

Description

VAM Voltage & Current Meter is equipped with high accuracy measurement for dual channels(isolated), dual display, and communication of 0~600V and 0~10A for DC/AC/TRMS; compact dimension: 48 x 96mm

Also, it provides arithmetic operations such as addition, subtraction, multiplication, and division with lowpass/highpass transformation to meet the requirement of testing equipments.

It has 4 relay outputs, 1 analog output, and 1 RS-485(Modbus RTU Mode) interface; they provide many functions such as control, alarm, re-transmission, and communication.



Features

- Measuring voltage for DC / AC / TRMS, 0~100mV/~600V, and current 0~199.99 μ A/~10A.
- Arithmetic operations involve addition/ subtraction/ multiplication/ division with lowpass/highpass transformation.
- 4 relay can be cross-programmed to be a Hi / Lo / Hi Latch / Lo Latch / Go energized with Start Delay / Hysteresis / Energized & De-energized Delay functions, or to be a remote control.
- Able to additionally purchase one or more of analog output or RS-485 communication port
- High-voltage Input module is optional for metering high-voltage signal.

Applications

- Testing equipments for voltage/current measurement; work with PC/PLC for alarm, control and communication.
- 4 relay functions involving Hi / Lo / Go with on and off delay time from 0.0(s)~ 9(m):59.9(s).
- DC watt measuring in solar energy to communicate with PC/PLC; Input: 1 Adc & 2Vdc.
- Voltage/ current measurement, alarm, and remote I/O for inspection equipment; communication with PC/PLC.
- 4 relays can be set as Hi / Lo / Hi latch / Lo latch / DO(remote control by PC/PLC).

Ordering Information

VAM — DC/AC/TRMS Input 1 Signal / DC/AC/TRMS Input 2 Signal — Relay Output — Analog Output — RS-485 Port — Aux. Power *Optional Function

| CODE | Current Input | CODE | Volt Input | CODE | Relay O/P | CODE | Analog O/P | CODE | RS-485 Port | CODE | Aux. Power |
|------|--------------------|---|----------------|------|-----------|------|------------------------|------|-------------|------|---------------------------|
| D | DC measuring | D | DC measuring | N | None | N | None | N | None | A | AC 115/230V |
| A | AC measuring | A | AC measuring | R2 | 2 Relay | V | 0(1) ~ 5 V 0 ~ 10V | 8 | RS-485 | ADH | AC 85~264V DC 100~300V |
| T | TRMS measuring | T | TRMS measuring | R4 | 4 Relay | I | 0 ~ 10 mA 0(4)~20mA | | | ADL | AC/DC 20~56V |
| A1 | 0 ~ 199.99 μ A | V1 | 0 ~ 199.99 mV | | | | | | | | |
| A2 | 0 ~ 1.9999 mA | V2 | 0 ~ 1.9999 V | | | | | | | | |
| A3 | 0 ~ 19.999 mA | V3 | 0 ~ 19.999 V | | | | | | | | |
| A4 | 0 ~ 199.99 mA | V4 | 0 ~ 199.99 V | | | | | | | | |
| A5 | 0 ~ 1.9999 A | V5 | 0 ~ 300.0 V | | | | | | | | |
| A6 | 0 ~ 1.0000 A | V6 | 0 ~ 600.0 V | | | | | | | | |
| A7 | 0 ~ 5.000 A | HV 0~1.6 V (Only available when working with High-voltage input module MHV-4V) | | | | | | | | | |
| A8 | 0 ~ 10.000 A | | | | | | | | | | |
| VA | 0 ~ 50 mV | | | | | | | | | | |
| VB | 0 ~ 60 mV | | | | | | | | | | |
| VC | 0 ~ 100 mV | | | | | | | | | | |
| VM | 0 ~ 333 mV | | | | | | | | | | |

*If the current is over 10A, please connect with a current shunt, and select the code of mV range(VA/VB/VC)
*To use Split Core CT, please choose 333mV range as code VM.

* Input 2: max current input shouldn't more than 199.99mA.

| CODE | Optional |
|------|-------------------------|
| MMF | Mathematic function |
| MF1 | Over-current protection |

Measurement and Wiring

| | Measuring Range | Input | | Measuring Range | Input |
|---------|-----------------|-----------|---------|-----------------|-----------|
| | DC / AC / TRMS | Impedance | | DC / AC / TRMS | Impedance |
| Voltage | 0~50/~100 mV | ≥5MΩ | Current | 0~199.99 μA | 1KΩ |
| | 0~199.99 mV | ≥5MΩ | | 0~1.9999 mA | 100Ω |
| | 0~1.9999 V | ≥1MΩ | | 0~19.999 mA | 10Ω |
| | 0~333 mV | ≥5MΩ | | 0~199.99 mA | 1Ω |
| | 0~19.999 V | ≥1MΩ | | 0~1.9999 A | 0.05Ω |
| | 0~199.99 V | ≥1MΩ | | 0~5.000 A | 0.02Ω |
| | 0~300.0 V | ≥2MΩ | | 0~10.000 A | 0.01Ω |
| | 0~600.0 V | ≥2MΩ | | | |

* Dual inputs offer the measurement for the voltage/current of DC, AC, and TRMS.
* can be specify to measure other signal such as Pt100Ω, mV/V etc.

