
AMI System Device

Concentrator of DJGZ23 Series

Technical Manual

(V1.0)

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Foreword

Version and purpose

Version

Manual version	Explanation
DJGZ23C-V1.0	Corresponds to the initial version of device DJGZ23-DJGZ23C /DJGJ23-DJGZ23C.

Purpose

This manual describes the function features, application module and technical indexes of DJGZ23-DJGZ23C PLC Concentrator, in order to help users understand the technique, performance and the use of technique to provide users with technical support.

Readership

This manual applies to the readers as followed:

Marketers

Technical engineers

Devices maintenance personnel

Master the knowledge as follows prior to using this manual:

Power measurement basis

Power line carrier communication technology

Electronic technology and application

Catalogue

Catalogue.....	5
1. Safety rules	7
1.1 Safety requirements.....	7
1.2 Safety information.....	7
2. Product introduction.....	9
2.1 Product orientation	9
2.2 Functions and features	10
2.2.1 Good performance and high reliability	10
2.2.2 Multiple channels communication and maintenance hardware interface	11
2.2.3 Pluggable design for communication module	12
2.2.4 Huge data calculation and storage volume	12
2.2.5 Data collection and management system	13
2.2.6 Multiple compatible meter communication protocols	13
2.2.7 Strong communication networking method and connection capability.....	14
2.2.8 Smart fault self-diagnosis and report function.....	14
2.2.9 Energy quality management alarm system.....	14
2.2.10 Long-distance prepayment function.....	15
2.2.11 AC/DC analog variable sampling and measurement function	15
2.2.12 Remote signaling status variables' collection and report function	16
2.2.13 Parameters setting and auto broadcasting time synchronization function	16
2.2.14 Long-distance and local program upgrading and maintenance	16
2.2.15 Simple and practical on-site installation and commissioning	17
3. Product application.....	17
3.1 Networking application.....	17
3.1.1 AMI system infrastructure principle diagram.....	18
3.1.2 AMI system electric networking topological diagram.....	18
3.1.3 AMI system devices connection diagram.....	19
3.1.4 Uplink networking	19
3.1.5 Downlink networking.....	19
3.1.6 Thailand networking method.....	20
3.2 Technology and field application	20
3.2.1 RS485 technology and application	20
3.2.2 PLC field and application.....	20
3.2.3 ZIGBEE field and application	20
3.2.4 GPRS/CDMA field and application.....	20
4. Product structure and components	21
4.1 Structure material and features.....	21
4.1.1 Base	21

4.1.2	Cover	22
4.1.3	Air-proof.....	22
4.1.4	Nameplate.....	22
4.1.5	Sealing	22
4.1.6	Outline dimension	22
4.2	Structure components and introduction	23
4.2.1	Introduction to various hardware components	23
4.2.2	Wiring diagram of main power supply.....	23
4.2.3	Auxiliary wiring diagram	24
4.2.4	Indicator function introduction	25
5.	Basic operation.....	26
5.1	Button function introduction	26
5.2	LCD display instruction.....	26
5.2.1	Display style of terminal's main interface	26
5.2.2	Menu interface content introduction	27
6.	Technical performance and indexes	28
6.1	Technical Specification.....	28
6.2	Downlink communication technology and performance.....	29
6.2.1	Electrical test performance of 485 meter-reading port.....	29
6.2.2	PLC communication technical performance	30
6.2.3	ZIGBEE communication technical performance.....	30
7.	Standards and protocols.....	31
8.	Technical terms	32
9.	Installation and debugging.....	33
9.1	Cautions for installation.....	33
9.2	Debugging method	34
9.3	Installation and debugging procedure.....	34
10.	Transport and safety	34
11.	After-sales service	34

1. Safety rules

1.1 Safety requirements

- DJGZ23C PLC Concentrator owns advantages of simple measurement, simple installation and simple operation. But to avoid personal injury and other products related to the meter, it is suggested that this manual should be carefully read, which is better for usage before being installed, detected, operated and used.
- While the designing and producing of DJGZ23C PLC Concentrator, its solidity and reliability and users' safety and convenience have been already fully considered. Thus common faulty operations can be endured. If the meter is reasonably and safely installed and used according to the guideline, its lifespan will be extended. This product could only be used within its provisions; Shenzhen Golden Square Technology Co., Ltd. has no responsibility for the damage and personal injury caused by faulty operations, operation and the usage beyond the specific range.

1.2 Safety information



In each chapter of this manual, different letter symbols and graphic symbols which are adopted to express the danger according to

different levels of danger will be explained. Please pay attention!



Caution! This sign is to remind of possible danger, which will possibly cause some severe hurt and damage to people and the equipment.



Attention! This sign is to remind of possible unexpected situation, which might result in personal injury, equipment damage and data error.

Pay attention to this product's rated voltage and maximum current.

Pay attention to this product's measured load capacity.

Correct and reliable installation and connection.

Pay attention to effective cross-sectional area of wire connection.

Do not touch bare wire or use bare wire to connect.

Please don't use this product in explosive environment.

Keep the product's surface clean.

Pay attention to concentrator's seal management.

Don't immerse the concentrator in water and any chemical substance and don't use any chemical substance to clean the concentrator.

Displays are all examples in this manual, which may have some difference from the real data in concentrators.

Since it is life-threatening to touch live components, the power must be cut off before installation and replacement.

Please obey local safety rules; Installation and replacing of concentrator only could be done by qualified person with specified technology.

When installing concentrator, pay attention to concentrator's safety. Appearance damaged or fell downed concentrators are not allowed to install.

The concentrator whose appearance is damaged or which fell down should not be installed.

Washing the concentrator by water is not allowed.

2. Product introduction

2.1 Product orientation



Figure1 Concentrator

- DJGZ23C series of concentrators are designed for electricity measurement, monitoring, remote meter-reading and load control functions for AMI system public region, they are smart management terminals and central devices for centralized meter-reading in electric neighborhood.
- The uplink connects with long-distance master station server via multiple communication channels like GPRS/CDMA/GPON/EPON etc., and the downlink connects with meter via multiple communication channels like PLC/RS485/ZIGBEE etc..
- The uplink can communicate by many standards including IEC standards and receive and execute the command sent by master station. The download can communicate with meter devices via many protocols including DLMS, COSM and DL/T645-2007, fulfilling functions like remote meter-reading, monitoring, anti-tamper management and load control etc..
- It can realize bi-directional long-distance communication with measuring devices including electricity meters, water meters and gas meters etc..

