

## ME131

### Multi-circuit Smart Energy meter V1.1



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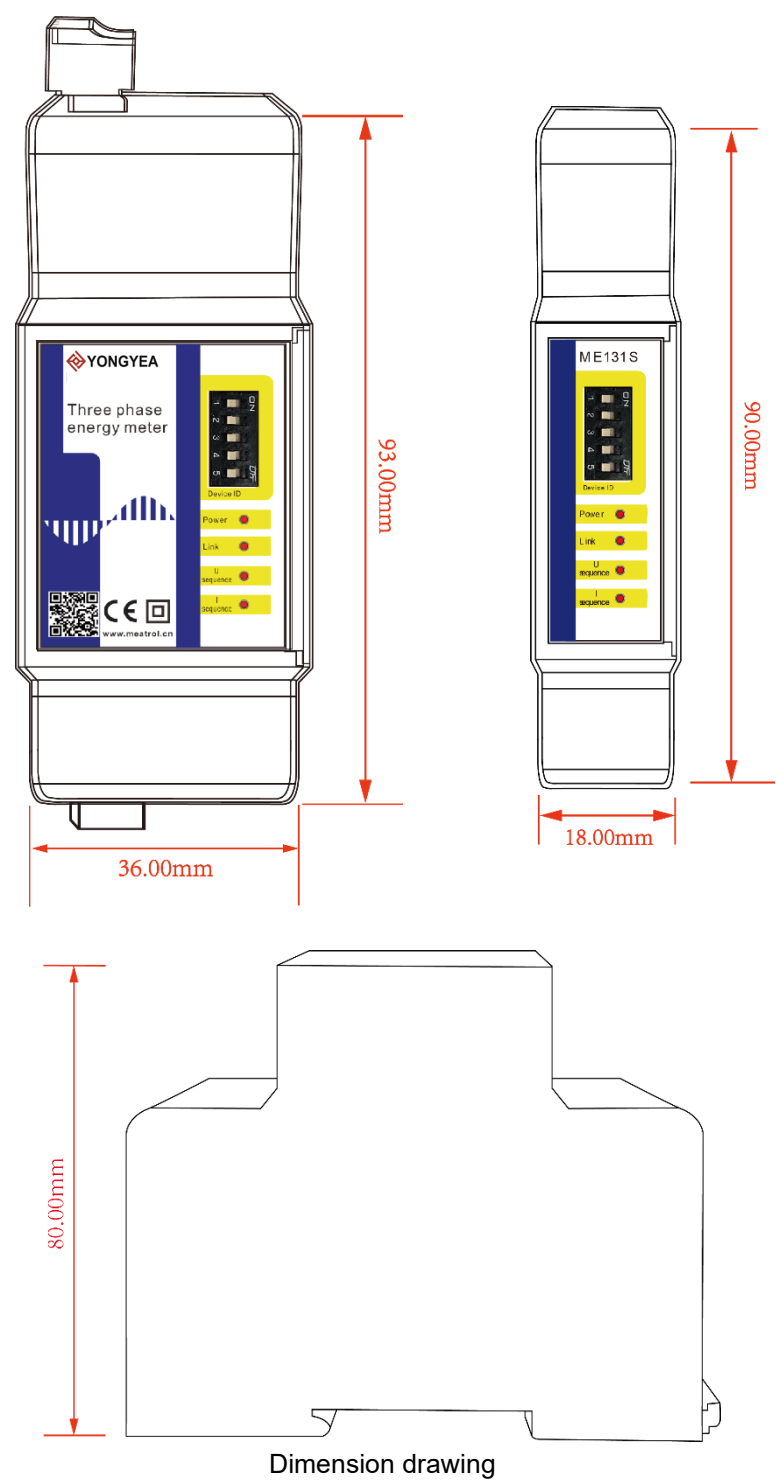
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1 Product description



## ME131 Model No. naming rules

ME131-M2

### Master/Sub device type

M: Master device, with power supply

S: Sub device, without power supply,  
attached to the master device.

