



# DDSY168

## Operation Manual

### 1. Brief Introduction

DDSY168 is keypad based prepayment electric meter. It is compliant with IEC62055-41, and Standard Transfer Specification (STS) standards. The meter trips on preset credit and detects the tamper like meter case open, terminal cover open, shorted circuit, reverse connection and etc. Short codes are provided for the users to toggle up various information.

### 2. Technical Index and Specifications

|                      |                                |
|----------------------|--------------------------------|
| Wiring type          | 1 phase 2 wires                |
| Accuracy             | Class 1                        |
| Meter constant       | 1600 imp/kWh                   |
| Operating voltage    | 60~285V                        |
| Rated current        | 5 (60) A                       |
| Rated frequency      | 50Hz                           |
| Starting current     | 0.002 Ib                       |
| Degree of protection | IP54                           |
| Power consumption    | Voltage circuit: < 10VA, 1.5W; |
|                      | Current circuit: < 4VA         |
|                      | -25°C ~ +55°C for operation    |

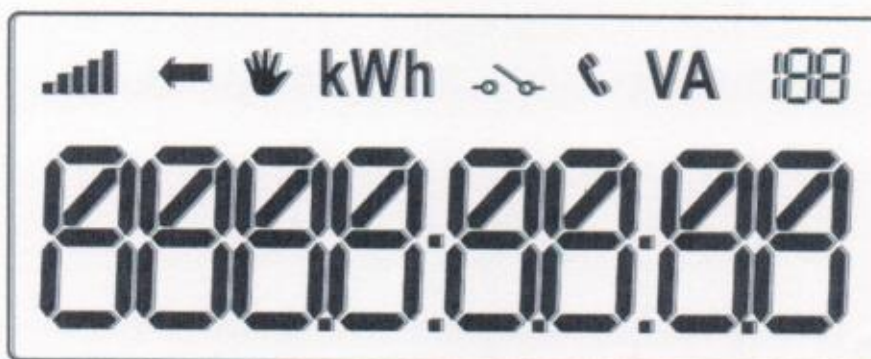
|                     |  |
|---------------------|--|
| Ambient temperature | -25°C ~ +85°C for storage and transport                            |
|                     | Humidity < 95%   |
| Optical port        | IEC62056-21 compliant      Near-infrared<br>magnetic ring inserted |
|                     | Baud rate 9600 bps   |

### 3. Display and indicator

#### 1) LCD display

- (a) The LCD can display 8 digitals with backlight.
- (b) The display's backlight can be waked up by keypad press.

#### 2) LCD display's functions



| No. | LCD Picture | Description   |
|-----|-------------|---|
| 1   |             | Available credit indicators, reduces as the energy is being consumed. |
| 2   |             | Reversed energy indicator.  |
| 3   |             | Tamper indicator  |
| 4   |             | Relay disconnected indicator  |
| 5   |             | Communication indicator   |
| 7   | kWh VA      | Electricity units indicator   |
| 8   | 188         | Short code indicator  |
| 9   |             | The main display zone   |

### 3) Display text legend

| No | Condition          | Display text | Display in LCD |
|----|--------------------|--------------|----------------|
| 1  | Token accepted     | ACCEPt       | ACCePt         |
| 2  | Token rejected     | rEJECT       | rEJECt         |
| 3  | Token used         | uSEd         | uSEd           |
| 4  | Token expired      | oLd          | oLd            |
| 5  | Overload           | ovErLoAd     | ovErLoAd       |
| 6  | Overload x 5 times | LoCKout      | LoCKout        |
| 7  | Tamper             | inSPECt      | inSPECt        |
| 8  | Meter Error        | Err          | Err            |
| 9  | Empty Data         | nuLL         | nuLL           |

### 4) LED Indicator

Three LED indicator lights including pulse, alarm and credit, respectively indicates the pulse output, tamper/overload warning and credit status.

- Red LED - Pulse output
- Yellow LED - Tamper warning
- Green LED - Power
- Blinking Red LED - Low credit warning

### 4 Short codes

Users can check and monitor meter status/information by inputting the following short codes with keypad:

| Short code | Command                             | Short code | Command                        |
|------------|-------------------------------------|------------|--------------------------------|
| 00         | Test all LCD display                | 59         | Last credit kWh                |
| 01         | Test the load switch                | 60         | Last 2nd credit kWh            |
| 02         | Test display and buzzer             | 61         | Last 3rd credit kWh            |
| 03         | Total kWh Register                  | 62         | Last 4th credit kWh            |
| 04         | Display key revision version & type | 63         | Last 5th credit kWh            |
| 05         | Display tariff index                | 64         | Total technical token accepted |

|    |                                |    |                                       |
|----|--------------------------------|----|---------------------------------------|
| 07 | Display power limit (kW)       | 65 | Last technical token accepted         |
| 08 | Display tamper status          | 66 | Last 2nd technical token accepted     |
| 09 | Display power consumption      | 67 | Last 3rd technical token accepted     |
| 10 | Display software version       | 68 | Total power off due to overload       |
| 37 | Balance credit (kWh)           | 69 | Total power off due to power off      |
| 38 | Cumulative energy (kWh)        | 70 | Total terminal cover open             |
| 39 | Power factor                   | 71 | Total meter cover open                |
| 41 | Voltage (V)                    | 72 | Total tampering                       |
| 44 | Ampere (A)                     | 73 | Energy consumption negative credit    |
| 47 | Power (W)                      | 74 | Hardware version                      |
| 53 | Total number of token accepted | 75 | Meter ID                              |
| 54 | Last credit token accepted     | 76 | Meter constant                        |
| 55 | Last 2nd credit token accepted | 77 | Supply Group Code (SGC)               |
| 56 | Last 3rd credit token accepted | 78 | Alarm interval time                   |
| 57 | Last 4th credit token accepted | 79 | Low credit threshold                  |
| 58 | Last 5th credit token accepted | 81 | Forecast time till the credit is over |

## 5 Load Control

Two relays are used to control the Phase and the Neutral line respectively. When the balance credit is zero, the relay will open. After inserting the credit token, the relay closes.

