User Manual

---Apply to D800 series Industrial GPRS/3G DTU

V2.0

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1 Product Introduction

1.1 Product Overview

The rugged D800 series DTU (Data Terminal Unit) which is a cellular modem have been developed especially for M2M application. It provides RS232/RS-485/RS-422/TTL interface and equipped with PPP, TCP/IP and DDP protocol, it could convert the user data into 3G, EDGE or GPRS network and transmits the data to the customer's data service center through complete transparent data channel, allows a simple and rapid integration of cellular network connectivity into M2M application.

With the robust, reliable, long life and compact metal case design, the D800 DTU ideally adapts to onboard standard, easy to deploy and maintenance, it has been widely applied in many fields worldwide, such as power SCADA, oil field, coal mine, weather forecast, environment protection, water conservancy, heating, natural gas, petroleum and so on.

1.2 Typical Application Diagram

Wlink 3G/2G DTU widely used in AMR, Oil, transportation, power grid, mining and other industries fields.

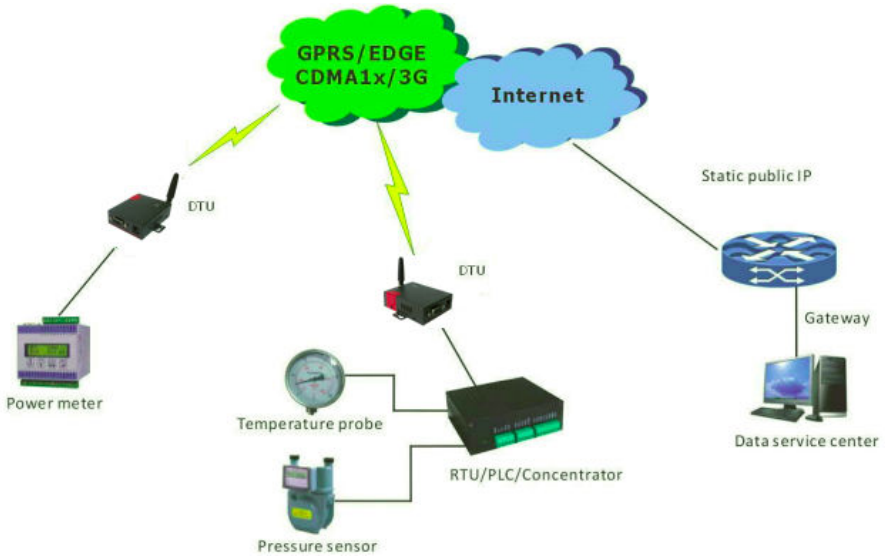


Figure 1-1 Network Topology

1.3 Features

- Various cellular module optional, LTE/HSPA+/EVDO/CDMA2000 optional
- Optimized EMC design
- Standard PPP, TCP/IP and UDP/IP protocol
- Industrial pluggable terminal block
- Industrial 3G/EDGE/GPRS wireless module
- Support APN and VPDN wireless private network
- Support short message service (SMS)
- Support transparent data transmission
- Support data service center with dynamic IP address
- Support LED status indication
- Wide range voltage input
- Smart power management
- External power on/off control
- Reliable, flexible and easy to deploy

2 Hardware Installation

This chapter is mainly for installation introduction, there would be some difference between the scheme and real object. But the difference doesn't have any influence to products performance.

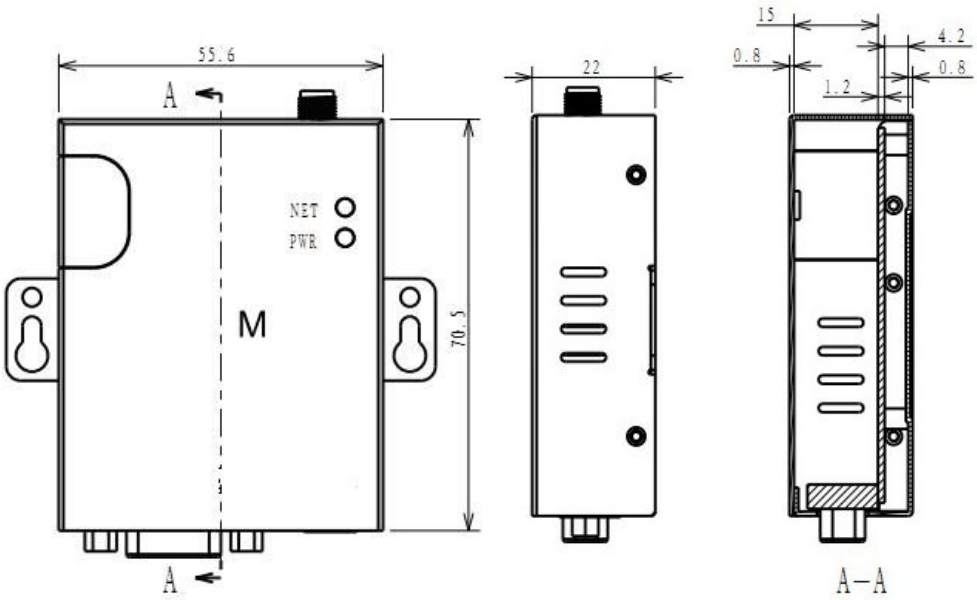


2.1 LED Status

LED indicator Status

silk-screen	color	status	Indication
NET	Red	Weak Signal	CSQ<20
	Green	Good Signal	CSQ>21
		Fast Blinking	Self-checking
		Light on 2s,Light off 1s	Standby
		Light on 1s, Light off 2s	Online
PWR	Green	Light on	DTU system runs

