection (default: A.4~20); Settable: v.0-10 (0~10V) / v.0~5 (0~5V) / v.1-5 (1~5V) / A.0-20 (0~20mA) / A.4-20 (4~20mA) / A.0-10 (0-10mA) > Press ENT to enter & setting	7	Z.S.Clr	Z.S.Clr: Clear for Zero & Span Fine adjustment (default: nonE); Settable: nonE / Ao.Zro / Ao.SPn / both nonE: No clear Ao.Zro: Clear Zero Adjustment Ao.SPn: Clear Span Adjustment both: Clear Zero and Span Adjustment > Press ENT to enter & setting
▼	▲	3	Ao.LS	Ao.LS: Analogue Output Low to relative Low Scale (default: according to Lo.SC); Settable: -19999~99999 > Press ENT to enter & setting	8	Ao.LMt	Ao.LMt: Analog Output High Limit (default: 110.00); Settable: -0.00~110.00% of FS > Press ENT to enter & setting
▼	▲	4	Ao.Hi	Ao.HS: Analogue Output High relative High Scale (default: according to Hi.SC); Settable: -19999~99999 > Press ENT to enter & setting	1	Ao.SEL	Cyclic to first page
▼	▲	5	Ao.Pro	Ao.Zro: Fine Zero Adjustment for Analog Low Output (default: 0); Settable: -19999~32768 > Press ENT to enter & setting	1	Pu.n1	
▼	▲				1	▼	▲
GROUP	RS485 GROUP	E	AdRES	Adres: Device number of the meter (default: 1); Settable: 1~255 > Press ENT to enter & setting	E	PrItY	PrItY: Parity (default: n.Stb.2); Settable: n.Stb.1 / n.Stb.2 / odd / EvEn n.Stb.1: None, 1 stop bit n.Stb.2: None, 2 stop bits odd: odd EvEn: Even > Press ENT to enter & setting
r5485	Press ENT → ← Press ◀ 1sec.	1	1		3	nonE	
▼	▲	E	6AUd	baud: Baud rate (default: 9600); Settable: 1200 / 2400 / 4800 / 9600 / 19200 / 38400 > Press ENT to enter & setting	1	AdRES	Cyclic to first page
▼	▲	2	9600		1	1	
▼	▲				1	▼	▲
GROUP	Cyclic to input 1 group						
inPt.1							
▼	▲						

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
Two Word Area						
PV.M1*	0000h	-19999~99999	Present Value 1 of Mathematic *(High Word)		R	
PV.M1*	0001h	-19999~99999	Present Value 1 of Mathematic *(Low Word)		R	
PV.M2*	0002h	-19999~99999	Present Value 2 of Mathematic *(High Word)		R	
PV.M2*	0003h	-19999~99999	Present Value 2 of Mathematic *(Low Word)		R	
rY1SP*	0004h	-19999~39999	Relay1 Set Point *(High Word)	10000	R/W	
rY1SP*	0005h	-19999~39999	Relay1 Set Point *(Low Word)	10000	R/W	
rY2SP*	0006h	-19999~39999	Relay2 Set Point *(High Word)	10000	R/W	
rY2SP*	0007h	-19999~39999	Relay2 Set Point *(Low Word)	10000	R/W	
rY3SP*	0008h	-19999~39999	Relay3 Set Point *(High Word)	10000	R/W	
rY3SP*	0009h	-19999~39999	Relay3 Set Point *(Low Word)	10000	R/W	
rY4SP*	000Ah	-19999~39999	Relay4 Set Point *(High Word)	10000	R/W	
rY4SP*	000Bh	-19999~39999	Relay4 Set Point *(Low Word)	10000	R/W	
n.in.n1*	000Ch	-19999~99999	The Minimum of PV.M1 *(High Word)	0	R	
n.in.n1*	000Dh	-19999~99999	The Minimum of PV.M1 *(Low Word)	0	R	
nA.n1*	000Eh	-19999~99999	The Maximum of PV.M1 *(High Word)	0	R	
nA.n1*	000Fh	-19999~99999	The Maximum of PV.M1 *(Low Word)	0	R	
n.in.n2*	0010h	-19999~99999	The Minimum of PV.M2 *(High Word)	0	R	
n.in.n2*	0011h	-19999~99999	The Minimum of PV.M2 *(Low Word)	0	R	

