# MET200

## METRO Single Phase 60A Sub-Meter

## USER MANUAL

**Metro Prepaid**
**SUB METERS FOR TENANTS**

**www.metroprepaid.co.uk**

# 1.Product Description

The MET200 is a single phase 60A two wire prepayment keypad integrated-type STS sub-meter, with IEC62055-compliant data encryption .

It has a built-in relay with advanced anti-tamper functions.

## 2. Features and Technical Parameters

### 2.1 Features

• Numeric keypad for inputting 20-digit STS tokens and Short Codes

• Keypad lifetime > 25000 inputs (multiple LAB tests)

• Full events record with optical interface

• Low balance credit and emergency LED

• LCD display

• Internal 60A relay

• Over load protection

• Terminal cover tamper protection

• Meter supports IR communication

• RoHS compliant

• CE approved

### 2.2 Technical Parameters

| | |
|---|---|
| Voltage: | 230V |
| Current: | 5(60) A |
| Accuracy class: | 1.0 |
| Standard: | IEC62052- 11,IEC62053-21,IEC62056-21,IEC62055-41 |
| Frequency: | 50Hz |

| | |
|---|---|
| Impulse constant: | 1 0 0 0 imp/ kWh |
| Display: | LCD 6+2 |
| Power consumption: | ≤10VA   ≤1W |
| Starting current: | 0.4%Ib |
| Temperature range: | -2 0 ~ 7 0 ℃ |
| Average humidity value: | 75% |
| Maximal value: | 95% |
| Communication: | IR IEC6 2 0 5 6 - 2 1 A Mode |

## 3. Description

### 3.1 Description of Meter



| | |
|---|---|
| A | low credit alarm indicator |
| B | pulse indicator |
| C | 3*4 keypad |
| D | LCD |
| E | IR communication interface pulse |
| F | output |

## 4. Display

### 4.1 LCD display



| Symbol | Description |
|---|---|
| ← | Power Reverse |
| ✋ | Tampering status |
| ⊶ | Relay open |
| ▁▂▃▅▆ | Present power |

