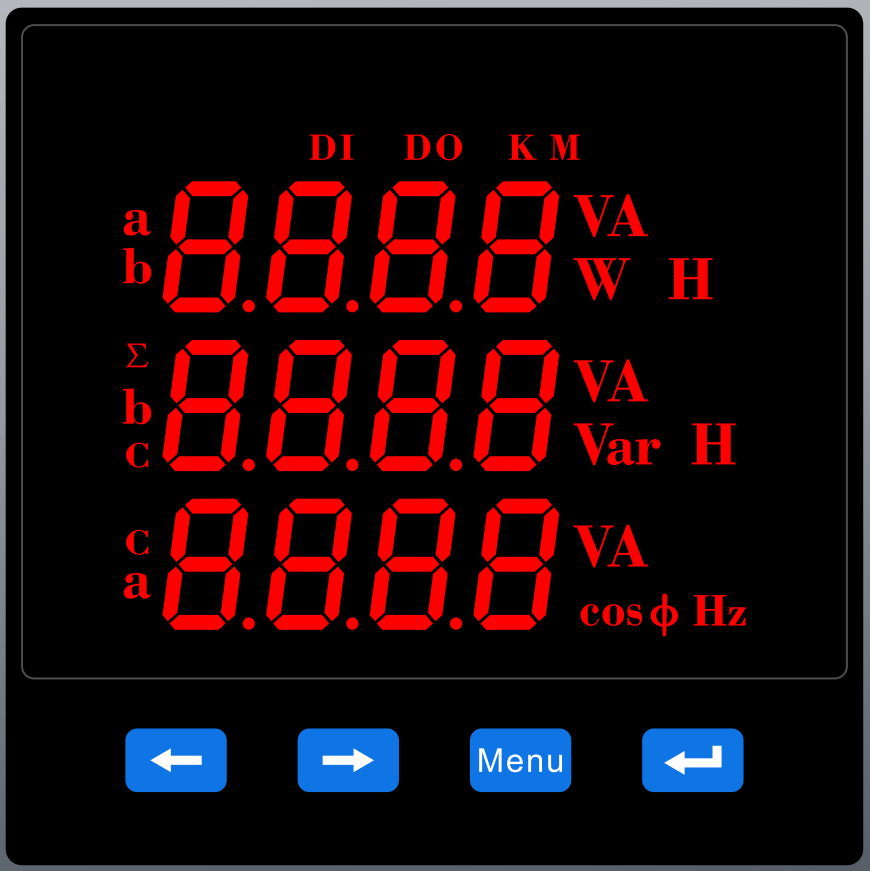
Multifunctional Electricity Meter
User Manual



Aze Tech. (Zhejiang) Co., Ltd.

Version: AZ1.0v

Contents

ATTENTION:

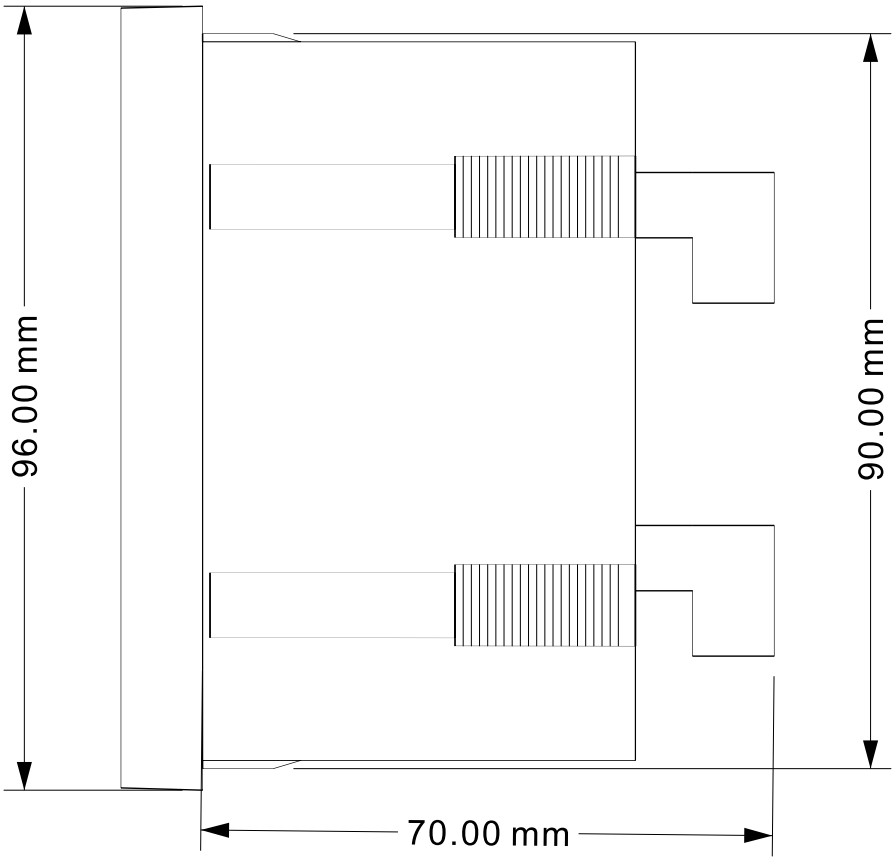
1. Please read this manual carefully before using the meter;
2. Dangerous voltage beware of the risk of electric shock;
3. It is forbidden for non professional personnel of the company to repair the meter;
4. The product update iteration will not be notified, if it is inconsistent with the real object, please refer to the latest manual;
5.

