



ACPM 02

THREE-PHASE MULTIFUNCTION ANALYZER
THREE PHASE MULTYFUNCTION DIGITAL POWER METER

DESCRIPTION

The three-phase three-phase network analyzer – Power meter ACPM02 is designed to measure all general electrical parameters as follows: Voltage of the three phases, Current of three phases, Active energy, Reactive energy, Frequency, Power factor, Energy 4 quadrants, etc., Has serial interface RS485, Protocol Modbus RTU, up to 4 pieces Analog outputs – 0(40) – 20 mA, up to 4 pieces Digital outputs. It is used in Energy, Industry or Bits, wherever electricity measurements and controls are required.

BASIC FUNCTIONS

- Three-phase voltage: UA, UB, UC
- Linear voltages: UAB, UBC, UCA
- Three-phase current: IA, IB, IC
- Active power of the three phases and Total
- Reactive power of the three phases and Total
- Aperyary power of the three phases and Total
- Power Factor of the three phases and Total
- Network frequency
- Totalizer Active Energy
- Totalizer Reactive energy
- Serial port RS485

ADDITIONAL INPUTS/OUTPUTS

- 4-Digital outputs – DO (Discrete output)
- 4-Digital inputs – DI (Discrete input)

The ACPM02 instrument is standard with four analog outputs. If necessary, the instrument can be ordered with digital outputs and inputs, but cannot be mixed.

TECHNICAL CHARACTERISTICS

VOLTAGE INPUTS

Scope	AC 100V PV, 400V Direct Connection - Programmable
Overloading of inputs	120% constantly, 200% for 30 sec
Load (input consumption)	0.5 VA per phase
Input resistance	>500kΩ

ELECTRICITY INPUTS

Scope	1A, 5A AC - Programmable
Overloading of inputs	120% permanent, 200% in 10 seconds, ≥20*I in 0.5 seconds
Load (input consumption)	0.5 VA per phase
Input resistance	< 2mΩ

ANALOG OUTPUTS

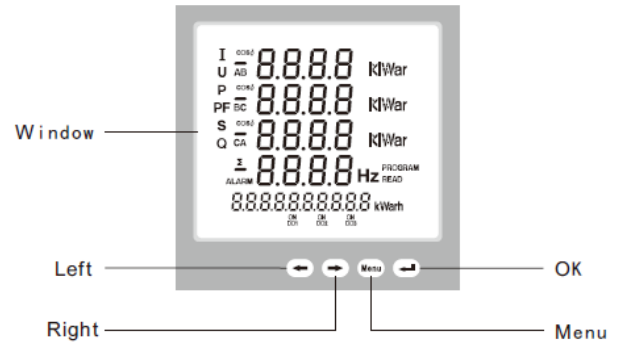
Number of outputs	4
Output current	0-20 mA, 4-20mA
Class	0.5

COMMUNICATION

Serial port	RS485
Number of devices in the line	up to 30
Protocol	Modbus RTU
Communication speed	1200,2400,4800,9600, 19200

DISPLAY

The ACPM02 features a good contrast LCD display showing current data in 5 rows. The first three show measuring dimensions for electricity, voltage, cosine u and power. The fourth row displays the network frequency. In the fifth row, the totalizers are displayed. Below the display are 4 functional buttons for managing the device.



FEATURES ON DISPLAY

The ACPM02 display displays measured or calculated data on six consecutive screens. Moving the screens is done using the Left and Right buttons. The diagram below shows the structure of the displayed information.

	Display	Content
diSP=1		Phase A current : 5.200A Phase B current : 5.197A Phase C current : 5.198A Frequency: 50.00Hz Active forward energy : 0.09KWh
diSP=2		Phase A voltage : 220.1V Phase B voltage : 220.0V Phase C voltage : 220.3V Frequency : 50.00Hz Reactive forward energy: 0.02Kvarh
diSP=3		Phase A active power : 1.100KW Phase B active power : 1.100KW Phase C active power : 1.100KW Total active power : 3.300KW Reverse active energy : 0.09KWh
diSP=4		Phase A COS : 1.000 Phase B COS : 1.000 Phase C COS : 1.000 Total COS : 1.000 Reverse reactive energy : 0.02Kvarh
diSP=5		Phase A apparent power : 1.100KW Phase B apparent power : 1.100KW Phase C apparent power : 1.100KW Total apparent power : 3.300KW 1~4 digits: DO (0: OFF, 1: ON) 5~8 digits: DI (0: OFF, 1: ON)
diSP=6		Phase A reactive power : 0.000Kvarh Phase B reactive power : 0.000Kvarh Phase C reactive power : 0.000Kvarh Total reactive power : 0.000Kvarh Active forward energy : 0.09KWh

DESCRIPTION ON THE MENU CONFIGURATION

Entering configuration mode starts by pressing the Menu button. The set responds with information on the first three lines of the display, and following the steps and information, the instrument is configured according to user needs. The meaning of the information on the display is as follows:

CodE		We need to enter a four-digit password. The default password is 0001.
SEt		General settings of the set as follows:
	diSP	Select current screen
	b.Lcd	Display brightness setting 15 steps
	CLr.E	Confirmed subset (reset)
In.Pt		Operating settings of the set as follows:
	nEt	Measurement operating schedule: n.3.3 - Three-phase three-wire n.3.4 - Three-phase four-wire
	U.ScL	Operating input voltage: 400 or 100V
	i.ScL	Operating input electricity: 5A or 1 A
	Pt	Primary voltage - set as a ratio of 1 - 9999.
	Ct	Primary electricity - set as a ratio of 1 - 9999
Conn		Communication Settings as follows:
	Sn	Address to device address from 1 to 247
	bAUd	Communication speed – 1200, 2400, 4800, 9600,19200 bps.
	dAtA	Data format: n.8.1 n-None parity, 8 data bits, 1 stop bit o.8.1 o-Odd parity, 8 data bits, 1 stop bit E.8.1 e-Even parity, 8 data bits, 1 stop bit
do-l		Select an alarm set for all parameters corresponding to the ability to set alarm levels in on/off digital output mode. Parameter selection is set as a number of 0-255 corresponding to this parameter and set as a ratio of 0–9999.
Ao-l		Select parameter of analog output for conversion to output electricity. Parameter selection is set as a number of 0-255 corresponding to this parameter and set as a ratio of 0–9999.
CodE		Password change: oLd current password from 0 –9999 n-1 New password – first input from 0 –9999 n-2 New parora – second entry from 0 - 9999

MODBUS RTU COMMUNICATION

The table provides available Modbus RTU registers for instant and integral dimensions.

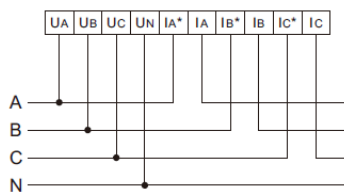
ADDRESS	FORMAT	NAME	DESCRIPTION
57	Float32	UL1	Voltage phase L1
59	Float32	UL2	Voltage phase L2
61	Float32	UL3	Voltage phase L3
63	Float32	UL1-L2	Linear voltage-phase L1-L2
65	Float32	UL2-L3	Linear voltage-phase L2-L3
67	Float32	UL3-L1	Linear voltage-phase L3-L1
69	Float32	IL1	Electricity phase L1
71	Float32	IL2	Electricity phase L2
73	Float32	IL3	Electricity phase L3
75	Float32	PL1	Active power phase L1
77	Float32	PL2	Active power phase L2
79	Float32	PL3	Active power phase L3
81	Float32	Ptotal	Active power total
83	Float32	QL1	Reactive power phase L1
85	Float32	QL2	Reactive power phase L2
87	Float32	QL3	Reactive power phase L3
89	Float32	Qtotal	Reactive power Total
91	Float32	SL1	Aperary power phase L1
93	Float32	SL2	Aperary power phase L2
95	Float32	SL3	Aperary power phase L3
97	Float32	Stotal	Aperary power Total
99	Float32	PFL1	Power Factor phase L1
101	Float32	PFL2	Power Factor phase L2
103	Float32	PFL3	Power Factor phase L3
105	Float32	Pftotal	Power Factor Total
107	Float32	FR	Network Frequency
129	Float32	WPP	Active Energy Export
131	Float32	WPN	Active Energy Import
133	Float32	WQP	Reactive Energy Export
135	Float32	WQN	Reactive Energy Import
137	Float32	EPP	
139	Float32	EPN	
141	Float32	EQP	
143	Float32	EQN	

DIMENSIONS AND MOUNTING HOLES

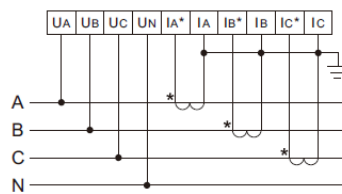
In the table are given all the manufactured instrument sizes and light mounting holes.

Appearance	Appearance		Dimension			Mounted	
	Width	Height	Width	Height	Depth	Width	Height
120×120	120	120	110	110	80	112	112
96×96	96	96	90	90	80	92	92
80×80	80	80	74	74	80	76	76
72×72	72	72	66	66	80	68	68

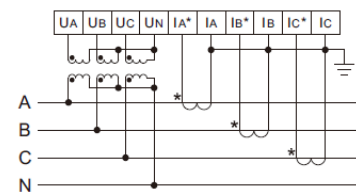
CONNECTION SCHEMES



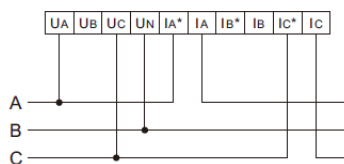
Voltage (<600V) directly in
Current (<5A) directly in



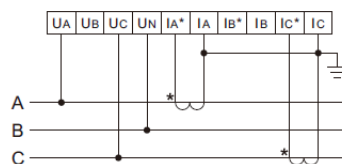
Voltage (<600V) directly in
Current (>5A) CT in



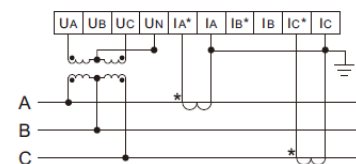
Voltage (>600V) CT in
Current (>5A) CT in



Voltage (<600V) directly in
Current (<5A) directly in



Voltage (<600V) directly in
Current (>5A) CT in



Voltage (>600V) CT in
Current (>5A) CT in

Standards

- Standard MODBUS-RTU Communication Protocol
- IEC62053-22:2003 Class 0.2S & 0.5S Static AC active watt-hour meter
- IEC62053-23:2003 Class 2.0 Static AC reactive watt-hour meter GB/T13850-1998 AC electricity transfer to analog or digital signal electric measurement transducer
- IEC61010-1 Measure and control electrical equipment safety - part 1
- IEC61000-2-11 Electromagnetic compatibility (EMC)
- IEC60068-2-30 Environmental testing