2.2 Functions and features

2.2.1 Good performance and high reliability

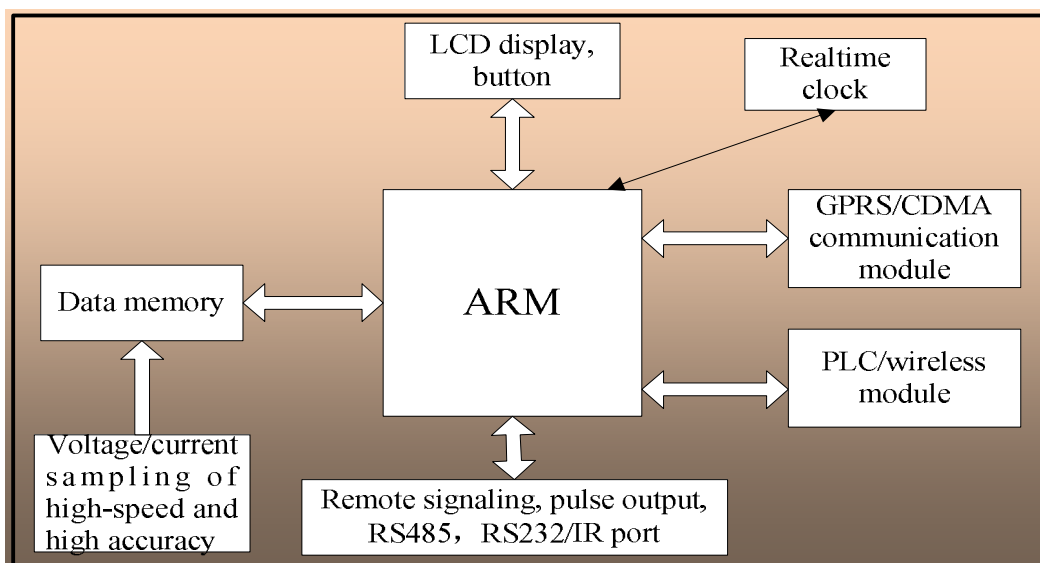


Figure 2 Principle diagram

- DJGZ23C low-voltage concentrator adopts current most advanced technology such as micro-electronics technology, PC chip technology and modern communication technology etc., supports most advanced wireless and wired communication network technology including GPRS/CDMA/GSM/GPON/EPON, local power line PLC technology including PLC/ZIGBEE/RF and wireless RF self-networking technology etc..
- It adopts high-speed 32-bit ARM and Linux operating system, with collecting module of high-speed and high-accuracy built-in, fulfilling realtime energy calculation of high-speed, and especially it still assures sampling and energy measurement accuracy during operation of high harmonics content.
- The terminal features excellent EMC performance to withstand immunity from high-voltage spike pulse, intense magnetic field, strong electrostatic and lighting surge, additionally it features wide self-adapting range for temperature.
- Wide voltage range design enables high reliability and easy to adapt the working environment.
- Sealed designed, ABS water-proof and fire-proof material, wall type structure, small volume and easy installation.

2.2.2 Multiple channels communication and maintenance hardware interface

- The concentrator has two remote signaling interfaces, one 4~20ma DC analog variable input interface, one 12 DC voltage output interface, three pulse output interfaces, three meter-reading interfaces, one 232 maintenance interface, one USB program upgrading interface, one IR communication interface, one GPRS/CDMA interface and one LAN/WAN interface.

2.2.3 Pluggable design for communication module

- The uplink channel adopts pluggable GPRS/CDMA/LAN/WAN module, and the downlink adopts PLC module, ZigBee module and RF module and the three can be exchanged.



Figure 3 Module outline figure

2.2.4 Huge data calculation and storage volume

- DJGZ23C low-voltage concentrator adopts the excellent-performance CPU from 32 bit ARM processor of high-speed, collect, analyze and calculate the secondary voltage/current via high accuracy energy measurement chip, and store various data in the FLASH.
- The concentrator can store the data as follows as per the category:
 - ✚ 31 daily zero time (next zero time) frozen energy data of every energy meter.
 - ✚ Frozen energy data of meter-reading dates of 12 months.
 - ✚ Energy data of 24 integral hours of 10 days of 10 major customers.
- The storage volume of terminal is not less than 32M.

2.2.5 Data collection and management system

- The concentrator stores data collected by category, like daily frozen data, frozen data on the meter-reading day, curve data, historical daily data and historical monthly data etc..
- Terminal can choose some customers as key customers as per needs, and pay more attention on the energy meters of them, in addition, generate curve data as per collecting interval of 1 hour.
- As per needs from customers, the interval of curve frozen data can be expanded to every month, every day, every hour, every 30minutes, or every 15min etc..

2.2.6 Multiple compatible meter communication protocols

- The communication with master station supports IEC standards and the Q / GDW 376.1-2009 *Consumption data collection system communication protocol for electric power consumers: Protocol for communication between master station and collecting terminal* issued by China State Grid Corporation, as well as TCP/UDP/SMS transmission mode.
- The communication with PLC module supports IEC standards and China State Grid Standard Q / GDW 376.2-2009 *Communication protocol of consumption data collecting system for electric power consumer: concentrator local communication module interface protocol*.
- The communication with master bus supports IEC standards and DL/T645-1997/2007 (Ministry issue protocol), and many common meter protocols home and broad for meters from GST, WASION, HND, FUJIAN STANDARD, ABB, IEC1107, REDPHASE EDMI, Landis+Gyr/Simens/ and B/D etc., meanwhile the terminal supports meters connection with protocols ≥ 2 and supports master station remote upgrading terminal meter protocols library.
- The communication with residents in the neighborhood supports IEC standards and

China National Standard DL/T645-1997/2007 (Ministry Issue Protocol).

2.2.7 Strong communication networking method and connection capability

- It supports PLC remote data transmission, power line carrier communication, power carrier self-networking and carrier auto relay.
- It supports ZigBee/RF wireless short-distance transmission, long-distance auto networking, route and data transmission, auto optimizing data transmission path, realtime smart detection of communication channel traffic and auto optimizing option of data transmission time section.
- Individual region can connect up to 1024 PLC meters and ≥ 1000 ZigBee/RF meters in theory.
- PLC meter-reading data transmission distance can reach radius of 1km (no great harmonics interference and good power operating environment), while the transmission distance for ZIGBEE/RF meter-reading data can reach sight distance of radius 500m (no apparent obstacle buildings).

2.2.8 Smart fault self-diagnosis and report function

- The concentrator can self-diagnose, and it will record the event and alarm in case of abnormal thing happens (including communication).

2.2.9 Energy quality management alarm system

- The concentrator can record the events by category of important event and ordinary event considering the event attribute of event. The events include terminal parameters alteration, meter-reading failure, terminal switch on/ff and energy meter beyond clock error etc..
- When the concentrator adopts duplex transmission channel, it will send alert information to master station actively; when it adopts the long-distance channel

without active report, it will require the access location (ACD) and ask for master station's access when responding master station on reading energy data.

