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F2164 GPRS RTU Technical SPECIFICATION

## General

F2x64 GPRS RTU is wireless remote terminal unit(abbreviation:RTU). RTU has many functions (analog input、switch input、switch output、pulse counting and wireless data communication ect).

It adopts high-powered industrial 32 bits CPU and embedded real time operating system. It supports RS232 and RS485 (or RS422) port that can conveniently and transparently connect one device to a cellular network, allowing you to connect to your existing serial devices with only basic configuration. It has low power consumption states in which the power consumption could be 1ower than 1mA@12VDC. It has compatible digital I/O channel, ADC, input pulse counter and pulse wave output function.

It has been widely used on M2M fields, such as intelligent transportation, smart grid, industrial automation, telemetry, finance, POS, water supply, environment protection, post, weather, and so on.
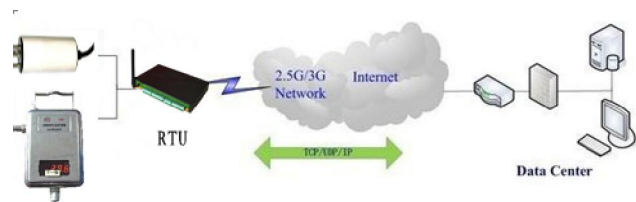
Produc Feature --

Design for Industrial Application
◆ High-powered industrial cellular module
◆ High-powered industrial 32 bits CPU
◆ Support low power consumption mode, including multi-sleep and trigger modes to reduce the power dissipation farthest
◆ Embedded Real Time Clock(RTC) circuit which can realize timing online/offline function
◆ Housing: iron, providing IP30 protection.
◆ Power range: DC 5~35V

Stability and Reliability
◆ Support hardware and software WDT
◆ Support auto recovery mechanism, including online detect, auto redial when offline to make it always online

◆ RS232/RS485/RS422 port: 15KV ESD protection
◆ SIM/UIM port: 15KV ESD protection
◆ Power port: reverse-voltage and overvoltage protection
◆ Antenna port: lightning protection(optional)

Standard and Convenience
◆ Adopt terminal block interface, convenient for industrial application
◆ Support standard RS232 and RS485(or RS422) port that can connect to serial devices directly
◆ TTL logic level RS232 interface can be customized

- Support intellectual mode, enter into communication state automatically when powered
- Provide management software for remote management
- Support several work modes
- Convenient configuration and maintenance interface

High-performance

- 8 ch acquisition analog input（resolution：16bit）Input voltage（0-5V）,Input current（0-20mA）, Sampling rate(1.365kSPS)，Accuracy ±0.5% or better
- 4 ch relay output（5A/30VDC,5A/250VAC）
- 4 ch optocoupler isolation output,open collector to 30V,40mA max.load,power consumption 125mW
- 8 ch Digital input（"0"：0-3.3V，"1"：5-24V）Contains all the way count function （1KHz）
- 2MB SPI FLASH
- Support double data centers, one main and another backup
- Support multi data centers and it can support 5 data centers at the same time
- Support multi-center multi-function(for example: a data center is MODBUS RTU protocol function, another data center is RTU extended protocol function)
- Support multi online trigger ways, including SMS, ring and data. Support link disconnection when timeout
- Support dynamic domain name(DDNS) and IP access to data center
- Support RS232/RS485 MODBUS RTU protocol.
- Support TCP MODBUS RTU protocol using TCP2COM software that converts TCP to virtual serial
- Support the function that 8-way digital input and 8-wat analog input(analog input are actual data, it means that customers do not need to be translated) are queried by MODBUS RTU protocol.
- Support the function that 4-channel optocoupler output and 4-channel relay output are controlled by MODBUS RTU protocol

- Support the function that the initial value of the timer is set and the value of the timer is queried by MODBUS RTU protocol
- Support RTU extended protocol. Unified protocol format that customers develop easy
- Support RTU extended protocol. Acquisition data(8-channel analog input and 8-channel digital input) are reported periodically
- Support RTU extended protocol. Reporting mode can be selected. there are three reporting mode, including Network only, SMS only and Main network SMS backup(it uses SMS. when network connect fail)
- Support RTU extended protocol.When reporting acquisition data failure, acquisition data are saved to 2M byte SPI FALSH that power-down can save a lot of acquisition data
- Support RTU extended protocol. The data center can query acquisition data actively
- Support RTU extended protocol. It has counter function that the initial value of the timer is set and the value of the timer is queried
- Support RTU extended protocol. It has the data center and RS232/RS485 transparent transmission function
- Support RTU extended protocol. it has alarm function that alarm information is reported(alarm trigger conditions can be set independently).
- Support RTU extended protocol. Can remotely reboot equipment
- Support RTU extended protocol. Can remotely configure the parameters
- Support RTU extended protocol. The remote upgrading parameters can be set, as well as rtu is remotely upgrading
- Alarm function. Alarm information are reported through RTU extended protocol only, SMS only and both SMS and RTU extended protocol

◆ When alarm information are reported through SMS, alarm number and alarm content of each channel can be set independently
◆ The remote upgrading parameters can be set by SMS. RTU are remodely upgrading, when SMS set remote upgrading parameters successfully.
◆ SMS remotely config parameters

◆ Built-in industrial clock, the acquisition time can be recorded through this clock
◆ Network is automatically conneted, when device power on. Network is automatically reconnected, when network is not conneted successfully.
◆ The function of regular boot and shutdown make the device work in low-power mode

Cellular Specification

Item	Content
Cellular Module	Industrial cellular module
Standard and Band	EGSM900/GSM1800MHz, GSM850/900/1800/1900MHz(optional) Compliant to GSM phase 2/2+ GPRS class 10, class 12(optional)
Bandwidth	85.6Kbps
TX power	GSM850/900: <33dBm GSM1800/1900: <30dBm
RX sensitivity	<-107dBm

Hardware System

Item	Content
CPU	Industrial 32 bits CPU
FLASH	2MB（Extendable 8MB）
SRAM	512KB（Extendable 1MB）

Interface Type

Item	Content
Serial	1 RS232 port and 1 RS485 port, 15KV ESD protection Data bits: 5, 6 ,7, 8 Stop bits: 1, 1.5, 2 Parity: none, even, odd, space, mark Baud rate: 110~230400 bps
Indicator	"Power", "ACT", "Online"
Antenna	Standard SMA female interface, 50 ohm, lighting protection(optional)
SIM/UIM	Standard 3V/1.8V user card interface, 15KV ESD protection
Power	Terminal block interface, reverse-voltage and overcurrent protection

Power Input

Item	Content
Standard Power	DC 12V/0.5A

Power Range	DC 5~35V

Power Consumption

Working States	Power Consumption
Communication	88-100mA@12VDC
Standby	52mA@12VDC
Timing Power Off	0.9mA@12VDC

Physical Characteristics

Item	Content
Housing	Iron, providing IP30 protection
Dimensions	157x97x25 mm
Weight	500g

Environmental Limits

Item	Content
Operating Temperature	-35~+75ºC（-31~+167℉）
Storage Temperature	-40~+85ºC（-40~+185℉）
Operating Humidity	95% (unfreezing)