2.2 Dimension



2.3 How to Install

2.3.1 SIM/UIM card installation

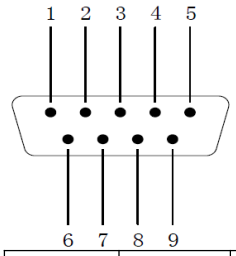
Open SIM shelter by screw-driver, then insert SIM/UIM card.



CAUTION

Before connecting, please disconnect any power resource of DTU

2.3.2 Serial port



PIN	1	2	3	4	5	6	7	8	9
RS232		Tx	Rx		GND				
RS485		B	A						
TTL		Tx	Rx		GND				

2.3.4 Power Supply

In order to get high reliability, adapt wide voltage input: +5V～+36VDC, support hot plug and complex application environment.

2.3.5 Review

After insert the SIM/UIM card, connect serial cable, necessary antenna, then connect power cable.

CAUTION

Please connect the antenna before connect the power cable, otherwise because of impedance mismatching, the signal maybe poor.

Notice:

Step 1 Check antenna connection.

Step 2 Check SIM/UIM card, configure SIM/UIM card is available.

Step 3 Power on DTU

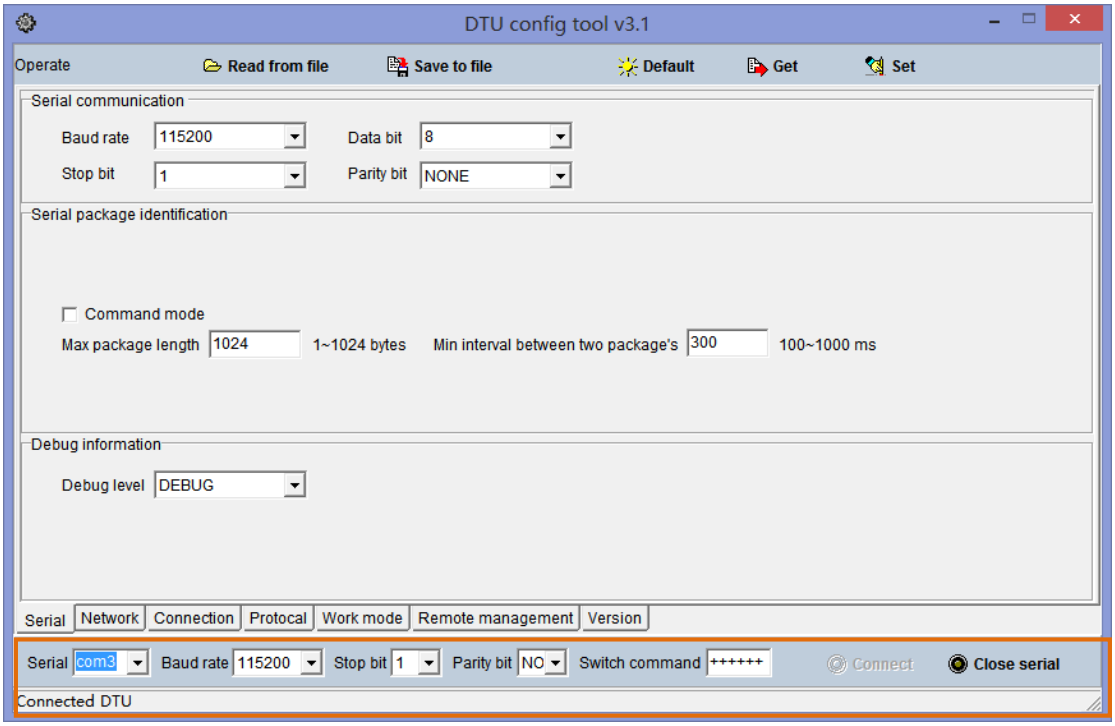
3 DTU Configuration

3.1 Serial Port Settings

Run DTU Config Tool and select serial port, then setup serial port parameters in the bottom of DTU Config Tool as below.

