

Industrial Cellular IP Modem TD210 Series User Guide



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About This Guide

Thank you for choosing BIVOCOM Industrial Cellular IP Modem TD210 Series. Please thoroughly read this user guide before you configure and install the device.

This manual is compatible with below models

Model	Description
TD210-G	Industrial GPRS IP Modem
TD210-W	Industrial WCDMA IP Modem
TD210-LF	Industrial LTE/WCDMA IP Modem

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1. Definitions

1.1 IP Modem

Data Transfer Unit, a wireless terminal used convert the data from serial port data packet to IP data packet, or from IP data packet to serial port data packet, then transfer the data packet through cellular network.

1.2 SMS

Short Messaging Service

1.3 2G GPRS and CMDA 1X.

1.4 3G

TD-SCDMA, WCDMA, EVDO.

1.5 4G LTE

1.5 Center/Server

A computer for receiving data sent from IP Modem through SMS/2G/3G, and sending data to IP Modem through SMS/2G/3G.

1.6 TD210

An industrial IP Modem series manufactured by Bivocom.

2. Introduction

2.1 Overview

TR210 Series IP Modem is a type of industrial wireless IP Modem (Also called DTU, Data Transfer Unit), designed to fully meet the needs of industrial standards and industrial users. It adopts high-powered industrial 32-bits CPU, multi-layer software detection and hardware protection mechanism to ensure reliability and stability of the device. It supports worldwide carrier 4G/3G cellular network FDD-LTE, TD-LTE, and WCDMA, EVDO, TD-SCDMA, EDGE, CDMA 1X and GPRS. With rich and flexible interfaces, such as RS232, RS485 and RS422, and TTL GPIOs is also customizable.

TR210 Series IP Modem can help users to quickly access the Internet, to ensure secure and reliable data transmission. It's ideal for IOT (Internet of Things) and M2M (Machine to Machine) applications, and has been widely used in many applications, such as Intelligent Transportation, Smart Grid, Vending Machine, Agricultural Irrigation, Environmental Protection, Industrial Automation, Energy Saving, Smart Home, etc.

2.2 Applications

TD210 Series IP Modem utilizes cellular network for remote data acquisition and transmission, and has been used for industrial remote monitor and control. Typical application as below.



3. Getting Started

WARNING: Please make sure the device is powered off before you install and configure it.

3.1 Package Checklist

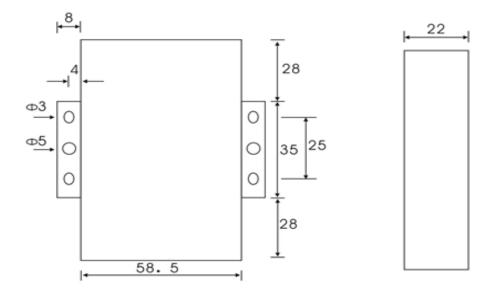
Check the package before you configure and install the device.

- TD210 IP Modem Host
- Cellular antenna(SMA Male)
- Power Adapter(12VDC/0.5A)
- 3- Pin RS232 cable with DB9 connector(female)
- 12-Pin Terminal Block



3.2 Dimensions

There are 3 holes for installation at each side of TD210 (Unit: mm)



3.3 Installation



3.3.1 SIM/UIM Card

TD210 supports normal SIM/UIM only, so if you're using a Micro SIM or Nano SIM card, you may need to use a Micro SIM or Nano SIM to Normal SIM adapter.

Make sure your IP Modem is powered off, then use a needle object(such as a pen) to push the button near the SIM/UIM card holder, it will flick out immediately. Put the SIM/UIM card to card holder with chipset upside, insert it to IP Modem and make sure it's tightly matched.

Warning: Never install SIM/UIM card when Modem is powered on.

3.2.2 Cellular Antenna

Fasten the cellular antenna.

Screw the SMA male cellular antenna to TD210 (SMA female interface), make sure it is screwed tightly to ensure the strength of signal.

3.2.3 Terminal Block, Power Cable and Console Cable

Insert the terminal block to modem correctly.