Multifunctional electricity meter is an intelligent network instrument with multiple functions such as programmable electric quantity measurement, electric energy measurement, data display, network communication, electric energy pulse, analog output and digital output. It is widely used in substation, power distribution automation, intelligent building, enterprise production and other scenes. It has the characteristics of convenient installation, simple wiring, convenient maintenance, small engineering quantity, on-site configuration parameters and can accept customized production by customers.

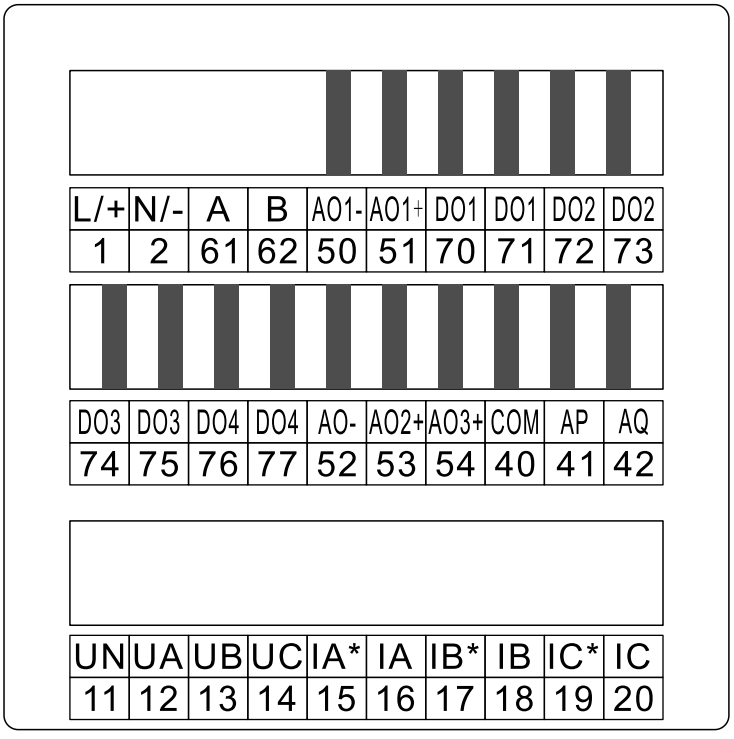
Measurement: voltage, current, active power, reactive power, apparent power, power factor, grid frequency, positive and negative active/reactive electric energy.

Specifications	Parameters
wiring modes	3P4L/3P3L/1P2L
voltage	rating: AC 110V/220V/400V
	overload: continued 480V, 10s 1000v
	power dissipation: <1VA
current	rating: 5A
	overload: continued 6A, 10s 10A
	overload: <1VA
frequency	40 - 70Hz
accurass	voltage\current: 0.2%; other: 0.5%; energy: 1%
temperature drift	< 200ppm
auxiliary power	85-265VAC/110VDC ±15%
communication	RS485 physical layer isolation protocol: modbus-RTU speed: 1200 - 56000bps verification: N81、E81、O81、N82
transformation ratio	PT/CT: 1-5000
digital output(optional)	0-4 10A 250VAC/30VDC
analog output(optional)	0-4 4-20mA
energy pulse(optional)	collector output, fixed pulse width 80ms ±20%
withstand voltage	between input, output and power supply>AC2KV between input, output and incrustation>50MΩ
external environment	operating temperature: -20-60°C storage temperature: -20-70°C relative humidity: 5%-95% altitude: < 3000m