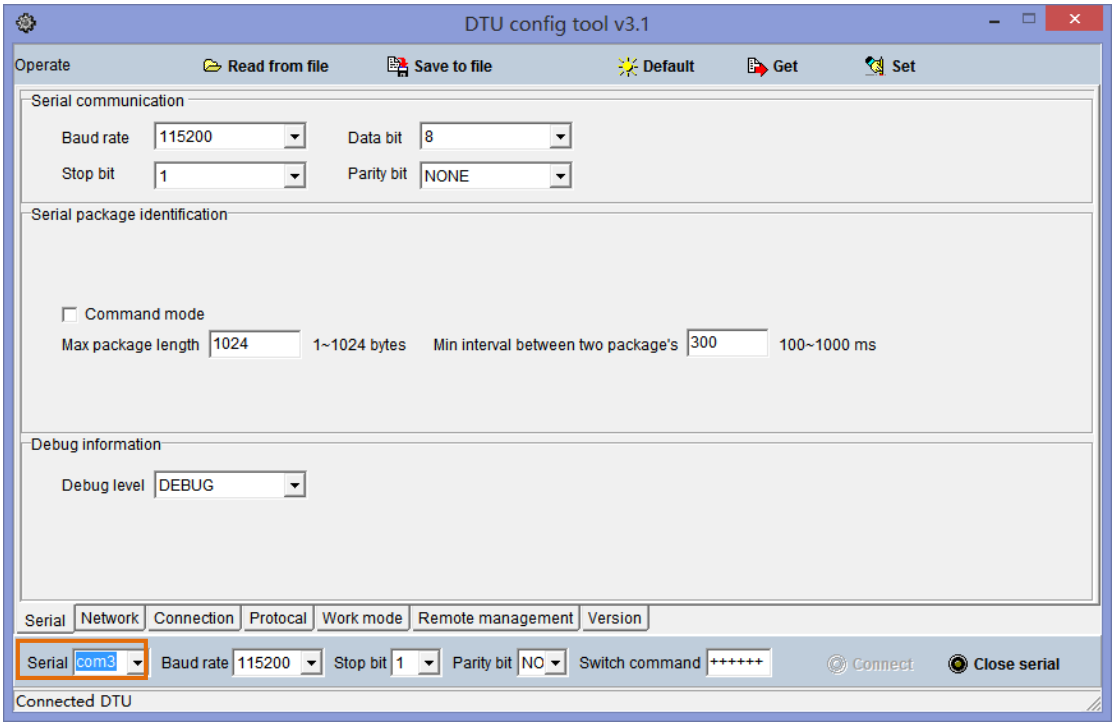


Baud: 115200bps
Bits:8bit
Parity: NULL
Stop Bits: 1bit
Flow Control: NULL



NOTE

Click Connect button, The DTU will be connected to this software and enter configuration mode. If connection is successful, it will display Connected DTU in the status bar.



【Connect】Connect DTU

【Close serial】Close serial port to leave configuration mode.

【Read from file】Read settings file in the software.

【Save to file】Save current settings to file. It's convenient to butch setup.

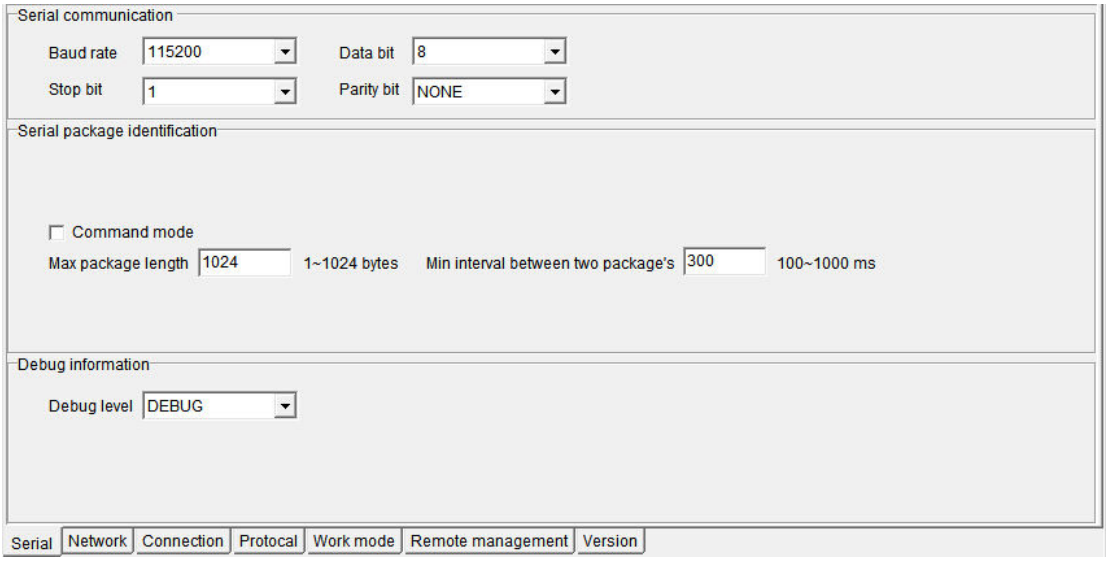
【Default】Setup DTU to default settings.

【Get】Inquiry current DTU setting.

【Save】Save settings to DTU.

