RD06 (4G) User Manual

V2.2

1 Product overview

The 4G TZ-RD06 is an ultra-long-range wireless data acquisition gateway dedicated to receiving the signals from our company's temperature and humidity sensors-Tag06/06B. The 4G Gateway supports TCP, UDP, HTTP, RS485, MODBUS-RTU and other communication interfaces. The Gateway uses a high-performance 32-bit industrial processor and an industrial-grade wireless module, which are featured by high reliability, stability and data security. It supports local sound and light alarms, SMS alarms, GPRS alarms and other alarm methods.

2 Product feature

- Support 4G
- Support GPRS
- RS-485
- Support MODBUS-RTU
- Compatible with TCP/UDP or HTTP
- One outlet for connecting alarming device
- Multiple alarming methods
- An external USB interface specially for configuring the operating mode by user
- Anti-collision: Mutual interferences can be prevented by advanced anti-collision technology
- Security: Encryption algorithm and certification to ensure data security and prevent, link eavesdropping and cracking
- Metal shell, resistance to high pressure and easy to install and use

3 Technical Parameters

RF frequency	433MHz
RF modulation mode	GFSK
RF receiving sensitivity	-124dBm
RF identification Angle	Omni-directional
Interface	TCP/UDP/HTTP/RS485/MODBUS-RTU
LED	Three LED (RF、NET、Power)
Firmware update	Support
Communication protocol	Private protocol

Supply power	DC 12V
Flash memory	32Mb
Net weight	0.27kg
Operating temperature	-20°C to +60°C
Operating humidity	5% to 95% (non-condensing)
Dimension	112mm*105mm*27mm
Frequency band	LTE-TDD： B34/B38/B39/B40/B41 LTE-FDD： B1/B2/B3/B4/B5/B7/B8/B12/B13/ B18/B19/B20/B25/B26/ B28/B66 UMTS/HSPA+： B1/B2/B4/B5/B6/B8/B19 GSM/GPRS/EDGE： 850/900/1800/1900MHz

4 Definition of interfaces

4.1 Appearance

4.2 All interfaces

Interfaces	Functions
A.LED lights	RF,NET and Power successively
B.Extension interfaces	Extension functions （See description in below 4.3 part）
C.USB	Configure the device and save the log
D.Switch of power	Turn on/off
E.Charging interface	Connect the power adapter
F.SIM card slot	Insert the SIM card
G.RF antenna interface	Connect the RF antenna
H.4G antenna interface	Connect the 4G antenna

4.3 Extension interfaces

Interfaces	Functions
1- RS-485B	RS-485B
2- RS-485A	RS-485A

3- GND	Ground
4- OUT	Output
5-GND	Ground
6-12V	12V output

5 Status of the LED indicator lights

Blue light - RF	
Status of the RF light	**Explanations**
On without flashing	OTA/Bulk read and write configuration
Flash for 0.1 second	Receive TAG's data

Green light - NET	
Status of the NET light	Explanations
On without flashing	OTA/ Bulk read or write configuration /Connected
On for 0.1 second then off for 0.1 second	Unable to read IMEI/wait for the phone to be connected
On for 0.1 second then off for 0.2 second	Receive SMS
On for 0.1 second then off for 0.9 second	Connected to the GPRS network
On for 0.1 second then off for 2.9 second	Connected to the 4G network
On for 1 second then off for 2 second	Unable to connect to the 4G network
On for 0.5 second then off for 0.5 second	Unable to read the SIM card

Red light - Power	
Status of the Power light	**Explanations**
On without flashing	OTA/bulk read and write to configuration/power adapter connected
Flash every 2 seconds	Power adapter not connected

6 4G protocol

Please read the document of RD06 GPRS data protocol.

7 HTTP data protocol

Please read the document of RD06 HTTP data protocol.

8 RS485 Data Protocol

8.1 Report automatically

Please read the document of RD06 RS485 Protocol Supporting Automatic Report.

8.2 Modbus Protocol

RD06 supports the standard RS485 Modbus protocol. Please read the document of RS485 Modbus Protocol.

9 Command List

The following are ASCII commands, which can be configured via SMS or by serial port or 4G.

Note: $$$$$$ is the password and the default password is 000000

Attention: (1) The default configuration is to send a pieces of data to the Tzone platform every 5 min.

If the SIM card needs a specified APN to use, please set the 011 command.

(2) Configure the RTC time of RD06 .