The meter can detect the load power automatically and the relay will open when the time of overload is over 45 seconds, then it will automatically close after 150 seconds. The relay will also open when the accumulative total overload is more than 45 seconds within 30 minutes and close after 150 seconds. When overload is tripped 5 times within 30 minutes, the relay will open for 45 minutes.









## 6. Audio alarm: The meter is built-in with a buzzer

- When the balance credit reaches the pre-set low credit threshold, which can be adjusted by short code "456XX" (min. 5 kWh), the audio alarm will be triggered. As the credit is getting lower and lower, the alarm interval time will be getting shorter and shorter.
- When overload occurs, the audio alarm will be triggered. User can deactivate the alarm temporarily by a key-press. The interval duration for between each of two alarms is XXX minutes that can be adjusted by short code "123XXX".

### 7. Tamper alarm

- The yellow LED will light up when there is tamper going on.
- Input "08" short code will show the tamper type on the LCD.
- The audio alarm will be triggered when a tamper is on-going.

### 8. Tamper legend

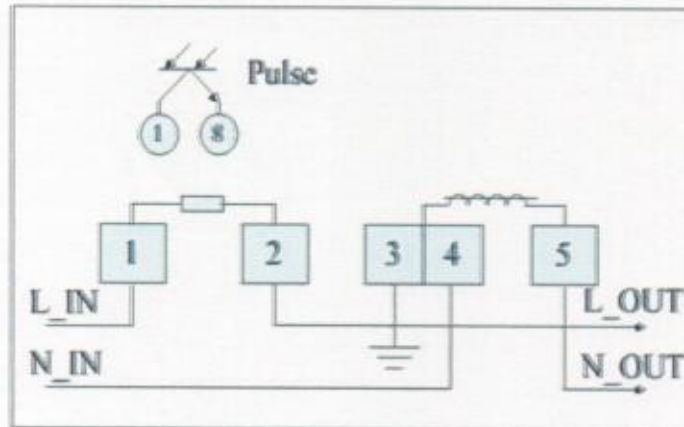
| No | Tamper  | Action                                    | Display |   | Yellow LED | Solution                                     |
|----|---|---|---------|---|------------|--|
|    |   |   | Text    | Symbol  |            |  |
| 1  | Open the terminal cover when meter is power on                            | Relay cut off<br>Record event             | inSPECT |    | on         | Enter Clear tamper token by field technician |
| 2  | Open the terminal cover when meter is power off                           | Relay cut off<br>Record event             | inSPECT |    | -          | Enter Clear tamper token by field technician |
| 3  | Polarity wiring flow reversed   | Measure normal<br>Record event            |         |    | on         | Fix it                                       |
| 4  | Current circuit shorted   | Measure normal                            |         |   | on         | Fix it                                       |
| 5  | Ampere injection into Phase or Neutral line                               | Measure normal                            |         |  | on         | Fix it                                       |
| 6  | Input Neutral line cut off  | Measure normal                            |         |  | on         | Fix it                                       |
| 7  | Input Neutral line cut off replace with voltage regulator on output side. | Measure normal                            |         |  | on         | Fix it                                       |
| 8  | External magnetic induction over 400mT                                    | Measure normal<br>Normal relay operation. | inSPECT |  | on         | Remove the magnet                            |

### 9. Event Record

The meter is equipped optical infrared port. The default baud rate is 9600bps. You can extract the following recorded events on the meter using the optical infrared port and the software.

- a) Last 50 accepted credit tokens.
- b) Last 50 corresponding kWh value.
- c) Last 50 accepted engineering tokens.
- d) Record all the short codes' values on the meter.

## 10. Wiring Diagram



## 11. Installations and use

- The meters have passed all the required tests before shipping out of the factory and can be installed directly.
- The meter should be installed indoors with its bottom board placed on a solid and fireproof wall; it is recommended to mount at height of 1.8m above the floor, and keep it away from corrosive gases.
- Phase, neutral line should be wired in accordance with wiring diagram; it is better to use copper wiring to connect; make sure the connection is solid enough, or there will be a risk of burning due to high current.
- Energy pulse indicators: indicates the using condition of electric power of users, the flicker frequency of the indicators is direct ratio with the consuming power.
- Relay indicator will disappear when there is sufficient kWh credit and no tamper.

## 12. Transportation and storage

- The meters should be kept away from strong impact during transportation.
- The temperature during transportation and storage should be kept within -25°C to 85°C, with relative humidity of no more than 95% and non-corrosive air.
- The meters should be placed in storage benches with a stacking height of no more than 7 cartons (16 meters in one carton); the stacked meter number is not more than 10 after unpacking.

- The meters should be kept in their original package when not in used for maximum protection.

## **8. Warranty**

DDSY168 meters have 12-months warranty. Within the warranty, Marksede will repair or replace free of charge as long as users use the meters properly according to the specification. The warranty will void immediately if the seals and QC stickers are broken intentionally.