

Smart Mobile Reading and Fixed/AMR (Automatic Meter Reading)

USonic Metering

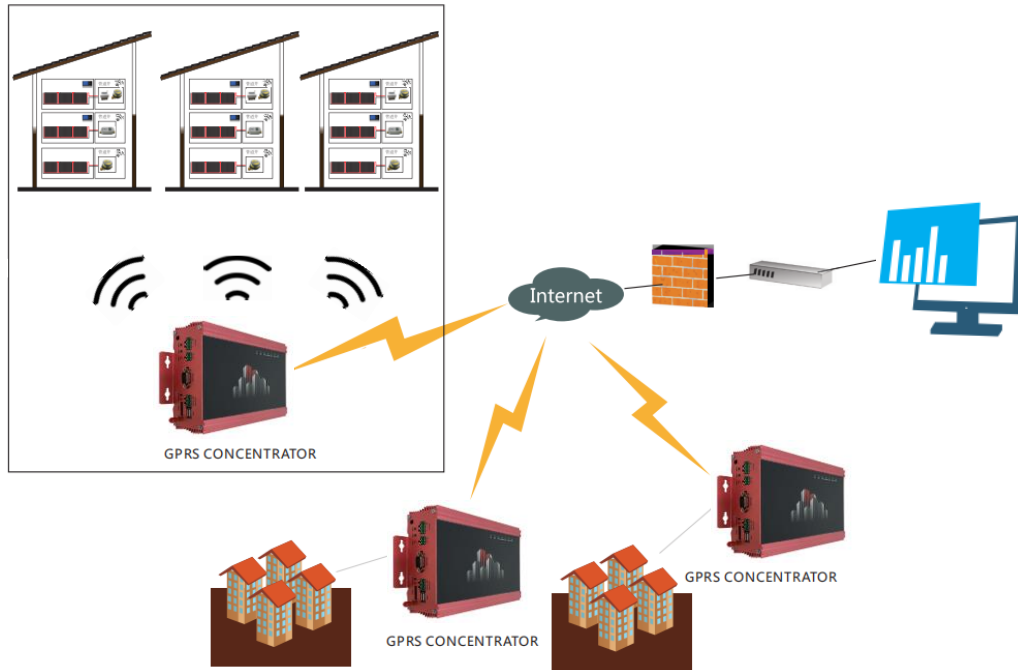
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1. System overview

1.1 system overview

The whole system mainly consists of ultrasonic water meter, collector and management system (system).



1.2 System principle

1. Timing upload mode

The data collector connects with the ultrasonic water meter by M-BUS line or wireless communication, reads the data of the meter regularly, and stores the data in the collector. The collector actively uploads the copied data into the management system.

2. Manual copying mode

The collector receives the command from the management system, then passes these commands through to all meters. As a result, the meters return the data to the management system.

2. Collector

2.1 Function

1. Integrating touch screen cutting-edge technology, the concentrator includes a data processor and GPRS wireless module. The microprocessor core module is controlled by Texas Instruments chip (TI) A8Arm11 core;

2. Linux operating system has the advantages of fast running speed, low power consumption, powerful function, convenient remote updating and maintenance, stable and reliable system operation, friendly user interface, strong functional expansibility and smoother information exchange with management system.

3. The data storage unit can store real time data for 3 years. When power failure occurs, the data recorded before power failure can be easily recovered. Then after the power supply is restored, normal computing function will be resumed.

4. Variety of communication interfaces, including GPRS, M-BUS, RS232, RS485, USB, LAN network interface. All these outputs allow data import and export from the collector.

5. Through GPRS module, the user's water consumption data is sent to the management facility instantly.

6. Support the water meter protocol of different manufacturers, and support expansion.

7. It can be used for water meters, BTU meters, energy meter and process/transmit all data.

8. It can receive signals from multiple wireless repeaters.

9. Remote updating: The collector micro-processor has the functions of remote updating and restarting (supporting remote upgrade of the collector device and two-way communication), which facilitates remote maintenance of the system and saves a lot of cost.