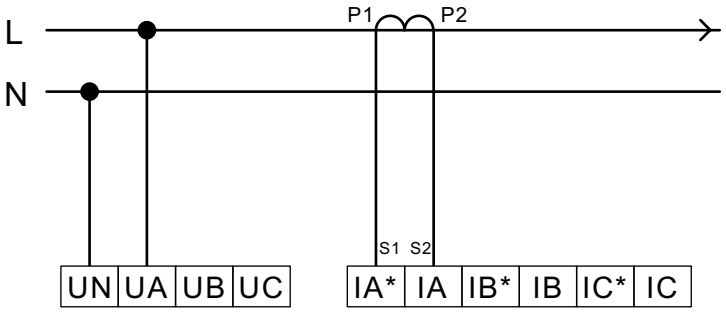
Table1 Techninal Parameters



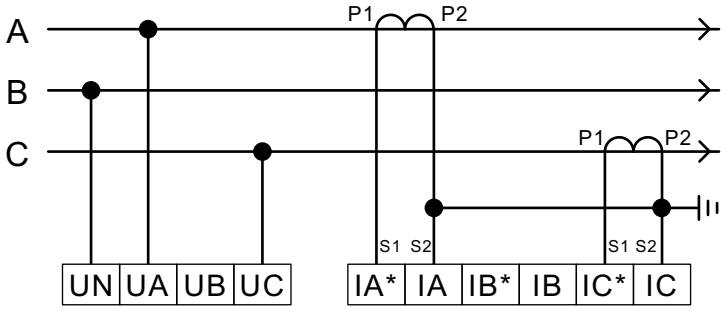
Side view



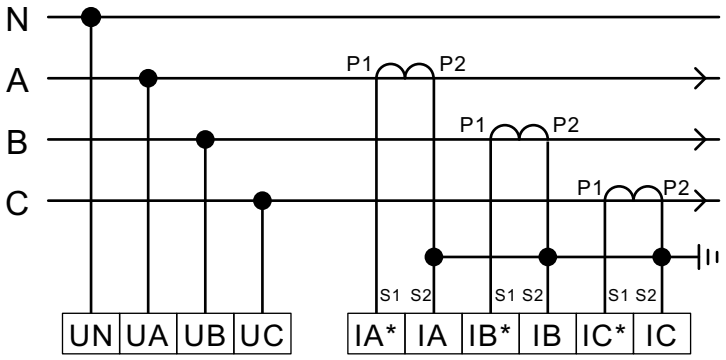
Rear view



1P2L



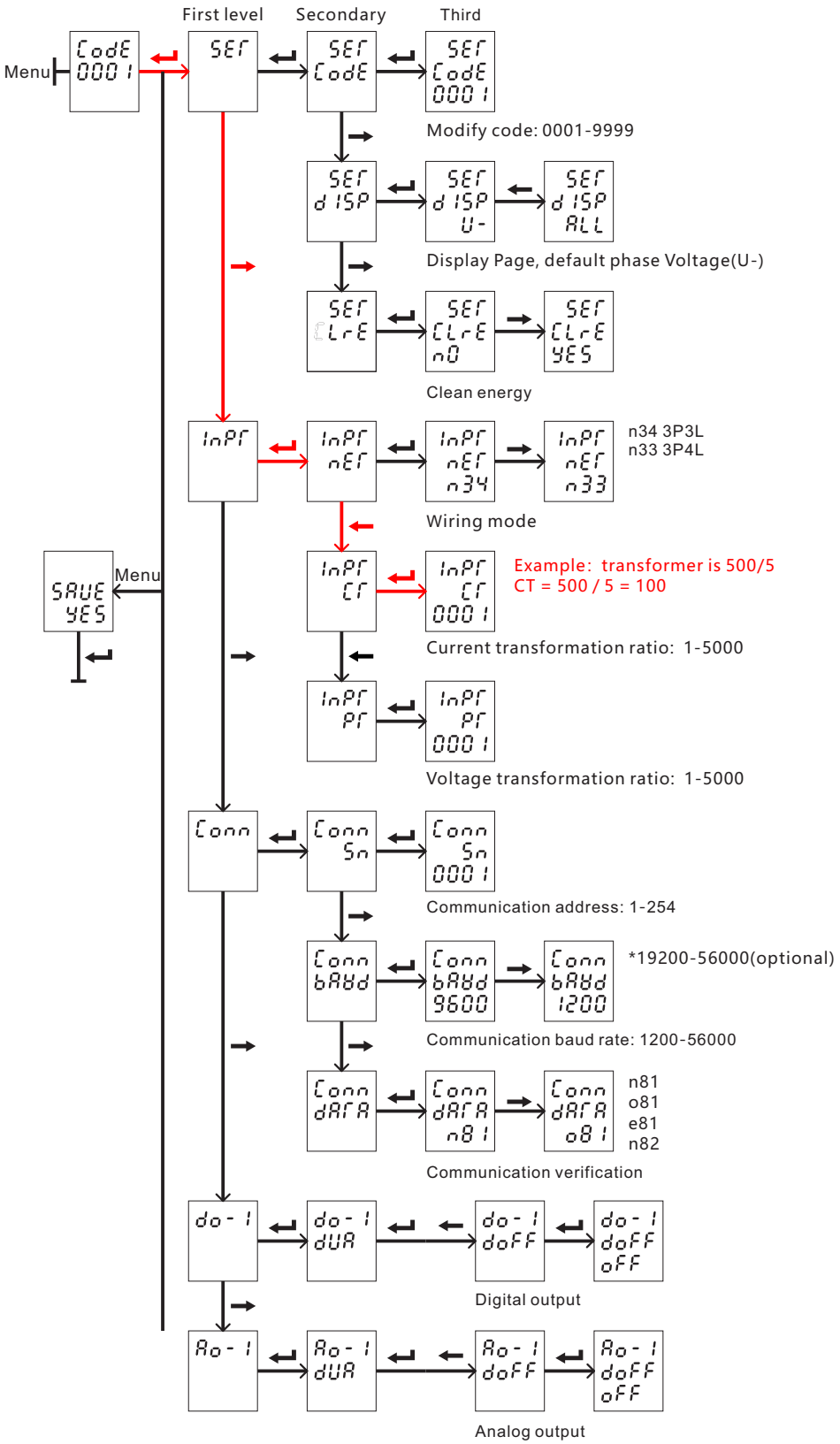
3P3L



3P4L

ATTENTION:

1. The input voltage shall not be higher than the rated input voltage of the product, otherwise PT shall be considered for easy maintenance, and it is recommended to use wiring block;
2. The standard rated input current is 5A. If it is greater than 5A, external CT shall be used. If the CT used is connected with other instruments, the wiring shall be in series. Before removing the current input connection of the product, be sure to disconnect the CT primary circuit or short circuit the secondary circuit;
3. Ensure that the input voltage and current are corresponding, the phase sequence and direction are consistent, otherwise there will be numerical and symbolic errors (active power and energy);
4. The instrument can work in 3P3L or 3P4L. The user shall select the corresponding wiring mode according to the field use. Generally, 3P3L is used when there is no center line. Only two CTs (phase A and C) can be installed for 3P3L, and three CTs need to be installed 3P4L. Two wiring modes can be set in the instrument. The actual wiring mode must be consistent with the setting mode in the instrument, otherwise the measurement data of the instrument is incorrect;
5. For wiring safety and lightning protection, it is recommended to connect 1A fuse at the voltage input terminal and the L terminal of auxiliary power supply.



Key description:

1. Menu is to enter the setting, default code is 0001. If you forget the modified password, you can view it through communication; after entering the menu, it is the function of exit;
2. ↵ is the Confirm button;
3. ← switching to the right, and when encountering numbers, it is the function of shifting;
4. → switch to the left, and the number is to increase 1, cycling from 0 to 9;
5. Save exit, otherwise do not save.

Dec	Hex	Type	R/D	Describe	Explain
40001	0x00	UInt16	R	UA A phase voltage	Primary value = register / 10 * PT (V)
40002	0x01	UInt16	R	UB B phase voltage	
40003	0x02	UInt16	R	UC C phase voltage	
40004	0x03	UInt16	R	IA A phase current	Primary value = register / 1000 * CT (A)
40005	0x04	UInt16	R	IB B phase current	
40006	0x05	UInt16	R	IC C phase current	
40008	0x07	Int16	R	P total active power	Primary value = register * CT * PT (W) If it is negative, it means that the current input is connected reversely
40009	0x08	Int16	R	PA A active power	
40010	0x09	Int16	R	PB B active power	
40011	0x0A	Int16	R	PC C active power	
40012	0x0B	Int16	R	Q total reactive power	Primary value = register * CT * PT (Var) Negative means capactive Positive means inductive
40013	0x0C	Int16	R	QA A reactive power	
40014	0x0D	Int16	R	QB B reactive power	
40015	0x0E	Int16	R	QC C reactive power	
40016	0x0F	UInt16	R	S total apparent power	Primary value = register * CT * PT (VA)
40017	0x10	UInt16	R	SA A apparent power	
40018	0x11	UInt16	R	SB B apparent power	
40019	0x12	UInt16	R	SC C apparent power	
40020	0x13	UInt16	R	PF total power factor	Value = register / 100
40021	0x14	UInt16	R	PFA A power factor	
40022	0x15	UInt16	R	PFB B power factor	
40023	0x16	UInt16	R	PFC C power factor	
40024	0x17	UInt16	R	UAB A phase line voltage	Primary value = register / 10 * PT (V)
40025	0x18	UInt16	R	UBC B phase line voltage	
40026	0x19	UInt16	R	UCA C phase line voltage	
40027	0x1A	UInt16	R	FA A phase frequency	Value = register / 100 (Hz) Measuring range: 40-70Hz
40028	0x1B	UInt16	R	FB B phase frequency	
40029	0x1C	UInt16	R	FC C phase frequency	