Technical Specification

Electrical Characteristics

A/D converter: 16-bit resolution
 Accuracy: DC: $\leq \pm 0.04\%$ of FS $\pm 1C$
 AC: $\leq \pm 0.1\%$ of FS $\pm 1C$
 Sampling rate: 15 cycles/sec
 Response time: ≤ 100 mS (when the AvG = "1") in standard
 Input range: Input High and Low programmable for each channel
 R_{inH}: Settable range: 0.00~100.00% of input range
 R_{inL}: Settable range: 0.00~100.00% of input range

Display & Functions

LED: Numeric: Dual display screen, 5 digits, 0.4" (10.0mm)H red high-brightness LED
 Relay output indication: 4 square red LED
 RS-485 communication: 1 square orange LED
 Max/Mini Hold indication: 2 square orange LED
 Dual display screens: Dual screens can be programming individual
 Display range: PV: -19,999~29,999, Mathematic: -19,999~+99,999
 Scaling function: Individual programmable for dual input
 L_{scale}: Low Scale; Settable range: -19,999~+29,999
 H_{scale}: High Scale; Settable range: -19,999~+29,999
 Decimal point: Programmable from 0 / 0.0 / 0.00 / 0.000 / 0.0000
 Over range indication: \overline{OVR} , when input is over than 20% of input range Hi
 Under range indication: \underline{OVR} , when input is under than 20% of input range Lo
 Max / Mini recording: Maximum and Minimum value storage during power on.
 Display functions: PV / Max(Mini) Hold / RS-485 Programmable Multi-cross selection for dual screens.
 Mathematic functions: Programmable for Addition / Subtraction / (Option) Multiplication / Division / High or Low selector
 Front key functions: Relative PV / PV Hold / Reset for maxi(mini) hold / Reset for relay energized latch programmable
 Low cut: Settable range: -19999~29999 counts
 Digital fine adjust: P_{up}: Settable range: -19,999~+29,999
 P_{down}: Settable range: -19,999~+29,999

Reading Stability Function

Average: Settable range: 1~99 times
 Moving average: Settable range: 1(None)~10 times
 Digital filter: Settable range: 0(None)/1~99 times

Control Functions (Optional)

Set-points: Four set-points
 2/12

Control relay: Four relays
 Relay 2 & Relay 3: Dual FORM-C, 1A/230Vac, 3A/115V
 Relay 1 & Relay 4: Dual FORM-A, 1A/230Vac, 3A/115V
 Relay energized mode: Multiple cross selection of display 1 & display 2
 Energized levels compare with set-points: Hi / Lo / Go.12 / Go.23 / Hi.HLd / Lo.HLd; programmable
 DO function: Energized by RS-485 command of master.

Energizing functions: Start delay / Energized & De-energized delay / Hysteresis / Energized Latch
 Start band(Minimum level for Energizing): 0~9999counts
 Start delay time: 0:00.0~9(Minutes):59.9(Second)
 Energized delay time: 0.00.0~9(Minutes):59.9(Second)
 De-energized delay time: 0.00.0~9(Minutes):59.9(Second)
 Hysteresis: 0~5000 counts

Analog Output (Optional)

Accuracy: $\leq \pm 0.1\%$ of F.S.; 16-bit DA converter
 Ripple: $\leq \pm 0.1\%$ of F.S.
 Response time: ≤ 100 mS (10~90% of input)
 Isolation: AC 2.0 KV between input and output
 Output range: Specify either voltage or current output in ordering
 Voltage: 0~5V / 0~10V / 1~5V programmable
 Current: 0~10mA / 0~20mA / 4~20mA programmable
 Output capability: Voltage: 0~10V; $\geq 1000\Omega$;
 Current: 4(0)~20mA; $\leq 600\Omega$ max
 Functions: Multi-Cross selection to relative display 1 & display 2
 R_{OH5} (output range high): Settable range: -19999~29999
 R_{OL5} (output range Low): Settable range: -19999~29999
 R_{OLHL} (output High Limit): 0.00~110.00% of output High
 High/Low Selection output: The output will compare the 2 inputs which one is High(or Low) and tracking output.
 Digital fine adjustment: R_{up}: Settable range: -38011~+27524
 R_{down}: Settable range: -38011~+27524

RS-485 Communication (Optional)

Protocol: Modbus RTU mode
 Baud rate: 1200/2400/4800/9600/19200/38400 programmable
 Data bits: 8 bits
 Parity: Even, odd or none (with 1 or 2 stop bit) programmable
 Address: 1 ~ 255 programmable
 Remote display: to show the value from RS-485 command of master
 Distance: 1200M

Electrical Safety

Dielectric strength: AC 2.0 KV for 1 min,
 Between Power / Input 1 / Input 2 / Output / Case

Insulation resistance: Insulation resistance: $\geq 100M\Omega$ @ 500Vdc,
Between Power / Input / Output
Isolation: Between Power / Input 1 / Input 2 / Relay / Analog / RS-485

Work Environment

Operating temp.: 0~60 °C
Operating humidity: 20~95 %RH, Non-condensing
Temp. coefficient: ≤ 100 PPM/°C
Storage temp.: -10~70 °C
Enclosure: Front panel: IEC 529 (IP52); Housing: IP20

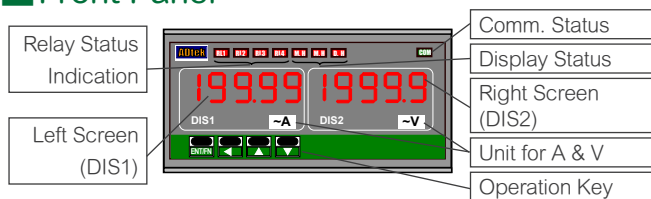
Mechanical Structure

Dimensions: 96mm(W) x 48mm(H) x 120mm(D)
Panel cutout: 92mm(W) x 44mm(H)
Case material: ABS fire-resistance (UL 94V-0)
Mounting: Panel flush mounting
Terminal block: Plastic NYLON 66 (UL 94V-0)
#A1~A3(current input): 20A/300Vac, M3.5, 12~22AWG
Others: 10A 300Vac, M2.5, 16~22AWG
Weight: 550g / 350g(Aux. Power Code: ADH or ADL)

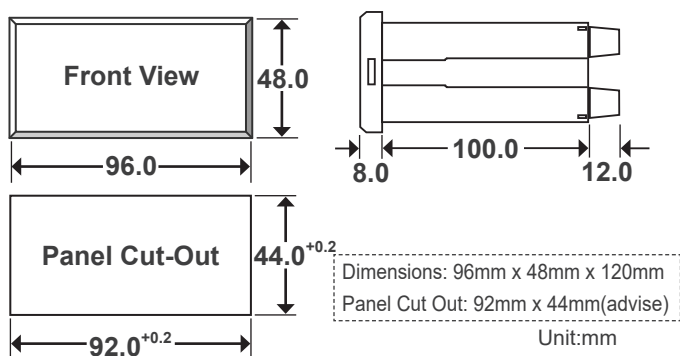
Power

Power supply: AC115/230V,50/60Hz;
Optional: AC 85~264V / DC 100~300V or AC/DC 20~56V
Power consumption: 7.0VA maximum
Back up memory: By EEPROM

