WLINK

User Manual

---Apply to D80 Series 4G/3G Serial to IP Modem

Caution

Due to product updates or functional upgrading, we may renew the content of this file, and this file only for reference. All statement, information, suggestion.etc in this file do not compose any form of guarantee and we WLINK reserves the right of final explanation.
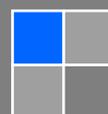
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1 Product Introduction

1.1 Product Overview

The rugged D80 serial to IP modem which is a cellular modem have been developed especially for M2M/IoT application. It provides RS232/RS-485/TTL interface and equipped with PPP, TCP/IP and DDP protocol, it could convert the user data into 4G, NB-IoT/CATM, 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/IoT application.

With the robust, reliable, long life and compact metal case design, the D80 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 4G/NB/3G/2G modem widely used in AMR, Oil, transportation, power grid, mining and other industries fields.
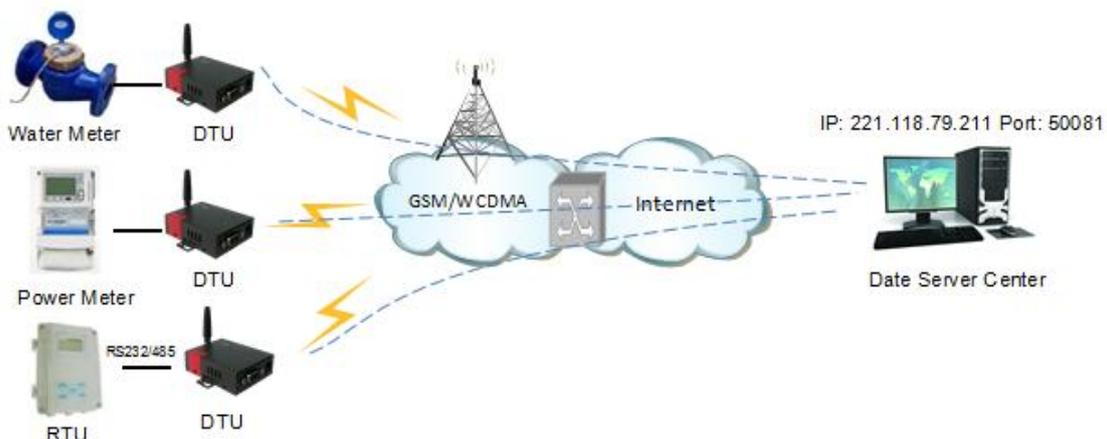
Figure 1-1 Network Topology

1.3 **Features**

- Various cellular module optional, 4G/NB/3G/2G optional

- Optimized EMC design

- Standard PPP, Coap/TCP/IP and UDP/IP protocol

- Industrial pluggable terminal block

- Industrial 4G/NB/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	D80 system runs

2.2 **Dimension**
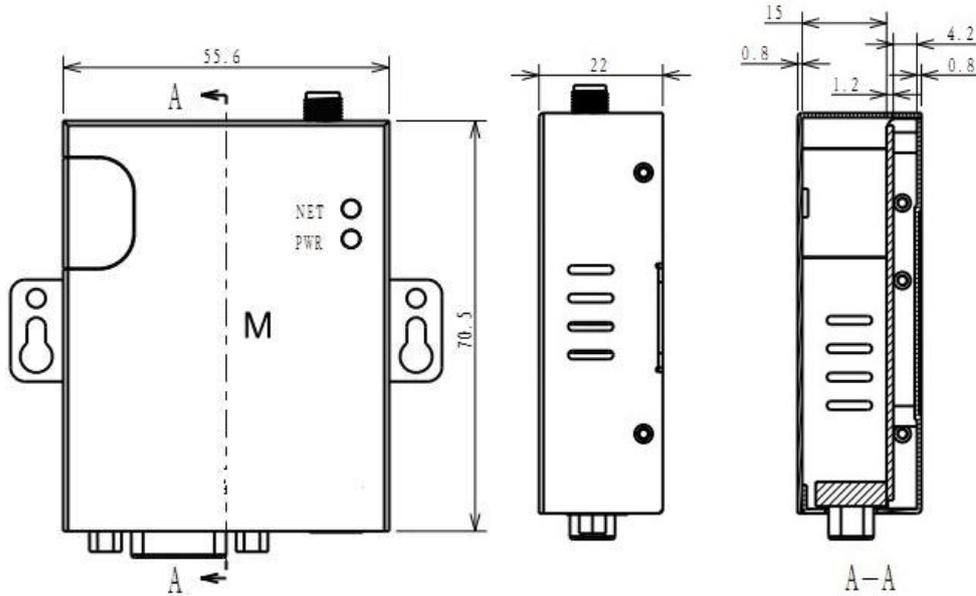
2.3 **How to Install**

2.3.1 SIM/UIM card installation

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

SIM/UIM Card

👁 CAUTION

Before connecting, please disconnect any power resource of D80.