### Power supply type

2: 220V AC auxiliary power supply(95-265VAC)

3: 24V DC auxiliary power supply(18-36VDC)

5: Main circuit power supply(90-528VAC)

**Note:** ME131S series, without auxiliary  
power supply

ME131 multi-circuit smart energy meter supports three-phase three-wire and three-phase four-wire systems. It can measure multi electrical parameters such as current, voltage, power factor, harmonic, power and energy of electric network phase L1, L2 and L3.

With standard configuration of RS485 communication interface and standard Modbus-RTU protocol, ME131 is compatible with various configuration systems and could transmit the electrical parameters collected by the front end to the system data center in real time.

| Description                 |                                                              |
|-----------------------------|--------------------------------------------------------------|
| Mounting type               | Din Rail                                                     |
| Model No.                   | Master meter: ME131M, Submeter: ME131S                       |
| Type of current sensor      | Rogowski coil<br>Voltage-output current transformer          |
| Feature                     | Directly connect to Rogowski coil                            |
| Advantage                   | Wide current range, measurement without dismantling          |
| Wiring system               | 3P4W_3CT, 3P3W_3CT, 3P3W_2CT, 1P3W, 1P2W                     |
| Application field           | Power analysis and energy consumption monitoring             |
| Display screen              | None                                                         |
| Weight                      | ME131M: 122g;<br>ME131S: 59g                                 |
| Dimension                   | ME131M: L*W*D 9.3*8.0*3.6CM;<br>ME131S: L*W*D 9.3*8.0*1.81CM |
| Color                       | White                                                        |
| Current measurement         |                                                              |
| Channel input voltage range | 0-900mVAC peak, 636 mV RMS                                   |
| Measurement range           | Different current sensors have different measuring ranges    |

|                            |                                                                                                                                                |
|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| Rogowski coil              | 50mV/kA@50Hz(0-12000A), @60Hz(0-10000A)<br>85mV/kA@50Hz(0-7000A), @60Hz(0-6000A)<br>100mV/kA@50Hz(0-6000A), @60Hz(0-5000A)<br>...              |
| Voltage-output CT          | 0~99999A                                                                                                                                       |
| <b>Voltage measurement</b> |                                                                                                                                                |
| Measurement range          | 0~600VAC                                                                                                                                       |
| Maximum measured value     | 720VAC                                                                                                                                         |
| <b>Digital signal</b>      |                                                                                                                                                |
| Switching output           | 1-circuit electromagnetic relay output, contact capacity: 3A 30V DC, 3A 250V AC                                                                |
| Switching value input      | Optocoupler isolation (5kVrms)                                                                                                                 |
| <b>Communication</b>       |                                                                                                                                                |
| RS485 Communication        | One RS485 communication interface<br>Interface type: two-wire half-duplex<br>Communication baud rate: 2400bps~38400bps<br>Protocol: Modbus-RTU |
| <b>Power supply</b>        |                                                                                                                                                |
| Power supply               | 85~265VAC/110~370VDC, 45~60Hz<br>(24V DC power supply version could be customized)                                                             |
| Maximum power consumption  | ≤3.5VA                                                                                                                                         |

## 2 Measurement parameters

|                              |                                             |
|------------------------------|---------------------------------------------|
| <b>Instantaneous value</b>   |                                             |
| Phase Voltage                | U1, U2, U3, AVG, U0 (Zero sequence voltage) |
| Line Voltage                 | U12, U23, U31, AVG                          |
| Current                      | I1, I2, I3, AVG, In                         |
| Grid frequency               | F1, F2, F3, $\Sigma$                        |
| Power factor PF              | PF1, PF2, PF3, $\Sigma$                     |
| Fundamental power factor DPF | DPF1, DPF2, DPF3, $\Sigma$                  |
| Active power                 | P1, P2, P3, $\Sigma$                        |
| Reactive power               | Q1, Q2, Q3, $\Sigma$                        |
| Apparent power               | S1, S2, S3, $\Sigma$                        |
| <b>Energy</b>                |                                             |
| Active energy Pos.           | EP1, EP2, EP3, $\Sigma$                     |
| Active Energy Neg.           | EP1, EP2, EP3, $\Sigma$                     |
| Reactive Energy Pos.         | EQ1, EQ2, EQ3, $\Sigma$                     |