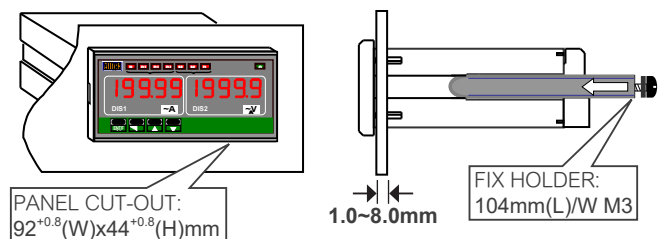
Front Panel



Dimensions

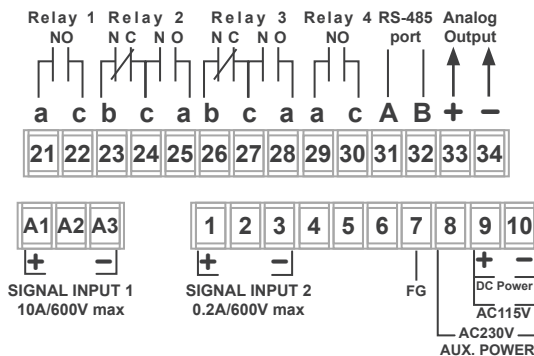


Installation



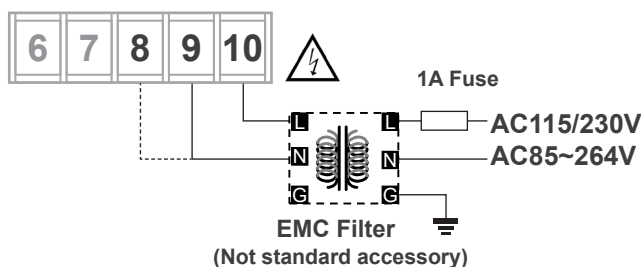
The meter should be installed in a place where it does not exceed the maximum operating temperature and provides good air circulation.

Terminal Block

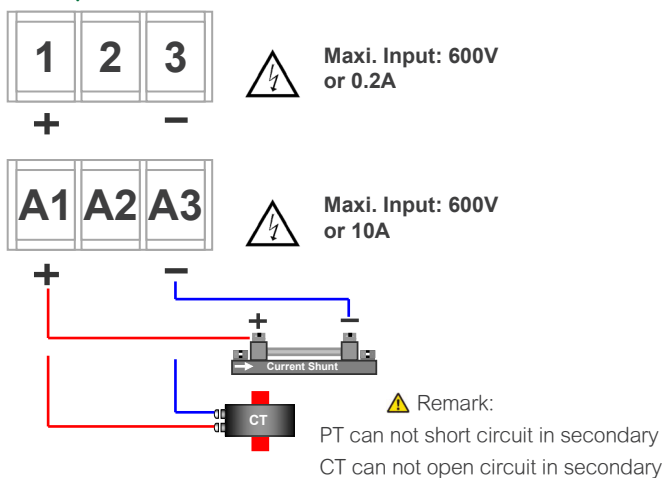


Please check the voltage of power supplied first, and then connect with the specified terminals. It is recommended that power supplied to the meter should be protected by a fuse or circuit breaker.

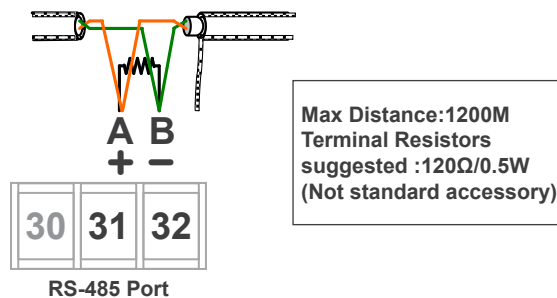
Power Connection



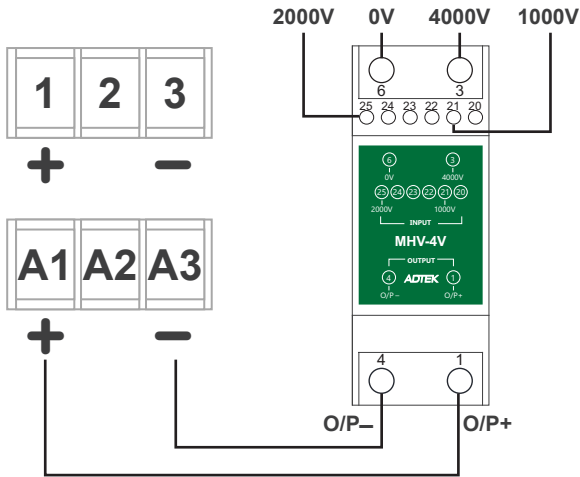
Input Connection



RS-485 Communication Port



High-Voltage Input Module Connection



Function Description

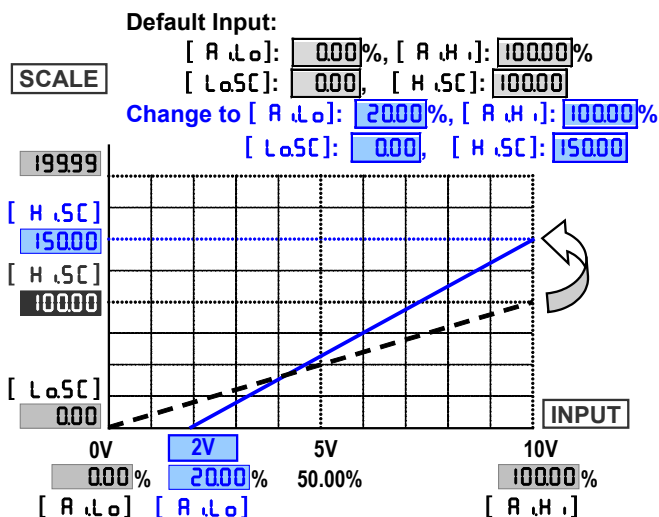
Input & Scaling Functions

Input range(each channel):