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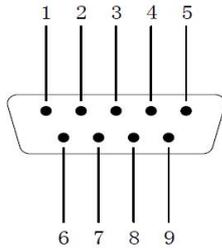
PIN	1	2	3	4	5	6	7	8	9
RS232		Tx	Rx		GND				
RS485		B	A						
TTL		Tx	Rx		GND				

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 D80

3 Configuration

3.1 Serial Port Settings

Run D80 Config Tool and select serial port, then setup serial port parameters in the bottom of D80 Config Tool as below.

Run Config Tool, click Config button to setup serial port parameters as below.
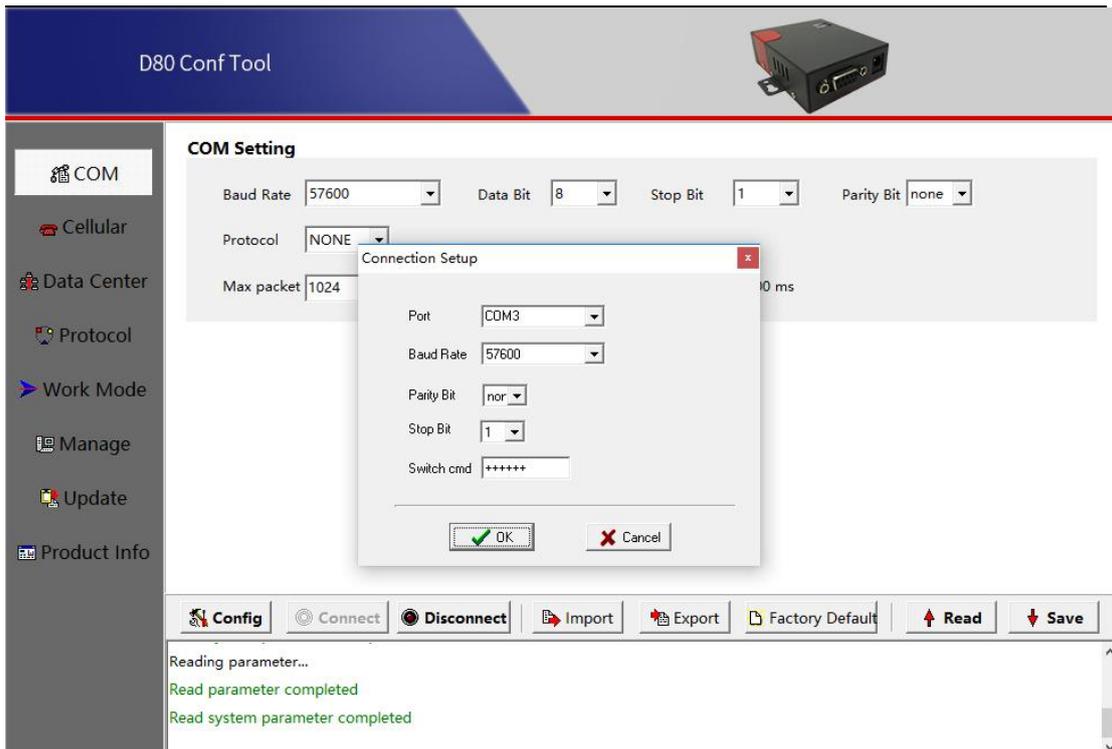
Baud Rate: 57600bps

Data Bit: 8bit

Parity: None

Stop Bit: 1bit

 NOTE

Click Connect button, modem will be connected to the tool and enter configuration mode. If the connection is successful, it will display Connected dialog box as below.
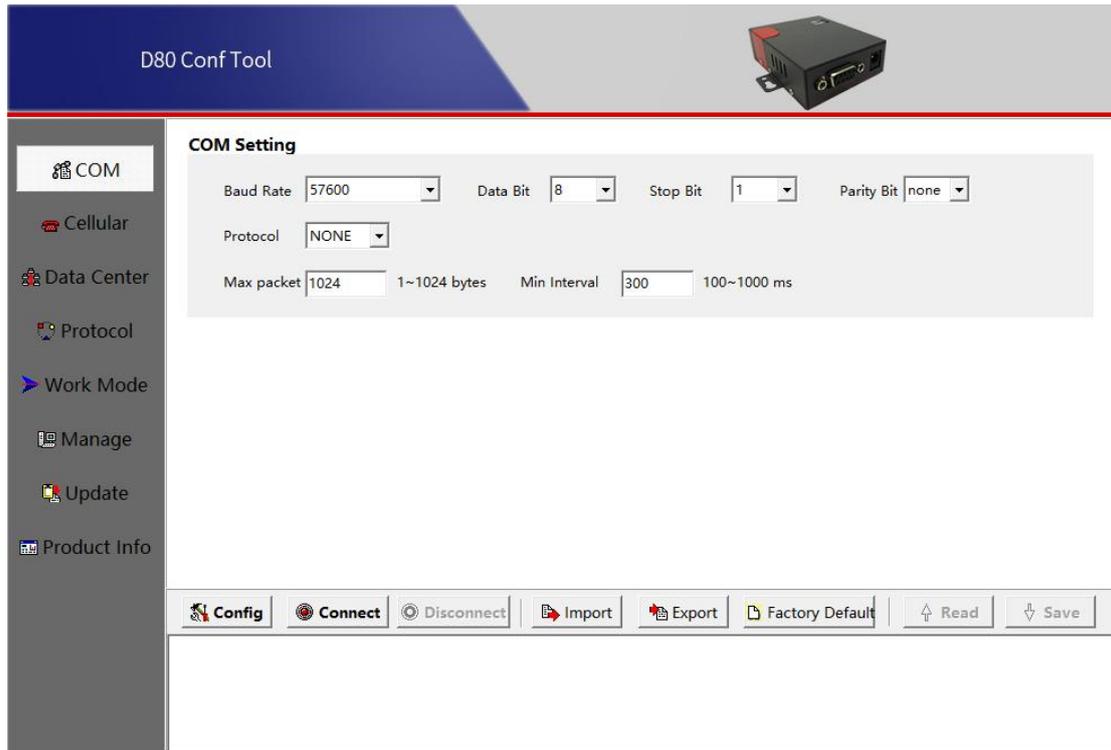
【Config】Tool Serial port configuration.