3.2 DTU Configuration

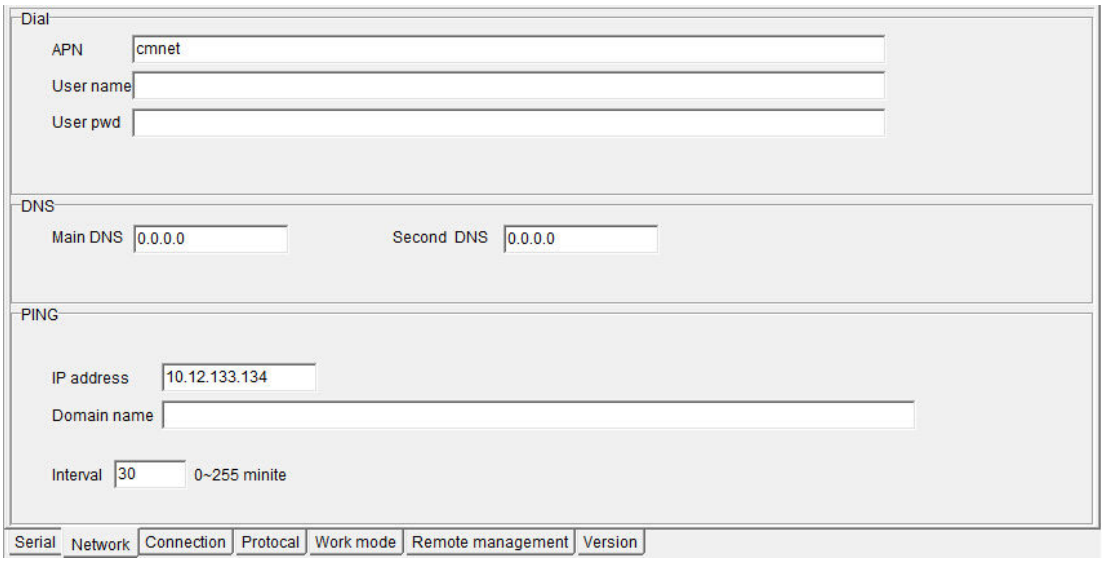
3.2.1 DTU serial port Settings



DTU Serial port settings instruction.

Parameters	Description	Instruction	Default
Baud rate	Serial port properties	300/600/1200/2400/4800/9600/19200/38400/57600/115200 optional	115200
Data bits		8	8
Stop bits		1/2	1
Parity		NULL/ODD/EVEN	NULL
Command mode	DTU and terminal communication as special protocol. Under command mode, terminal might setup DTU configuration.	Enable/Disable The default is for transmission mode.	Disable
Max Package Length	The max transmission unit. Once data package length exceed to MTU, DTU will split data package as MTU.	1~1024bytes	1024bytes
Min Internal	The Min Interval is the waiting time interval for transmitting the data package that is less the MTU. If the last package equals to the MTU, DTU will transmit it immediately.	100~1000ms	300
Debug Info	Control serial port debug information	NULL/DEBUG/STATUS **[**NULL**]** DTU won't send any information to serial. **[**DEBUG**]**DTU sends all debug information to serial port. It's convenient to test DTU. **[Status]**DTU sends operation status, signal strength to serial.	NULL

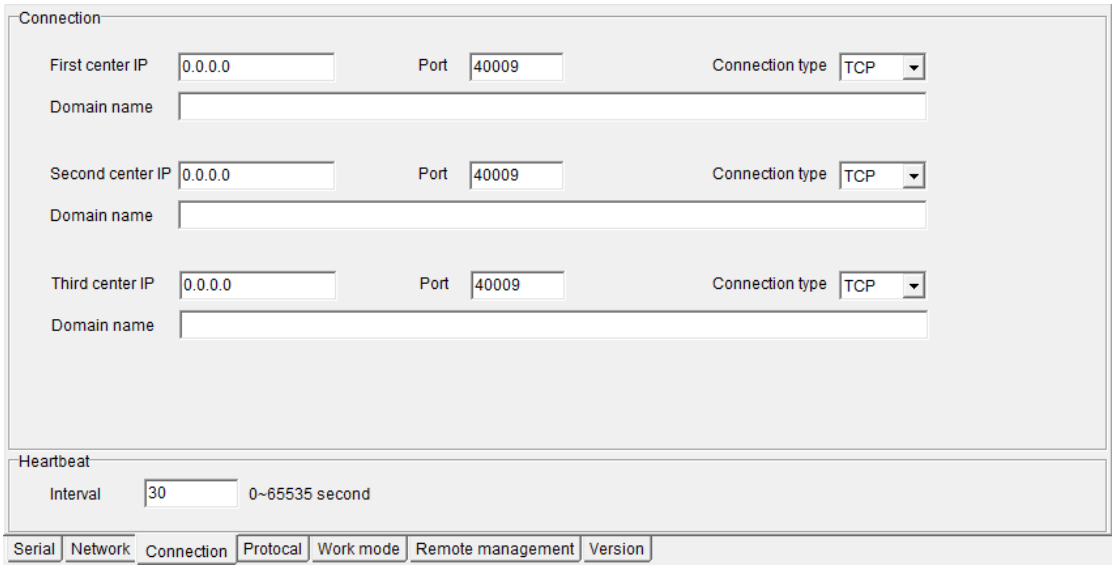
3.2.2 DTU Network Settings



DTU Network settings instruction

Parameters	Description	Instruction	Default
APN	SIM information for dial up	1~63bytes	cmnet
User name		0~63bytes	NULL
Password		0~63bytes	NULL
Main DNS	Defined main DDNS server IP address	If configured 0.0.0.0, DTU will use default DNS IP address as domain name resolution server.	0.0.0.0
Secondary DNS	Defined secondary DDNS server IP address	If main DNS for 0.0.0.0, the secondary DNS will be invalid.	0.0.0.0
Ping IP address	Check destination IP address		0.0.0.0
Ping Domain Name	Check destination domain name. If IP 0.0.0.0 and domain name is null, Ping is disable.	0~63byts	NULL
Interval	PING check interval when idle.	0~255mins 0 indicates PING is disable status.	0