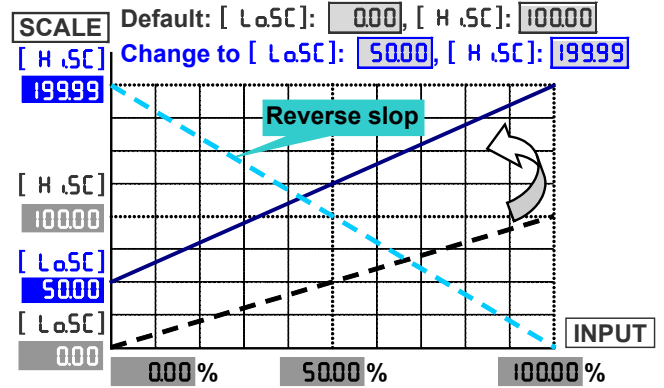
The meter has to be specified and fixed according to ordering code (ex. 0~10A or 0~300V) in factory. If the meter has been installed with input range, the meter can be set in function [R.L.S.] and [R.H.I.] of input group to meet the input signal.

For example: The input of the meter is 0~10Aac, and the signal from sensor is 0~5Aac. Please enter into [INPUT GROUP] to set [R.H.I.] (analog input high) to be 50.00%(10A x 50.00% = 5A), then the input range of the meter will changed. Also, the corresponding setting values will stay in the range of 0~5A, and the all relative parameters will be adjusted based on the range of 0~5A, so it doesn't need to be calibrated.

re-calibration after change the [R.L.S.] and [R.H.I.]



Setting the [L.S.](Low scale) and [H.S.](High scale) in [INPUT GROUP] to correspond to input signal, and vice versa. Please refer to below figure,



*Too narrow scale may cause display lower resolution.

Display & Functions

Multiple Cross Selection:

VAM has 2 isolated input corresponding to 2 displays.

EX: The meter can be set:

DIS1 to INPUT1, DIS2 to INPUT1 X INPUT2, or

DIS1 to INPUT1 ÷ INPUT2

DIS1 shows value through RS-485 command.

Arithmetic operations

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

Max / Mini recording: The meter will store the maximum and minimum value for each display in [User Level] during power on in order to review drifting of PV.

Display functions: PV / Max(Mini) Hold / RS-485 programmable in (Please refer to step A-10) [DISPLAY] function of [INPUT GROUP] for each display screen.

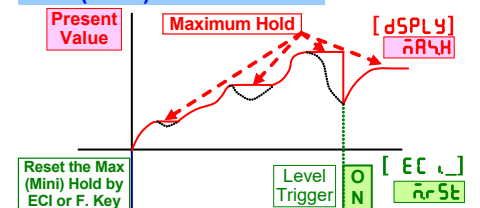
Present Value [PV]: The display will show the value that is relative to input signal.

Maximum Hold [M.H.] / Minimum Hold [M.H.]: The meter will keep display in maximum(minimum) value during power on until manual reset by front key in [User Level], or press front down key

(Down function has to set [RESET])

Please find the [M.H.] enclosed in the package, and stick it to the right side of square orange LED.

Max. (Mini) Hold & Reset



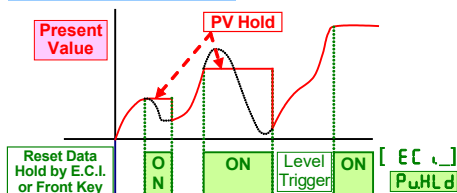
Remote Display by RS-485 command **[R5485]** :

The meter will show the value that received from RS-485 sending. In past, The meter normally receive 4~20mA or 0~10V from AO or digital output from BCD module of PLC. We come up with a cost saving solution that PV shows the value through RS-485 command of master.

PV Hold **[P_uH_L_d]** : Down key function can be set to be **[P_uH_L_d]** function. The display will be hold, when down key has to be pressed.

Please find the **[EC]** **[P_uH_L_d]** sticker, and stick it to the upper side of square green LED.

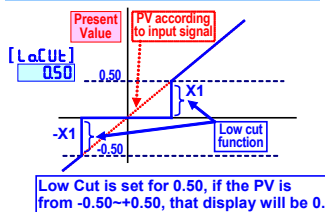
PV Hold & Reset



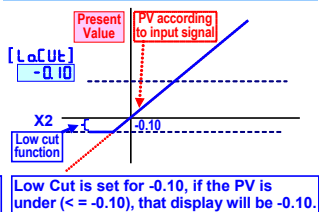
Low cut(each display):

If the setting value is positive, it shows "0", $|PV| \leq$ setting value; if the setting value is negative, it shows "setting value", $|PV| \leq$ setting value.

Low Cut set to be +0.50



Low Cut set to be -0.10

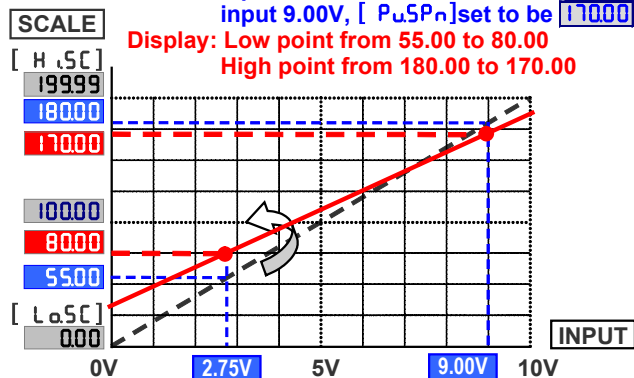


Digital fine adjustment(individual for each display screen):

In the past, the engineers had to spend lots of time on adjusting high/low values to meet the requirement. With the functions of **[P_uP_r_o]** & **[P_uS_P_n]**, the users can set the corresponding values with "Just Key in Values" according to actual needs. Also, users can clear the adjusted value with the function of **[P_S_C_L_r]**.