- The concentrator can save records of nearly 500 events.
- The meter monitors meter operation status and when meter has parameters alteration; clock beyond error tolerance or meter fault etc., the terminal shall record the occurrence time and abnormal data as per event recording requirements.

2.2.10 Long-distance prepayment function

- The concentrator can receive and transmit the prepayment command parameters sent from prepayment management module of master station to the corresponding meter, to facilitate meter auto executing prepayment management and load control function, besides, the concentrator can still receive and execute the command sent from master station to read meter prepayment parameters and data, and report them to master station for analysis and management.

2.2.11 AC/DC analog variable sampling and measurement function

- The concentrator collects analog variables including voltage and current, and measure voltage, current, power, and power factor etc..
- Transform some non-electric variable monitoring points (e.g. temperature and voltage etc.) to DC analog variables by converter. The concentrator can collect realtime analog variables to measure non-electric variables including temperature and voltage etc., with the DC analog variable measuring accuracy $\pm 1\%$.
- When the terminal configures AC analog variables collection function and calculates various electric variables of public transformer, it shall realize calculation of public transformer's energy, measure it and save the total forward/reverse and split phase active energy, max demand and its occurrence time, total forward/reverse reactive energy, with active energy measuring accuracy not less than class 1 and for reactive not less than class 2, besides all the above complies with requirements given in GB/T 17215.

2.2.12 Remote signaling status variables' collection and report function

- The terminal collects realtime switch position status and other status information, when some positions change, it will record that in memory and send the position change signal to master station in the latest enquiry or report actively.

2.2.13 Parameters setting and auto broadcasting time synchronization function

- It enables setting and inquiring relevant parameters via 232 port, 485 port, IR HHU and pressing button on terminal.
- It enables long-distance inquiring and setting meter archives parameters or with HHU setting and inquiring the parameters as follows:
 - ✚ —Concentrator archives e.g. collection point No. etc.;
 - ✚ —Concentrator communication parameters, e.g. master station communication address (including main channel and backup channel), communication protocol, IP address, ringing times and communication routers etc.;
- It enables long-distance or local setting or inquiring meter-reading task schemes, e.g. concentrator collection cycle, meter-reading time and collecting data items etc.;
- The concentrator has timing unit with error of time of day within 1s/d. The concentrator can receive clock reading and time synchronization command from master station or local HHU. The concentrator can synchronize time by broadcasting for collector or meter in system via local channel.

2.2.14 Long-distance and local program upgrading and maintenance

- It supports upgrading of programs of local 232 port, USB port and 485 port, and

local maintenance of 232 port, 485 port and IR port.

- The concentrator supports on line software download upgrading in long distance on concentrator, and supports transmission resuming at breaking points but does not support SMS communication upgrading.

2.2.15 Simple and practical on-site installation and commissioning

- Concentrator can be installed by any engineer with meter installation operating experience, as long as according to requirements given in “Installation manual”.
- Meter archives debugging only requires that during meter installation, meter installer collate archives of meter in region well, distribute them in batch to concentrator via master station remotely, which fulfills auto meter-reading function.
- As per customer archives information of field meters, match them with customers’ archives in sales system, and the meter-reading data is imported to sales library via interface between master station and sales system, fulfilling long-distance auto meter-reading and billing functions.

3. Product application

3.1 Networking application

DJGZ23C series of concentrators has many data transmission networking methods which can be designed as per customer’s needs. Networking includes uplink data communication and downlink data communication:

3.1.1 AMI system infrastructure principle diagram

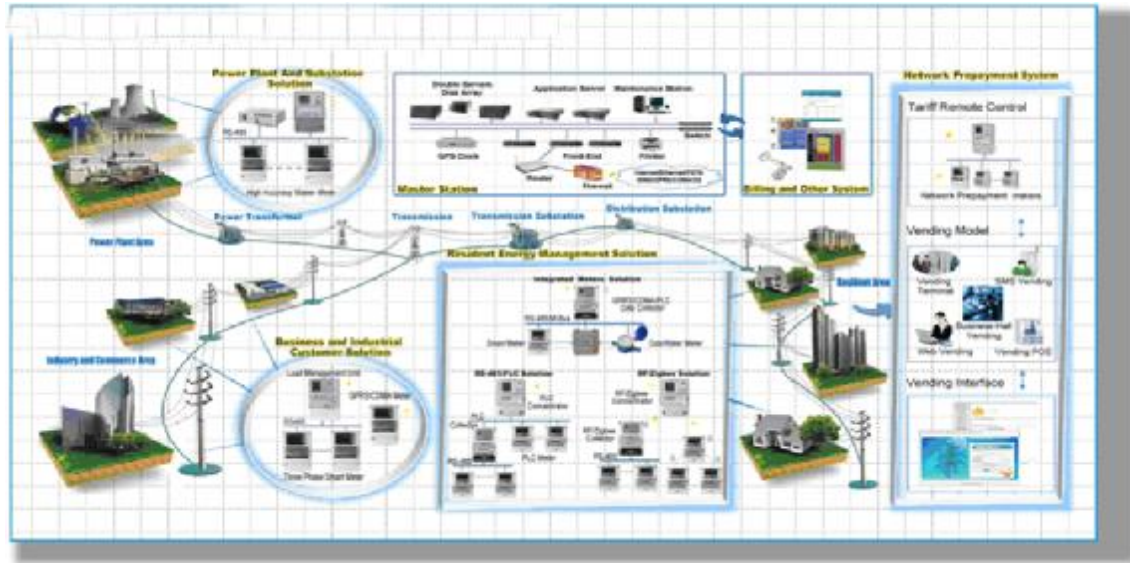


Figure 1 AMI system infrastructure principle diagram

3.1.2 AMI system electric networking topological diagram

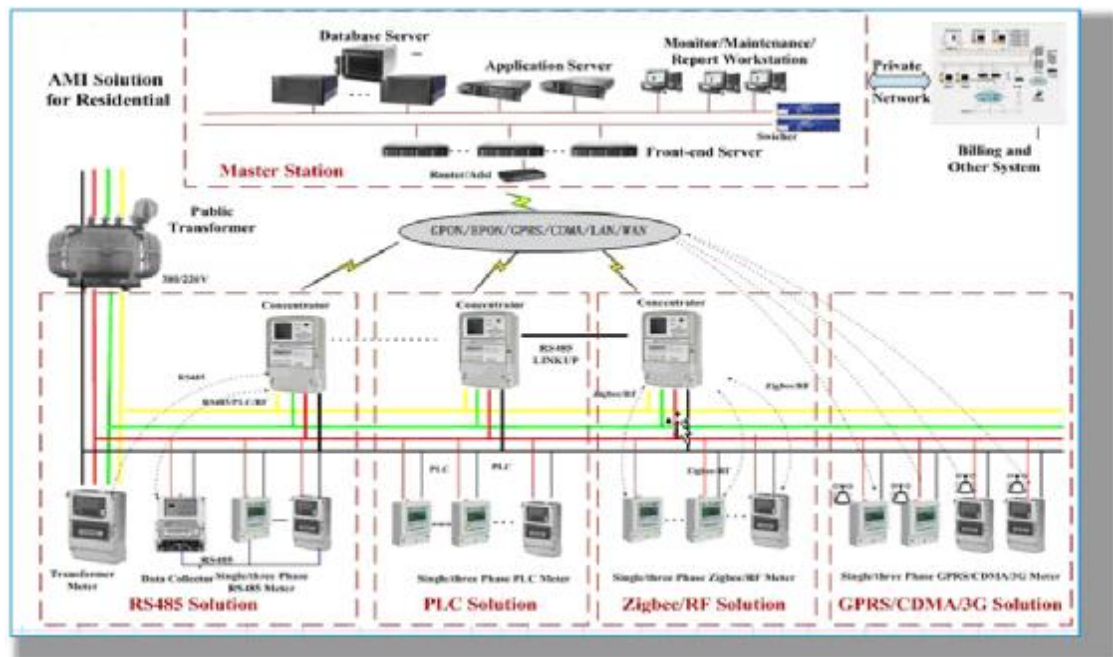


Figure 5 AMI system electric networking topological diagram

3.1.3 AMI system devices connection diagram

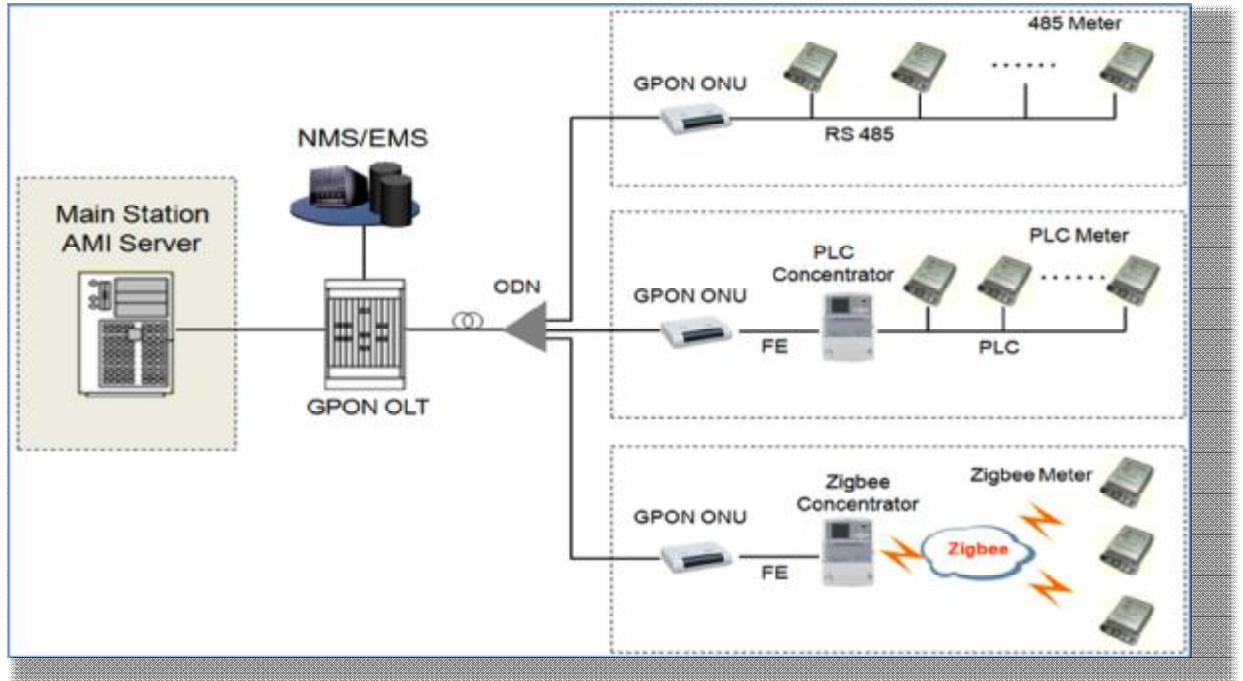


Figure 6 AMI system devices connection diagram

3.1.4 Uplink networking

According to AMI system electric networking diagram, it can tell, the uplink networking methods include GPON/EPON/GPRS/CDMA/MODEM/LAN/WAN. As required by Thailand customer, the concentrator shall connect to master station server with GPON/EPON+ONU networking device, actually it is called a way of GPON/EPON+LAN/WAN networking communication method. It takes advantage of bandwidth of GPON/EPON+ Optical Fiber +ONU network, ensures the smooth of data communication channel and realizes massive data uploading easily.

3.1.5 Downlink networking

According to AMI system electric networking diagram, the concentrator adopts ways including RS485, PLC, ZIGBEE, RF and GPRS etc. to read meter in general.

3.1.6 Networking method

According to AMI system device connection diagram, currently Thailand AMI project adopts GPON+ONU for uplink and RS485, PLC, ZIGBEE for downlink.

3.2 Technology and field application

3.2.1 RS485 technology and application

Considering communication line connection limit of RS485 during implementation, RS485 only applies to connect with 485 master meter in region.

3.2.2 PLC field and application

PLC is widely used and recognized for its stable, mutual and advanced power line transmission capability, but its harmonics interference immunity performance is looking forward to be improved. So it is generally applied for centralized meter-reading in pure residents' neighborhood of region power facilities assigned in order and small harmonics interference.

3.2.3 ZIGBEE field and application

With wireless power transmission method, Zigbee like RF, features fast networking, auto routing, high-speed transmission of data and stable, but in the mean time, it has limits like weak barrier-penetration capability, so it is preferred to be applied to broad field with point to point within sight.

3.2.4 GPRS/CDMA field and application

GPRS/CDMA wireless network is now widely used in remote centralized meter-reading, as it communicates and connects with master station directly by GPRS/CDMA, so some intermediate links like concentrator/collector are left out and

it is not affected by regional influence, and features realtime online, fast response speed, stable and accurate, but due to the communication method of keeping realtime on line and one meter to one card (SIM card), the communication traffic charges high, in general data traffic 5~10M per month (if massive collected data configured, and short reporting curve data cycle, the traffic turns to be more), so it applies to country/region of low charge for communication traffic and some special circumstances (installation points of dispersed and not easy for networking).