The machine cannot calibrate the time by itself,so when the server receives the machine data,the following information can be sent to the machine to modify the machine's RTC time (The Tzone server already has this function)

Format: @UTC,yyyy-MM-dd HH:mm:ss#

Example: @UTC,2021-11-24 02:56:43#

Set the APN (Access Point Name)

Format: *$$$$$$,011,APN,Username,Password,PDP_type,auth_type#

Notes: The username and password can be empty.

For example: *000000,011,cmnet,,,0,1#

Explanation: China Mobile's APN is "cmnet", and the username and password are empty,PDP_type is IP,auth_type is PAP;

After you send the command via SMS, the mobile phone will receive the following message.

Receive:'011'OK

***000000,011,cmnet,,,0,1#**

If you send the command via serial port , the serial port will receive the following reply:

CMD bytes: 18

***000000,011,cmnet,,,0,1#**

ComdType:011(SETAPN)

APNnumber:cmnet

Username:

Password:

APN Type:00

Auth Type:01

NO.	SMS command	Format	Explanations
001	Modify user password	*$$$$$$,001,@@@@@@#	$$$$$$ is old password @@@@@@ is new Password (default:000000)
003	Set a preset SMS number	*$$$$$$,003,SMS Number#	SMS Number: Must be less than 25 characters
008	Extension setting	*$$$$$$,008,ABCDEFG#	A=0,disable TAG ACK downward function; A=1,enable TAG ACK downlward function(default); Note:when the TAG ACK is

			disable, the machine will no longer return the ACK information to the TAG. B=0, C=0, D=0, default, D=1,Close all SMS function' E=0, F=0, G=0,disable Server ACK function, default, G=1,enable Server ACK function Note: if Server ACK function in enabled, every time the machine sends data to the server, the server must return. @ACK,Packet index(Hex converted into decimal)# to the machine. Then the machine will continue to send next data to the server, Otherwise, the previous data will be sent repeatedly.
009	Change band	*$$$$$$,009,S#	S=0, work in 900/1800 S=1, work in 850/1900 S=2, Automatic selection S=3, not set(default) Note:The default parameter is S=3, without setting of the frequency band. If the GSM module support three frequencies (900/1800/1900), then you could set the parameter to S=0, if the GSM module support the four frequencies (850/900/1800/1900),then you could set the parameter to S=1.
011	Set APN,Username,Password	*$$$$$$,011,APN,Username,Password,PDP_type,auth_type#	APN : < 28 characters; Username: t<28character ; Password:<28 character; * If there is no username or password, then leave it blank.

			PDP_type:0-IP,default, PDP_type:1-IPV6, PDP_type:2-IPV4V6, PDP_type:3-PPP; auth_type:0-NONE, auth_type:1-PAP,default, auth_type:2-CHAP, auth_type:3-PAP or CHAP Note:PDP_type and auth_type can be left empty. The default is PDP_type:0, auth_type:1, To leave them empty is suitable for most situations. For example: *000000,011,CMNET,,#
014	Set DNS	*$$$$$$,014, X,DNS1,DNS2#	X=0 Disable the DNS (default) X=1 Enable the DNS DNS is the domain name server , xxx.xxx.xxx.xxx
015	Set IP Address & port number	*$$$$$$,015,X,IP,PORT#	X=0 Use IP to connect the server X=1 Use DN to connect the server IP : xxx.xxx.xxx.xxx DN:(Domain name) www.xxx.com If the HTTP protocol is selected,, Pleas write URL in here PORT : [1,65535] If the HTTP protocol is selected, no need to set IP or Port can fill in any Port
016	Enable/Disable GPRS function	*$$$$$$,016,X#	X=0 Disable GPRS unction X=1 Enable GPRS Function (default)
018	Set the time intervals of GPRS Data	*$$$$$$,018,X#	X=0, stop send time interval GPRS = [10,6000] Time interval (Unit: Sec.) (Default:300)