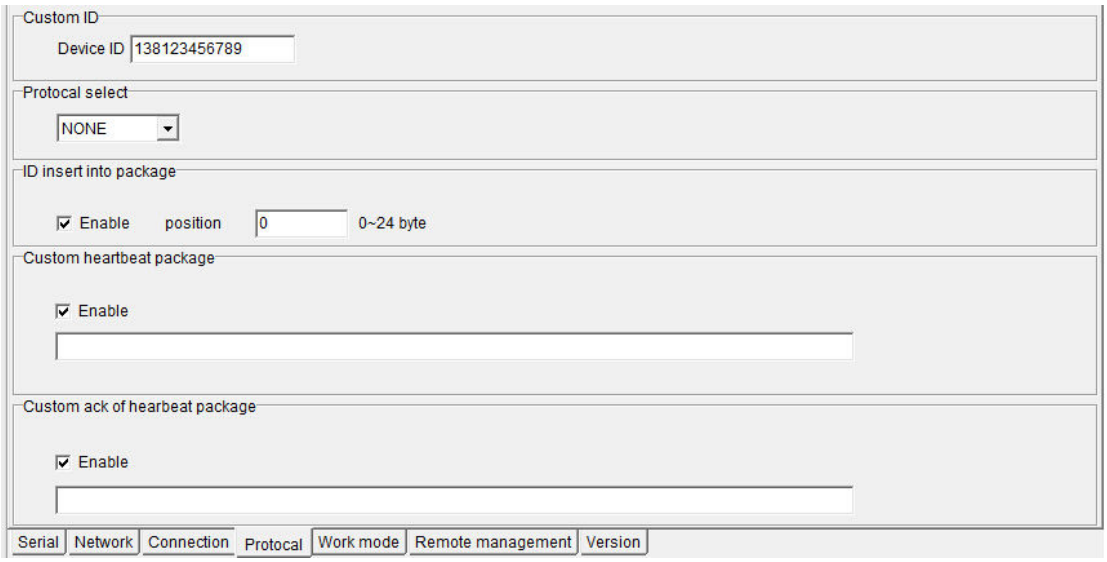
3.2.3 DTU Connection Settings



DTU Connection settings instruction

Parameters	Description	Instruction	Default
First center IP	First Data server center IP address(static IP address)		0.0.0.0
Port		0~65535	40001
Connect type	UDP/TCP		UDP
Domain name	No static IP for server	Only when setup center IP as 0.0.0.0, it's just available.	N/A
Second center IP	Second Data server center IP address(static IP address)		0.0.0.0
Port		0~65535	40002
Connect Type	UDP/TCP		UDP
Second Domain Name	No static IP for server	Only when setup center IP as 0.0.0.0, it's just available.	N/A
Third center IP	Third Data server center IP address(static IP address)		0.0.0.0
Port		0~65535	40003
Connect Type	UDP/TCP		UDP
Third Domain Name	No static IP for server	Only when setup center IP as 0.0.0.0, it's just available.	N/A