Default Input: **[LoSC]**: **[000]**, **[HSC]**: **[19999]**

Digital fine adjustment:
 input 2.75V, **[P_uP_r_o]** set to be **[8000]**
 input 9.00V, **[P_uS_P_n]** set to be **[17000]**
Display: Low point from 55.00 to 80.00
High point from 180.00 to 170.00

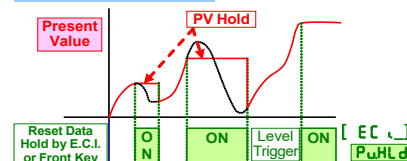


Front key functions: Relative PV / PV Hold / Reset for maxi(mini) hold / Reset for relay energized latch programmable in **[d_nP_uE C_r_oU_P]** function of **[d_nP_uE C_r_oU_P]** function can be **[F_E_L_P_u]** function, When user press the set to **[F_E_L_P_u]** key, the display will show the differential value(Δ PV) until press **[F_E_L_P_u]** key again.

Please find the **[R.PV]** sticker, and stick it to the right side of square green LED.

PV Hold **[P_uH_L_d]** : **[d_nP_uE C_r_oU_P]** function can be set to be **[P_uH_L_d]** function. When user press the **[F_E_L_P_u]** key, the display will be hold until press the **[F_E_L_P_u]** key again. Please find the **[P.V.H]** sticker, and stick it to the right side of square green LED.

PV Hold & Reset



Reset for Max(Mini) Hold: when the **[dSP_L_Y]** in **[d_nP_uE C_r_oU_P]** set to be **[R_R_Y_H_d]** or **[F_n_H_d]**, **[d_nP_uE C_r_oU_P]** function can be set to be **[r_r_S_t]** to reset the display when it is holding in maxim or mini value.

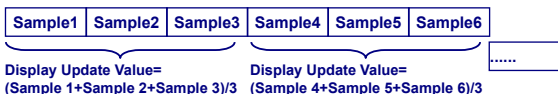
Reset for relay energized latch: when the **[r_Y_t_n_d]** in **[r_E_L_R_Y C_r_oU_P]** set to be **[H_uH_L_d]** or **[L_oH_L_d]**, **[d_nP_uE C_r_oU_P]** function can be set to be **[r_Y_t_n_d]** to reset the relay when it is energizing and latching.

Reading Stability Function

Average:

Basically, the sampling rate of meter is 15cycles/sec. If the function set to be 3 times, It means the meter will update the reading 5 times/sec.

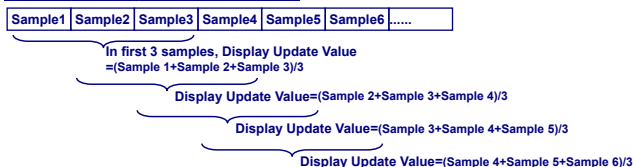
Average set to be 3



Moving average:

If the function to be set 3 times, the meter will update delay in first 3 samples, then it will update 15 times/sec continuously.

Moving Average set to be 3



Digital Filter:

The digital filter can reduce the magnetic noise in field.

Control Functions (Optional)

The VAM can specify 4 relay output. Each relay can be cross-programmed to relative display 1 or display 2.

Relay energized mode: Hi / Lo / Hi.HLd / Lo.HLd / do / Go-1.2 / Go-2.3 programmable

Hi : Relay will energize when PV > Set-Point

Lo : Relay will energize when PV < Set-Point

Go-1.2: This function is programmable in Relay 4 only.

If the Relay 4 set to be Go function, the relay will compare with [r y 1SP] and [r y 2SP]

Go relay energized when the condition is

[r y 1SP] (Hi) > PV > [r y 2SP] (Lo)

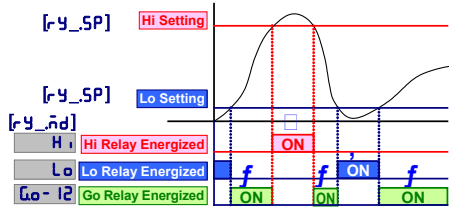
Go-2.3: This function is programmable in Relay 4 only.

If the Relay 4 set to be Go function, the relay will compare with [r y 2SP] and [r y 3SP]

Go relay energized when the condition is

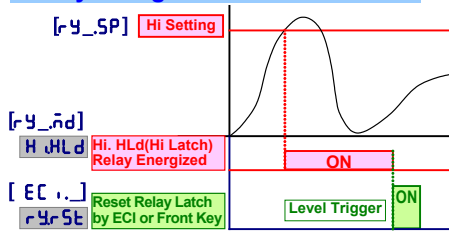
[r y 2SP] (Hi) > PV > [r y 3SP] (Lo)

Hi / Lo / Go Relay Energized Fig.1



Hi.HLd (Lo.HLd): When the PV is Higher (or lower) than set-point, the relay will be energized and latch until manual reset by from key in [User Level] or press front down key to reset (Down function has to set [r y 5E])

Relay Energized Latch & Reset

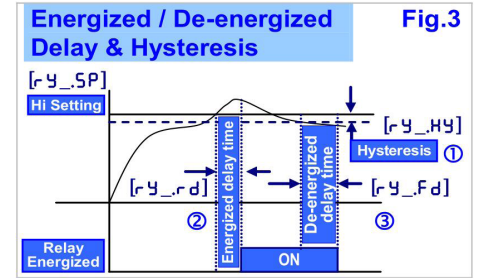
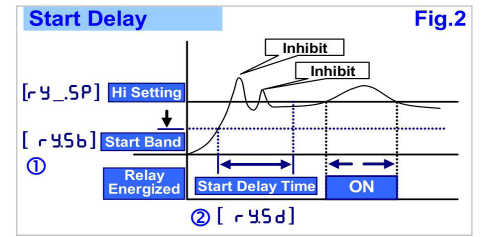


DO function: Energized by RS-485 command of master.

The function was designed to get remote control by RS-485 command of master. The typical application is to control a switch in field from computer center as like as digital output(DO) of PLC.