1 2 3 4 5 6 7 8 9 10 11 12 PWR GND 101 102 103 104 105 GND RX TX A B

PIN No.	Signal Name	Default Function	Extended Function
1	PWR	Power input anode	NA
2	GND	Power Ground	NA
3	IO1	Reserved GPIO, able to check dry	Reserved RS232 RTS
		contact signal and 3.3 V switch	and
		signal, output 3.3V switch signal.	TTL RX
		NOT ENABLED BY DEFAULT	
4	IO2	Reserved GPIO, able to check dry	Reserved RS232 CTS
		contact signal and 3.3 V switch	and
		signal, output 3.3V switch signal.	TTLTX
		NOT ENABLED BY DEFAULT	
5	IO3	Reserved GPIO, able to check dry	Reserved RS232 DCD
		contact signal and 3.3 V switch	
		signal, output 3.3V switch signal.	
		NOT ENABLED BY DEFAULT	
6	IO4	Reserved GPIO, able to check dry	Customized pulse
		contact signal and 3.3 V switch	output, pulse counter,
		signal, output 3.3V switch signal.	analog quantity input,
		NOT ENABLED BY DEFAULT	Reserved RS232 RI
7	IO5	Reserved GPIO, able to check dry	Customized pulse
		contact signal and 3.3 V switch	output, pulse counter,
		signal, output 3.3V switch signal.	analog quantity input
		NOT ENABLED BY DEFAULT	
8	GND	Power Ground	NA
9	RX	RS232 Receive Data	NA
10	TX	RS232 Transfer Data	NA
11	A	RS485 anode	Reserved RS232 DTR
12	В	RS485 cathode	Reserved RS232 DSR

1) Definition of Terminal Block Interface

2) Connect Power Cable and Console Cable

The interface of TD210 is industrial terminal block, we suggest you use 28-16AWG power cable and console cable.

Definition of power cable and console cable in this package are as below

Power Cable (Output 12VDC/0.5A)

Color of cable	Power Output Polarity
Black & White Alternate	Anode
Black	Cathode

RS232 Cable (with DB9 female interface)

Color of Cable	Corresponding DB9-M Pin Number
Blue	3
Brown	2
Black	5

WARNING: make sure you connect the terminal block to TD210 modem correctly before power on, or it may cause the damage of device.

3.3 Power Supply

After all the accessories and cables mentioned above are installed very well and correctly, then plug the power supply to power outlet.

TD210 adopts advanced power technology to improve the stability and adapt to complex external environment. You can use Bivocom standard power adapter(12VDC/500mA), or use DC power ranging at 5-35VDC, please make sure the power supply is stable enough(Ripple shall be less than 300Ma, and Instantaneous voltage shall not larger than 35V), meanwhile, power shall over 4W.

Note: We suggest you use Bivocom standard power adapter (500mA/12VDC).

3.4 LED Indicators

LED Indicators	Status	Content	
Online	Off	TD210 isn't connected to server	
	On	TD210 is connected to server	
ACT	Off	No data transfer	
	Blink	Sending or receiving data	
Power	Off	Power Off	
	On	Power On	
System	Off	System error	
	Blink	System works	

TD210 has 4 LED indicators, 'Online', 'ACT', 'Power', 'System', as follows.

4. Configuration

4.1 Getting started

To start to configure the modem, you'll need below materials

1) A laptop or computer that has DB9 serial port(male)

Note: if your laptop or computer doesn't have a serial port, an USB to Serial port(male) adapter would be required.

2) BIVOCOM TD210 config tool.

The TD210 config tool integrated with configuration, debug and firmware upgrade functions.

You can go to BIVOCOM website to download the config tool, like below. <u>http://www.bivocom.com/index.php?m=content&c=index&a=show&catid=12&id=22</u> Note: The config tool only support Windows OS, IOS is not supported yet.

4.2 Serial port configuration

Connect TD210 to your laptop or computer through RS232, then open Bivocom
configuration tool (TD210.exe), Click
Open Port to open the serial port, and choose your COM port of laptop or computer.
Then Click Reload, and a window will be open tell you to restart the device(Figure 2), unplug the power adapter, and power on TD210 again, then waiting for entering into configuration status, when it shows loading DTU parameters successfully(Figure 3), then you can go to next step to configure the modem, including Basic Setting(<u>4.3</u>), Network
Setting(4.4).

DTU Config	r			
Download Tool				*
Bebug Tool	Charles (
Basic Setting	Step 1			
···· Network Setting				
SMS Setting				
MODBUS Setting				
	Step 2			
		Step 3		
Port:				Ŧ
Baud Rate: 115200 -	Common Operations Reload	Save	Load	Clear Output
	Reload	Save	Load	Clear Output
Data Bit: 8	Other Operations			
Stop Bit: 1	Ver Info	Signal Value	Factory Setting	Restart
Parity Bit: None 💌	Browse			
Open Port	Save Config	Load	d Config	