2.2 Technical specifications

1. Communication method: GPRS wireless communication mode, built-in GPRS wireless receiving module;
2. Using high-precision clock crystal oscillator, the host computer automatically synchronizes the collector processor.
3. Capacity: up to 256 end points
4. Consumption power: 15W
5. Working Voltage: DC24V
6. Temperature: -30-60°C ;
7. The parameters of the collector core board: The SC-5 uses AM335x series chip as the main control. The chip is corcor-a8 kernel, with the highest frequency of 720MHZ, with LCD controller, support usb2.0 OTG mode, and 10/100/1000mhz Ethernet interface (MAC). The interface could be: RGMII, RMII, MII interface communication, 2-channel CAN bus, 6-channel hardware UART, 12bit ADC, MMC/SDIO, advanced PWM, McSPI, I2C, I2S and other interface modules. The core board has 256MB/512MB DDR2, 256MB Nand Flash, 10/100mhz network PHY, peripheral pins have been extracted.



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2	Configure serial port	PC terminal is connected with this port through serial port, and it is used to configure tool and communication, generates collector configuration file, upgrade program and command package.
3	LAN interface	Network interface, use the network cable connect to the router with DHCP function. This feature is optional.
4	SD card interface	Storage and other data records.
5	USB interface	To insert the usb flash disk in FAT32 format and send the corresponding command package through The configuration tool and copy the collector's historical data to the usb flash disk.
6	Power interface	The positive and negative poles to be connected to the 24VDC.
7	MBUS interface	To connect all M-Bus slaves.
8	SIM card	Insert a SIM card tray into the hole to eject the the

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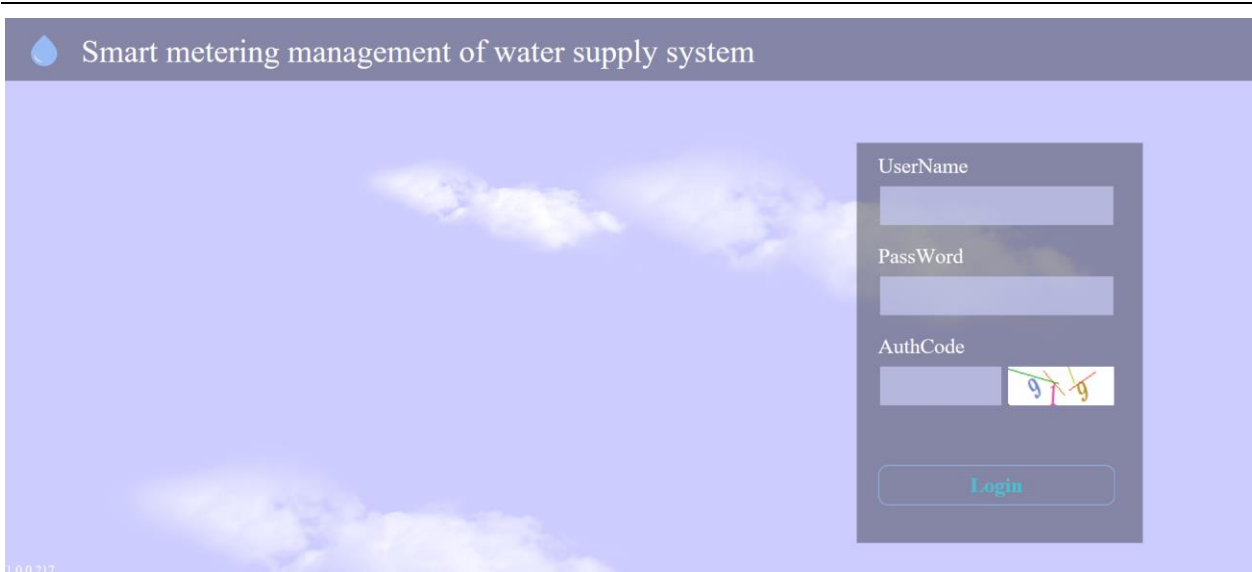
		SIM card.
9	Antenna interface	after installing GSM antenna, the collector can be automatically connected to the server
12	Power light	
13	MBUS_COM light	The signal of communication between the MBUS host and the meter slave in the collector, the light should flash when the collector reads the meter.
15	RUN light	When the led keeps flashing for every second, the program inside the collector is running.

