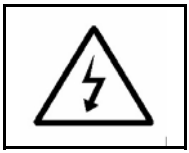
AC Current CONTROLLER / MONITOR

Model : PAA-6069

Your purchase of this AC CURRENT CONTROLLER/MONITOR marks a step forward for you into the field of precision measurement. Although this ACA controller is a complex and delicate instrument, its durable structure developed.
Please read the following instructions carefully and always keep this manual within easy reach.

OPERATION MANUAL

Caution Symbol



Caution :

* Risk of electric shock !

Caution :

* Do not use fingers or any tool to touch the Wire Terminals.
* Do not apply the relay contact load current > 0.5 Amp.
* The instrument contains no user serviceable parts and should not be opened by the user.
* Repair or after service should be done by a qualified technician only.
* Power supply should apply the correct ACV power voltage
* Cleaning - Only use the dry cloth to clean the plastic case !

*** Equipment protected throughout by Double Insulation or Reinforced Insulation.**

Environmental Condition

* Comply with EN61010.
  Transient over voltage at Mains Supply 2500V.
* Pollution Degree 2.
* Altitude up to 2000 meters.
* Indoor use.
* Relative humidity 80% max.

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1. FEATURES

* Professional ACA meter with standard DIN case (96 x 48 mm) and Control/Alarm function.
* Microprocessor circuit ensures high accuracy and provide special functions and features.
* Large red LED display, high brightness and easy to read.
* Input signal (without CT) :
  ACA : 0.05 to 10.00 ACA, 40 to 400 Hz.
* True rms for ACA measurement.
* ACA input can cooperate the external CT (Current transformer) to expend the measurement range. The CT range can be adjusted with default.
* Control setting, Hi/Lo alarm setting.
* Control relay output, alarm relay output.
* Control Relay will make action when the reading value reach to control value.
* Alarm Relay will make action when the reading value reach to high/low alarm value.
* Hysteresis value setting for control and alarm function.
* Power : 90 ACV to 264 ACV, 50/60 Hz.
* RS232/USB computer interface.
* Option data acquisition software.

2. SPECIFICATIONS

2-1 General Specifications

Display	Large LED display. 4 digit LED . 14 mm (0.55 inch) digit height . 5 indicators . PV (process value) indicator SV (set value) indicator Control out indicator Alarm out indicator A (ACA) indicator	
Circuit	Custom chip of microprocessor LSI circuit.	
ACA measurement	0.05 ACA to 10.00 ACA. ** True rms value*	
Sampling Time	Approx. 0.8 second.	
Relay Output	Number	2 relays
	Function	*Relay 1 :* Control relay.
		Relay 2 : High/Low alarm relay.
	Max load 	0.5 ACA/250 ACV 0.5 DCA/24 DCV **** Do not apply the relay contact load current > 0.5 A, other wise the relay may be damaged permanently without warranty.***

Setting Function	*1st layer setting procedures*	CtLo (Control low limit) CtHi (Control high limit) ALLo (Alarm low limit) ALHi (Alarm high limit)
	Second layer setting procedures	CtSt (CT rate setting) CtHy (Control hysteresis value setting) ALHy (Alarm hysteresis value setting)
Over input	" - - - - " mark indication.	
Zero Adjustment	Automatic adjustment.	
Data Output	RS232 / USB PC Computer interface. * Connect the optional RS232 cable , UPCB - 02 will get the RS232 plug. * Connect the optional USB cable, USB - 01 will get the USB plug.	
Operating Temperature	0 to 50 ℃.	
Operating Humidity	Less than 80% R.H.	
Power Supply	90 to 260 ACV, 50/60 Hz.	
Power Consumption	Approx. 3.3 VA/AC 110V. Approx. 4.9 VA/AC 220V. ** Under no load*	
Weight	261 g/ 0.57 LB.	
Dimension	DIN size : 96 x 48 mm. Panel cut size : 92 x 46 mm. Depth : 110 mm.	
Accessories Included	Instruction manual.....1 PC Case holder with screw..... 2 PCs	

Optional Accessories	USB cable , USB - 01 RS232 cable , UPCB - 02 Data Acquisition software SW-U801-WIN
	* Real time SD card datalogger DL-9602SD
	* GSM controller, GSM-889. * Interface cable (cable between meter to GSM-889), GMCB-89.