Figure 1

Download Tool Debug Tool DTU Config Basic Setting Network Setting SMS Setting MODBUS Setting	<time:2018-09-18 10:4<="" th=""><th>1:25>:Please restart device</th><th></th><th>*</th></time:2018-09-18>	1:25>:Please restart device		*
		Tips 2		
ort: COM4 💌 aud Rate: 115200 💌	Common Operations	确定 Save	Load	Clear Output
ata Bit: 8 ×	Other Operations	Signal Value	Factory Setting	Restart
arity Bit: None 💌	Browse.,			

Figure 2

Debug Tool DTU Config Basic Setting Network Setting SMS Setting MODBUS Setting	Bind Server's Port 5008 ZS password: 123456 ZS ID: abcdefge Is login hex: 0 Is heart hex: 0 If sms show receive NO: 1 info language: 1 Net Mode: 0 OK	0		Ē
Port: COM4 💌	<time: 10:="" 2018-09-18="" 42:04="">:Loading</time:>	J DTO parameters successio	лı у	+
Baud Rate: 115200 👻	Common Operations	1		1
	Reload	Save	Load	Clear Output
	Other Operations			
Data Bit: 8		Signal Value	Factory Setting	Restart
Data Bit: 8		Signal Value	Factory Setting	Restart

Figure 3

Below are quick instructions of Operations on the config tool, but you can go to next step.(<u>4.3 Basic setting</u>), if you're familiar with those parameters.

4.2.1 Save



Click to save the parameters you've configured.

4.2.2 Load

Load

Load the parameters of TD210 to config tool and display.

4.2.3 Clear Output

Clear Output

Clear log of config tool.

4.2.4 Version Info

Ver Info

Check the version info of TD210.

4.2.5 Signal Value

Signal Value

Check the signal strength of TD210.

4.2.6 Factory Setting

Factory Setting

TD210 returns to factory setting.

4.2.7 Restart



Restart TD210

4.2.8 Save Config



Save configuration of TD210 in file format, which you can use it recover the config.

4.2.9 Configure via Saved Config File

Click	Browse			, a	nd	choose	the
saved	config file, then click	Load Config	to configure TD2 ⁻	10.			

4.3 Basic Setting

Basic Setting	
Device ID(8 digits HEX): Debug Tool	
DTU Config SIM Card No(11 Bytes):	
Work Setting Work Mode: SMS Setting	•
MODBUS Setting Debug Level(0/1/2):	0
Serial Port Settings	
Communication Baudrate:	9600 💌
Databit,Parity,Stopbit:	_
Frame Interval(msec):	
Trigger Settings	
Trigger Type:	
Port: Call Trigger Phone No:	
Baud Rate: 115200 V SMS Trigger Password(4 B	Bytes):
Data Trigger On Password	f:
Data Bit: 8 _ Data Trigger Off Password	d:
Stop Bit: 1	1
RTC Setting:	Set
Parity Bit: None ▼ 2018/ 9/18 星其 ▼ 上台	∓ 10:14:16 •
Open Port	

Figure 4

4.3.1 Device ID

Device ID(8 digits HEX):	

To identify the TD210 and for device management, if you have many TD210 connected to server, please make sure all the ID are different.

4.3.2 SIM Card No.

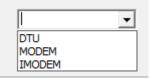
SIM Card No(11 Bytes):	
------------------------	--

The No. of SIM inserted in this device.

4.3.3 Work Mode

Work Mode:	-
------------	---

There are 3 work modes to choose from the drop-down menu, as below



IP Modem (Transfer the data to server through GPRS/SMS) MODEM (Normal Modem, dial up or sending SMS through AT Command) IMODEM (Intelligent Modem, except the functions supported by normal modem mentioned above, it is always online for SMS function)

4.3.4 Debug Level

Debug Level(0/1/2):

There are 3 levels to choose from the drop-down menu, as below

	-
0	
1	
2	

2: All logs output through RS232/RS485

- 1: Part of important logs output through RS232/RS485
- 0: No logs output

4.3.5 Communication Baud Rate

Communication Baudrate:

Supported baud rate: 300, 600, 1200, 2400, 4800, 9600, 14400, 19200, 38400, 56000, 57600 and 115200.

4.3.6 Databit, Parity and Stopbit

Databit,Parity,Stopbit:

•

You can choose below from drop-down menu.

•	
8N1	
8E1	
801	
 701	-
7E1	
7N1	

8N1 (8 Databit, No Parity, 1 Stopbit)8E1 (8 Databit, Even Parity, 1 Stopbit)8O1 (8 Databit, Odd Parity, 1 Stopbit)

7O1 (7 Databit, Odd Parity, 1 Stopbit)7E1 (8 Databit, Even Parity, 1 Stopbit)7N1 (7 Databit, No Parity, 1 Stopbit)

4.3.7 Frame Interval (Unit: Millisecond)

Frame Interval(msec):

When IP Modem receives packet slicing, increase the value, while for packet merging, lower the value, 20ms for 115200 baud rate, 50ms for 9600 baud rate and 200ms for 1200 baud rate.