|                                        |                                                                                                                                                                 |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Reactive energy Neg.                   | EQ1, EQ2, EQ3, $\Sigma$                                                                                                                                         |
| Apparent Energy                        | ES1, ES2, ES3, $\Sigma$                                                                                                                                         |
| Tariff Energy                          | ET1, ET2, ET3, ET4, ET5, ET6                                                                                                                                    |
| <b>Harmonics</b>                       |                                                                                                                                                                 |
| Voltage Harmonic Distortion            | Total harmonic (U1, U2, U3)<br>Odd total harmonic (U1, U2, U3)<br>Even total harmonic (U1, U2, U3)<br>Sub-harmonic 1-50th (U1, U2, U3)                          |
| Current Harmonic Distortion            | Total harmonic (I1, I2, I3)<br>Odd total harmonic (I1, I2, I3)<br>Even total harmonic (I1, I2, I3)<br>K-factor (I1, I2, I3)<br>Sub-harmonic 1-50th (I1, I2, I3) |
| Voltage Harmonic Value                 | Total harmonic (U1, U2, U3)<br>Sub-harmonic 1-50th (U1, U2, U3)                                                                                                 |
| Current Harmonic Value                 | Total harmonic (I1, I2, I3)<br>Sub-harmonic 1-50th (I1, I2, I3)                                                                                                 |
| <b>Phase</b>                           |                                                                                                                                                                 |
| Phase sequence                         | Voltage, Current                                                                                                                                                |
| Voltage angle                          | U1, U2, U3                                                                                                                                                      |
| Current angle                          | I1, I2, I3                                                                                                                                                      |
| Voltage-current angle                  | UI1, UI2, UI3                                                                                                                                                   |
| <b>Demand</b>                          |                                                                                                                                                                 |
| Demand                                 | Total active power, total reactive power, total apparent power                                                                                                  |
| Maximum demand of total active power   | Maximum demand and time                                                                                                                                         |
| Maximum demand of total reactive power | Maximum demand and time                                                                                                                                         |
| Maximum demand of total apparent power | Maximum demand and time                                                                                                                                         |
| <b>Unbalance</b>                       |                                                                                                                                                                 |
| Voltage unbalance                      | Negative Sequence, zero Sequence                                                                                                                                |
| Current unbalance                      | Negative Sequence, zero Sequence                                                                                                                                |
| <b>Max. &amp; Min.</b>                 |                                                                                                                                                                 |
| Phase Voltage                          | Each phase and average                                                                                                                                          |
| Line Voltage                           | Each phase and average                                                                                                                                          |
| Current                                | Each phase and average                                                                                                                                          |
| Active power                           | Each phase and total                                                                                                                                            |
| Reactive power                         | Each phase and total                                                                                                                                            |
| Apparent power                         | Each phase and total                                                                                                                                            |