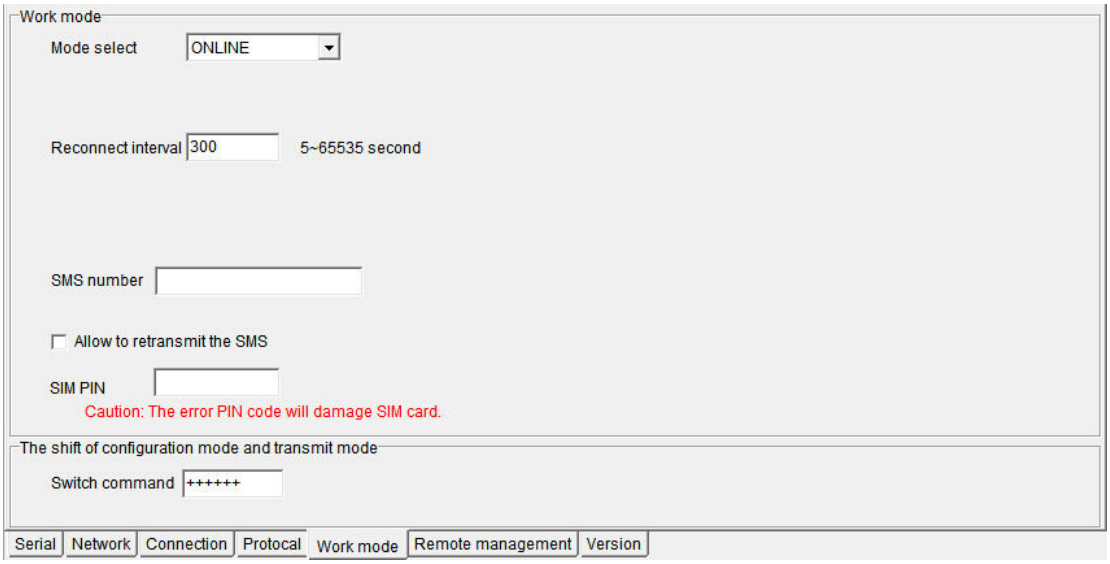
3.2.4 DTU Protocol settings



DTU Protocol settings instruction

Parameters	Description	Instruction	Default
Protocol Select	NULL/DRMP/DDP	**[**NULL**]** Transparent transmission. **[**DRMP**]**WLINK transmission protocol.	NULL
Custom ID	Identify DTU in data server center	4byte length	0
ID Position	ID insert data package in order to identify which DTU sent data.	0~24bytes	1
Custom Heartbeat Package	DTU log in data center server and keep connection.	0~24bytes	NULL
Custom ACK Package	DTU receive ACK after sent heartbeat. If no ACK 3times in succession, DTU will reconnect to data center server.	0~24bytes	NULL

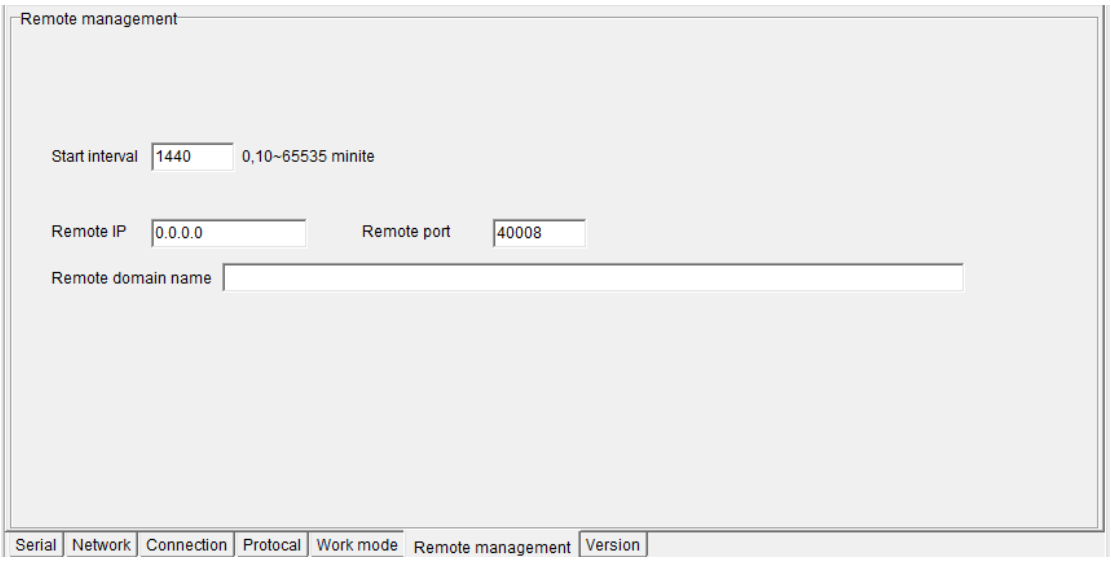
3.2.5 DTU Protocol work mode settings



DTU Protocol settings instruction

Parameters	Description	Instruction	Default
Mode Select	ONLINE/WAKEUP/SMS/	**[ONLINE]** After powered on, DTU automatically connect and reconnect to data center server to keep online always.. **[WAKEUP]** After Powered on, DTU will work on standby mode. Once DTU received wake up short message from defined phone number, or received the triggering data from terminal, DTU will dial up and connect to data center server. After idle time, DTU will re-enter wake up mode. **[SMS]** DTU works short message mode.	NULL
Idle Interval		5~65535s	300s
Reconnect Interval	DTU reconnect to data center server after interval time when connection is failed.	5~65535s	300s
SMS Number	Short message and call wake up and short message configuration from the specified number.	0~31bytes	NULL
Transmission SMS	DTU will transmit any short message to terminal.	Enable/Disable	Disable
Switch Command	DTU will be switched to configuration mode from transmission mode. After switched to configuration mode, The DTU will enter command mode to communicate with terminal.	6 visible characters	++++++