4. Product structure and components

4.1 Structure material and features

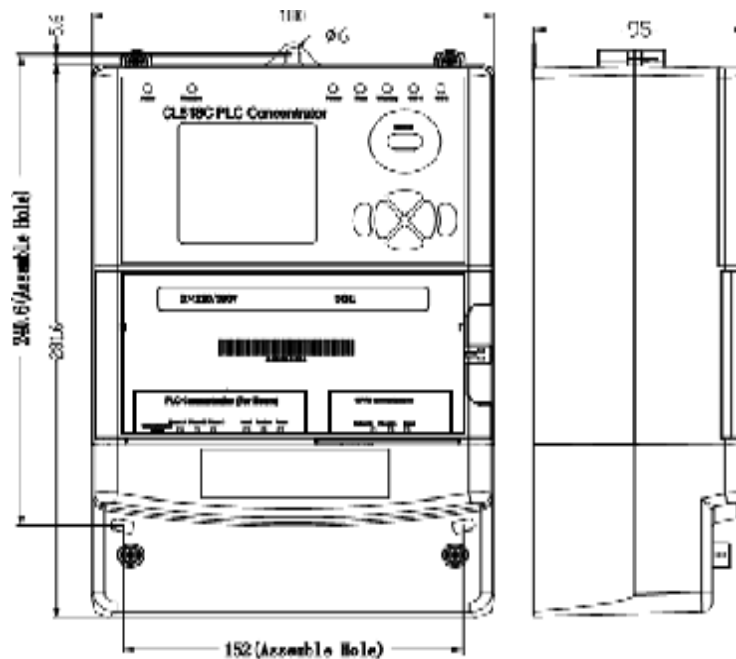


Figure 7 Concentrator front-view/side view diagram

4.1.1 Base

The base is made out of PC material of insulated, fire-resistant and ant-ultraviolet, as well as corrosion-resistant, ageing-resistant, high degree of hardness and indeformable, and easy for installation.

4.1.2 Cover

The cover is made out of PC material of insulated, fire-resistant and anti-ultraviolet, as well as corrosion-resistant, ageing-resistant, high degree of hardness and indeformable after screwing down the screws. The transparent window shall be of PC material of good transparency.

4.1.3 Air-proof

Good air-proof capability between cover and base. The joint portion has a close-up seal ring to prevent from water leakage. The enclosure protection degree meets IP51.

4.1.4 Nameplate

The nameplate is anti-ultraviolet. It lists the information as follows: product name, model, specifications, manufacturer, No. or batch No. and manufacturing date etc..

4.1.5 Sealing

Double sealing positions of reliability are located on cover and terminal cover, only one of which is required for manufacture to seal. The manufacturing sealing mark of pick-proof, anti-fake and with manufacturer logo in evidence is chosen.

4.1.6 Outline dimension

Concentrator length×width×height≤320mm×220mm×120mm。

4.2 Structure components and introduction

4.2.1 Introduction to various hardware components

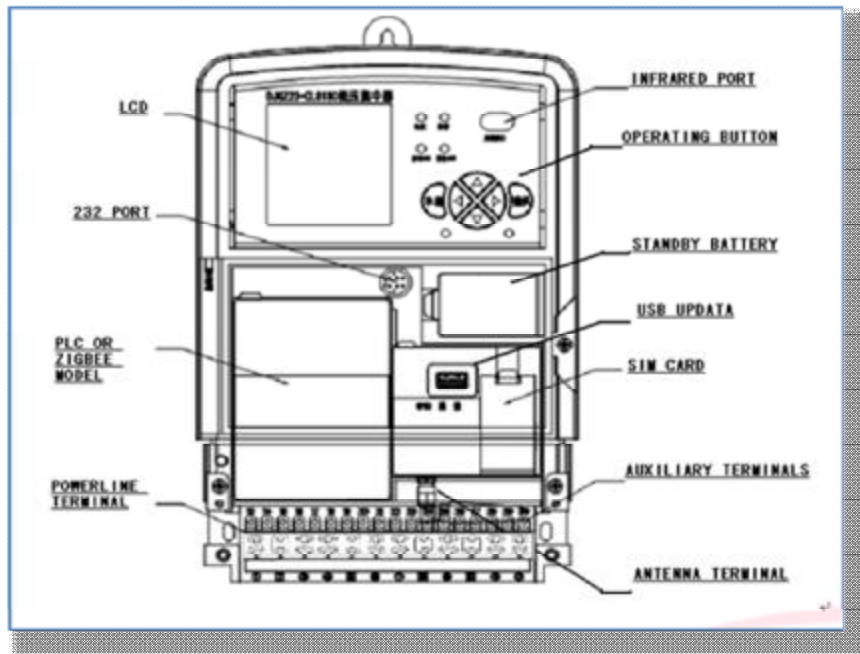


Figure 8 Name indication to components of concentrator

4.2.2 Wiring diagram of main power supply

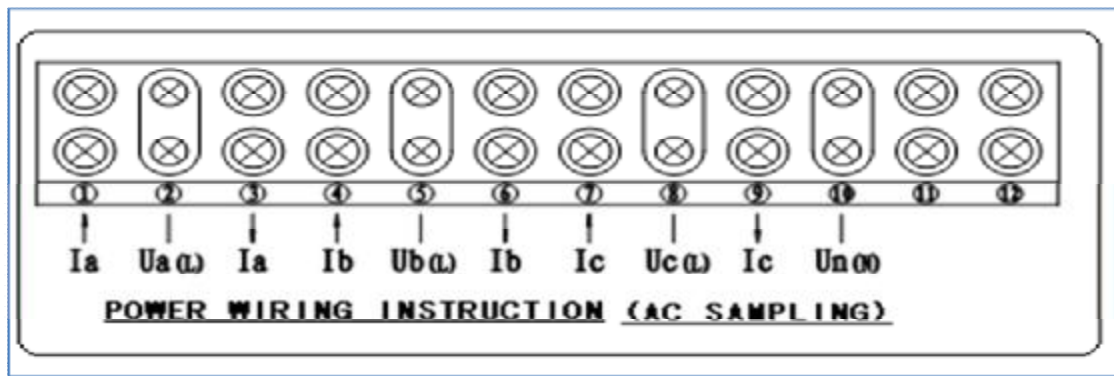


Figure 9 Graphic illustration of power supply terminals (with AC sampling)