【Connect】Connect D80.

【Disconnect】Close serial port to leave configuration mode.

【Import】Import configuration file into Config tool.

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

【Default】Setup D80 to default settings.

【Read】Inquiry current D80 setting.

【Save】Save settings to D80.

3.2 D80 Serial to IP Modm Configuration

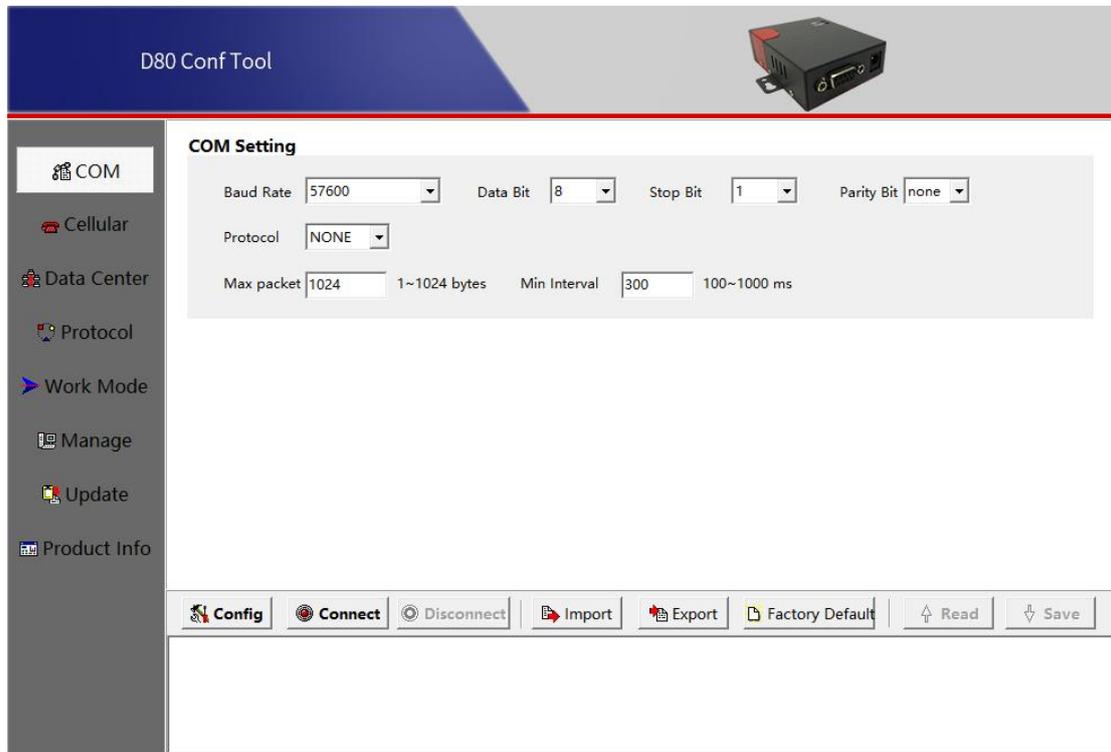### 3.2.1 COM Settings

COM settings instruction.

Parameters	Description	Instruction	Default
Baud rate	Serial port properties	300/600/1200/2400/4800/9600/19200/38400/57600/115200 optional. RS232 Port for 115200bps as default. RS485 Port for 115200bps as default.	
Data bits		8	8
Stop bits		1/2	1
Parity		NULL/ODD/EVEN	NULL
Trans Proto	Transmission protocol between D80 and device. Under command mode, terminal might setup D80 configuration.	Transparent and Command are optional. The default is for transparent protocol.	Transparent
Max Package Length	The max transmission unit. Once data package length exceeds to MTU, D80 will split data package as MTU.	1~1024bytes	1024bytes

Parameters	Description	Instruction	Default
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, D80 will transmit it immediately.	100~1000ms	300ms
Data center 1 IP	Data server center IP address(static IP address)	D80 will transmit COM1 data to Data center 1	0.0.0.0
Port	Data server center port	0~65535	40001
Protocol	UDP/TCP		UDP
Domain name	No static IP for server	It's just available when center IP is configured as 0.0.0.0,	NULL