Energized Functions: Start delay / Energized & De-energized delay / Hysteresis

Please refer to figure as below

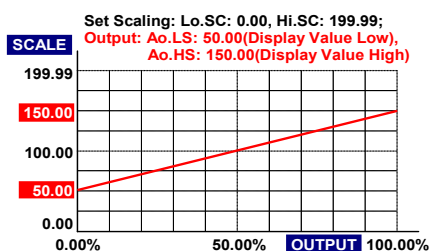


Analog Output (Optional)

The analog output can be programmed to relative display 1 or display 2. Please specify the output type either an 0~10V or 4(0)~20mA in ordering. The programmable output will correspond to low value and high value according to the setting value. The users can also set reverse output value (lower limit of the signal to high value; higher limit of the signal to low value).

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

Functions: $R_{o.H.S}$ (output range high): setting the Display value High to versus output range High (as like as 20mA in 4~20)
 $R_{o.L.S}$ (output range Low): setting the Display value Low to versus output range Low (as like as 4mA in 4~20)

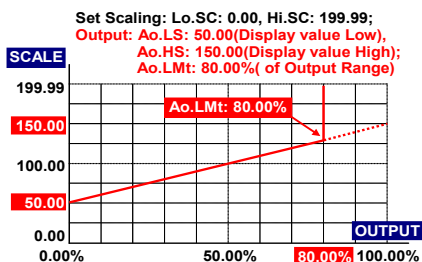


The range between $R_{o.H.S}$ and $R_{o.L.S}$ should be over 20% of span at least; otherwise, it will be got less resolution of analog output.

$R_{o.L.Mt}$ (output High Limit):

0.00~110.00% of output High

User can set the high limit of output to avoid a damage of receiver or protection system.



Fine zero & span adjustment:

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

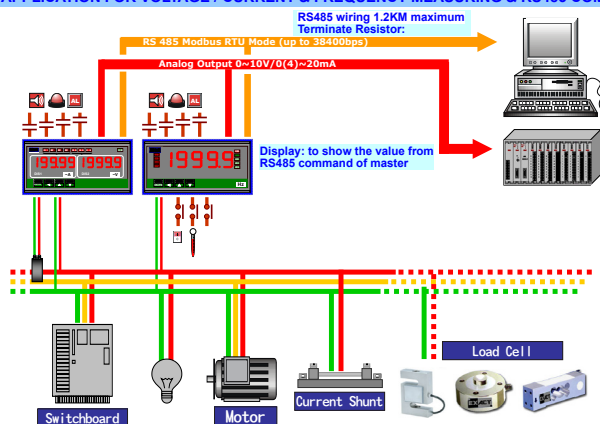
$R_{o.Zr o}$: Fine Zero Adjustment for Analog Output;
Settable range: -38011~27524;

$R_{o.SP n}$: Fine Span Adjustment for Analog Output;
Settable range: -38011~27524

RS-485 Communication (Optional)

The RS-485's protocol is Modbus RTU mode, and baud rate up to 38400 bps. User can set the parameter, read values, remote display, remote monitoring, contact input, and input control.

APPLICATION FOR VOLTAGE / CURRENT & FREQUENCY MEASURING & RS485 COMM.

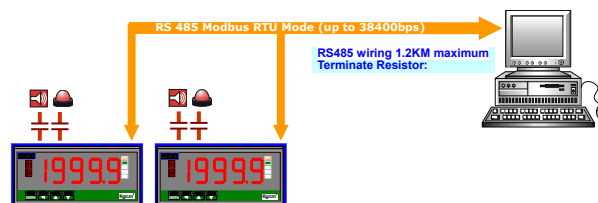


Remote Display:

The meter will show the value that received from RS-485 command. In past, The meter normally receive 4~20mA or 0~10V from AO or digital output from BCD module of PLC. We come up with a cost saving solution that PV value shows on the panel through RS-485 command of master.

When the [dSPLY] is set to be RS-485, it means the screen will show the values through RS-485 command & data. The data is the same as PV that will be compared with the set-point for relay action; analog output corresponding to the outputs.

VAM APPLICATION FOR REMOTE DISPLAY FROM RS485 COMMAND



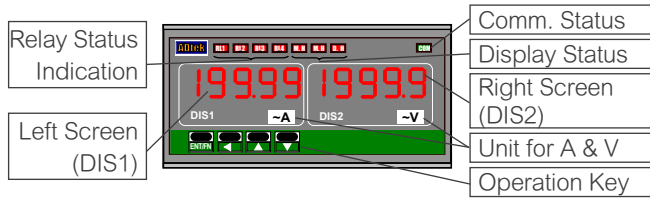
■ Error Message

Please check the specification and connection, and turn on the meter to proceed self-inspection.

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 ↔ FR.L | EEPROM occurs error | (Please send back to manufactory for repaired) |
| R.i.nG ↔ Pw | Calibrating Input Signal do not process | (Please process Calibrating Input Signal) |
| R.i.C ↔ FR.L | Calibrating Input Signal error | (Please check Calibrating Input Signal) |
| R.o.f.nG ↔ Pw | Calibrating Output Signal do not process | (Please process Calibrating Output Signal) |
| R.o.C ↔ FR.L | Calibrating Output Signal error | (Please check Calibrating Output Signal) |

■ Front Panel



VAM has two display screens and I/O status indication for purposes.

■ Numeric Screens

- Left screen: 0.4" (10.0cm) red high-brightness LED for 5 digits to relative input 1 or mathematic.
- Right screen: 0.4" (10.0cm) red high-brightness LED for 5 digits to relative input 2 or mathematic.

■ 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;
- Display status: 3 square red LED
- RS-485 Communication: 1 square green LED
COM will flash when the meter is receive or send data, and **COM** flash quickly means the data transient quicker.
- Max/Mini Hold indication: 2 square orange LED
M.H displayed: When the display function has been selected in Maximum or Minimum Hold function.

■ Stickers:

- Each meter has a sticker what are functions and engineer label enclosure.
- Relay energized mode: **HH HI Lo LL DO**
 - Front key functions mode:
PV.H PV.H(PV Hold) / **Tare** Tare / **DI** DI(Digital Input)
M.RS M.RS(Maximum or Minimum Reset) /
R.RS R.RS(Reset for Relay Latch)
 - Engineer Label: over 80 types.

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

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

■ Pass Word: Settable range: 0000~9999;

User has to key in the right pass word so that get into 【Programming Level】. Otherwise, the meter will go back to measuring page. If user forgets the password, please contact with the service window.

