

Annex 1: Hop Meter

Chengdu Hop Technology Co., Ltd

Data Sheet of 1Ph. Meter

DDZ1737 Single Phase Smart Energy Meter

DDZ1737 single phase smart energy meter uses advanced energy measurement chip, mature technology such as SMT. It is a highly advanced smart meter available either for direct connection or for CT connection. The meter can measure single phase AC active/reactive energy with frequency of 50/60Hz. Equipped with RS485 interface and GPRS communication module, it can flexibly communicate with other device and platform software. The product can be widely used in billing and management applications for residential, commercial and industrial energy measurement and management.

Technical Specifications

- Accuracy: active: 1.0, reactive: 2.0
- Reference Voltage: 220V
- Normal Working Voltage: $0.8U_n \sim 1.15U_n$
- Reference Temperature: 23°C
- Normal Working Temperature: -25°C~60°C
- Limit Working Temperature: -40°C~70°C
- Power Consumption: Active $\leq 1.5W$, Apparent $\leq 6VA$
- Basic Current: 5(60)A
- Frequency: 50Hz $\pm 2.5Hz$
- Clock Accuracy $\leq 0.5s/d(23^\circ C \pm 2^\circ C)$
- Clock Battery Volume: $\geq 1200mAh$
- Clock Battery Working Time: ≥ 5 years
- Starting Current: 0.004Ib
- Anti-creeping design. The meter does not produce more than one impulse output in the specified time.
- Weight: 1 Kg
- Dimension: 160×112×71 mm
- This meter conforms to DL / T 645-2007 and GB/T 17215.301- 2007 “Multifunction Energy Meter Special Requirements”

Functions

1. Metering Function

- Metering import active energy, export active energy and reactive energy of 4 quadrants. And active energy and combined reactive energy can be set on basis of this.
- TOU. Import and export active energy of each tariff are accumulated and stored respectively

2. Demand Record

- Recording the maximum demand of import and export active and reactive energy. Recording each tariff's maximum demand of import and export active energy. And recording the time and date of the maximum demand.
- Measurement of maximum demand uses slip frequency mode, cycle and slip frequency time can be set. Factory Default Value: demand cycle 15min, slip frequency time 1min. Demand cycle can be chosen between 5min、 10min、 15min、 30min、 60min. Slip frequency time can be chosen between 1min、 2min、 3min、 5min.
- When the voltage circuit is in the condition of power on, zero clearing, clock adjustment, demand cycle change, power flow direction conversion, meter measure the demand according to demand cycle and starting from current time. When the first demand cycle finishes, start the maximum demand record by slip frequency interval. In incomplete demand cycle, maximum demand is not recorded.
- Maximum demand data of 12 months' settlement cycle will be stored

3. Clock Function

- Temperature compensation function. In temperature range of $-25^{\circ}\text{C} \sim +60^{\circ}\text{C}$, clock accuracy $\leq \pm 1\text{s/d}$. In the reference temperature of 23°C , clock accuracy $\leq \pm 0.5\text{s/d}$
- Function of calendar, timing and automatic jump in leap year
- Unauthorized personnel cannot set the date and time

- Broadcast time calibration is not restricted by password and hardware programming switch. The time calibration range is ± 5 minutes, calibration beyond this range is not allowed. And broadcast time calibration can only be done once a day.

4. Time and Tariff

- Supporting 4 tariffs of sharp, peak, flat and valley
- 14 time zone and time frame
- Special tariff period of holiday and festival is settable
- Having 2 sets of tariff and time frame which can be programmed arbitrarily. And can use another set of tariff and time frame at the set time.

5. Data Storage(following meter reading day means the first settlement day of each month)

- Storing the import and export total energy and each tariff's energy of latest 12 meter reading cycle. Data transfer time is the set meter reading day
- Storing the import and export maximum demand, each tariff's maximum demand and the occurring time and date. Data transfer time is the set meter reading day. At the same time of transfer, the maximum demand for the month is automatically reset.
- After power loss of meter, all stored data is saved for more than 10 years

6. Freeze Function

- Timed freeze: freeze energy data according to agreed time and time interval. Saving at least 60 data
- Instantaneous freeze: in abnormal conditions, freeze current calendar, time, all energy data and important measuring data. Saving as least 3 data
- Daily freeze: saving energy data of everyday 0 o'clock. At least 2 months' data will be saved. Default free time is 00:00.
- Agreed freeze: freeze switch of 2 time zone tables. Freeze switch of 2 daily time frame tables. Freeze energy and other important data at the moment of switch. Switch time return to zero after freeze

- Hour freeze: Storing the total active energy at the hour or half of the hour. It can store 254 freeze data

7 Constant Magnetic Field Interference Event Record

When a constant magnetic field of 100 mT or more is detected outside, and the duration is longer than 5s, it is recorded as constant magnetic field interference event. Recording the total number of times of the constant magnetic field interference event. The occurring time, end time and corresponding energy data of last 10 times' event will be recorded too.