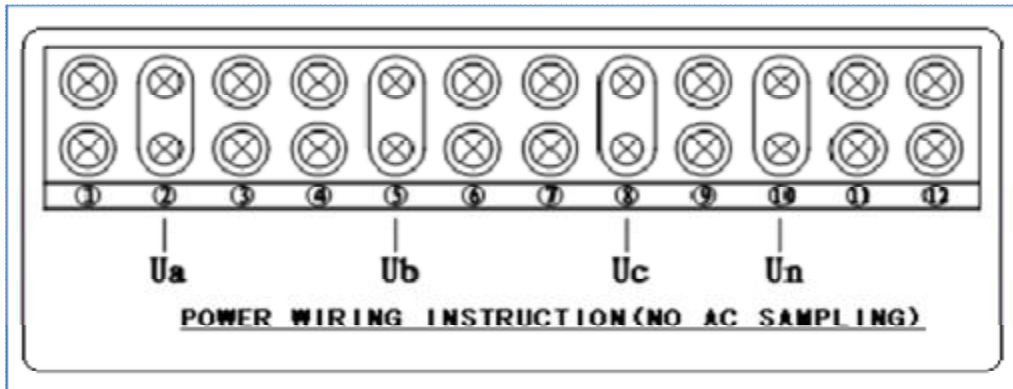


Figure 10 Graphic illustration of power supply terminals (without AC sampling)

4.2.3 Auxiliary wiring diagram

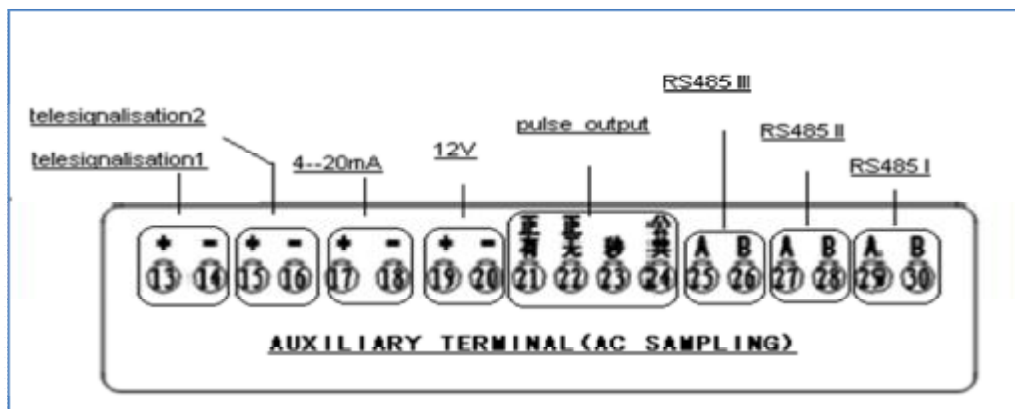


Figure 11 Graphic illustration of auxiliary terminals functions (with AC sampling)

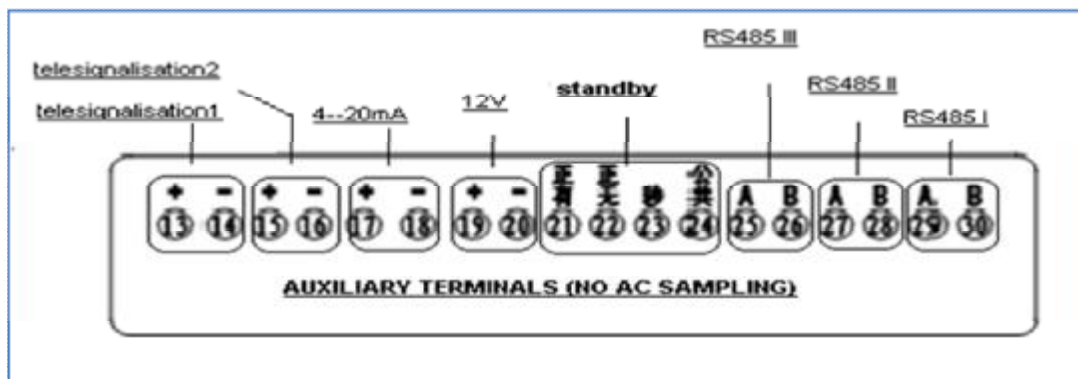


Figure 12 Graphic illustration of auxiliary terminals functions (without AC sampling)

sampling)