4.3.8 Trigger Settings

Trigger Settings	
Trigger Type:	· ·
Call Trigger Phone No:	
SMS Trigger Password(4 Bytes):	
Data Trigger On Password:	
Data Trigger Off Password:	

1) Trigger Type

	-
AUTO	
SMSD	
CTRL	
DATA	
MIXD	

AUTO: Always online

SMSD: SMS trigger mode, sending specific SMS to trigger TD210 online. CTRL: Make call to trigger TD210 online.

DATA: Sending specific data to trigger TD210 online or offline.

MIXD: Support SMSD, CTRL and DATA trigger mode, you can use any of them to trigger TD210.

2) Call Trigger Phone NO.

Call Trigger Phone No:

You can add a phone number in the blank, once the trigger mode is CTRL or MIXD, and TD210 receives the call from this number, it will get online.

3) SMS Trigger Password

SMS Trigger Password(4 Bytes):

You can set up a code in the blank, once the trigger mode is SMSD and MIXD, and TD210 receives a SMS text with 'DAIL+code', it will get online.

For example, your code is 123456, you can trigger TD210 by sending SMS text 'DAIL123456'.

4) Data Trigger On Password

Data Trigger On Password:	
---------------------------	--

You can set up trigger data in the blank, once the trigger mode is DATA and MIXD, and TD210 receives the trigger data through RS232/RS485 serial port, it will get online.

5) Data Trigger Off Password

Data Trigger Off Password:	
bata mgger on rassnora.	

You can set up trigger data in the blank, once the trigger mode is DATA and MIXD, and TD210 receives the trigger data through RS232/RS485 port, it will get offline.

6) RTC Setting

RTC	Setting:		•		Set	
	4/ 7/2017	•	4:49:30 PM	•	•	

You can set up the system time for your TD210.

4.4 Networking Setting

Network Setting		
	Data Service Center Settings	Dialing Settings
Debug Tool	Network Work Mode:	APN:
DTU Config Basic Setting	Data Center Number:	Username:
	Main Center Addr +Port:	Password:
MODBUS Setting	Backup Center:	Call Center:
	2nd Center Addr +Port:	
	3rd Center Addr +Port:	Heartbeat Interval(31-65534 s):
	4th Center Addr+Port:	Auto Back To Main Server :
	5th Center Addr+Port:	Custom Register String:
	DNS Server	Custom Heartbeat String:
	Main Center DNS Server:	☐ Hex Register ☐ Hex Heartbeat
Port:	Backup Center DNS Server:	Transfer Meaning:
Baud Rate: 115200 💌	2nd Center DNS Server:	TCP MTU(Byte):
Data Bit: 8 💌	3rd Center DNS Server:	Multi Center Reconnet Interval:
Stop Bit: 1	4th Center DNS Server:	Connect Retry Times:
Parity Bit: None 💌	5th Center DNS Server:	Reconnect Time Interval(Seconds):
Close	TTL Heartbeat:	ECHO Heartbeat Interval(Seconds):

Figure 5

4.4.1 Network Work Mode

Network Work Mode:	-	FTCP	-
		,	

There are 8 network work modes, including FTCP, HTCP, CTCP, NUDP, CUDP, HUDP, TCPSVR and UDPSVR.

- Custom register string and heartbeat packet is required when work mode is CTCP and CUDP.
- TD210 will act as a TCP client when choose FTCP, HTCP and CTCP, but the register string and heartbeat string will be different.
- TD210 will act as a UDP client when choose NUDP, CUDP and HUDP, but the register string and heartbeat string will be different.
- When choose TCPSVR, TD210 acts as a TCP Server.
- When choose UDPSVR, TD210 acts as a UDP server.

4.4.2 Data Center Number

Data Center Number:	5 💌
Main Center Addr+Port:	
Backup Center:	
2nd Center Addr+Port:	
3rd Center Addr+Port:	
4th Center Addr+Port:	
5th Center Addr+Port:	
DNS Server	
Main Contra DNC Commun	
Main Center DNS Server:	
Backup Center DNS Server:	
Backup Center DNS Server:	
Backup Center DNS Server: 2nd Center DNS Server:	

1) You can configure up to 5 data centers.

- 0 means TD210 will not connect to cellular network, such as 4G/3G/2G networks.
- 1 means TD210 only supports 1 data center, TD210 will connect to main center, once it couldn't connect to backup center, it will continue to connect to main center till it's connected.