3.2.2 Cellular Settings
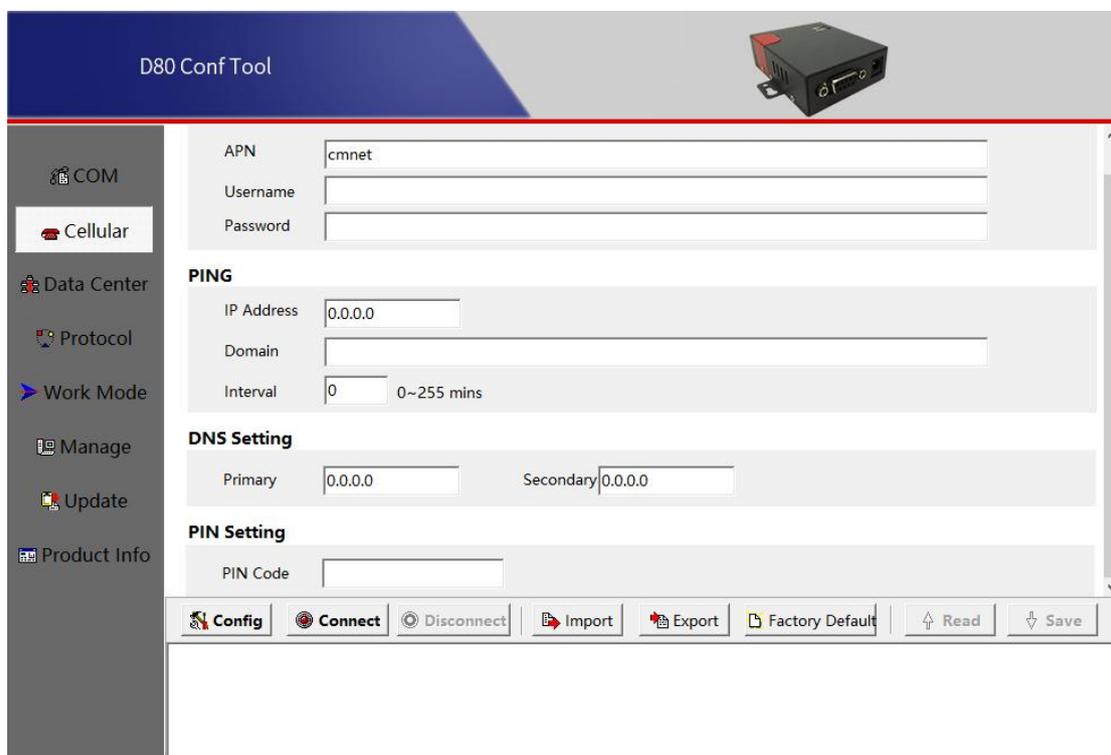
Cellular settings instruction

Parameters	Description	Instruction	Default
APN	SIM information for dial up	1~63bytes	cmnet
User name		0~63bytes	NULL
Password		0~63bytes	NULL
Ping IP address	Check destination IP address		0.0.0.0
Domain Name	Check destination domain name. If IP 0.0.0.0 and domain name is null,	0~63byts	NULL

Parameters	Description	Instruction	Default
	Ping is disable.		
Interval	PING check interval when idle.	0~255mins 0 indicates PING is disable status.	0
Primary DNS	Defined Primary DDNS server IP address	If configured 0.0.0.0, D80 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
PIN	SIM card PIN code	If SIM card is defined PIN code. It need to be configured the correct PIN code in D80. Otherwise, D80 won't identify SIM. If configured an error PIN code in D80, SIM card will be damage. We suggest not pre-configure PIN code in SIM card.	NULL