8 Event Record

- Recording the total number of times of the voltage loss, the occurring time, end time and corresponding energy data of last 10 times of voltage loss.
- Recording the total number of times of the phase loss, the occurring time, end time and corresponding energy data of last 10 times of voltage loss.
- Recording the total number of times of the current loss, the occurring time, end time and corresponding energy data of last 10 times of voltage loss.
- Recording the occurring time, end time and corresponding current value of last 10 times of total voltage loss
- Recording total number of times of reverse phase sequence, and the occurring time, end time and corresponding energy data of last 10 times
- Recording total number of times of flow reverse, and the occurring time, end time and corresponding energy data of last 10 times
- Recording total number of times of power failure, and the occurring time and end time
- Recording total number of times of demand overrun, and the occurring time, end time and corresponding energy data of last 10 times of phase loss
- Recording total number of times of voltage(current) imbalance, and the occurring time, end time and corresponding energy data of last 10 times
- Recording last 10 times of constant magnetic field interference event
- Recording last 10 times of power supply abnormality
- Recording the total number of times of demand zero clearing, and the zero clearing

time, operator code of last 10 times of demand zero clearing

- Recording the total number of times of programming, and the time, operator code, programming item's data identification of last 10 times of programming
- Recording the total number of times of time calibration(exclude broadcast time calibration), and the time, operator code of last 10 times of time calibration
- Recording the total number of times of each phase overload, and the occurring time, end time, corresponding energy data of last 10 times of overload
- Recording the total number of times of opening meter cover, and the occurring time, end time of last 10 times of opening meter cover event
- Recording the total number of times of opening terminal cover, and the occurring time, end time of last 10 times of opening terminal cover event
- Recording the occurring time of last 10 times of meter zero clearing event and the energy data at zero clearing moment
- Recording last 10 times of event zero clearing
- Recording last 10 times of pulling switch
- Recording last 10 times of recharge amount
- Recording last 10 times of strong magnetic influence event
- Recording last 10 times of false operation of built-in load switch

9 Real-time Parameter Detect

Real-time measurement and calculation of the voltage, current, power factor, active power, reactive power, apparent power, grid frequency, meter inside temperature, current active demand, current reactive demand, etc. reading accuracy 1%

10 Fault Alarm

Four kinds of fault alarm modes: LCD fault display, LED light control alarm indication, buzzer acoustic alarm, relay alarm. User can choose different alarm mode to alarm event in advance.

11 Load Curve Record(optional)

Start time and sampling interval time of load curve record can be set separately. The smallest value is 1 min, the default value is 15 min. 6 kinds of load can be recorded in maximum: voltage current frequency channel, active reactive power channel, power factor

channel, active reactive total energy channel, 4 quadrant reactive total energy channel, current demand channel. Open and close can be realized by setting load control word.

12 Auxiliary power supply: auxiliary power supply voltage 100V ~ 240V, AC DC self-adaptive. Auxiliary power supply is preferred. (extensible)

13 Communication Function

The communication channel physical layer is independent of each other. Breakdown of any communication channel doesn't affect the normal operation of other channels

- RS485 communication: RS485 interface communication Baud rate is settable, standard rates are 1200bps, 2400bps, 4800bps, 9600bps, default value is 2400bps. After the meter is power on for 3s, meter can use RS45 interface to communicate.
- Infrared communication: modulation type of infrared communication, communication Baud rate is 1200bps
- GPRS communication: modular design, plug-in design

14 Output Function

- Impulse output: impulse width: 80ms±20ms
- Programmable multifunctional output port: meter can realize output of 3 kinds of detection signal by programming. The 3 kinds of signal are: clock detection signal, demand cycle signal, time frame switch detection signal. Factory default is clock detection signal output (second signal). The meter automatically reverts to clock detection signal(second signal) output after power failure
- Control output: meter can output relay switching signal to control outside alarm unit or load switch

15 Display Function

- LCD display: the value displays 8 digits, the displayed decimal places can be set. After power on, it displays full screen for 5 seconds first for self - check
- Indicator light display:
Active impulse indicator light: red, usually off, flicker when measure active energy
Reactive impulse indicator light: red, usually off, flicker when measure reactive energy

Trip indicator: yellow, usually off, lights up when load switch break

16 Zero Clearing Function

- Meter total zero clearing
- Event zero clearing

17 Remote Control Functions

Outline Drawing (All dimensions are in mm)