• 2-5 means TD210 supports multi centers, and all the other centers will get sync data. Note: if there is not backup center, please set up the same address and port for main center and backup center

2) Center Addr.+Port

2nd Center Addr+Port:		
	-	

It can be configured as DNS or IP address.

3) Center DNS Server

When you use DNS for center, a DNS server is required to analytic the corresponding IP address.

4.4.3 Dialing Settings

		-
Di	aling Settings	
AF	PN:	
Us	ername:	
Pa	ssword:	
Ca	ll Center:	

- APN: cellular network access code
- Username: authentication username of cellular network
- Password: authentication password of cellular network
- Call center: dial number of call center for cellular network

Below are some examples of APN, Username, Password and call center of Chinese mobile carriers.

Model	APN	Username & Password	Call Center
TD210-G	Cmnet(China Mobile) Uninet(China Unicom)	Null	*99***1#
TD210-C	Null	card	#777
TD210-W	3gnet	Null	*99#
TD210-T	cmnet	Null	*98*1#
TD210-E	Null	card	#777

Note: Different carriers may have different APN, Username, Password and Call Center, please ask your mobile carriers for those info if you have any questions.

4.4.4 Heartbeat Interval

Heartbeat Interval(31-65534 s):

Heartbeat time, we suggest you set up 60 seconds for TCP, and 31 seconds for UDP.

4.4.5 Auto Back to Main Server



Auto back to main server.

• N

• Y

Don't auto back to main server.

This setting will only work when both main and backup center are enabled, under this work mode, if main center fails, TD210 will auto connect to backup center. If you choose 'Y', TD210 will check whether main center is recovery or not, if yes, it will switch to main center, and disconnect with backup center. While if choose 'N', TD210 will not check whether main center is recovery or not.

4.4.6 Custom Register String

Custom Register String:	
Caston register stang.	

You can configure it when network word mode is configure as CTCP and CUDP, but you can also choose not to configure it, which means register string won't be sent. Note: the length of register string is up to 70 bytes.

4.4.7 Custom Heartbeat String

You can configure it when network word mode is configure as CTCP and CUDP, but you can also choose not to configure it, which means register string won't be sent. Note: the length of register string is up to 70 bytes.

4.4.8 Transfer Meaning

Transfer Meaning:	•
-------------------	----------

- Y means Yes
- N means No

When network work mode configured as FTCP, if choose Y, then TD210 will transfer meaning '0xfd' to '0xfd' and '0xfe', and '0xfe' to '0xfd' and '0xee'. If choose N, it is transparent transfer.

4.4.9 TCP MTU

TCP MTU(Byte):

Set up the maximum number of data transmission for each TCP data packet.

4.4.10 Multi Center Reconnect Interval

Multi Center Reconnet Interval:

Only available when data center number is 2-5.

4.4.11 Reconnect

Connect Retry Times:	I
Reconnect Time Interval(Seconds):	

In real application, the data center may be shut down or have issue, and that will cause TD210 disconnects from data center, while in order to keep TD210 always online, it will try to reconnect the data center, and that will cause unnecessary data flow. So you can configure those 2 functions to save the data flow, when Reconnect Time Interval enabled, TD210 will try to reconnect data center, and if Connect Retry Times exceed the value you set, while TD210 is still unable to reconnect to data center, TD210 will do exception handling.

4.4.12 ECHO Heartbeat Interval

ECHO Heartbeat Interval(Seconds):

- 0 means disables ECHO Heartbeat.
- 1-65535 means heartbeat interval, 60 seconds is suggested.

This helps to maintain connection of PPP layer and mobile carrier's network, to avoid being forced to sleep, and helps to check the stability of connection.

4.4.13 TTL Heartbeat



- Disable, to disable TTL heartbeat
- Enable, to enable TTL heartbeat

This helps to maintain connection of Application layer and mobile carrier's network, to avoid being forced to sleep, and helps to check the stability of connection.

4.5 SMS Setting

TD210 TOOL V1.2.4	X
SMS Setting	
Download Tool	SMS Send No Settings(Each Group Has 5 Numbers, Separated By Comma)
Debug Tool	1st Send No:
Basic Setting Network Setting SMS Setting	2nd Send No:
MODBUS Setting	3rd Send No:
	4th Send No:
	SMS Send Type:
	SMS Send Backup:
Port:	Display SMS Receiving:
Baud Rate: 115200 -	
Data Bit: 8 💌	
Stop Bit: 1	
Parity Bit: None 💌	
Close	

4.5.1 SMS Send No. Settings

Each group supports up to 5 cell phone No., divided by comma, and each cell phone length shall not exceed 15 numbers.