3. Management System

3.1 Platform type

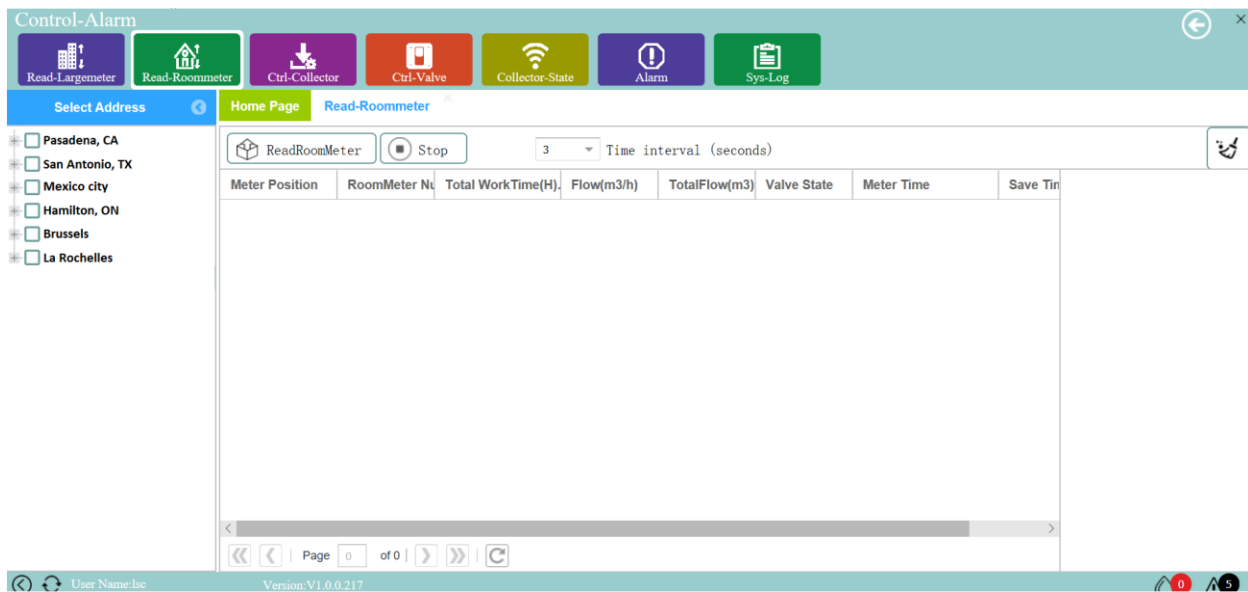
The management system is a user-friendly interface, which makes it convenient for the facility management company, to easily navigate and retrieve information instantly:

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3.2 Platform features

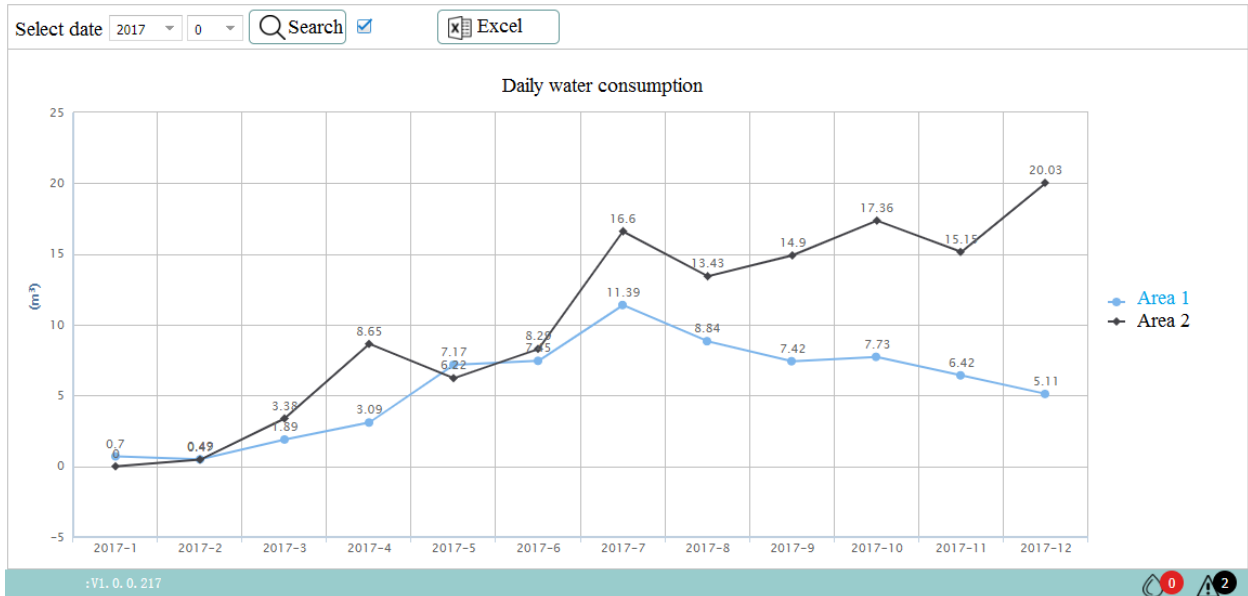
Platform style uses the popular flat design style, data information is displayed graphically. Selecting the meter of a specific household can read the meter information in real time.



3.4 Usage statistics

By choosing RoomMeterUse-Rep, the water consumption of household can be counted each month, and the water consumption of for all tenants can be compared.

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3.5 Control alarm

Fault alarm prompt for main interface. When there is a malfunction of the meter, the system will react at the first time, and the lower right corner of the main interface will be prompted. Severe malfunctions will be flashed at the red sign, accompanied by text rolling prompts (such as drip, pipeline burst, etc.).

3.7 Meter reading statistics

The system can search and select the latest data and historical data of the user's water meter reading information.

3.8 Access/Rights

The system can assign different user roles to different managers, different users can operate in different communities, different users may use different system functions.

4. Drive-By and Mobile reading (wireless M-Bus)

The system consists of:

- Pad/tablet (nexus9 or similar, with an App)
- Wireless Transmitter: SC-TR with Antenna
- Power Supply Box (For wireless transmitter)

4.1 Functions:

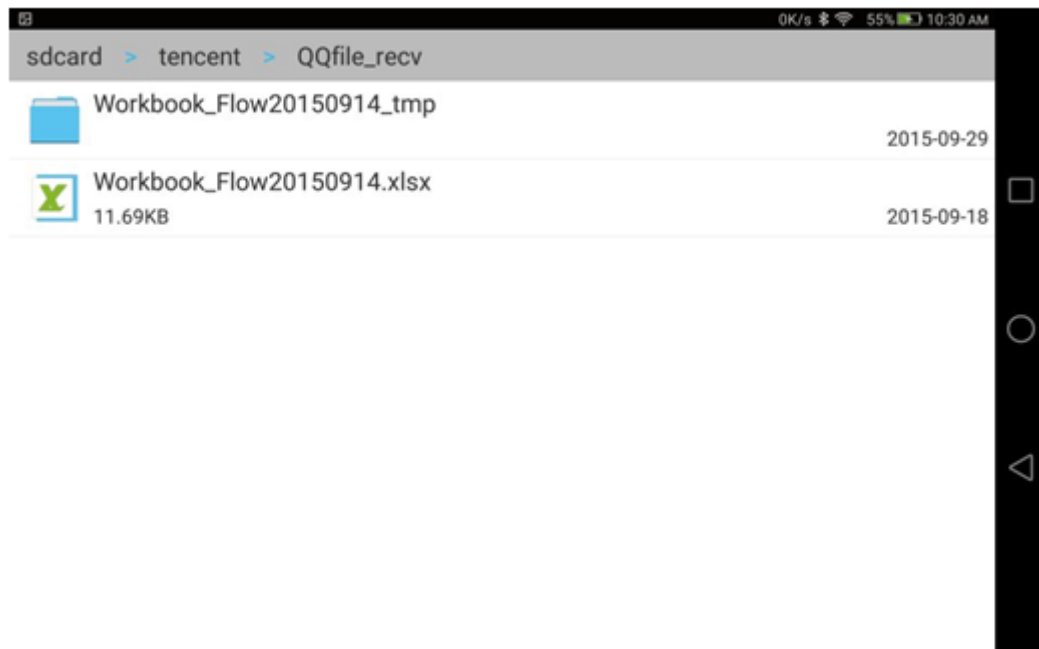
Home Interface: Load the meter collecting task list (excel file) into App.