## 5. Connection Diagram
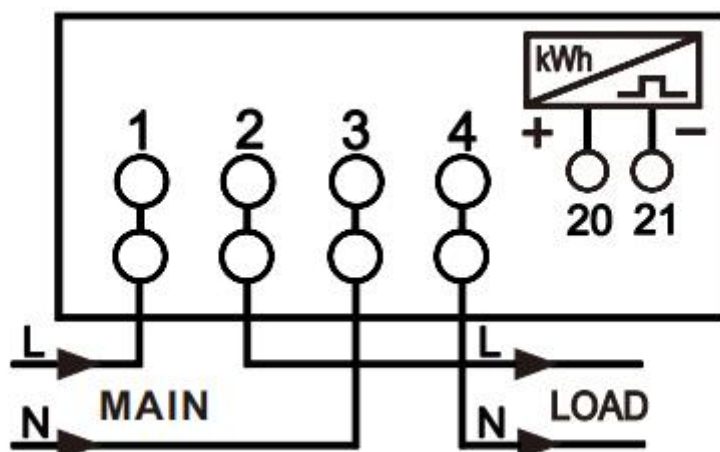
## 6. Dimensions

### 6.1 Meter Dimensions
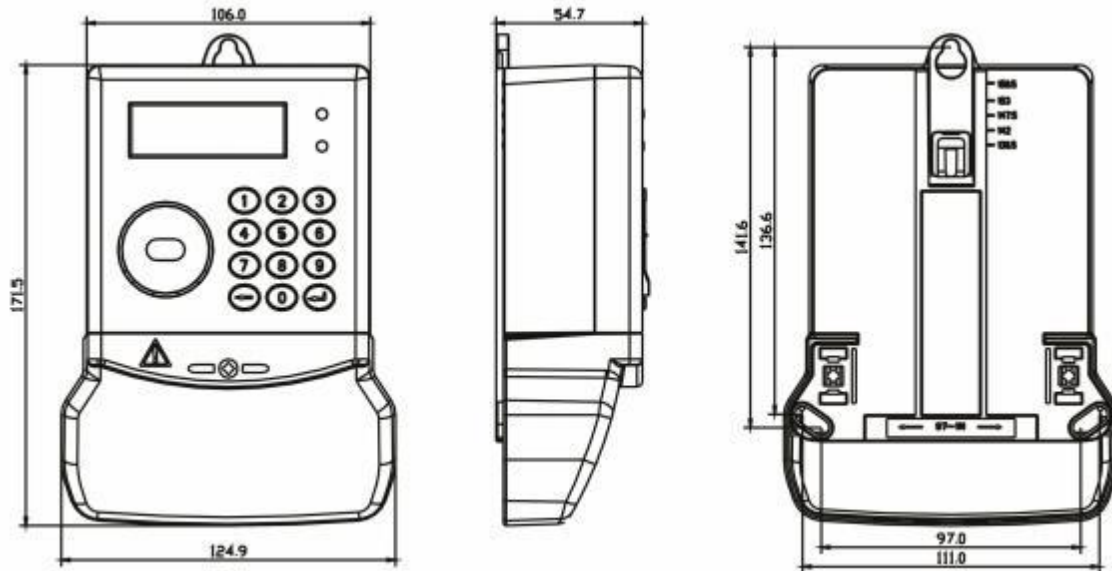


| | |
|---|---|
| Height | 171.5mm |
| Width | 106.0mm |
| Depth | 54.7mm |

## 7. Software

### 7.1.1 Short Codes - Meter Programming

a. Set Alarm Credit: input 456XX-enter.

where XX is alarm credit (kWh), no decimal, setting, range is 5-99kWh

b. Alarm Buzzer Interval: input 123XXX-enter.

XXX is interval (minutes), setting range is 0-999 minutes.

c. Emergency overdraft Credit: input **234510**-enter

Overdraft is 10kWh.

Note: This process will fail when the balance credit is more than 0.

d. Set low voltage alarm: Input XXX125-enter where XXX is voltage (V).

e. Set low current alarm: Input XXX246-enter where XXX is current (A).

### 7.1.2 Short Codes - Queries

| Code | Description | Code | Description |
|------|-------------|------|-------------|
| 00 | Test LCD display | 59 | Last credit kWh |
| 01 | Test the load switch | 60 | Last 2nd credit kWh |
| 02 | Test the Display | 61 | Last 3rd credit kWh |
| 03 | Total kWh register | 62 | Last 4th credit kWh |
| 04 | KRN & KT | 63 | Last 5th credit kWh |
| 05 | TI | 64 | Total technical tokens accepted |
| 06 | EEPROM error code | 65 | Last technical token accepted |
| 07 | Display power limit, kW | 66 | Last 2'rd technical token accepted |
| 08 | Tampering status | 67 | Last 3'rd technical token accepted |
| 09 | Instantaneous power | 68 | Total trip because over load times |
| 10 | Display software version | 69 | Total power source off times |
| 37 | Remaining Credit (kWh) | 70 | Total terminal cover open times |
| 38 | Total recharge kWh | 71 | Total meter cover open times |
| 39 | Power Factor(PF) | 73 | Overdraft energy |
| 40 | Apparent power | 74 | Hardware version |
| 41 | Rms voltage (V) | 75 | Meter ID No. |
| 44 | Rms current (A) | 76 | Meter Constant |
| 47 | Instantaneous power (W) | 77 | Supply Group Code (SGC) |
| 53 | Total number of tokens accepted | 78 | Alarm Duration time |
| 54 | Last credit token accepted | 79 | Alarm Low Credit limit |
| 55 | Last 2nd credit token accepted | 81 | Remain kWh allowed using time (hour/day) |
| 56 | Last 3rd credit token accepted | 90 | Low voltage |
| 57 | Last 4th credit token accepted | 91 | High voltage |
| 58 | Last 5th credit token accepted | | |

### 7.2 Events Record

　　※Last 50 recharges - token codes

　　※Last 50 recharges - credit

　　※Last 50 recharges - technical tokens

　　※Recharges - total quantity

　　※Overload events - total quantity

　　※Power-off events - total quantity

　　※Terminal cover open - quantity

　　※Top cover open - quantity

　　※Last 50 technical tokens

　　※Total number of technical tokens

Note: The maximum number of the above events is 60,000.

**Yellow LED will light and LCD will display information as below table.**

| Tampering Type | Meter status | Symbol display | Normalization |
|---|---|---|---|
| Open the terminal cover when meter is working | 🗁 Relay open<br>🗁 Data record | ⌐o⌐ | Token |
| Reverse current | 🗁 Meter measures normally<br>🗁 Data record | ← | Repair |

### 7.3 Metro Code (token) prepayment function

**Recharge:**
After purchasing a recharge token, enter the 20-digit token into keypad

The token will scroll display from right to left. The typing time interval should within 20

seconds. Type " back button " to modify an input error.