When TD210 receives data from serial port, while if the network disconnects, and data will be sent to preset cell phone through SMS.(SMS data backup)

4.5.2 SMS Send Type

- Char Format
- HEX Format

Normally, SMS will be sent in format of character or Chinese, while when you choose HEX Format, it will be sent under hexadecimal number 0x00-0xff, which is ideal for industrial automation.

4.5.3 SMS Send Backup

- Enable
- Disable

When TD210 receives data from serial port, while if the network disconnects, and data will

be sent to preset cell phone through SMS (SMS data backup).

4.5.4 Display SMS Receiving

- Enable
- Disable

When TD210 receives SMS, you can choose whether to transfer the cell phone number and SMS to serial port or not.

4.6 MODBUS Setting

TD210 TOOL V1.2.4		×
MODBUS Setting		
Download Tool Debug Tool DTU Config Basic Setting Network Setting	MODBUS Work Mode:	
- SMS Setting MODBUS Setting	Interface Settings Ist Analog Work Mode:	
	2nd Analog Work Mode:	
	1st Digital Work Mode:	
	2nd Digital Work Mode:	
	3rd Digital Work Mode:	
Port:		
Baud Rate: 115200 -		
Data Bit: 8 💌		
Stop Bit: 1 💌		
Parity Bit: None 💌		
Close		

4.6.1 MODBUS Work Mode

- MODBUS Disable
- Network RTU
- Serial Port RTU

When enables MODBUS RTU mode, once TD210 gets online, it can identify the MODBUS protocol command data from center, and collect data or set up terminal port based on the sent command data, then transfer the collected data and terminal port to center, that means TD210 act as a MODBUS device.

4.6.2 MODBUS Device Address

Modbus device address means the MODBUS device address of TD210, center will identify MODBUS device according to this address. The address works when TD210 is enabled RTU mode.

4.6.3 Interface Settings

1) 1st Analog Work Mode and 2nd Analog Work Mode

- Disable
- Collect Once

There are 2 analog quantity ports, IO4 and IO5, with corresponding port are 6 and 7. When MODBUS is set as RTU mode, analog work mode is normally set as Collect Once, TD210 will collect the data through corresponding terminal port after receiving MODBUS command.

2) 1st Digital Work Mode, 2nd Digital Work Mode and 3rd Digital Work Mode

- Disable
- Input
- Output

There are 3 digital quantity ports, IO1, IO2 and IO3, with corresponding port 3, 4 and 5. When MODBUS is set as RTU mode, digital work mode is set as input or output, TD210 will operate the corresponding terminal port after receiving MODBUS command.

4 Firmware Upgrade

4.4 Please open the Bivocom Config Tool, as below,

- 1) Configure Serial Port parameters
- Baud Rate: 115200
- Data Bit: 8
- Stop Bit: 1
- Parity Bit: None
- 2) Click 'Download Tool'
- 3) Click 'Load', choose the firmware you want to upgrade
- 4) The click 'Download'

TD210 TOOL V1.2.4			×
Download Tool			
Download Tool Debug Tool 2 D DTU Config Basic Setting Network Setting SMS Setting MODBUS Setting		******Download software version: V1.1.1****** <time:2017-07-07 17:51:03="">:begin download now</time:2017-07-07>	~
	Program Type: App		
Port: COM14 Baud Rate: 115200 -	Download Clear		
Data Bt: 8 v Stop Bit: 1 v	1		-
Parity Bit: None Close Port			

4.5 Power on the TD210, then device will start to upgrade the firmware, as below

Download Tool Download Tool Download Tool Debug Tool Debug Tool D-Debug Tool D-Debug Tool D-Dru Config SMS Setting MODBUS Setting Dort: COM19 3aud Rate: 115200	Program Type: APP v Load HHOANG-20170707.bin Cancel Clear	*******Download software version: V1.1.1****** <ime:2017-07-07 17:51:03="">:begin download now</ime:2017-07-07>	
Data Bit: 8 -			÷
Parity Bit: None 💌			