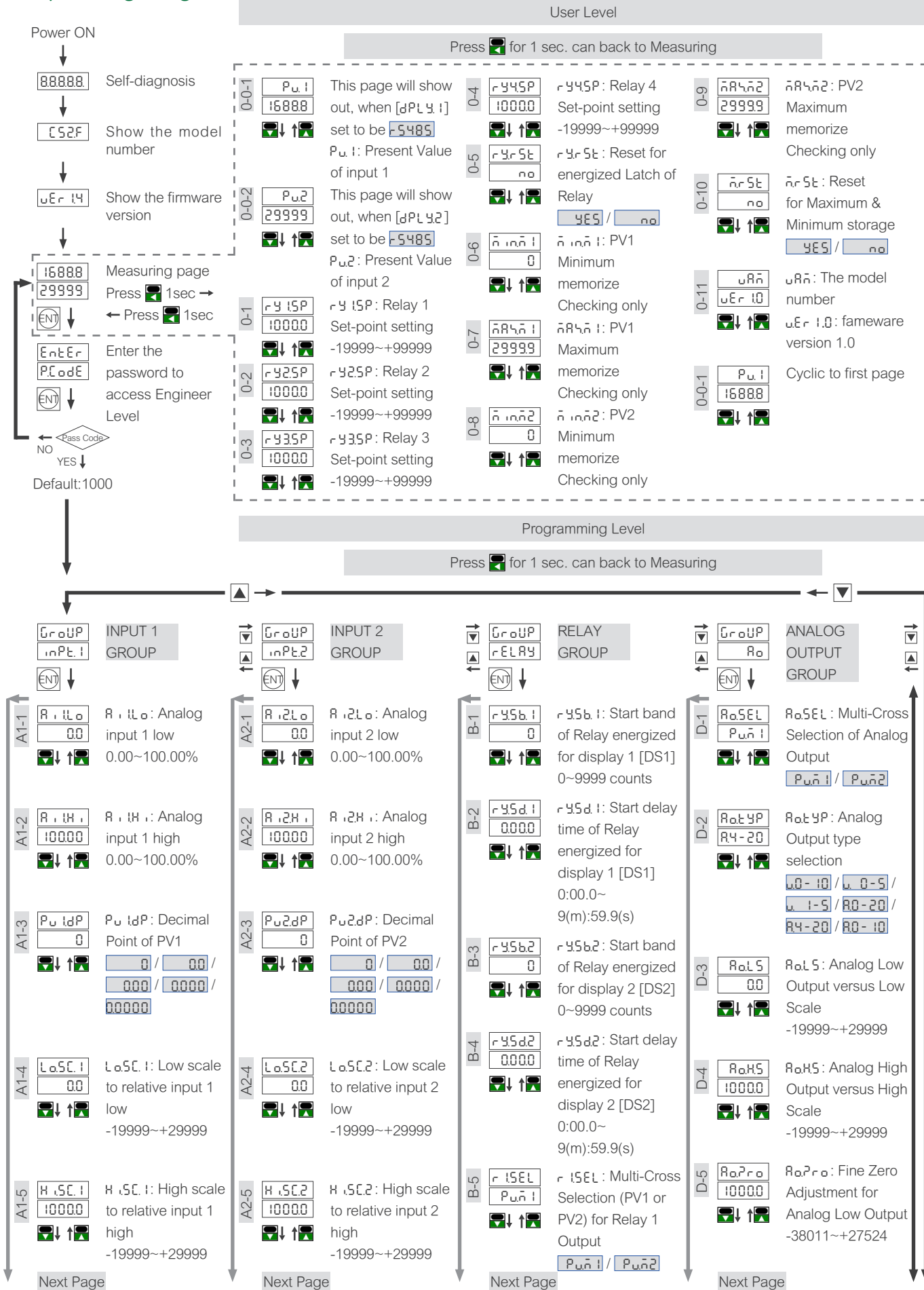
■ Function Lock: There are 4 levels programmable.

- None: 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.

■ Down Key Function:

- The Key can be set to be the function as below
Relative PV / PV Hold / Reset for maxi(mini) hold / Reset for relay energized latch programmable

Operating Diagram (please refer to last pages for more details about the operation.)