2-2 Electrical Specifications

Direct input (without CT)

Range	0.05 ACA to 10.00 ACA
Resolution	0.01 ACA
Accuracy	± (0.5 % + 5d) reading

Remark :
* *T16, T15 ACA input : 0.05 ACA to 10.00 ACA.*
* *Accuracy is test under input signal is sine wave, 50/60 Hz.*
* *ACA frequency response is from 40 to 400 Hz.*
* *ACA measurement is True RMS value.*
* *Accuracy value is specified within 23℃ ± 5℃*

With CT (Current transformer)

Range	1 ACA to 2000 ACA
Resolution	1 ACA
Accuracy	± (0.5 % + 5d) reading

Remark :
* *Measuring Signal come from the rear terminals .*
* *T16, T15 ACA input : 0.05 ACA to 10.00 ACA.*
  CT (Current transformer) adjust value : x 1 to x 200.
* *Accuracy is test under input signal is sine wave, 50/60 Hz.*
* *Accuracy is specified for the meter only, not include the accuracy of CT (Current transformer).*

@ The above spec. accuracy are tested under the environment RF Field Strength less than 3 V/M & frequency less than the 30 MHz only.

3. FRONT PANEL DESCRIPTION

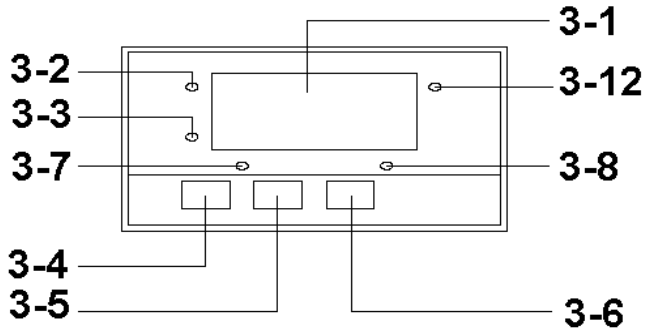
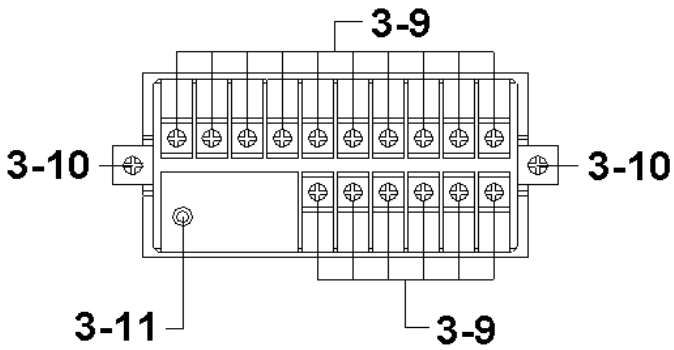


Fig. 1

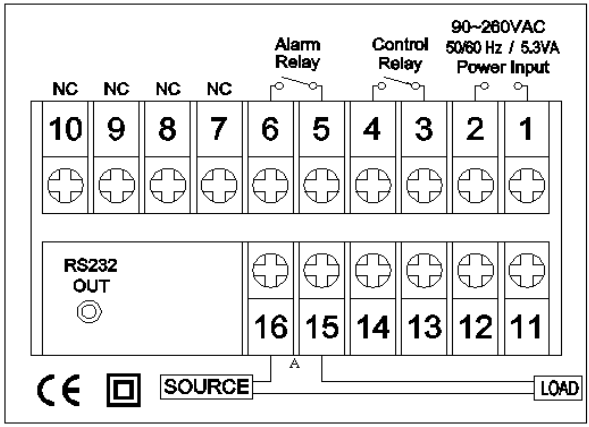


3-1 Display
3-2 PV (process value) indicator
3-3 SV (set value) indicator
3-4 Set Button
3-5 ▼ Button
3-6 ▲ Button
3-7 Control relay indicator
3-8 Alarm relay indicator
3-9 Wire terminals
3-10 Case holder
3-11 RS232 terminal
3-12 A (ACA) ndicator