Table 3 Protocol Address 1

Dec	Hex	Type	R/D	Describe	Explain
40030	0x1D	UInt32	R	EP+ positive active energy	Value = (0x1D * 65536 + 0x1E) / 100 (KWH)
40031	0x1E		R		
40032	0x1F	UInt32	R	EP- reverse active energy	Value = (0x1F * 65536 + 0x20) / 100 (KWH)
40033	0x20		R		
40034	0x21	UInt32	R	EQ+ positive reactive energy	Value = (0x21 * 65536 + 0x22) / 100 (KVarH)
40035	0x22		R		
40036	0x23	UInt32	R	EQ- reverse reactive energy	Value = (0x23 * 65536 + 0x24) / 100 (KVarH)
40037	0x24		R		
40038	0x25	UInt32	R	EP total active energy	Value = (0x25 * 65536 + 0x26) / 100 (KWH)
40039	0x26		R		
40040	0x27	UInt32	R	EQ total reactive energy	Value = (0x27 * 65536 + 0x28) / 100 (KVarH)
40041	0x28		R		
40081	0x50	UInt16	R/W	code (default 0001)	1-9999
40082	0x51	UInt16	R/W	address (default 1)	1-254
40083	0x52	UInt16	R/W	baud rate (default 3)	0:1200 1:2400 2:4800 3:9600
40084	0x53	UInt16	R/W	verification (default 0)	0:N81 1:O81 2:E81 3:N82
40085	0x54	UInt16	R/W	energy clean	write 0x55AA
40086	0x55	UInt16	R/W	wiring mode (default 1)	0:3P3L 1:3P4L
40090	0x59	UInt16	R/W	PT (default 1)	1-5000
40091	0x5A	UInt16	R/W	CT (default 1)	1-5000
40108	0x6B	UInt16	R	software version	

Table 4 Protocol Address 2

Description:

1. Dec represents decimal, hex represents hexadecimal, type represents data type, uint16 represents unsigned 16 bit integer, int16 represents signed 16 bit integer, R / D represents read-write, R represents read-only, w represents writable, R / W represents readable and writable;
2. The decimal point part is realized by dividing by 10. For example, if the voltage is 1 decimal place, the read value is divided by 10, and if the current is 3 decimal places, the read value is divided by 1000;
3. Writing data to a read-only register will be ignored.

Structure of communication data frame: address code + function code + data code + check code

address code: default 1, can be set to 1-253;
function code: 03 Read data, 10 Write data;
data code: It consists of 2 bytes of starting address and 2 bytes of data length;
check code: 2 bytes CRC16.
Note: the frame data is represented in hexadecimal, and the register address starts from 0.

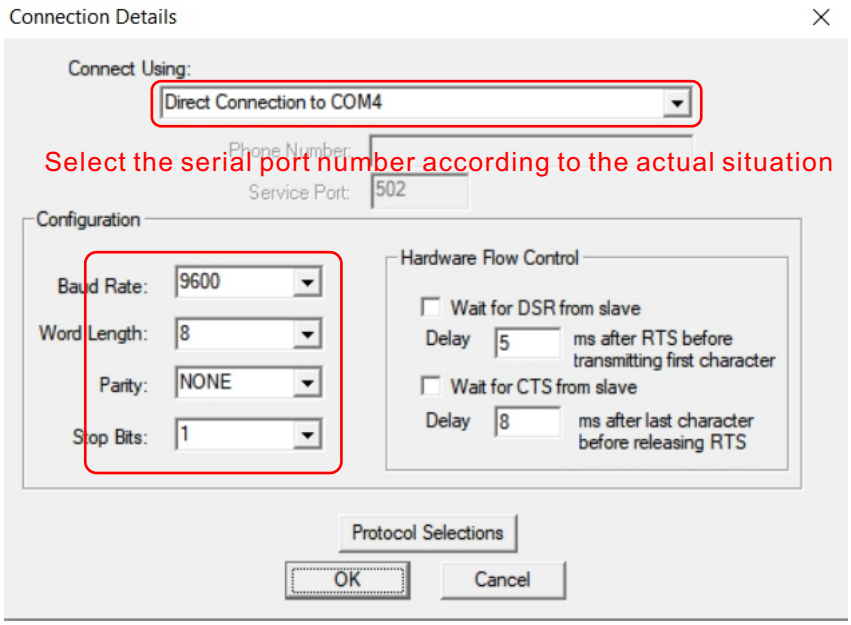
Read data:
01 03 00 00 00 03 05 CB Read ABC three-phase voltage value
01 address code
03 read function code
00 00 starting address
00 03 data length
05 CB check code