| | | | | | | | |
|-------|---|-------|---|------|--|------|--|
| A1-6 | Pu Ip0 0 Fine Zero Adjustment for PV display 1 -19999~29999 | A2-6 | Pu2P0 0 Fine Zero Adjustment for PV display 2 -19999~29999 | B-6 | ry In0 H Relay 1 energized mode OFF / Lo / H / LoHld / H,HLd / do | D-6 | RaSPn 00 Fine Span Adjustment for Analog High Output -38011~+27524 |
| A1-7 | Pu ISn 0 Fine Span Adjustment for PV display 1 -19999~29999 | A2-7 | Pu2Sn 0 Fine Span Adjustment for PV display 2 -19999~29999 | B-7 | ry IHY 0 Relay 1 Hysteresis 0~5000 counts | D-7 | P5CLr nonE Zero & Span Clear for Adjustment nonE / RaPrc / RaSPn / botH |
| A1-8 | P5CL1 no Clear Fine Zero & Span Adjustment for PV display 1 nonE / PuPrc / PuSPn / botH | A2-8 | P5CL2 no Clear Fine Zero & Span Adjustment for PV display 2 nonE / PuPrc / PuSPn / botH | B-8 | ry Ir0 0000 Relay 1 energized delay time 0:00.0~9(m):59.9(s) | D-8 | RaLnt 11000 Analog Output High Limit 0.00~110.00% |
| A1-9 | Pun I: Pu I Mathematic function for PV display 1 [DS1] Pu I / IRdd2 / ISUbb2 / PSUbb1 / InUUL2 / Id u2 / Bdu I | A2-9 | Pun 2: Pu 2 Mathematic function for PV display 2 [DS2] Pu 2 / IRdd2 / ISUbb2 / PSUbb1 / InUUL2 / Id u2 / Bdu I | B-9 | ry IFd 0000 Relay 1 de-energized delay time 0:00.0~9(m):59.9(s) | B-10 | r2SEL Pun I Multi-Cross Selection (PV1 or PV2) for Relay 2 Output Pun I / Pun 2 |
| A1-10 | dPLY1 Pun I Display 1 [DS1] Function Pun I / Inon I / nRAn I / E5485 | A2-10 | dPLY2 Pun 2 Display 2 [DS2] Function Pun 2 / Inon 2 / nRAn 2 / E5485 | B-11 | ry2In0 H Relay 2 energized mode OFF / Lo / H / LoHld / H,HLd / do | E-1 | RdRES I Device number of the meter 1~255 |
| A1-11 | LoCut1 0 Low Cut level to show "0" for display 1 [DS1] -19999~+29999 counts | A2-11 | LoCut2 0 Low Cut level to show "0" for display 2 [DS2] -19999~+29999 counts | B-12 | ry2HY 0 Relay 2 Hysteresis 0~5000counts | E-2 | bRUD 9600 Baud rate 1200 2400 4800 9600 19200 38400 |
| A1-12 | RuG 5 Average for display 1 [DS1] and display 2 [DS2] smooth 1(no function) ~99 times | A2-12 | RuG 5 As same as [input 1 group] | B-13 | ry2rd 0000 Relay 2 energized delay time 0:00.0~9(m):59.9(s) | E-3 | Pr tY nStb2 Parity nStb.1 nStb.2 odd EvEn |
| A1-13 | nRuG I Moving Average for display 1 [DS1] and display 2 [DS2] smooth 1(no function) ~10 times | A2-13 | nRuG I As same as [input 1 group] | B-14 | ry2Fd 0000 Relay 2 de-energized delay time 0:00.0~9(m):59.9(s) | | |
| A1-14 | dF iLt 0 Digital filter for display 1 [DS1] and display 2 [DS2] 0(no function)/ 1~99times | A2-14 | dF iLt 0 As same as [input 1 group] | B-15 | r3SEL Pun 2 Multi-Cross Selection (PV1 or PV2) for Relay 3 Output Pun I / Pun 2 | | |
| A1-15 | dNKEY nonE Down key function nonE / FELPu / PuHLd / nRSt / rYrSt | A2-15 | dNKEY nonE As same as [input 1 group] | B-16 | ry3In0 H Relay 3 energized mode OFF / Lo / H / LoHld / H,HLd / do / Co i2 | | |
| A1-15 | PCode 0 Pass Code for enter Engineer Level 0000~9999 | A2-15 | PCode 0 As same as [input 1 group] | B-17 | ry3HY 0 Relay 3 Hysteresis 0~5000counts | | |
| | FLoCL nonE Function Level Lock nonE / WSEr / EnG / ALL | | FLoCL nonE As same as [input 1 group] | | | | |

Next Page

| | | |
|------|---------------|--|
| B-18 | r43rd 0000 | r43rd : Relay 3 energized delay time 0:00.0~ 9(m):59.9(s) |
| B-19 | r43fd 0000 | r43fd : Relay 3 de-energized delay time 0:00.0~ 9(m):59.9(s) |
| B-20 | r45EL Pun2 | r45EL : Multi-Cross Selection (PV1 or PV2) for Relay 4 Output Pun1 / Pun2 |
| B-21 | r44nd Hi | r44nd : Relay 4 energized mode oFF / Lo / Hi / LoHld / HiHld / do / Co-12 / Co-23 |
| B-22 | r44HY 0 | r44HY : Relay 4 Hysteresis 0~5000counts |
| B-23 | r44rd 0000 | r44rd : Relay 4 energized delay time 0:00.0~ 9(m):59.9(s) |
| B-24 | r44fd 0000 | r44fd : Relay 4 de-energized delay time 0:00.0~ 9(m):59.9(s) |

► Please refer to operating manual for more details.

Split Core CT Ordering Information

US – CTV — Hole — Primary Current — 2

| CODE | Diameter(mm) | CODE | Rated Current |
|------|--------------|------|---------------|
| 10 | Φ10 | 005 | 5A |
| 16 | Φ16 | 060 | 60A |
| | | 100 | 100A |
| | | 150 | 150A |
| 24 | Φ24 | 200 | 200A |
| 35 | Φ35 | 300 | 300A |
| | | 400 | 400A |
| | | 600 | 600A |
| 50 | Φ50 | 800 | 800A |

(The output line of mV on the secondary side of the CT needs to be wired independently, and cannot be connected together or grounded for protection purposes.)



| Type | Current of primary (A) | Voltage of secondary (mV) | Accuracy %F.S. | Weight |
|---------------|------------------------|---------------------------|----------------|--------|
| US-CTV-10-005 | 5A | 333 | 1.0 | 60g |
| US-CTV-16-060 | 60A | 333 | 0.5 | 100g |
| US-CTV-16-100 | 100A | 333 | 0.5 | 100g |
| US-CTV-16-150 | 150A | 333 | 0.5 | 100g |
| US-CTV-24-200 | 200A | 333 | 0.5 | 205g |
| US-CTV-35-300 | 300A | 333 | 0.5 | 375g |
| US-CTV-35-400 | 400A | 333 | 0.5 | 375g |
| US-CTV-35-600 | 600A | 333 | 0.5 | 375g |
| US-CTV-50-800 | 800A | 333 | 0.5 | 655g |

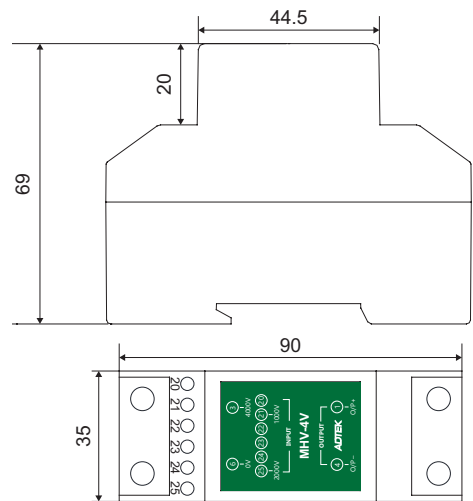
High-Voltage Input Module (Optional)

MHV – 4V

Input Voltage Range: AC/DC 0~4000V



Dimensions



Unit: mm

Terminal Block