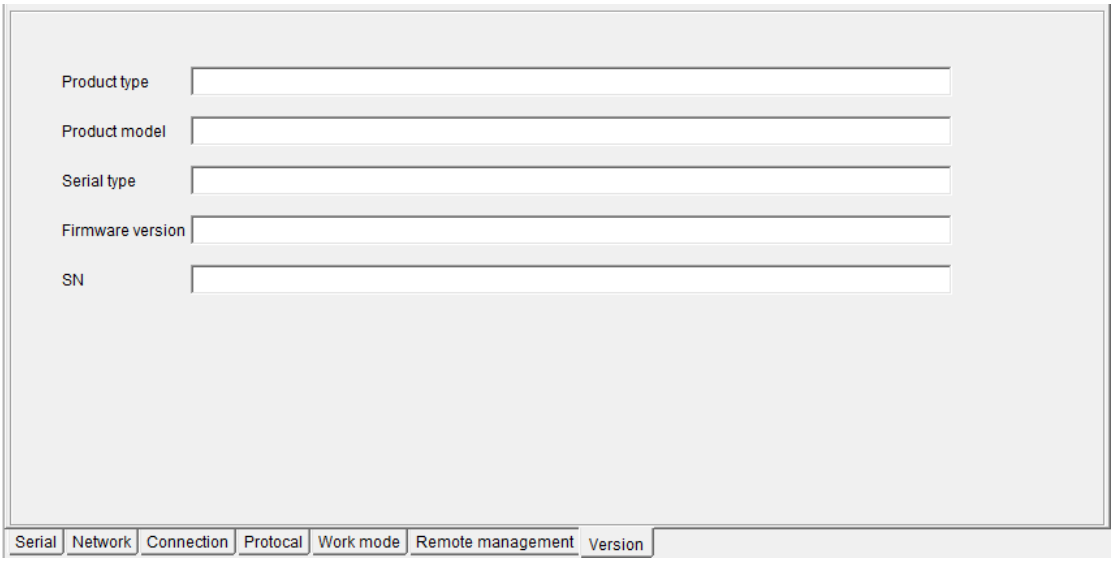
3.2.6 DTU Remote management settings



DTU Remote management settings instruction

Parameters	Description	Instruction	Default
Start Interval	DTU automatically connects to remote management software as this start interval time.	0,10~65535mins 0 means this function is invalid.	1140mins
Remote IP	Remote management software static IP address		0.0.0.0
Remote Port		0~65535	40001
Remote Domain Name	Short message and call wake up and short message configuration from the specified number.	0~63bytes, Domain name is available when the IP address is setup 0.0.0.0	NULL

3.2.7 DTU Version settings

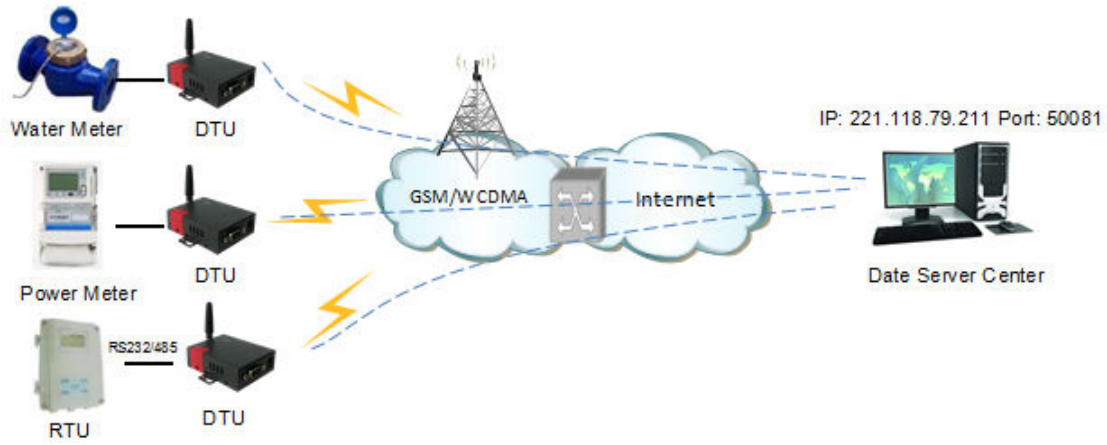


DTU Version settings instruction

Parameters	Description	Instruction	Default
Product type			
Product model			
Serial type			
Firmware version			
SN			

3.3 DTU Typical Application(point to point)

DTU establishes a TCP connection to data server center. DTU transmits serial port data to data server center by TCP protocol. DTU acts as TCP client as below settings. The serial port tool SSCOM32 simulates serial port device. TCP/IP net Assistant tool simulates data server center.