4.6 After firmware upgrading successfully, it shows 'download success ok', as below

TD210 TOOL V1.2.4	-21 -200 601 601 60
Download Tool	
Download Tool Download Tool Debug Tool DTU Config Basic Setting Network Setting MODBUS Setting Port: COM19 💌 Baud Rate: 115200 🖵 Data Bit: 8 🖤 Stop Bit: 1 🖤 Parity Bit: None 👻	<time:2017-07-07 17:59:02="">:download 82 block ok <time:2017-07-07 17:59:02="">:download 83 block ok <time:2017-07-07 17:59:03="">:download 84 block ok <time:2017-07-07 17:59:04="">:download 85 block ok <time:2017-07-07 17:59:05="">:download 95 block ok <time:2017-07-07 17:59:07="">:download 95 block ok <time:2017-07-07 17:59:09="">:download 95 block ok <time:2017-07-07 17:59:09="">:download 95 block ok <time:2017-07-07 17:59:09="">:download 105 block ok <time:2017-07-07 17:59:09="">:download 105 block ok <time:2017-07-07 17:59:09="">:download 105 block ok <time:2017-07-07 17:59:11="">:download 105 block ok <time:2017-07-07 17:59:11="">:download 105 block ok <time:2017-07-07 17:59:11="">:download 105 bl</time:2017-07-07></time:2017-07-07></time:2017-07-07></time:2017-07-07></time:2017-07-07></time:2017-07-07></time:2017-07-07></time:2017-07-07></time:2017-07-07></time:2017-07-07></time:2017-07-07></time:2017-07-07></time:2017-07-07></time:2017-07-07></time:2017-07-07></time:2017-07-07></time:2017-07-07></time:2017-07-07></time:2017-07-07></time:2017-07-07></time:2017-07-07></time:2017-07-07></time:2017-07-07></time:2017-07-07></time:2017-07-07>
Close Port	

4.7 Then use the Config Tool to enter into the configuration status, set up the device to factory setting, and restart to configure the parameters.

TD210 TOOL V1.2.4	x
DTU Config	
Download Tool Debug Tool Basic Setting Network Setting SMS Setting MODBUS Setting	
Port: Baud Rate: 115200 Reload Save Load Clear Output	
Data Bit: 8 Image: Control of the cont	
Parity Bit: None Browse Browse Close Save Config Load Config Load Config	

5 Configure TD210 via SMS

If config command exceeds 140 bytes, please send the command through multi SMS Note: Long SMS is not supported. SMS Config format: <password; command 1; command 2> Password: 123456(default) Command: Please refer to command after 'AT+' of <u>Appendix 1, AT Command</u> Example: <123456;IPAD=121.204.221.34;PORT=9999> Explanation: password: 1234546, IP address: 121.204.221.34, Port: 9999

Appendix 1: AT Command

Note: XX means parameter you'd like to set only, not command.

Description	AT Command	Parameter	
Decemption			
Debug Level	AT+DEBUG=XX	XX: 0 (No logs)	
		1 (Simple logs)	
		2 (Detailed logs)	
Baud Rate	AT+IPR=XX	XX: from 300 to 115200	
Data bit, stop bit and	AT+SERMODE=XX	XX: 8N1,8E1,8O1,7N1,7E1,	
Parity		701	
Frame Interval (ms)	AT+BYTEINT=XX	XX: unit(millisecond)	
Trigger Type	AT+ACTI=XX	XX: AUTO (Always Online)	
		SMSD (SMS Trigger)	
		CTRL (Call Trigger)	
		DATA (Data Trigger)	
		MIXD (Mixed Trigger)	
Call Trigger Phone No.	AT+CTRLNO=XX	XX: Preset call trigger phone	
		No.	
SMS Trigger Password	AT+SMSDPSWD=XX	XX: Preset SMS trigger	
		password	
Data Trigger On	AT+DONPSWD=XX	XX: Trigger on data	
Password			
Data Trigger Off	AT+DOFFPSWD=XX	XX: Trigger off data	
Password			
Network Word Mode	AT+MODE=XX	XX: FTCP,HTCP,CTCP,	
		NUDP,CUDP,HUDP	
Data Center Number	AT+SVRCNT=XX	XX: number of data center	

