

YME96

Three-phase multifunctional smart meter

V1.1



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1. Product description

YME96 three-phase multi-functional panel meter supports 1/5A CTs (YME96C) or external 333mV CTs (YME96V) or Flexible Rogowski coil(YME96R) . YME96 supports 3PH3W and 3PH4W system; it can measure Current, Voltage, Power Factor, Total Harmonic, Power, Energy and other electrical parameters of L1,L2,L3. The standard RS485 communication interface can be compatible with various configuration systems through the standard MODBUS-RTU protocol.

Description					
Type	96*96 Panel Meter				
Poles description	3PH3W ,3PH4W.				
Application	Current, Voltage, Power, Energy and Total harmonic measurement				
display screen	3.8 inch LCD segment code display screen.				
Weight	259g				
Dimension	L*W*D: 8.1*8.1*3CM				
Color	White and black				
Model	YME96C	YME96V	YME96R		
Current sensor type	1/5A CT	333mV CT	Rogowski coil		
Advantage	Traditional electric meter	Support to voltage output sensor and Current clamp	Support to Rogowski coil directly connect without amplifier(Integrator)		
Current					
Model	YME96C	YME96V	YME96R		
Primary Rated current	5A to 6kA	5A to 6kA (Accept OEM)	600A	2500A	6000A
Secondary Rated input	5A	333mV	60/102mV/kA	102mV/kA	60mV/kA
Input channel maximum value	7.5A	500mV	500mV	500mV	500mV
Current measurement Range	0.005~5A	0.005~500mV	0.6A to 600A	2.5A to 2500A	6A to 6000A
Recommended Sensor model	ACT ASCT	SCT-10(10mm 5A/333mV) SCT-16(16mm 100A/333mV) SCT-24(24mm 200A/333mV) SCT-36(36mm 500A/333mV)	MRC-36 AYFCT-50	AYFCT-100/150 NRC-100/150	NRC-200
Photo					
Voltage					
Range	0~600VAC Phase to Phase Voltage				
Maximum range	720VAC Phase to Phase Voltage				
Digital Signal					
Energy pulse output	Active energy pulse output, optocoupler isolation (5kvrms)				
Relay output	One way electromagnetic relay output, including normally open and normally closed contacts, contact capacity: 3A 30V DC, 3A 250V AC				
Digital input	2-way dry contact input, optocoupler isolation (5kvrms)				
Communication					
RS485 communication	One way RS485 communication interface Interface type: two wire half duplex Communication baudrate: 2400bps ~ 19200bps Protocol: Modbus RTU				
Power supply					
Power Supply	95~265VAC/110~260VDC, 45~60Hz				
Maximum power consumption	3.5VA				

2. Data display

Measuring data	
Phase Voltage	U1, U2, U3 and average value.
Line Voltage	U12, U23, U31 and average value.
Current	I1, I2, I3 and average value.
Power	Active power, Reactive power, Apparent power (total and per phase).
Energy	Active energy import/export, reactive energy import/export, apparent energy import/export. If it exceeds 9999999.9kwh, the energy value will be reset to "0" automatically.
Harmonic	The total harmonics of each phase of voltage and current.
Power Factor	Including power factor PF and fundamental power factor DPF (average value of each phase and three phases)
Grid Frequency	Synthetic frequency
Update rate	
Data refresh rate	500ms
Harmonic	
Voltage	Total 15 th harmonic phase
Current	Total 15 th harmonic phase
Max / min	
Voltage	Per phase
Current	Per phase
Power	Active power, Reactive power, Apparent power (sum of all phases and three phases)
Unbalance degree	
Voltage	Per phase
Current	Per phase
Demand / maximum demand	
Current	Per phase
Power	Active power, Reactive power, Apparent power (sum of all phases and three phases)