4. MEASURING PROCEDURE

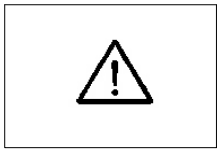
Terminal layout

Fig. 2



4-1 Terminal connection (ACV power, relays) :

1) Input the ACV power (90 to 260 ACV) to T1, T2.

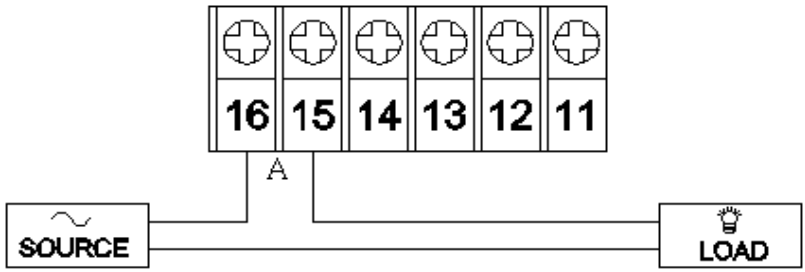


Do not input the over voltage to the AC input terminals.

2) Connect the " Control Relay " output from T3, T4.
   Connect the " Alarm Relay " output from T5, T6.

4-2 Terminal connection (without CT)

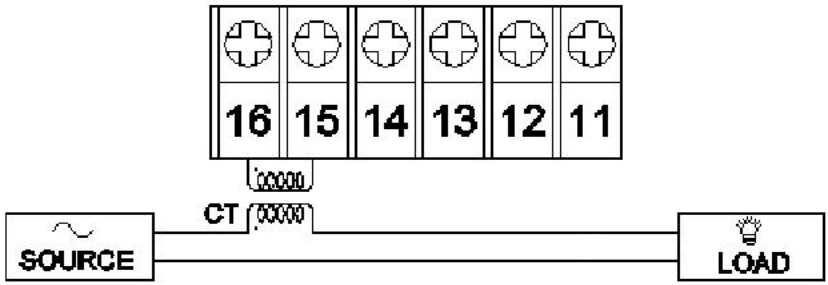
1) Cut off ALL Power Source
2) Connect the ACV power line (90 to 260 ACV) to T1 , T2.
3) Connect the " Control Relay " output from T3 , T4
   Connect the " Alarm Relay " output from T5 , T6
4) Connect the measurement AC current (Load current)
   in series with T16, T15 as the Fig. 3.
5) Turn ON the ACV power line (90 to 260 ACV).
6) Turn ON the AC Power Source.



Current sensing terminals : T16, T15

Fig. 3

4-3 Terminal connection (with CT)



Current sensing terminals : T16, T15

Fig. 4

4-4 1st layer setting procedures

CtLo	Control low value setting
CtHi	Control high value setting
ALLo	Alarm low value setting
ALHi	Alarm high value setting

a. Control low value setting

1) Press the " Set Button " (3-4, Fig. 1) once, the " Display " will show " CtLo ", now the meter is ready for the " Control low value " setting.
2) Use the " ▼ Button " (3-5, Fig. 1) and the " ▲ Button " (3-6, Fig. 1) to adjust the desiring " Control low value ".
   Press the " Set Button " (3-4, Fig. 1) to save the setting value.