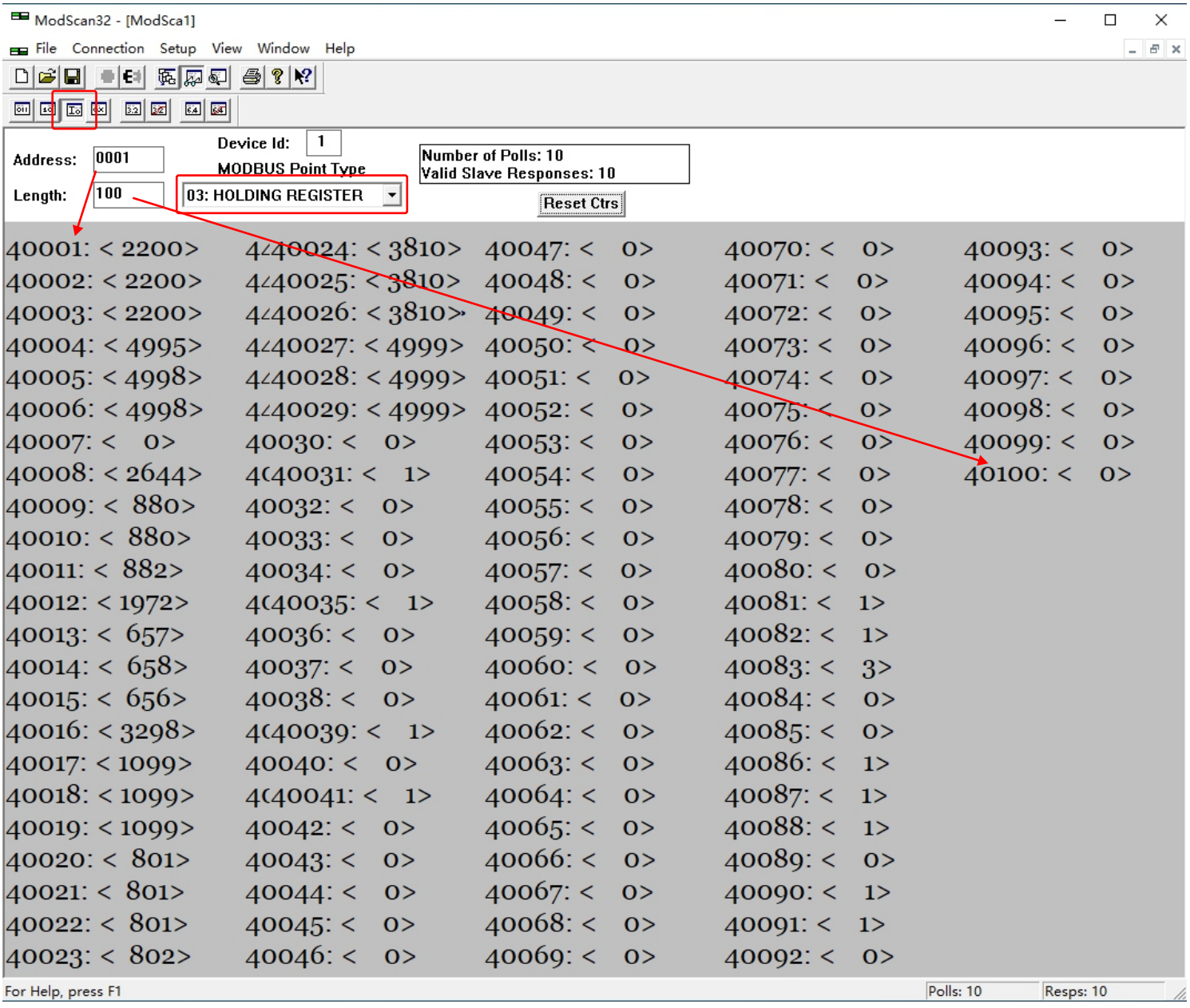
Write single data:
01 10 00 5A 00 01 02 02 58 AA 30 write a current transformer with a CT of 600, i.e. 3000/5
01 address code
10 write function code
00 5A register CT address code
00 01 number of registers
02 number of bytes written
02 58 written value, and the decimal conversion is 600
AA 30 check code

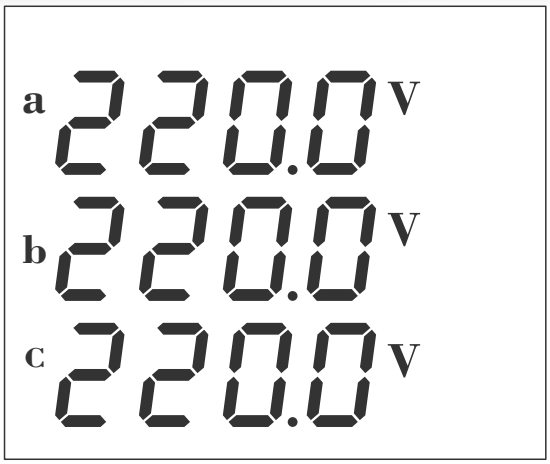
Write multiple data:
01 10 00 55 00 06 0C 00 00 00 01 00 01 00 01 00 01 00 0A 04 EF modify wiring mode is 3P3L, and CT is 10
01 address code
10 write function code
00 55 starting register address, corresponding to the line register
00 06 number of registers written continuously. Here, 6 registers are written and 5A is written, corresponding to CT register
0C Number of bytes written, 2 bytes per register, 12 bytes for 6 registers
00 00 00 01 00 01 00 01 00 01 00 0A write data for 12
04 EF check code
Note: write multiple registers that can only be continuous. Ensure that the value of each corresponding register is correct.