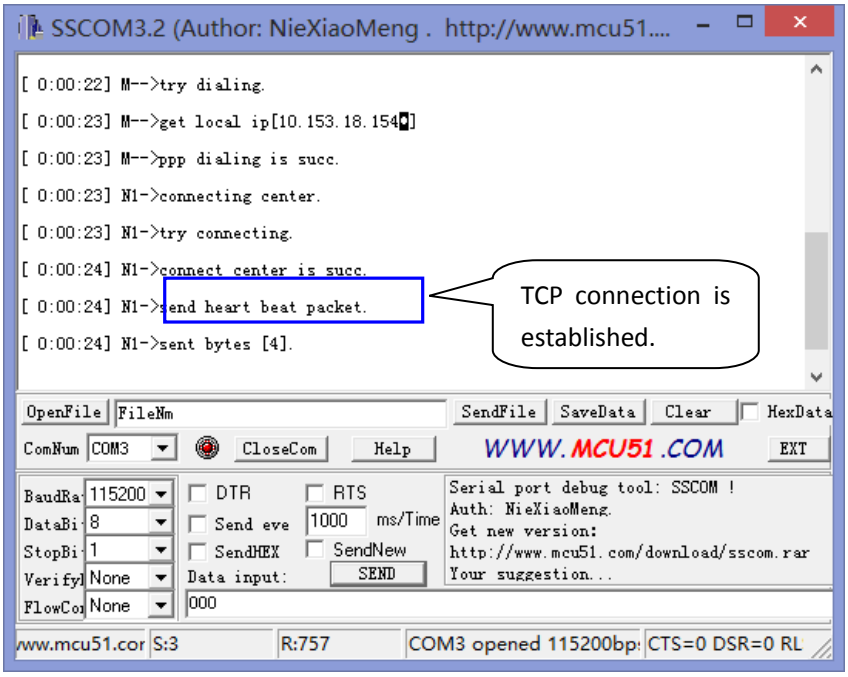
DTU Settings List

Parameters Menu	Settings	Note
Serial	Serial	Configure baud rate, data bit, stop bit and parity to match with terminal.
	Debug	If test DTU with PC's serial tool, better select STATUS which is easy to check DTU status. If tested DTU with device, better select NONE.
Network	APN	Uninet
	User name	NULL
	Password	NULL
	PING	221.118.79.21
Connection	First Center IP	221.118.79.21
	Port	50081
	Heartbeat Interval	120
Protocol	Custom ID	13900000001
	Protocol Select	NONE
	ID position	0
	Custom Heartbeat Package	hello
	Custom ACK Package	yes
Work Mode	Mode Select	ONLINE

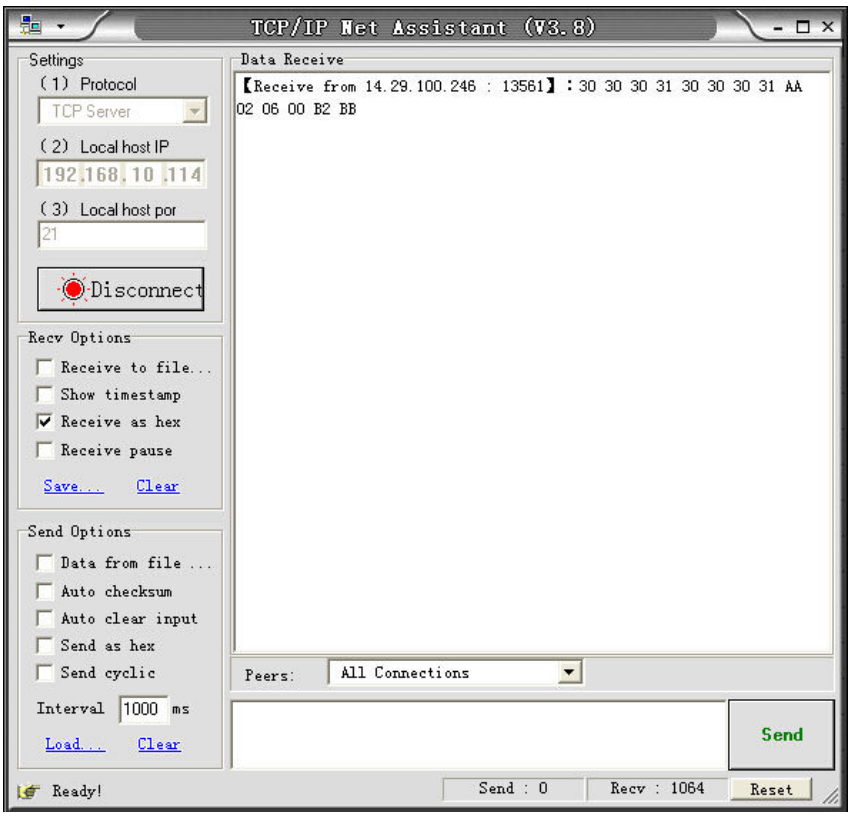
Parameters Menu	Settings	Note
	Reconnect Interval	300
Remote Management	Start Interval	0

Serial Port Status display

After configured, please restart the DTU and run SSCOM32 serial port tool, it'll display DTU work status. The hyper terminal tool is also available to display DTU status.



TCP Server Demo


TCP/IP Net Assistant (V3.8)
Settings
(1) Protocol
TCP Server
(2) Local host IP
192.168.10.114
(3) Local host por
21
Disconnect
Recv Options
Receive to file...
Show timestamp
Receive as hex
Receive pause
Save...
Clear
Send Options
Data from file ...
Auto checksum
Auto clear input
Send as hex
Send cyclic
Interval 1000 ms
Load...
Clear
Data Receive
【Receive from 14.29.100.246 : 13561】：30 30 30 31 30 30 30 31 AA
02 06 00 B2 BB
Peers:
All Connections
Send
Ready!
Send : 0
Recv : 1064
Reset