019	Set the GPRS mode	*$$$$$$,019,X#	X=0, use the UDP mode X=1, Use the TCP mode (default)
020	Set the local digital OUTPUT alarm function	*$$$$$$,020,X#	X=0, disable X=1, enable,(default)
021	Set GPRS data include LBS information or not	*$$$$$$,021,X#	X=0, disable X=1, enable,(default)
030	Set the SMS alarm function	*$$$$$$,030, ABCDEFG#	A=1,enable SMS alarm for temperature and humidity alert, the alarm condition is in 142(default); B=1; C=1; D=0; E=0; F=0; G=0;
040	Set RS485 port	*$$$$$$,040, A,B,C,D #	A:Baud rate selection [1200,115200], 9600(default); B:Data bit, 0-8bit(default), 1-9bit; C:Stop bit, 0-0.5bit, 1-1bit(default), 2-1.5bit, 3-2bit D:Parity Check bit, 0-null(default), 1-Even parity, 2-Odd parity
041	RS485 working mode	*$$$$$$,041, X#	X:0-Report automatically; X:1-Modbus protocol(default), Should add TAG to each channels;
042	RS485 address	*$$$$$$,042, AB#	AB:[0-F], can not be 00, default:01
043	RS485 anti-Reread	*$$$$$$,043, X#	X:[0-3600],unit:s,default:0 RS485 send once tag data within this time period, no matter RD06 receive this tag many times. It is only use in RS485

			automatic report mode
044	Max tag online time of the sensor	*$$$$$$,044, X#	X:[0-86400],unit:s,default:300 Beyond this time period, RD06 will consider tag is offline . It is only used for the Modbus protocol.
127	GPRS sending interval when power off	*$$$$$$,127,X#	X=0, disable this function (default) X:[10,6000] GPRS sending interval, unit: s;
136	Enable RF function	*$$$$$$,136,X#	X:0: disable this RF function X:1: enable RF function （default）
142	Set the temperature and humidity alarm functions of TAG	*$$$$$$,142,X,Temp_H,Temp_L, RH_H,RH_L#	X=0,disable this function (default) X=1, enable this function. The alarm threshold is the configured value of this command. If The TAG's temperature is above Temp_H or below RH_L, and the humidity is above RH_H or below RH_L, the alarm will be given. The alarm will be withdrawn after recovery. X=2, enable this function.The alarm threshold is the configured value of each sensor. Its alarm

			situation is same with the sensor's. X=3,enable this function, If tag's temperature exceeds Temp_H,the alarm is given. If the temperature drops below Temp_L,the alarm is withdrawn. If tag's humidity exceeds RH_H ,the alarm is given.If the humidity drops below RH_L, the alarm is withdrawn. X=4,enable this function. If the tag's temperature drops below Temp_L, the alarm is given. If it is restored above Temp_H, the alarm is withdrawn. If tag's humidity drops below RH_L, the alarm is given; If the humidity is recovered above RH_H, the alarm is withdrawn. Temp_H: high temperature

			threshold, [-55~125],unit:℃, default: 100; Temp_L: low temperature threshold, [-55~125],unit:℃, default: 0 RH_H: high humidity threshold [0~100] Unit: % Default:100 RH_L: low humidity threshold [0~100] Unit: % Default:0
144	Add a TAG	*$$$$$$,144,X,Y,ID#	X:TAG Type, X=0 (TAG06/06B), Y:Channel,[1,100]; ID:TAG ID,8 character; Note:The number of all tag should not be more than 100. By default, all tag in all ranges can be received. This function needs to be configured only when there isa need to bind, tag and use RS485 Modbus mode.
145	Delete a TAG	*$$$$$$,145,0,Y#	X:TAG Type, X=0 (TAG06/06B), Y:Channel,[1,100];
146	Delete all TAG	*$$$$$$,146,1#	
147	Query all added TAG	*$$$$$$,147,1#	Note:The TAG ID can only be queried through the serial port.
148	Select the reboot time when RF does not receive the data	*$$$$$$,148,X#	X:[1,1440],Default:5,unit:min RF module will reboot if RD06 can not receive any tag within this time period
200	Set GPRS transmission format	*$$$$$$,200,X#	X:0-TCP/IP(default); X:1-Http