4.2.4 Indicator function introduction

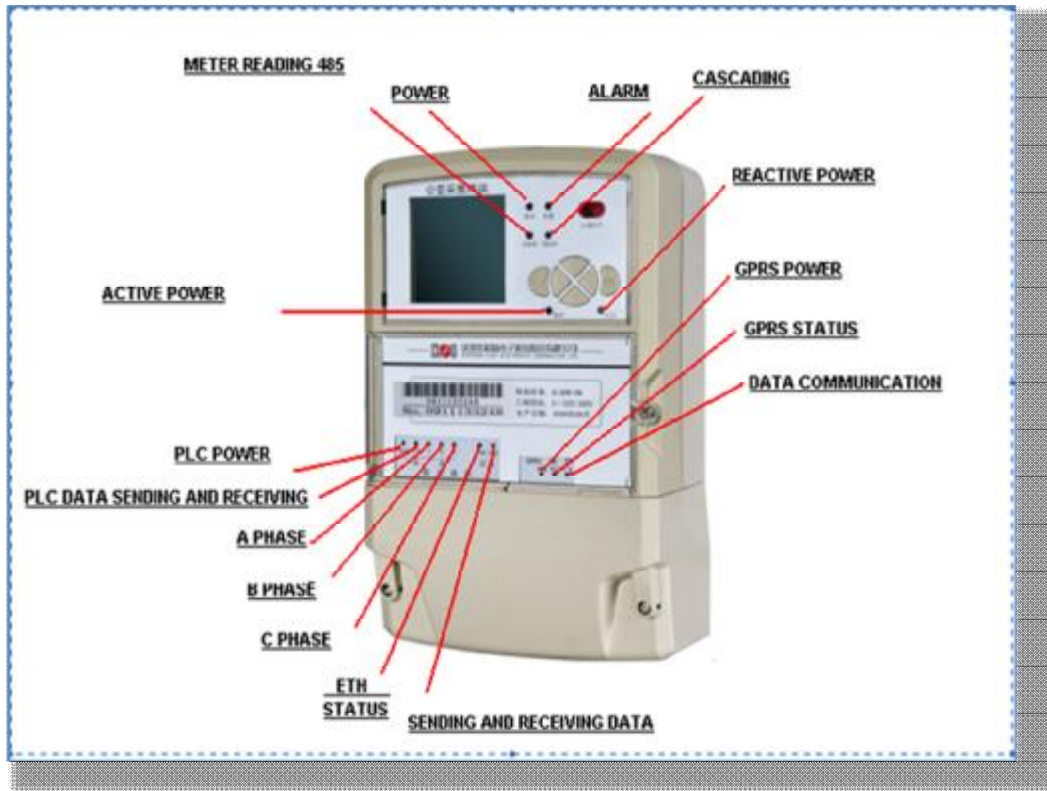


Figure 13 Indicator name instruction

5. Basic operation

5.1 Button function introduction

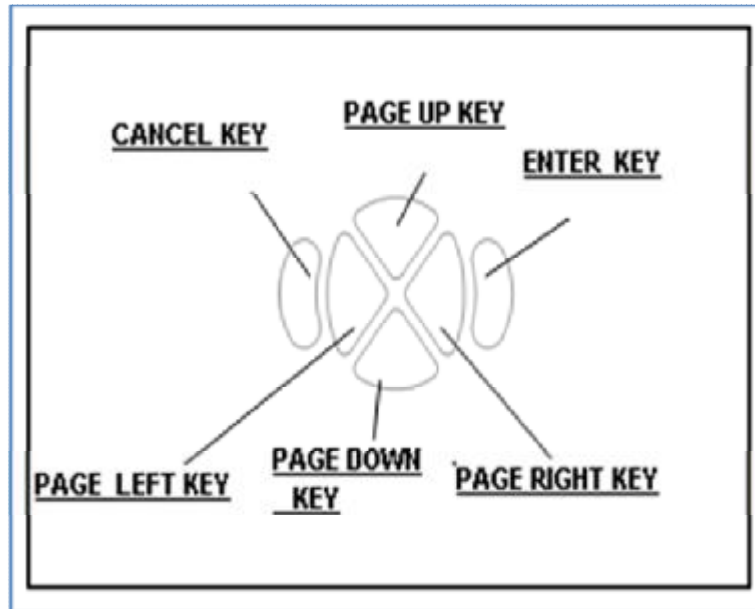


Figure 14 Button composition diagram

5.2 LCD display instruction

5.2.1 Display style of terminal's main interface

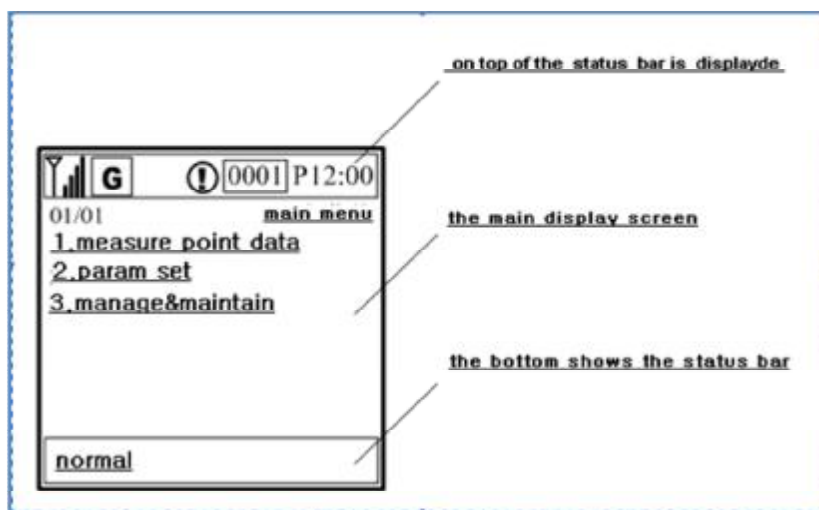







Figure 15 Concentrator's initialization interface diagram

5.2.2 Menu interface content introduction

5.2.2.1 Top display status bar

- Display some fixed parameters (not involved in cyclic display), e.g. communication method, signal intensity, connection status, abnormal alert, measured point No. and clock etc..
- Explanation of top status bar as follows:

Meanings of sign

	<p>Signal strength</p> <p>When the signal is only 1 to 2 cells, means the weaker signal, communication is not very stable. Signal is 3 to 4 cells, the signal is good, communication is relatively stable.。</p>
	<p>On-line display: When on- line, get the normal allocation of IP address display.。</p>
	<p>Communication status indication: When the TCP connection has been established, displaying the normal transmission of data</p> <p>G means GPRS communication mode</p> <p>C means CDMA communication mode</p>
	<p>Abnormal alarm indication means the terminal or measurement point is abnormal. When terminal is abnormal, the sign will flash</p>
	<p>Means terminal in the state of power save</p>
<p>12:00:00</p>	<p>Means current hours\minute\second, format: hh:mm:ss</p>

5.2.2.2 Main display interface

Mainly display cyclic display data, e.g. data of measured point and statistic information etc..

5.2.2.3 Bottom display status bar (subarea)

Display terminal operating status (normal/fault), task execution status (meter-reading, completing), status of communication with master station (idle, communicating or offline) etc..

6. Technical performance and indexes

6.1 Technical Specification

Specification	Voltage	3×100V	3×57.7V/100V
	Current	1.5A (6A)	5A(6A)
Accuracy	Voltage /Current	0.5%	
	Active Power	1%	
	Reactive Power	2%	
	Active Energy	1%	
	Reactive Energy	2%	
Voltage Withstand		4KV	
Impulse Voltage		6KV	
Electrostatic Discharge		8KV	
Fast Burst	Power loop 4KV		
	Signal loop 2KV		
Surge	Common-mode 4KV		
	Differential -Mode2KV		
Working Temperature		-25~65℃	
Limited Working Temperature		-30~70℃	
Relative Humidity		≤95%	
Voltage Range		Rate voltage ±30%	
Frequency Range		50Hz±5%	
MTBF		≥5×10 ⁴ h	
Design Life		15years	

Appearance(L*W*H)	290mm×180mm×95mm
Net Weight	2.4kgs
Battery Life	10years
Battery Continuous Work Time	≥3years
Hardware Port (OPTIONAL)	Alarm Output: 1 Remote monitor: 7 Pulse Test(Positive) : 2 DC sampling: 2 RS485: 2 RS232: 1 Aux power: 1 Gate-Ctr:1 Infrared Port: 1 GPRS/CDMA: 1 PLC:1 PSTN:1 ETHERNET:1

6.2 Downlink communication technology and performance

6.2.1 Electrical test performance of 485 meter-reading port

The concentrate supplies 3 independent 485 interfaces (485 interface of line 1 is cascade, that of line 2 is for reading master meter in region and that of the third line is the debugging port) and 1 IR port of osculum type (for local communication). The 485 output technical specification of concentrator is as follows:

- The special It adopts special RS485 chip, and there is photoelectricity isolator between 485 side and digital circuit side.
- It can withstand AC voltage of 4kV between 485 output terminal and force electricity terminal for 1min during hi-pot test.