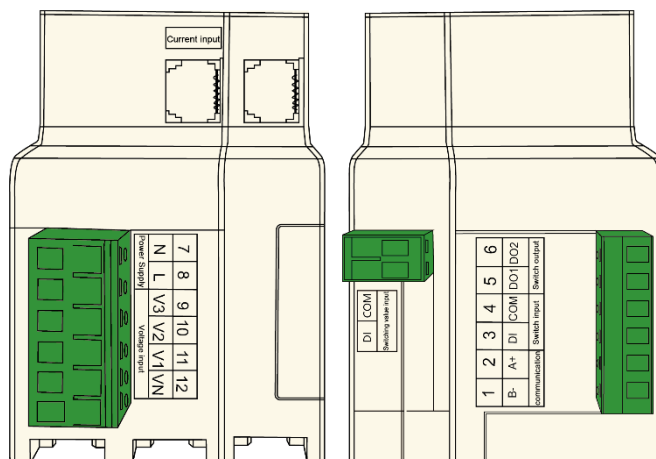
### 3 Accuracy and certification

|                              |                               |
|------------------------------|-------------------------------|
| <b>Measurement Accuracy</b>  |                               |
| Current measurement accuracy | 0.1%+ Current sensor accuracy |
| Voltage measurement accuracy | $\pm 0.2\%$ (60V~600V AC)     |
| Grid frequency               | $\pm 0.01\%$ (45~65Hz)        |
| Power factor                 | $\pm 0.005$                   |

|                                                                                                                              |                                                               |
|------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|
| Active and apparent power                                                                                                    | IEC62053-22 class 0.5S                                        |
| Reactive power                                                                                                               | IEC62053-21 class 1S                                          |
| Active energy                                                                                                                | IEC62053-22 class 0.5S                                        |
| Reactive energy                                                                                                              | IEC62053-21 class 1S                                          |
| <b>Environment condition</b>                                                                                                 |                                                               |
| Operating temperature                                                                                                        | -25℃~+60℃                                                     |
| Storage temperature                                                                                                          | -40℃~+85℃                                                     |
| Humidity range                                                                                                               | 5~95% RH, 50℃ (non-condensing)                                |
| Class of pollution                                                                                                           | 2                                                             |
| Overvoltage capacity                                                                                                         | III, Applicable to power distribution system below 277/480VAC |
| Insulation strength                                                                                                          | IEC61010-1                                                    |
| Altitude                                                                                                                     | 3000m Max                                                     |
| Anti-pollution grade                                                                                                         | IP20 (Meet the standard of IEC 60629)                         |
| Quality guarantee                                                                                                            | 12 months                                                     |
| <b>EMC (Electromagnetic compatibility)</b>                                                                                   |                                                               |
| Electrostatic discharge                                                                                                      | Level IV(IEC61000-4-2)                                        |
| Radiated immunity                                                                                                            | Level III (IEC61000-4-3)                                      |
| EFT Electrical fast burst immunity                                                                                           | Level IV (IEC61000-4-4)                                       |
| Surge immunity                                                                                                               | Level IV (IEC61000-4-5)                                       |
| Conducted disturbance immunity                                                                                               | Level III (IEC61000-4-6)                                      |
| Power frequency magnetic field immunity                                                                                      | 0.5mT (IEC61000-4-8)                                          |
| Conduction and radiation                                                                                                     | Class B (EN55022 )                                            |
| <b>Measurement standard</b>                                                                                                  |                                                               |
| 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 energy meter is equipped with standard interface and convenient RJ12 interface to meet different functional requirements



| Interface number | Interface name | Interface definition   | Interface type         | Remarks                                                                               |
|------------------|----------------|------------------------|------------------------|---------------------------------------------------------------------------------------|
| 1                | B-             | RS485 Communication B  | Communication          | RS485 communication                                                                   |
| 2                | A+             | RS485 Communication A  |                        |                                                                                       |
| 3                | DI             | Digital input +        | Switching value input  | Digital input                                                                         |
| 4                | COM            | Digital input -        |                        |                                                                                       |
| 5                | DO1            | Digital output 1       | Switching output       | One relay output, normally open contact                                               |
| 6                | DO2            | Digital output 2       |                        |                                                                                       |
| 7                | N              | Power supply (-)       | Power supply 85~265VAC | Power supply 85~265VAC, 45~60Hz<br>110~370VDC<br>(24V DC version could be customized) |
| 8                | L              | Power supply (+)       |                        |                                                                                       |
| 9                | V3             | Phase L3 Voltage input | Voltage input          | Measuring voltage input channel                                                       |
| 10               | V2             | Phase L2 Voltage input |                        |                                                                                       |
| 11               | V1             | Phase L1 Voltage input |                        |                                                                                       |
| 12               | VN             | Phase N Voltage input  |                        |                                                                                       |