Main Center Addr.	AT+IPAD=XX	XX: Main center IP address or DNS
Main Center Port	AT+PORT=XX	XX: Main center port
Backup Center Addr.	AT+IPSEC=XX	XX: Backup center IP address or DNS
Backup Center Port	AT+PTSEC=XX	XX: Backup center port
2 nd Center Addr.	AT+IPAD1=XX	XX: 2 nd center IP address or DNS
2 nd Center Port	AT+PORT1=XX	XX: 2 nd Center Port
3 rd Center Addr.	AT+IPAD2=XX	XX: 3 rd center IP address or DNS
3 rd Center Port	AT+PORT2=XX	XX: 3 rd Center Port
4 th Center Addr.	AT+IPAD3=XX	XX: 4 th center IP address or DNS
4 th Center Port	AT+PORT3=XX	XX: 4 th Center Port
5 th Center Addr.	AT+IPAD4=XX	XX: 5 th center IP address or DNS
5 th Center Port	AT+PORT4=XX	XX: 5 th Center Port
Main Center DNS Server	AT+DNSSVR=XX	XX: Main Center DNS Server
Backup Center DNS Server	AT+DNSSV2=XX	XX: Backup Center DNS Server
2 nd Center DNS Server	AT+DNSSVR1=XX	XX: 2 nd Center DNS Server
3 rd Center DNS Server	AT+DNSSVR2=XX	XX: 3 rd Center DNS Server
4 th Center DNS Server	AT+DNSSVR3=XX	XX: 4 th Center DNS Server
5 th Center DNS Server	AT+DNSSVR4=XX	XX: 5 th Center DNS Server
APN	AT+APN=XX	XX: APN
APN Username	AT+USERNAME=XX	XX: APN Username
APN Password	AT+PASSWORD=XX	XX: APN Password
APN Call Center	AT+CENT=XX	XX: APN Call Center
Heartbeat Interval	AT+POLLTIME=XX	XX: Heartbeat Interval
Auto Back to Main Server	AT+RETMAIN=XX	XX: 1, Yes 0, No
Custom Register String	AT+CONNRGST=XX	XX: Custom Register String
Custom Heartbeat String	AT+LINKRGST=XX	XX: Custom Heartbeat String
Transfer Meaning	AT+STRAIGHT=XX	XX: 0, Transfer meaning1, No transfer meaning
TCP MTU	AT+TCPMTU=XX	XX: TCP Data Maximum Transmission Unit
Multi Center Reconnect Interval	AT+MCONTIME=XX	XX: Second(Unit)
Connect Retry Times	AT+RETR=XX	XX: Connect Retry Times

Reconnect Time Interval	AT+RDLWT=XX	XX: Reconnect Time Interval
TTL Heartbeat	AT+EXFUN=XX	XX: 0, Disable
		1, Enable, 1 time per 60
		seconds
ECHO Heartbeat Interval	AT+ECHOINT=XX	XX: 0, Disable
		Other value means
		seconds you set
1 st SMS Send Phone No.	AT+PHONE1=XX	XX: Use comma for multi
		phone number
2 nd SMS Send Phone No.	AT+PHONE2=XX	XX: Use comma for multi
ord OMO Osia d Dharas Na		phone number
3 rd SMS Send Phone No.	AT+PHONE3=XX	XX: Use comma for multi
4 th SMS Send Phone No.	AT+PHONE4=XX	phone number
4" SIMS Send Phone No.	AT+PHONE4=XX	XX: Use comma for multi
SMS Sond Tuno	AT+HEXSMS=XX	phone number XX: 0, Normal SMS
SMS Send Type		1, HEX SMS
SMS Send Backup	AT+OPENSMSBCKP=XX	XX: 0, NO Backup
		1, YES, to Backup
Display SMS Receiving	AT+SMSDIS=XX	XX: 0, No, SMS is not
Display enter toconting		displayed at serial port
		1, Yes, SMS display at
		serial port
MODBUS Work Mode	AT+MBMODE=XX	XX: 0, Disable
		1, Network MODBUS
		2, Serial Port MODBUS
MODBUS Device Address	AT+MBADDRESS=XX	XX: Address ranging from
		1-247
1 st Analog Work Mode	AT+ADCMODE1=XX	XX: 0, Disable
		1, Collect Once
2 nd Analog Work Mode	AT+ADCMODE2=XX	XX: 0, Disable
		1, Collect Once
1 st Digital Work Mode	AT+DIOWORKMODE1=XX	XX: 0, Disable
		1, Input
		2, Output
2 nd Digital Work Mode	AT+DIOWORKMODE2=XX	XX: 0, Disable
		1, Input
		2, Output
3 rd Digital Work Mode	AT+DIOWORKMODE3=XX	XX: 0, Disable
		1, Input
		2, Output

Appendix 2: FAQ

1. Power light is off

Check if the power supply range is 5~35V, and make sure the polarity is correct.

2. Online light is off

- 1) Make sure SIM card is the card holder and locked correctly, and antenna is fasten.
- 2) Check the IP address and port of server in the configuration tool is correct.
- 3) Check whether the server is working.
- 4) Check if the SIM is out of service (charges owed) and function of data is on.

3. The device couldn't enter into configuration mode.

- 1) Check the connection of RS232/RS485 is correct.
- 2) Is the RS232/RS485 connected to your computer or laptop and serial port of computer or laptop is working.
- 3) Check whether the baud rate of computer or laptop is the same as IP Modem.