Remark :

** When adjust the value, the " SV indicator " (3-3, Fig. 1) will light.*

b. Control high value setting

1) After set the " Control low value ", press the " Set Button " (3-4, Fig. 1) once, the " Display " will show " CtHi ", now the meter is ready for " Control high value " setting.
2) Use the " " ▼ Button " (3-5, Fig. 1) and the " ▲ Button " (3-6, Fig. 1) to adjust the desiring " Control high value ".
   Press the " Set Button " (3-4, Fig. 1) to save the setting value.

Remark :

** When adjust the value, the " SV indicator " (3-3, Fig. 1) will light.*

c. Alarm low Value Setting

1) After set the " Control high value ", press the " Set Button " (3-4, Fig. 1) once, the " Display " will show " ALLo ", now the meter is ready for " Alarm low value " setting.
2) Use the " ▼ Button " (3-5, Fig. 1) and the " ▲ Button " (3-6, Fig. 1) to adjust the desiring " Alarm low value ".
   Press the " Set Button " (3-4, Fig. 1) to save the setting value.

Remark :

* *When adjust the value, the " SV indicator " (3-3, Fig. 1) will light.*

d. Alarm high Value Setting

1) After set the " Alarm low value ", press the " Set Button " (3-4, Fig. 1) once, the " Display " will show " ALHi ", now the meter is ready for " Alarm high value " setting.
2) Use the " ▼ Button " (3-5, Fig. 1) and the " ▲ Button " (3-6, Fig. 1) to adjust the desiring " Alarm high value ".
   Press the " Set Button " (3-4, Fig. 1) to save the setting value.

Remark :

* *When adjust the value, the " SV indicator " (3-3, Fig. 1) will light.*

4-5 2nd layer setting procedures

CtSt	CT rate value setting
CtHy	Control hysteresis setting
ALHy	Alarm hysteresis setting

a. CT rate value setting

CT : Current transformer, adjust value is x 1 to x 200.

1) Press the " Set Button " (3-4, Fig. 1) continuously at least two seconds, the " Display " will show " CtSt ", now the meter is ready for the " CT rate value setting ".
2) Use the " ▼ Button " (3-5, Fig. 1) and the " ▲ Button " (3-6, Fig. 1) to adjust the desiring " CT rate value ". Press the " Set Button " (3-4, Fig. 1) to save the setting value.

Remark :

** When adjust the value, the " SV indicator " (3-3, Fig. 1) will light.*

b. Control Hysteresis value setting

1) After finish the " CT rate setting ", press the " Set Button " (3-4, Fig. 1) once, the " Display " will show CtHy ", now the meter is ready for the " Control Hysteresis value " setting.
2) Use the " ▼ Button " (3-5, Fig. 1) and the " ▲ Button " (3-6, Fig. 1) to adjust the desiring " Control Hysteresis value ". Press the " Set Button " (3-4, Fig. 1) to save the setting value.

Remark :

* *When adjust the " Control Hysteresis value " , the " SV indicator " (3-3, Fig. 1) will light.*
* *The function of " Control Hysteresis value " setting, refer to Fig. 5.*

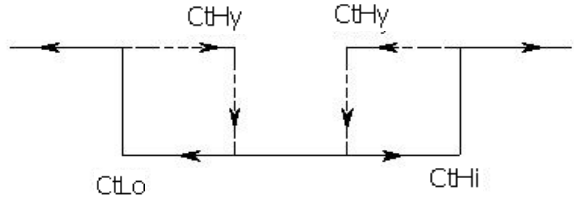


Fig. 5

* For example :

Control high value : 9.00
Control low value : 5.00
Control Hysteresis value : 0.1

a. The Control relay will On when measuring value up to 9.00. The Control relay will Off again when measuring value down to 8.90.
b. The Control relay will On when measuring value down to 5.00. The Control relay will Off when measuring value up to 5.10.

c. Alarm Hysteresis value setting

1) After select the " Control Hysteresis value " , press the " Set Button " (3-4, Fig. 1) once, the " Display " will show " ALHy ", now the meter is ready for the the " Alarm Hysteresis value " setting.
2) Use the " ▼ Button " (3-5, Fig. 1) and the " ▲ Button " (3-6, Fig. 1) to adjust the desiring " Alarm Hysteresis value " .
Press the " Set Button " (3-4, Fig. 1) to save the setting value.