- It can withstand static contact discharge of 8kV.
- It can withstand 4kV for surge immunity test (to neutral line).
- It can withstand AC 380V between terminals A and B for 5min without damage.
- It can withstand fast transient burst coupling test of 1kV, and it can normally communicate during test.
- The 485 interface can normally communicate after tests.

6.2.2 PLC communication technical performance

- Communication mode: bi-directional communication.
- Channel requirement: PLC signal frequency range 3kHz~500 kHz, meeting the range 9kHz~95 kHz for electric industrial special band given by IEC61000-3-8.
- The following requirements shall be met for max output signal level and interference level beyond band:

- F** The max output signal level for band 3kHz~9 kHz is 134dB μ V;
- F** The max output signal level for band 9kHz~95 kHz;
- F** The max output signal level for narrow band carrier: 134dB μ V at 9kHz, 120 dB μ V at 95 kHz, and it is linear decreasing as frequency varies at 9kHz~95 kHz;
- F** The max output signal level for broad band carrier is 134dB μ V;
- F** The max output signal level is 120 dB μ V detected by peak detector of 200Hz band width;
- F** The max output signal level of band 95kHz~148.5 kHz: in general 116 dB μ V, and not over 134 dB μ V in industrial application;
- F** The max output signal level of band 148.5 kHz~500kHz: \leq 66dB μ V~56dB μ V;
- F** The max output signal level of band 500kHz~525kHz: 56dB μ V.

6.2.3 ZIGBEE communication technical performance

- Transmission power: 100mW (20dBm) ; Receiver sensitivity -105dBm

(BER=10⁻²).

- Open band, carrier frequency 2.4GHz.
- Transmission rate: 250kbps.
- In circumstance of sight distance, the reliable distance reaches 1000m.
- 16 channels choose the reliable channel automatically to communication as per environment.
- Support TTL level/UART interface. Communication baud rate: 38400bps, 8N1 data format.
- Power consumption: receiving current≤50mA, transmission current≤160mA.
- Supports many antenna connection methods including PCB antenna, whiplike antenna and IPX antenna connection board etc..
- Applied to 2.4GHz IEEE 802.15.4 protocol and Zigbee, meeting requirement of auto networking.

7. Standards and protocols

- IEC 62056-21:2002 Electricity metering – Data exchange for meter reading, tariff and load control – Part 21: Direct local data exchange
- IEC 62056-31:2002 Electricity metering – Data exchange for meter reading, tariff and load control – Part 31: Using local area networks on twisted pair
- IEC 62056-42:2002 Electricity metering. Data exchange for meter reading, tariff and load control--Part 42: Physical layer services and procedures for connection-oriented asynchronous data exchange
- IEC 62056-46:2002 Electricity metering – Data exchange for meter reading, tariff and load control – Part 46: Data link layer using HDLC-protocol
- IEC 62056-52:2002 Electricity Metering - Data Exchange for Meter Reading, Tariff and Load Control - Part 52: Communication Protocols Management Distribution Line Message Specification (DLMS) Server
- IEC 62056-53:2002 Electricity metering –Data exchange for meter reading,

8. Technical terms

- **Low Voltage Power Distribution Network**

The power supply network adopted supplies power to customers directly with voltage 220V/380V. Low-voltage power supply lines usually are laid or mounted along the streets or roads. Each building connects with each other by distribution cabinet and the energy will be supplied to customers via cables or overhead cable.

- **Power Line Carrier (PLC)**

It is the kind of communication technology of transmitting data over low-voltage grid.

- **Channel**

The channel is the medium for signal (data) transmission, e.g. radio wave, electric power line, telephone wire and twisted-pair cable etc..

- **Master Station**

It is the control and information center of the whole system, collecting and controlling data of RS485 meter directly or from concentrator by optical fiber special channel GPON network, and analyzing and treating complexly the mass data collected. In general the master station is composed of PC system and remote communication devices.

- **Concentrator**

With unit of transformer region, the concentrator collects, stores and controls data from various collector and PLC measurement units in region via low-voltage grid channel or wireless channel, and exchange data with master station via long-distance public channel.

- **RS485 Bus Meter**

The meter stores the measured data based on measurement function and be capable

of exchanging data via RS485 bus, which in general exchange data with collector. According to the meters' attribute and purpose, there are RS485 bus meter, RS485 bus water meter, RS485 bus gas meter and RS485 bus heat meter etc..

- **Reading Interval of Master Station**

It means the cycle time for master station reading data from concentrator regularly, for short, reading interval.

- **Reading Interval of Concentrator**

It means the cycle time for concentrator reading measured data in customer's meter regularly.

- **Reading Period of Master Station**

It means the cycle time for master station regularly reading data in concentrator, for short reading cycle. The reading cycle time corresponds to the agreed meter reading time for consumption charging specified by the utility.

- **Reading Period of Concentrator**

It means the cycle time for concentrator regularly reading measured data in customer's meter, for short reading cycle. The measured data collected by concentrator in reading cycle time generally means the daily charging information for customer.

9. Installation and debugging

9.1 Cautions for installation

Fix and install terminal in the measurement cabinet, according to terminal type determining the terminal voltage, current, connection mode (see the previous panel label), connect each wiring of voltage and current. Open terminal front panel, insert the SIM card which has been open GPRS business function and the terminal with the charging battery, check the wiring and correct operation after power.

9.2 Debugging method

Set the master address, the terminal address, meter parameters, etc:

Preparing : Using the configuration software / maintain handheld computers to set parameter, can use RS232 or infrared mode. Terminals are equipped with password protection for each channel, set the time required for security authentication.

RS232/ infrared mode: Set serial port parameters for the baud rate: 2400, Data bits: 8, Checksum: no check, stop bit: 1.

9.3 Installation and debugging procedure

Please refer to “Concentrator installation and debugging manual”.

10. Transport and safety

- The individual product and the box body are packed strictly before delivery as per the national standards of electronics instruments packing and the packing material and enclosing measures comply with relevant national standards strictly (except special requirements from customers).
- Please strictly follow the relevant national electronic industrial products transportation and safety management approach during transportation and handle the products with care.
- GST is not responsible for any damage of products happened during transport or installation after acceptance of goods or due to man-made causes.

11. After-sales service

- Warranty period for this product is one year. For any quality problems or damage or fault during operation within warranty period, GST shall be responsible for free maintenance.

- A certain amount of maintenance cost will be considered as appropriate for product over the warranty period.
- The warranty period is counted from delivery date.