3. Accuracy and certification

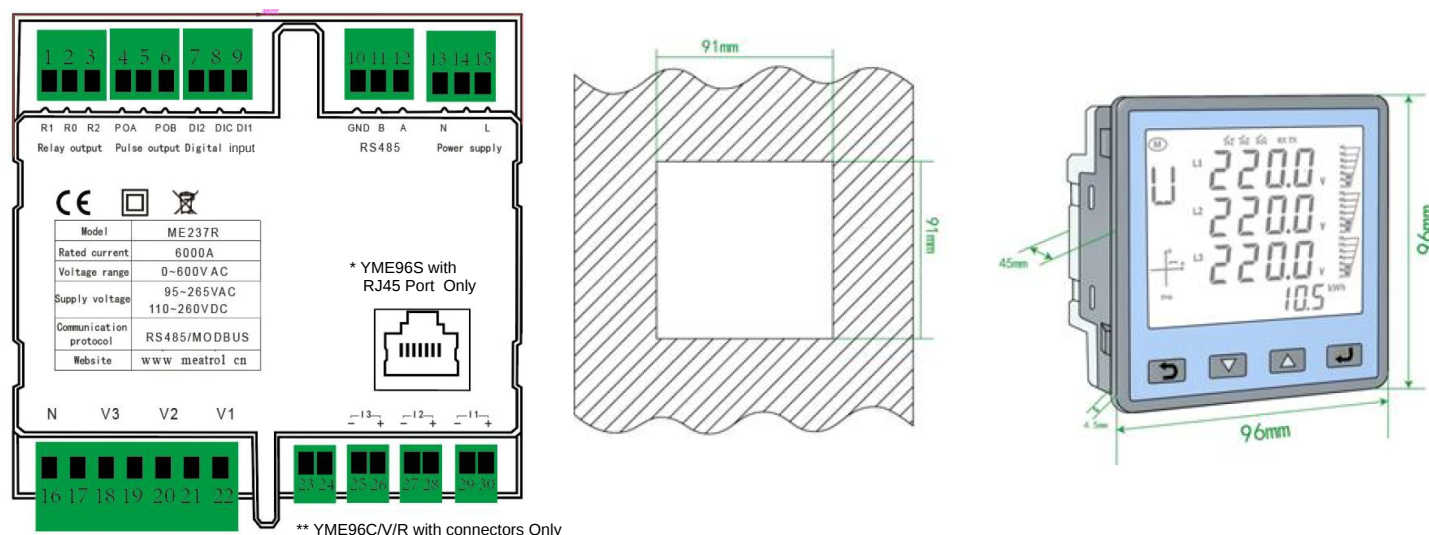
Note: RDG: reading value, FS: full scale

Measuring accuracy			
Model	YME96C	YME96V	YME96R
Current measurement	±0.3%RDG	±0.5%RDG	±0.5%RDG
Guarantee range of current measurement accuracy	0.5% FS~ 100%FS	1% FS~ 100%FS	2% FS~ 100%FS
Voltage measurement accuracy	0.2%(30~600V AC)		
Grid frequency	0.01(45 65Hz)		
Power factor	±0.005		
Active and apparent power	IEC62053-22 level 0.5S		
Reactive power	IEC62053-21 level 2S		
Active energy	IEC62053-22 level 0.5S		
Reactive energy	IEC62053-21 level 2S		
Environment condition			
Operating temperature	-25℃~+60℃		
Storage temperature	-40℃~+85℃		
Humidity range	5~95% RH, 50℃(non-condensing)		
Class of pollution	2		
Over voltage capability	CAT III 1000V, It is suitable for distribution system below 277 / 480VAC		
Insulation strength	IEC61010-1		
Altitude	3000m Max		

Antipollution level	IP20 (Meet the standard of IEC 60629)
Quality guarantee period	12 months
EMC (electromagnetic compatibility)	
Electrostatic discharge	Level CAT IV 600V (IEC61000-4-2)
Radiated immunity	Level CAT III 1000V (IEC61000-4-3)
EFT Electrical fast burst immunity	Level CAT IV 600V (IEC61000-4-4)
Surge immunity	Level CAT IV 600V (IEC61000-4-5)
Conducted disturbance immunity	Level CAT III 1000V (IEC61000-4-6)
Power frequency magnetic field immunity	0.5mT (IEC61000-4-8)
Conduction and radiation	Class B (EN55022)
Measurement standard	
EN 62052-11, EN61557-12, EN 62053-21, EN 62053-22, EN 62053-23, EN 50470-1, EN 50470-3, EN 61010-1, EN 61010-2, EN 61010-031	

4. Connection

The meter is equipped with rich interfaces to realize different functions.