3.2.3 Data Center settings
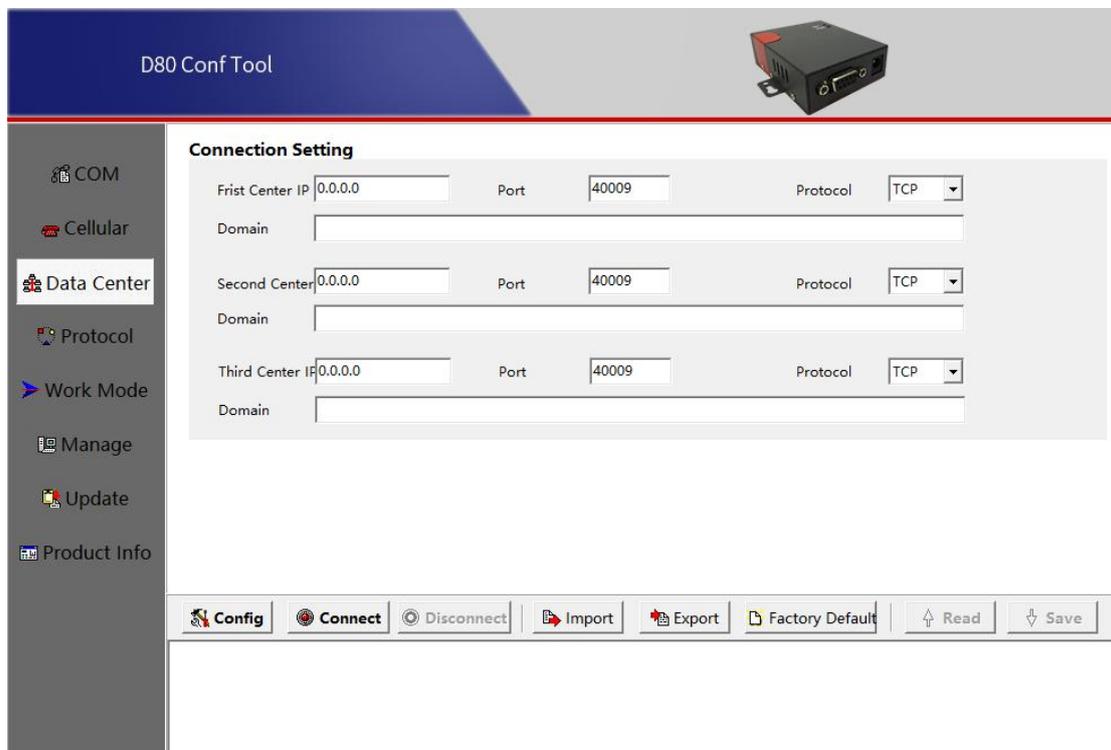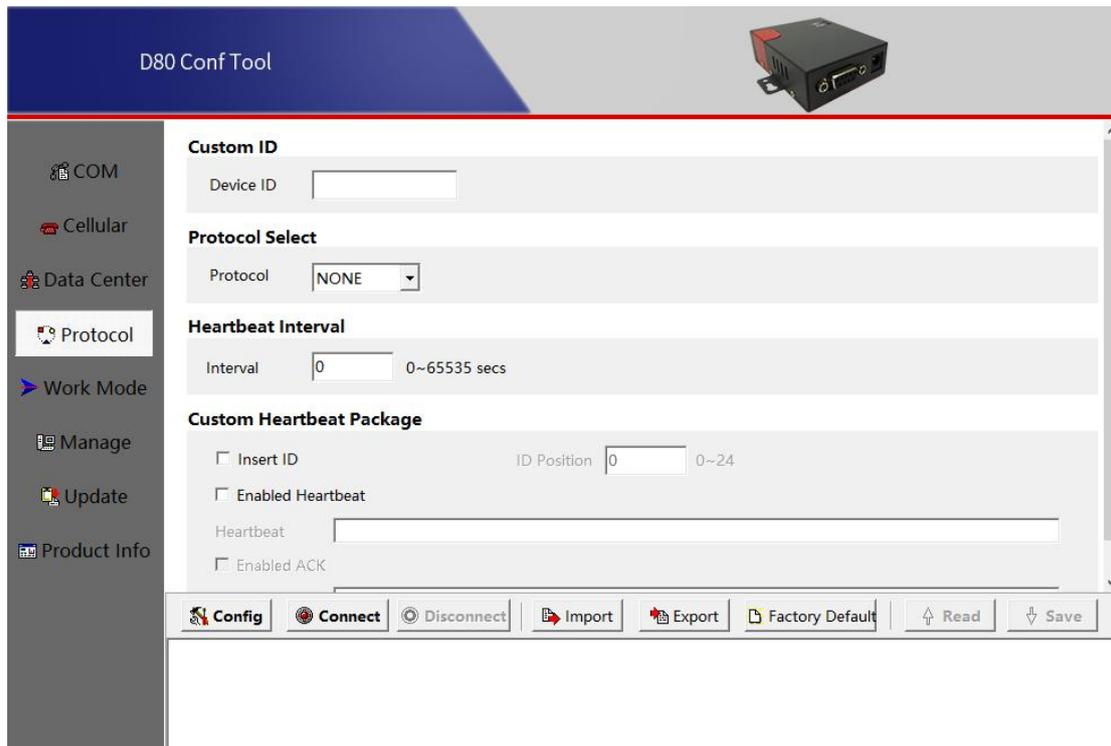

Data Center settings instruction

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

NOTE

1. D80 will synchronously connect to 3 data center when configured 3 center IP inside of tool.

2. D80 will retry connect other centers as long as it has connected one center.

3. D80 will redial up if it's failed to connect all of 3 centers more than 9times in succession.
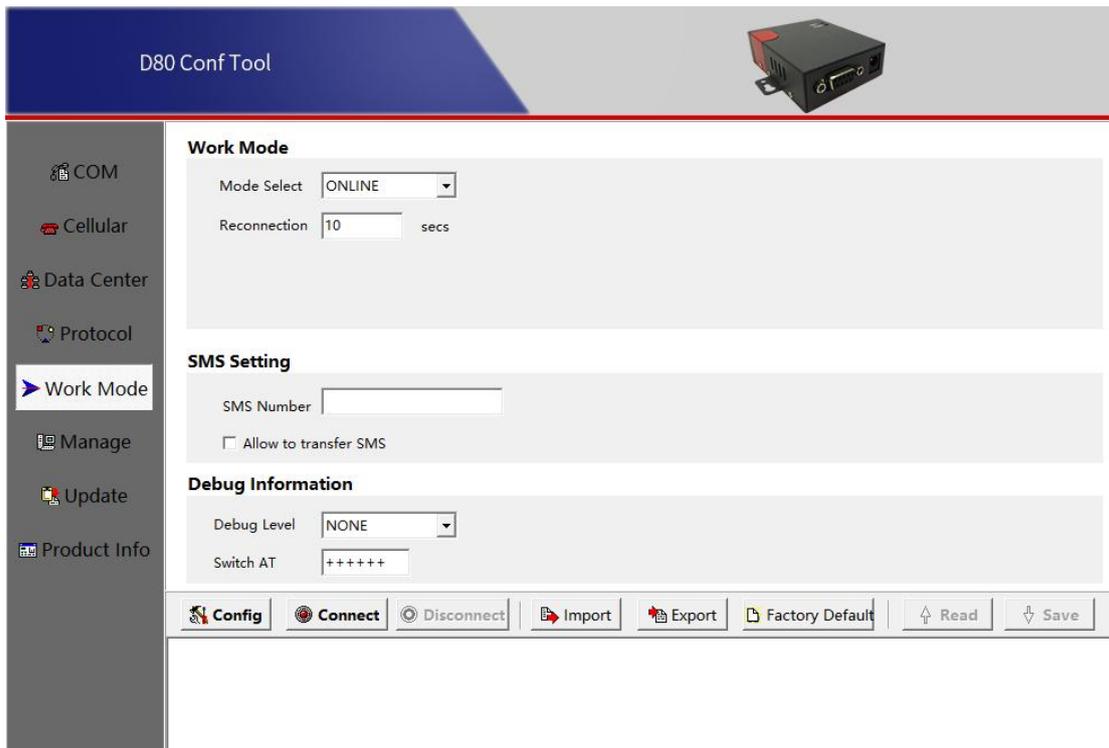
3.2.4 Protocol settings

Communication Protocol settings instruction

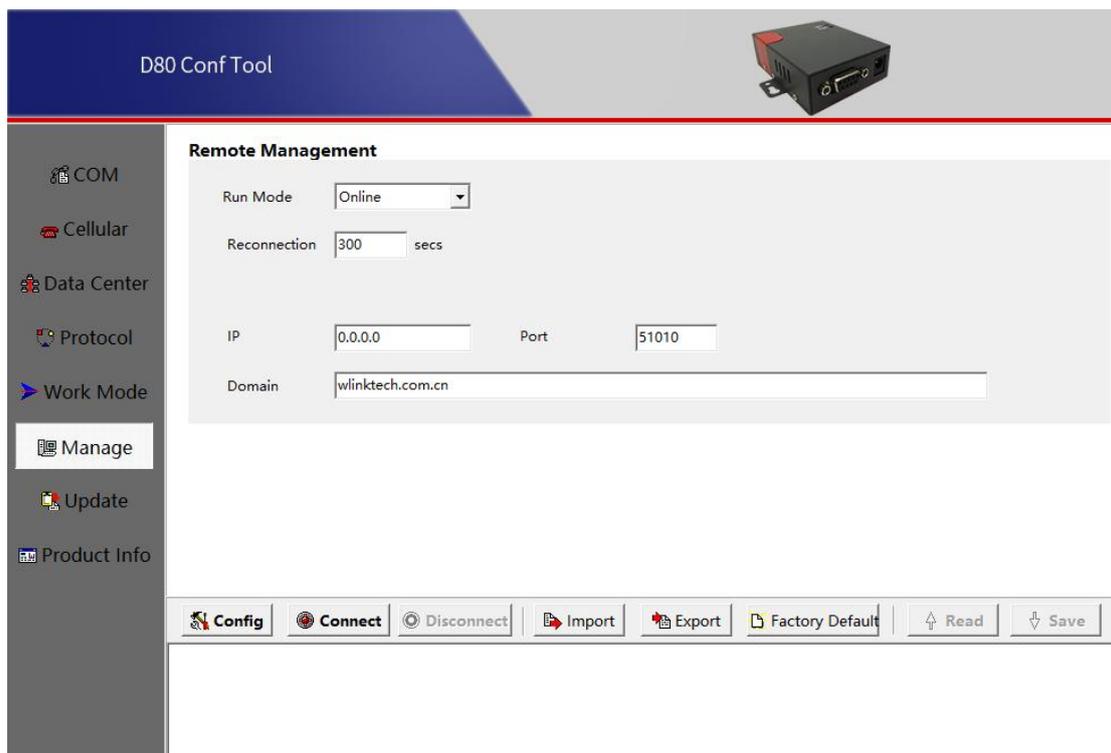| Parameters	Description	Instruction	Default
Custom ID	Identify D80 in data server center	4byte length	NULL
Protocol Options	Transparent/WLINK/DDP	[Transparent] Transparent transmission. [DRMP]WLINK transmission protocol. [HD-DDP] unavailable	Transparent
ID Position	ID insert data package in order to identify which D80 sent data.	0~24bytes	1
Heartbeat Interval	0~65535s	D80 will automatically send heartbeat to data server as defined setting. It will keep the connection between D80 and data center. 0 means no heartbeat	0
ID Position	ID insert data package in order to identify which D80 sent data.	0~24bytes	0
Custom Heartbeat Package	D80 log in data center server and keep connection.	0~24bytes	NULL
Custom ACK Package	D80 receive ACK after sent heartbeat. If no ACK 3times in succession, D80 will reconnect to data center server.	0~24bytes	NULL