Energy clean:
01 10 00 54 00 01 02 55 AA 14 AB
01 address code
10 write function code
00 54 address code
00 01 number of registers
02 number of bytes written
55 AA written value
14 AB check code

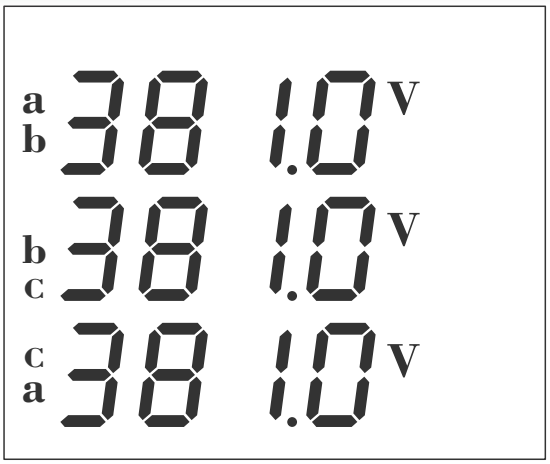
Modscan is a general software for Modbus test. It needs 485 to serial port tools. It only supports windows system.



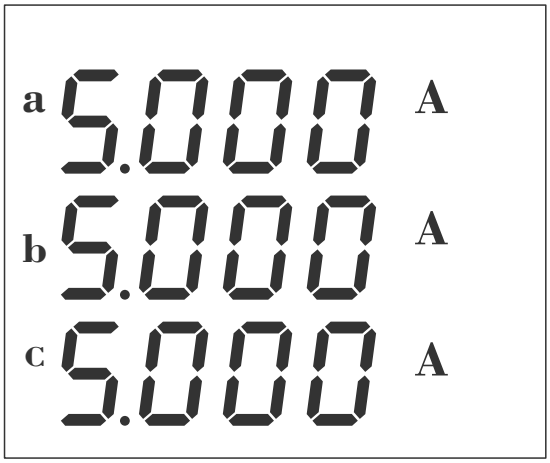




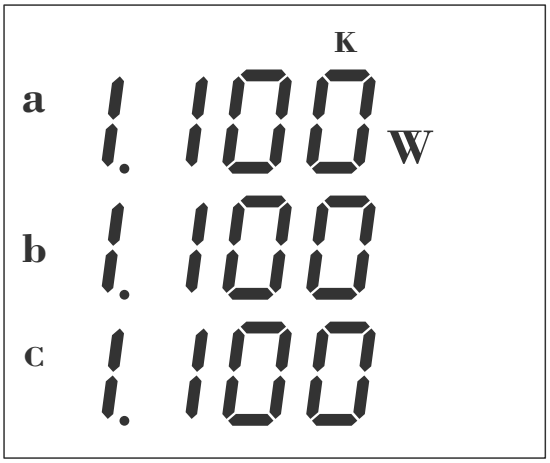
V is the voltage, abc is the phase voltage
(this page is not available for 3P3L)



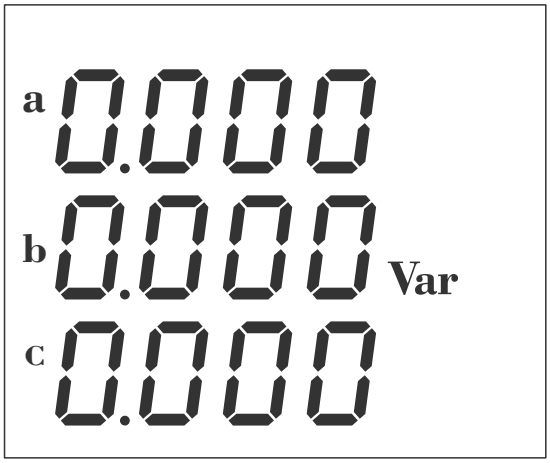
V is the voltage, ab bc ca is the line voltage