Point number	Point type	Point name	Point function	Remarks
1	Relay output	R1	Relay normally open contact	One relay output with normally open and normally closed contacts
2		R0	Relay common contact	
3		R2	Relay normally closed contact	
4	Pulse output	POA	Positive end of pulse output	Active power pulse output
5		N/C	N/A	
6		POB	Pulse output negative terminal	
7	Relay output	DI2	Digital input channel 2	One relay output with normally open and normally closed contacts
8		DIC	Digital channel common terminal	
9		DI1	Digital input channel 1	
10	RS485	GND	RS485 communication GND	RS485 communication
11		B	RS485 communication B	
12		A	RS485 communication A	
13	Power supply	N	Power supply (-)	Range 95~265VAC/110~260VDC, 45~60Hz
14		N/C	N/A	
15		L	Power supply (+)	
16	Voltage input	N	N-phase voltage input	Measurement voltage input channel
17		N/C	N/A	

18		V3	Phase C voltage input	
19		N/C	N/A	
20		V2	Phase B voltage input	
21		N/C	N/A	
22	Current input	V1	Phase A voltage input	YME96C/YME96V/YME96R Current channel interface.
23		N/C	N/A	
24		N/C	N/A	
25		I3-	Phase C current input negative	
26		I3+	Phase C current input positive	
27		I2-	Phase B current input negative	
28		I2+	Phase B current input positive	
29		I1-	Phase A current input negative	
30		I1+	Phase A current input positive	
31		RJ45	A B C three phase current input	

4.1. Power supply

The meter adopts external power supply mode, without internal direct power supply. The power supply voltage range is 95 ~ 265VAC / 110 ~ 260VDC, 45 ~ 60Hz, and the maximum power consumption is 3.5VA.

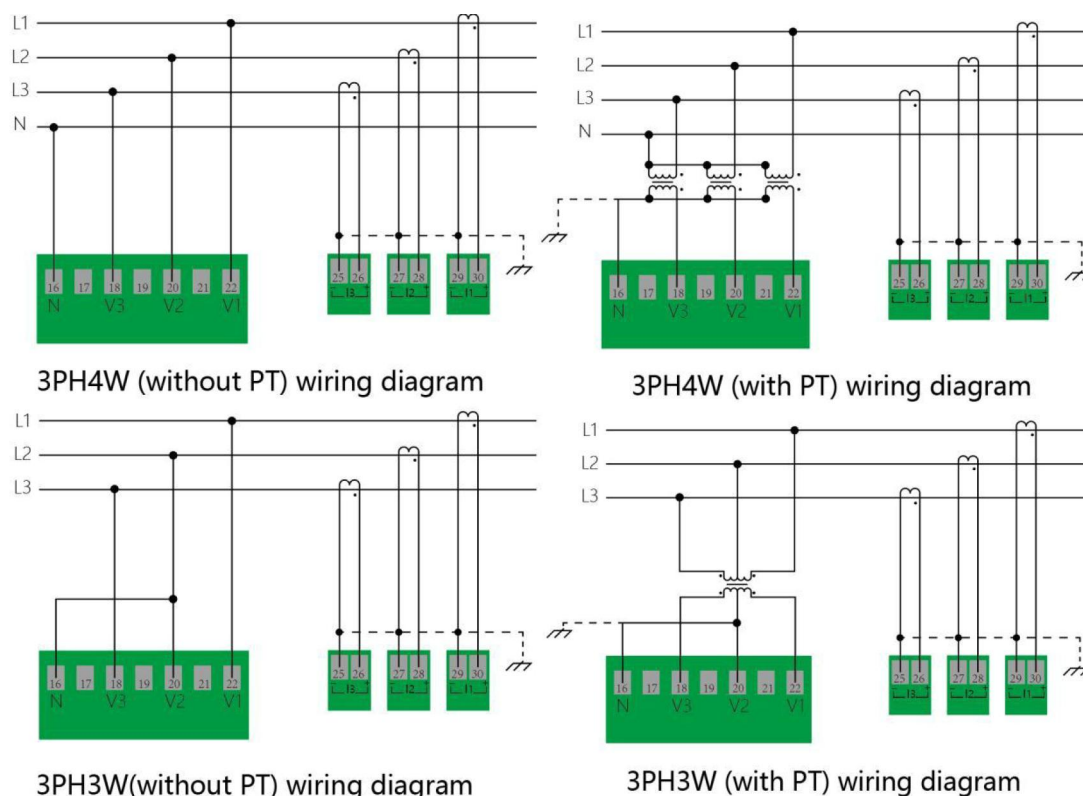
- Ø Do not connect the meter with the cable live.
- Ø Before connecting the power supply, make sure that the power supply voltage is within the required range, otherwise the meter cannot work normally.