3.2.5 Work Mode Setting

Parameters	Description	Instruction	Default
Mode Select	ONLINE/WAKEUP	**[ONLINE]** After powered on, D80 automatically connect and reconnect to data center server to keep online always. **[WAKEUP]** After Powered on, D80 will work on standby mode. Once D80 received wake up short message from defined phone number, or received the triggering data from terminal, D80 will dial up and connect to data center server. After idle time, D80 will re-enter wake up mode. **[SMS]** D80 works short message mode.	NULL
Reconnect Interval	D80 reconnect to data center server after interval time when connection is failed.	5~65535s	300s
Idle Interval		5~65535s	300s
Discard WAKEUP DATA			
SMS Number	Short message and call wake up and short message configuration from the specified number.	0~31bytes	NULL
Allow to Transfer SMS	D80 will transmit any short message to terminal	Enable/Disable	Disable
Transfer SMS	Transfer SMS to COM1/COM2	COM1/COM2 Options	COM1

Parameters	Description	Instruction	Default
Debug	Control serial port debug information	NONE/DEBUG/STATUS/AT. Configure AT level during testing with PC. Configure NULL, then connect D80 to device. **[NONE]** D80 won't send any information to serial port. **[DEBUG]**D80 sends simple information to serial port. It's convenient to test D80. **[Status]**D80 sends operation status, signal strength to serial. **[AT]** D80 sends all debug information to serial port. It's convenient to test D80	
Switch CMD	D80 will be switched to configuration mode from transmission mode. After switched to configuration mode, The D80 will enter command mode to communicate with terminal.	6 visible characters	++++++

3.2.6 Manage settings

Remote management settings instruction

Parameters	Description	Instruction	Default
Run Mode		Online/Timing mode options	Online

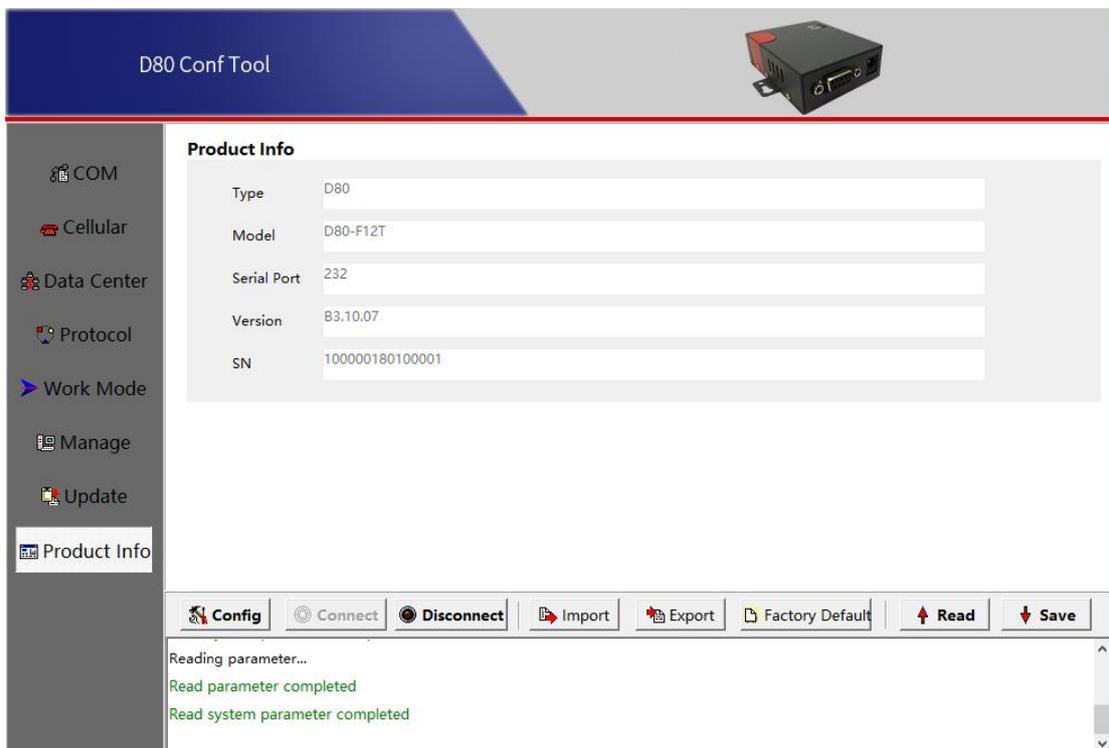| Parameters	Description	Instruction	Default
Start Interval	D80 will connect to remote management software as this start interval time.	0 means this function is invalid.	
Reconnection	D80 will reconnect to remote management software as this interval time when the connection is down.	0~65535s	1440s
Remote IP	WLINK remote management platform IP address in HQ	D80 will automatically login WLINK management platform so that customers might manage and monitor D80 in platform	0.0.0.0
Port		0~65535	51010
Domain Name	No static IP in HQ	Domain name is available when the IP address is setup 0.0.0.0	NULL

3.2.7 Upgrade settings

Upgrade settings instruction

Parameters	Description	Instruction	Default
Firmware	Select firmware	The firmware is Bin file	
FW Name	Firmware name		
FW Version	Firmware version		

| Parameters	Description	Instruction	Default
Firmware Size	Firmware size		
Checksum	Firmware Verification		
Start	Upgrade firmware	Click Start button to upgrade firmware. Restart D80 modem after upgrade is completed.	