Name	Address	Range	Explain	Initial	Write/Read	Note
$\overline{R}A4\overline{N}2$ *	0012h	-19999~99999	The Maximum of PV.M2*(High Word)	0	R	
$\overline{R}A4\overline{N}2$ *	0013h	-19999~99999	The Maximum of PV.M2*(Low Word)	0	R	
PV.M1 (Written)*	0014h	-19999~99999	PV.M1 [DS1] be written in by RS485 *(High Word)	00h	W	
PV.M1 (Written)*	0015h	-19999~99999	PV.M1 [DS1] be written in by RS485 *(Low Word)	00h	W	
PV.M2 (Written)*	0016h	-19999~99999	PV.M2 [DS2] be written in by RS485 *(High Word)	00h	W	
PV.M2 (Written)*	0017h	-19999~99999	PV.M2 [DS2] be written in by RS485 *(Low Word)	00h	W	
$\overline{R}oL5$ *	0018h	-19999~39999	Analogue Output Low Scale*(High Word)	0	R/W	
$\overline{R}oL5$ *	0019h	-19999~99999	Analogue Output Low Scale*(Low Word)	0	R/W	
$\overline{R}oH1$ *	001Ah	-19999~99999	Analogue Output High Scale*(High Word)	19999	R/W	
$\overline{R}oH1$ *	001Bh	-19999~99999	Analogue Output High Scale*(Low Word)	19999	R/W	
One Word Area						
PV1	001Ch		Present Value of input 1		R	
PV2	001Dh		Present Value of input 2		R	
Pu1dP	001Eh		Decimal Point of input 1		R/W	
Pu2dP	001Fh		Decimal Point of input 2		R/W	
PV.M1.DP	0020h		Decimal Point of PV.M1		R/W	
PV.M2.DP	0021h		Decimal Point of PV.M2		R/W	
RELAY STATUS	0022h	0~1	RELAY STATUS bit0~bit3:relay1~relay4; 0=Relay off 1=Relay on		R/W	
SYSTEM STATUS	0023h		SYSTEM STATUS bit0=1, Input 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	
$\overline{r}St$	0024h	0~1	Reset Maximum & Minimum Value 0:No 1:Yes	1	R/W	

➤ Engineer Level

[Input Group]						
Name	Address	Range	Explain	Initial	Write/Read	Note
$\overline{R}1L0$	0025h	0.00~100.00%	Input 1 Low	0.00%	R/W	
$\overline{R}1H1$	0026h	0.00~100.00%	Input 1 High	100.0%	R/W	
$\overline{R}2L0$	0027h	0.00~100.00%	Input 2 Low	0.00%	R/W	
$\overline{R}2H1$	0028h	0.00~100.00%	Input 2 High	100.0%	R/W	
$\overline{L}oSc1$	0029h	-19999~29999	Low Scale of input 1	0	R/W	
$\overline{H}iSc1$	002Ah	-19999~29999	High Scale of input 1	19999	R/W	
$\overline{L}oSc2$	002Bh	-19999~29999	Low Scale of input 2	0	R/W	
$\overline{H}iSc2$	002Ch	-19999~29999	High Scale of input 2	19999	R/W	
$\overline{P}u1Z0$	002Dh	-19999~29999	PV1 ZERO	0	R/W	
$\overline{P}u1Sn$	002Eh	-19999~29999	PV1 SPAN	0	R/W	
$\overline{P}5CL1$	002Fh	0~3	The clear of PV_ZERO and PV_SPAN 0:None 1:PV_ZERO 2:PV_SPAN 3: Both	3	R/W	
$\overline{P}u2Z0$	0030h	-19999~29999	PV2 ZERO	0	R/W	
$\overline{P}u2Sn$	0031h	-19999~29999	PV2 SPAN	0	R/W	
$\overline{P}5CL2$	0032h	0~3	The clear of PV_ZERO and PV_SPAN 0:None 1:PV_ZERO 2:PV_SPAN 3: Both	3	R/W	