Remark :

* *When adjust the " Alarm Hysteresis value " , the " SV indicator " (3-3, Fig. 1) will light.*
* *The function of " Alarm Hysteresis value " setting, refer to Fig. 6.*

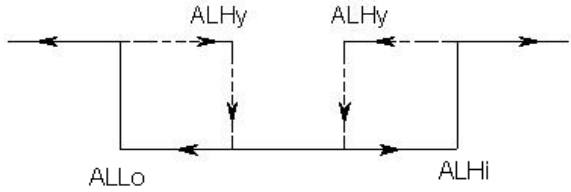


Fig. 6

* For example :

Alarm high value : 8.00
Alarm low value : 6.00
Alarm Hysteresis value : 0.1

a. The alarm relay will On when measuring value up to 8.00. The alarm relay will Off again when measuring value down to 7.90.
b. The alarm relay will On when measuring value down to 6.00. The alarm relay will Off when measuring value up to 6.10.

5. MAINTENANCE

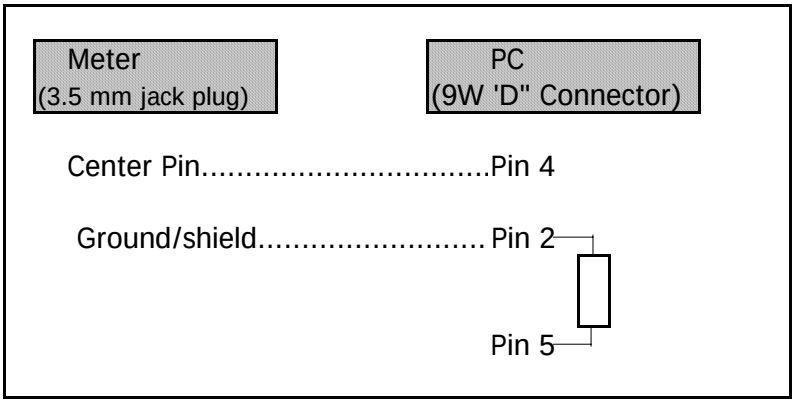
1) Instruments used in dusty environments should be stripped and cleaned periodically.
2) Do not leave the instruments exposed to direct heat from the sun for long periods.

6. RS232 PC SERIAL INTERFACE

The instrument has RS232 PC serial interface via a 3.5 mm terminal (3-11, Fig. 1).

The data output is a 16 digit stream which can be utilized for user's specific application.

A RS232 lead with the following connection will be required to link the instrument with the PC serial port.



The 16 digits data stream will be displayed in the following format :

D15	D14	D13	D12	D11	D10	D9	D8	D7	D6	D5	D4	D3	D2	D1	D0

Each digit indicates the following status :

D15	Start Word
D14	4
D13	1
D12 & D11	Annunciator for Display
	ACA = 52
D10	Polarity 0 = Positive 1 = Negative
D9	Decimal Point(DP), position from right to the left 0 = No DP, 1= 1 DP, 2 = 2 DP, 3 = 3 DP
D8 to D1	Display reading, D8 = MSD, D1 = LSD. For example : If the display reading is 1234, then D8 to D1 is : 00001234
D0	End Word

RS232 setting

Baud rate	9600
Parity	No parity
Data bit no.	8 Data bits
Stop bit	1 Stop bit

7. SYSTEM RESET

Power on the meter, use the two fingers to press " Set Button " (3-4, Fig. 1) and " ▼ Button " (3-5, Fig. 1) continuously more than 5 seconds until the Display show the text " rSt ", release the buttons. After " rSt " text flashing 2 times will return to the normal screen. The meter system will be reset, all the calibration data will be cleared, the meter's internal function will return the default value.

8. THE ADDRESS OF AFTER SERVICE CENTER