4.2. Voltage and current input

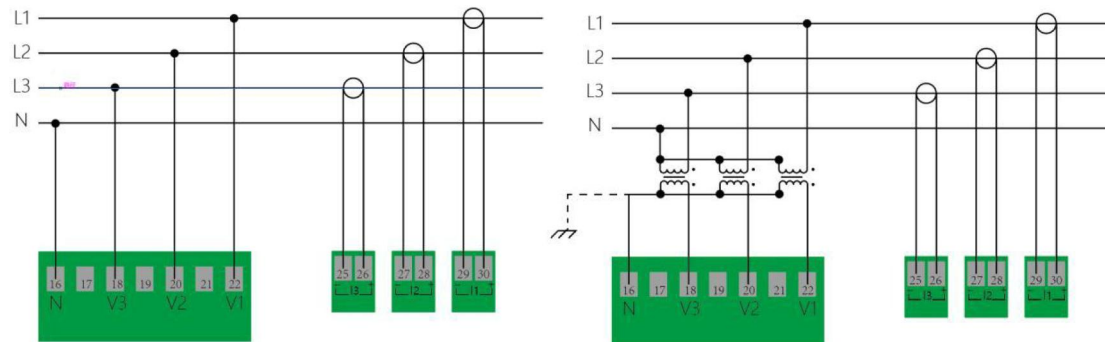
The meter supports two wiring modes, three-phase four wire (3P4W) and three-phase three wire (3P3W)

- Ø The actual wiring mode of the meter must be consistent with that of the internal configuration of the meter.
- Ø Three phase four wire requires three current sensors.
- Ø Two or three current sensors are required for three-phase three wire system. The use of two current sensors does not affect the measurement of power and electric energy, but the current of phase B cannot be measured. Three current sensors can be used to measure phase B current.
- Ø The phase sequence of voltage and current must follow the phase sequence of ABC, otherwise the meter will display the phase sequence error of voltage and current.
- Ø When using the current sensor, the direction of the current arrow on the sensor must be consistent with the actual current flow direction, that is, the current arrow of the sensor points to the load end.