Name	Address	Range	Explain	Initial	Write/Read	Note
dPLY.1	0033h	0~3	Display Mode of PV.M1 0:PV 1: Minimum Hold 2: Maximum Hold 3: RS485	0	R/W	
dPLY.2	0034h	0~3	Display Mode of PV.M2 0:PV 1: Minimum Hold 2: Maximum Hold 3: RS485	0	R/W	
LoCt.1	0035h	-19999~19999	Low Cut of PV1	0	R/W	
LoCt.2	0036h	-19999~19999	Low Cut of PV2	0	R/W	
Avg	0037h	1~99	Average display for PV1 and PV2	1	R/W	
dFilt	0038h	0~99	Digital Filter for PV1 and PV2	0	R/W	
PCode	0039h	0000~9999	Pass Code	1000	R/W	
FLoCk	003Ah	0~3	Function Lock 0: none 1: User Level 2: Engineer Level 3: All	0	R/W	
MAth.1	003Bh	0~3	Mathematic mode for display 1 [DS1] 0: PV1 1: PV1+PV2 2: PV1-PV2 3: PV1×PV2 4: PV1÷PV2 5: PV2÷PV1	0	R/W	
MAth.2	003Ch	0~3	Mathematic mode for display 1 [DS2] 0: PV1 1: PV1+PV2 2: PV1-PV2 3: PV1×PV2 4: PV1÷PV2 5: PV2÷PV1	0	R/W	
[Relay Group]						
Name	Address	Range	Explain	Initial	Write/Read	Note
rYsb.1	003Dh	0000~9999	Start Band of input 1 for relay energized	0	R/W	
rYsd.1	003Eh	0000~5999 (0.1second)	Start Delay Time of input 1 for relay energized	0	R/W	
rYsb.2	003Fh	0000~9999	Start Band of input 2 for relay energized	0	R/W	
rYsd.2	0040h	0000~5999 (0.1second)	Start Delay Time of input 2 for relay energized	0	R/W	
rYSEL	0041h	0~1	Relay 1 energized relative display 1 [DS1] or display2 [DS2] 0: display 1 [DS1] 1: display 2 [DS2]	0	R/W	
rY1nd	0042h	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);	1	R/W	
rY1HY	0043h	0000~5000	Hysteresis of Relay 1	0	R/W	
rY1rd	0044h	0000~5999 (0.1second)	Energized Delay Time of Relay 1	0	R/W	
rY1Fd	0045h	0000~5999 (0.1second)	De-Energized Delay Time of Relay 1	0	R/W	
r2SEL	0046h	0~1	Relay 2 energized relative display 1 [DS1] or display 2 [DS2] 0: display 1 [DS1] 1: display 2 [DS2]	0	R/W	
rY2nd	0047h	0~5	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);	1	R/W	
rY2HY	0048h	0000~5000	Hysteresis of Relay 2	0	R/W	
rY2rd	0049h	0000~5999 (0.1second)	Energized Delay Time of Relay 2	0	R/W	

Name	Address	Range	Explain	Initial	Write/Read	Note
r42Fd	004Ah	0000~5999 (0.1second)	De-Energized Delay Time of Relay 2	0	R/W	
r35Ed	004Bh	0~1	Relay 3 energized relative display 1 [DS1] or display 2 [DS2] 0: display 1 [DS1] 1: display 2 [DS2]	0	R/W	
r43Fd	004Ch	0~5	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);	2	R/W	
r43Hy	004Dh	0000~5000	Hysteresis of Relay 3	0	R/W	
r43Fd	004Eh	0000~5999 (0.1second)	Energized Delay Time of Relay 3	0	R/W	
r43Fd	004Fh	0000~5999 (0.1second)	De-Energized Delay Time of Relay 3	0	R/W	
r45Ed	0050h	0~1	Relay 4 energized relative display 1 [DS1] or display2 [DS2] 0: display 1 [DS1] 1: display 2 [DS2]	0	R/W	
r44Fd	0051h	0~7	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: Go-1.2 (Go function compare with SP1 & SP2); 7: Go-2.3 (Go function compare with SP2 & SP3);	2	R/W	
r44Hy	0052h	0000~5000	Hysteresis of Relay 4	0	R/W	
r44Fd	0053h	0000~5999 (0.1second)	Energized Delay Time of Relay4	0	R/W	
r44Fd	0054h	0000~5999 (0.1second)	De-Energized Delay Time of Relay4	0	R/W	
r4r5t	0055h		Reset for Relay Energized Hold 0: No 1: Yes	0	R/W	

[AO Group]

Name	Address	Range	Explain	Initial	Write/Read	Note
AO5Ed	0056h	0~1	Analogue output relative display 1 [DS1] or display2 [DS2]			
AOtYP	0057h	0~5	Analog Output Type 0: 0~10V 1: 0~5V 2: 1~5V 3: 0~20mA 4: 4~20mA 5: 0~10mA	0	R/W	
P5CLR	0058h	0~3	The clear of AO_ZERO and AO_SPAN 0: None 1: AO_ZERO 2: AO_SPAN 3: Both	3	R/W	
AOAnt	0059h	00.00%~110.00%	Analogue Output High Limit	110.00%	R/W	

[RS485 Group]

Name	Address	Range	Explain	Initial	Write/Read	Note
AdRES	005Ah	1~255	RS485 address	1	R/W	
BAUD	005Bh	0~5	RS485 baud rate 0:1200 1:2400 2:4800 3:9600 4:19200 5:38400	3	R/W	
Prity	005Ch	0~3	RS485 parity 0: n-8-1 1: n-8-2, 2: odd, 3: even,	0	R/W	