After correct token entry, press "Enter" .

If full Metro Code is not entered, code will not accept.
If the TOKEN is accepted, the LCD will display corresponding code.

**Error Codes:**

　Err-40: Invalid subclass

　Err-45: expired key

　Err-47: not permitted to purchase electricity in this mode

　Err-48: inconformity to key modify process

　Err-49: this data is not used by meter

　Err-53 :setting key overtime

　Err-59: the balance exceeds the allowed power and this recharge is not valid

**Press short code 8, LCD display instruction for tampering status:**

    1 : terminal cover has been opened before

    2 : terminal cover has been opened before when power off

    3 : phase reverse

If all these tampering status exist at the same time, then LCD will display these numbers at the same time.

**Successful code:**

    Good-01 : key modification, Token 1 decode successfully(if input Token 1 first)

    Good-02 : key modification, Token 2 decode successfully(if input Token 2 first)

    Good      :set alarming delay successfully

    Good      :set alarming kWh successfully

**If recharge successfully, LCD will display below 3 pages:**

   Good : TOKEN accept

   123   : recharge value this time

   1234: total recharge value for this meter

### 7.4 Overload process

The relay will open when the overload lasts for 45 sec and close after 150 seconds.

If the above situation re-occurs 5 times in 30 minutes, the relay will close again after 45 minutes.

If overloads are less than (eg. 4) in 30 minutes, the recovery time of the relay will be 150 seconds, and this record will be cleared unless repeated in the next 30 minutes. The overload value can be set through keypad or PC software.

### 7.5 Relay off when voltage is abnormal:

When the voltage is very low or high, the meter relay will open in order to protect the electric equipment, the low/high voltage limit value can be set through keypad or communication, the permitted setting range is 120-290VAC, and the tolerant range in the meter is 130-253VAC.

Details as below:

1. Low voltage relay off: when the meter detects the voltage in electricity grid is lower than

130V for 10 seconds, relay will open, and then LCD shows "Err-VL", only when the voltage rise to over 140V, relay will close.

2. High voltage relay open: when the meter detects the voltage in electricity grid is higher than 253V for 10seconds, relay will open, and then LCD shows "Err-VH", only when the voltage drops to lower than 243V, relay will close.

### 7.6 Credit Balance alarm

This meter has the function of class 1 credit balance alarm. It could be set through short code or communication. When the credit balance is less than the limit, the red LED will flicker. It could be cleared up by pressing any button but it will flicker again after a time interval. The interval can be set through short code or communication. After credit is fully used, the red LED will display all the time.

## 8   Safety Instructions

### Information for Your Own Safety

This manual does not contain all of the safety measures for operation of this equipment (module, device) because special operating conditions, local code requirements or local regulations may necessitate further measures. However, it does contain information which must be adhered to for your own personal safety and to avoid damage to the equipment. This information is highlighted by a warning triangle with an exclamation mark or a lightning bolt depending on the severity of the warning.

**⚠ Warning**

Means that failure to observe the instruction can result in death, serious injury or considerable material damage.

**⚡ Caution**

Risk of electric shock and failure to take the necessary safety precautions will result in death, serious injury or considerable material damage.

## Installation by Qualified Professional

Installation and operation of Metro sub-meters may only be performed by qualified professionals
Meter installation should be accompanied by a Certificate of electrical Compliance

## Use for the intend purpose

The equipment (device, module) may only be used for the application cases specified in the catalog and the user manual and only in connection with devices and components recommended and approved by YTL.

## Exclusion of liability

Whilst we have taken every precaution to ensure the accuracy of the information in this User Manual, we don't warrant that it is error free and disclaim any liability for errors or omissions.

## Warranty

Metro meters carry a 1 year factory warranty. see our website for more details.
https://metroprepaid.co.uk/

# Technical support

| | |
|---|---|
| Tel | 020 3020 1144 |
| WhatsApp | 020 3020 1145 |
| Email : | help@metroprepaid.co.uk |
| Web chat | www.metroprepaid.co.uk |

Metro Prepaid Help Desk - 24 Hours