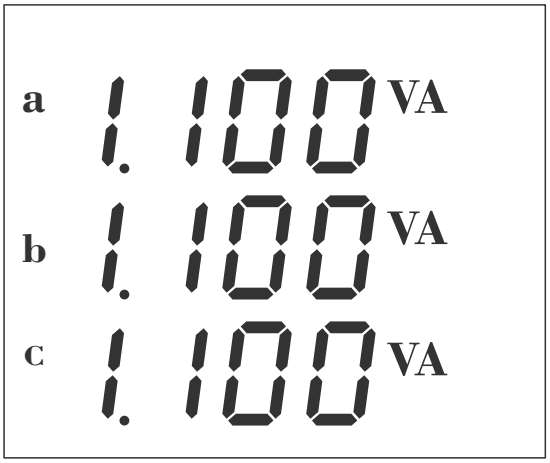
A is the current



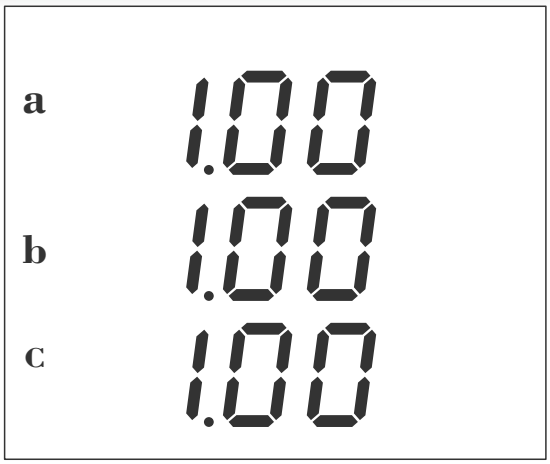
KW is the active power



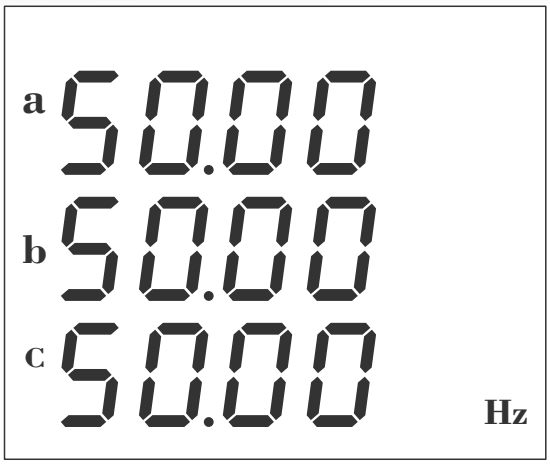
Var is the reactive power



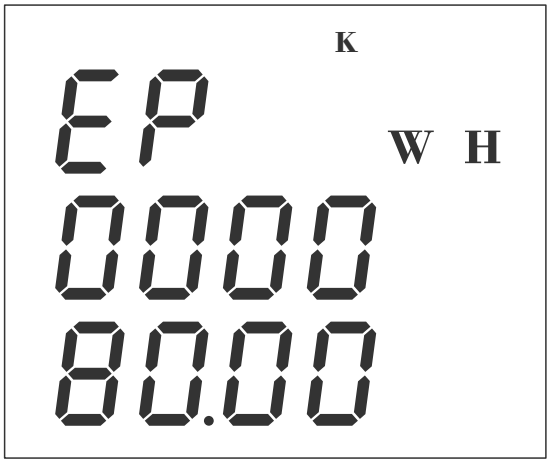
VA is the apparent power



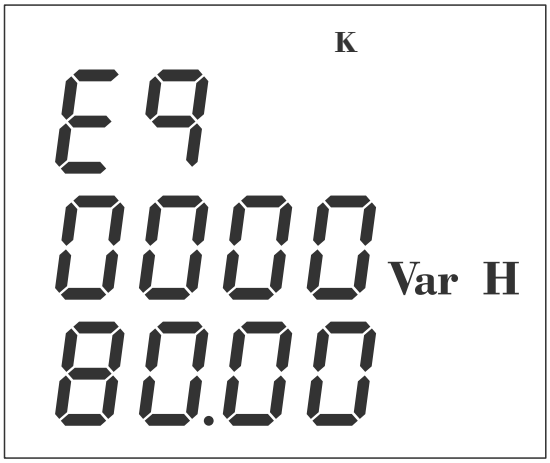
No unit is the power factor



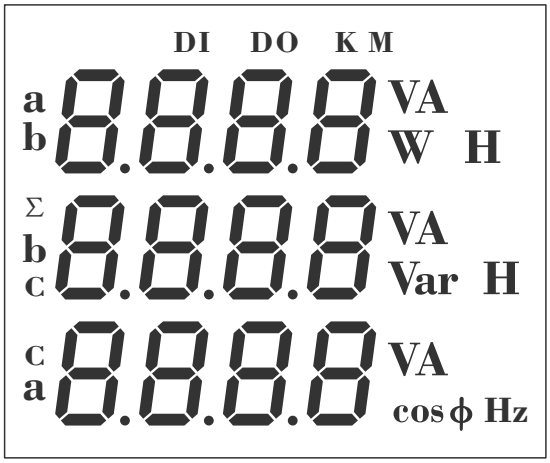
Hz is the frequency



EP KWH is the total active power energy
the valid value 8 bits



EQ KVarH is the total reactive power enerty
the valid value 8 bits



All display effect

AZE means Aze Tech.
0949 means version

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UDEM

CERTIFICATE

ATTESTATION
CERTIFICATE OF LOW VOLTAGE DIRECTIVE

Technical file of the company mentioned below has been observed and audit has been completed successfully.
2014/35/EU Low Voltage Directive has been taken as references for these processes

Company Name : **Aze Tech. (Zhejiang) Co., Ltd.**

Company Address : No.28, Santiaoqiao East Road, Liushi Town,Yueqing City, Zhejiang Province China, 325604

Related Directives and Annex : **Low Voltage Directive 2014/35/EU**

Related Standards : **EN 61010-1:2010+A1:2019**

Product Name : **Multifunctional Electricity Meter**

Report No and Date : TLZJ21111534779

Product Brand/Model/Type : AZ194E

Certificate Number : **M.2021.206.C69017**
Initial Assessment Date : 16.11.2021
Registration Date : 17.11.2021
Reissue Date/No : -
Expiry Date : **16.11.2026**

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