List Interface: Bluetooth connects wireless transmitter, send meter reading task automatically or manually.

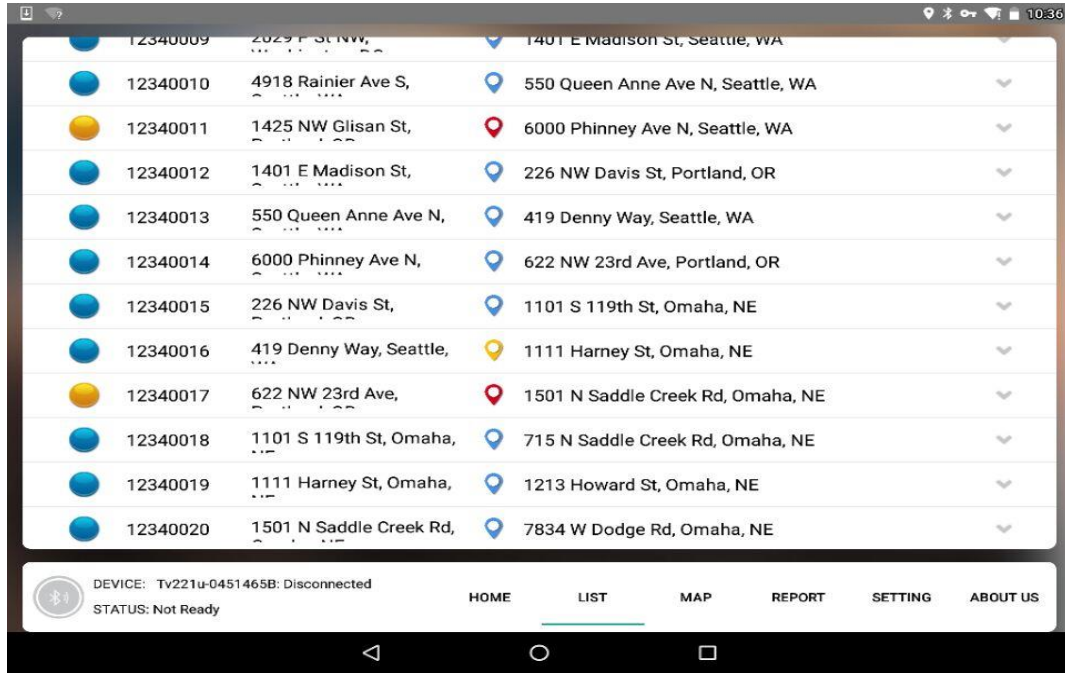
Map Interface: Check the geographical location.

Report Interface: Check meter reading data and upload these data to the server by various ways.

Set Interface: Setup system parameters of meter reading, such as the upper limit of vehicle speed, task push at one time, alarm ringing etc.



A click on the file will open a list of all meters in the area:



When the icon in front of ID turns yellow, it means the meter reading command was sent already and waiting for response. If turns blue, it means data was collected successfully.

4.2 The data/readings:

In addition to the serial number for each meter, the tablet App will show the signal strength, flow rate, temperature and other parameters.