4.2.1. The YME96C/YME96V connection mode of voltage and current is as follows :

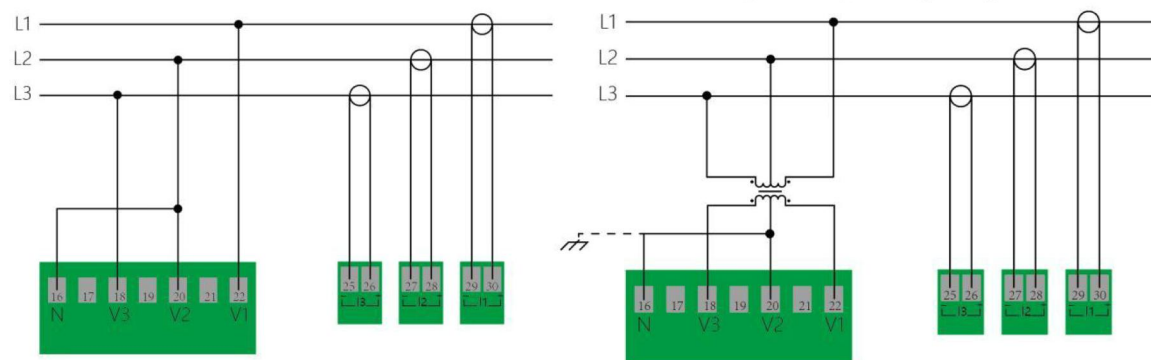


4.2.2. YME96R voltage and current wiring mode is as follows:



3PH4W (without PT) wiring diagram

3PH4W(with PT) wiring diagram

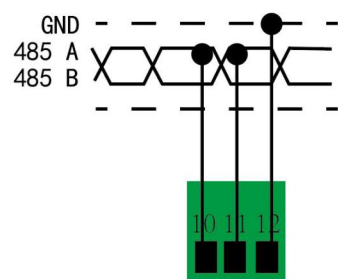


3PH3W (without PT) wiring diagram

3PH3W(with PT) wiring diagram

4.3. RS485

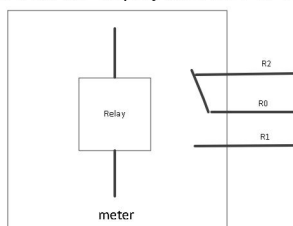
The meter is equipped with a RS485 communication interface, which supports Modbus RTU protocol. The RS485 communication port requires shielded twisted pair connection, which is connected in the form of daisy chain. In the case of long distance and high speed, a 120 Ω resistor should be parallel connected at both ends of the daisy chain.



4.4. Relay output

The meter is equipped with a relay output and has two contacts, normally open and normally closed. The identification of terminal blocks is: R1, R0, R2, where R0 is the common contact, R1 is the normally open contact, and R2 is the normally closed contact. The relay output can be controlled by RS485 / Modbus protocol.

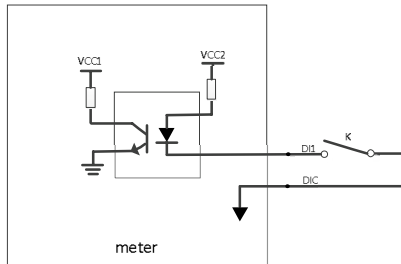
The protocol controls the closing and opening of the normally open contact. When the normally open contact is closed, the normally closed contact is opened; when the normally open contact is opened, the normally closed contact is closed. The closed state of normally open contact of relay is displayed on the display interface of electric meter. Maximum load capacity of relay: 3A 30V DC, 3A 250V AC



Relay output connection diagram

4.5. Digital output

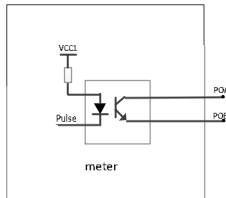
The meter is equipped with two digital switch inputs, which are connected by passive dry contact. The identification of terminal blocks is: DI1, DI2, DIC, where DIC is the common contact. The status of two digital switch input can be read through RS485 / Modbus protocol, and the digital switch input status can be displayed in the electric meter display interface.



Digital input connection diagram

4.6. Electric energy pulse output

The meter is equipped with an active power pulse output, and the electric energy pulse constant EC can be viewed through the meter information interface. The internal optocoupler of the meter is isolated, the maximum allowable passing current is 80mA DC, and the working voltage range is 5V ~ 80V DC



Energy pulse output connection diagram

5.Operation and interface display

This section is used to describe the display of the interface and key combination operation, as well as the configuration of the equipment.

5.1. Display and key

The meter adopts LCD display and 4 control keys, and all display segment codes on the screen are shown in the following figure:

Description of interface symbol display