3.2.8 Production Info

Information instruction

Parameters	Description	Instruction	Default
Product Name			
Product Model			
Serial Port Type			
Version			
SN			

---End

3.3 D80 Typical Application (point to point)

D80 establishes a TCP connection to data server center. D80 transmits serial port data to data server center by TCP protocol. D80 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.
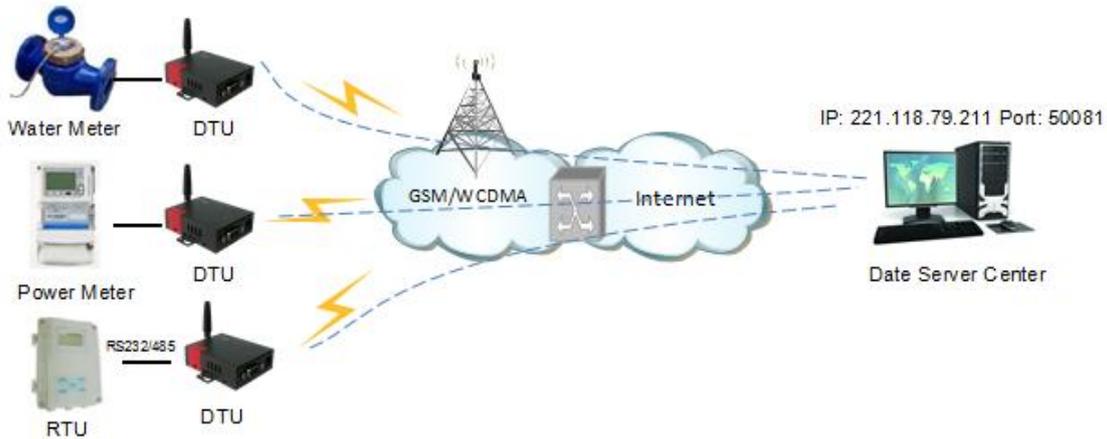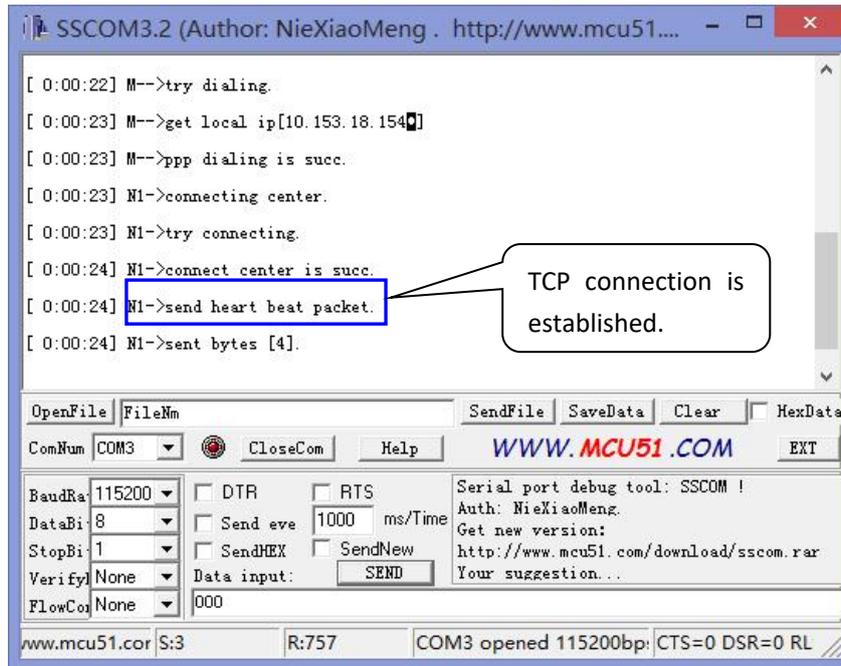

D80 Settings List

Parameters Menu	Settings	Note
Serial	Serial	Configure baud rate, data bit, stop bit and parity to match with terminal.
	Debug	If test D80 with PC's serial tool, better select STATUS which is easy to check D80 status. If tested D80 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
	Reconnect Interval	300

Parameters Menu	Settings	Note
Remote Management	Start Interval	0

Serial Port Status display

After configured, please restart the D80 and run SSCOM32 serial port tool, it'll display D80 work status. The hyper terminal tool is also available to display D80 status.

TCP Server Demo