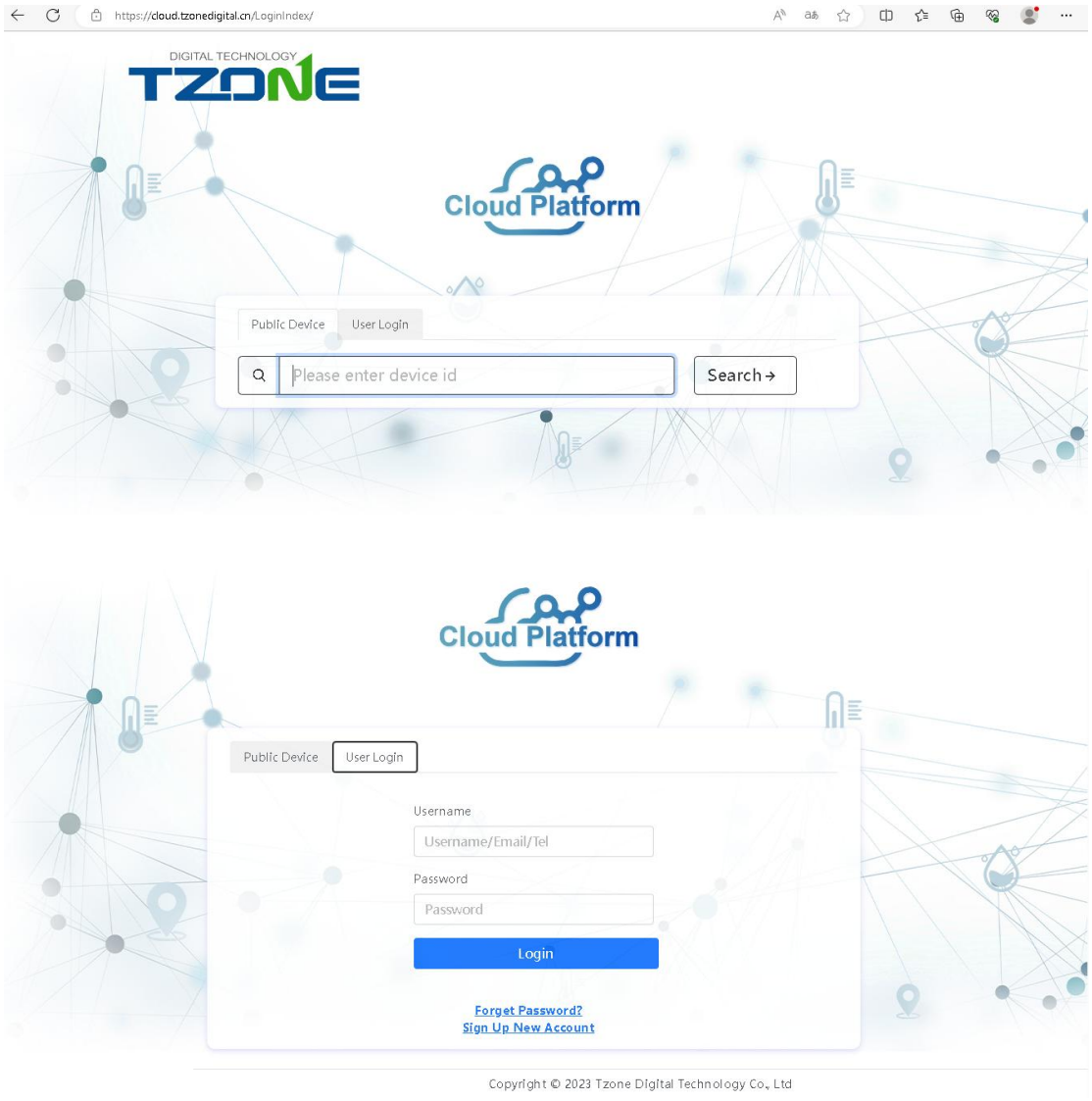
201	Set Http proxy server	*$$$$$$,201,X,IP,PORT#	X=0 disable; X=1 enable; IP:Proxy Server IP PORT:[1,65535] Proxy Server Port
500	Clear flash data	*$$$$$$,500#	Clear the stored data in the flash memory of the machine
600	Auto Reboot	*$$$$$$,600,X,Y#	X=0,disable his function X=1, Active this function. (Default) Y:Reboot time interval, [10,9999],unit: Min, (Default: 1440)
800	Query command	*$$$$$$,800,X #	X:The command to be queried
801	Reading the IMEI number	*$$$$$$,801#	Use this command to get the IMEI ,firmware version and GSM module version.
990	Initialization the machine	*$$$$$$,990,099#	This command will set all parameters to factory default values (except for the password/frequency brand).
991	Reboot now	*$$$$$$,991#	Reboot the RD06

10 Data query

TZONE cloud platform.

Please register an account and add a device. After adding a device, you can query the data by device ID.
For more details, please log in and view the help documentation.

Tzone cloud platform website: http://cloud.tzonedigital.com/
Tzone Server Domain: t-gateway.tzonedigital.cn(default)
Tzone Server Port: 54929 (default)
URL：http://g.cloud.tzonedigital.cn:18811/Receive（HTTP）


https://cloud.tzonedigital.cn/LoginIndex/
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TZONE
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