

InDTU332 & 324

Version: V1.0 - November, 2019

InHand Networks Global Leader in Industrial IoT



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Declaration

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Conventions

Symbol	Indication
< >	Content in angle brackets "<>" indicates a button name. For example, the <ok> button.</ok>
""	"" indicates a window name or menu name. For example, the pop-up window "New User."
>	A multi-level menu is separated by the double brackets ">". For example, the multi-level menu File > New > Folder indicates the menu item [Folder] under the sub-menu [New], which is under the menu [File].
Cautions	Means reader be careful. Improper action may result in loss of data or device damage.
Note	Notes contain detailed descriptions and helpful suggestions.

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1 Product Overview	1
1.1 System Application	1
1.2 Function Description	1
1.2.1 Hardware	1
1.2.2 Software Functions	2
2 Quick Start	5
3 Hardware description	6
3.1 Installation	6
3.1.1 InDTU332	6
3.1.2 InDTU324	8
3.2 LED Indicator	
3.2.1 InDTU332	9
3.2.2 InDTU324	
4 Configurations	11
4.1 Wiring	11
4.2 Connecting the DTU to the Master Station	11
4.3 TCP Server	16
4.4 Modbus-Net-Bridge	19
4.5 Multi-application Center	21
4.6 Connecting the DTU to the DM Cloud Platform	
4.7 Transmission Mode	24
4.8 ICMP/Link Maintenance Function	24
4.9 Dual-SIM Switching Function	26
4.10 Maintenance	30
4.10.1 View Real-Time/ History Logs	30
4.10.2 101 Detection	
4.11 Other Functions	35
4.11.1 Login Settings for the Administrator	35
4.11.2 Import/Export Configuration	
4.11.3 Upgrade Device	36
4.11.4 Power Mode	39
4.11.5 Restoring Factory Settings	39
4.11.6 SNTP Time Synchronization	40
4.11.7 Short Message Sending/Receiving	41
5 FAQ	44
6 Parameter Settings	46

Contents

6.1 Local Serial Port/Serial Port 2	46
6.2 Work Mode	47
6.3 GPRS Dialing	48
6.4 Application Center	48
6.5 Multi-application Center	49
6.6 Multi-center mechanism	
6.7 Other Settings	50
6.8 InHand Device Manager (DM) platform	51
6.9 Administrator Account	51
6.10 ICMP	52
6.11 User-Defined Packets	53

1 Product Overview

1.1 System Application

InDTU332/324 uses the wireless cellular network to complete remote data collection and transmission, thus enabling remote monitoring in the industrial field. The typical network topology is shown as below.

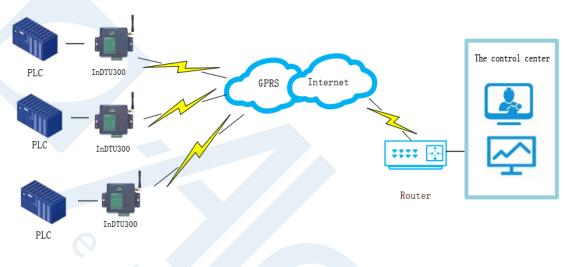


Figure 1-1-1 network topology

1.2 Function Description

1.2.1 Hardware

It has the following features:

- It is based on a high-performance microprocessor that integrates a wireless module for wireless communication.
- It supports a variety of industrial bus protocols, with good scalability.
- Compact and easy-to-install design
- Moisture proof, anti-interference design
- Voltage range +5 to 35 V DC, meeting industry requirements
- Industry-level temperature range: -40°C to +70°C

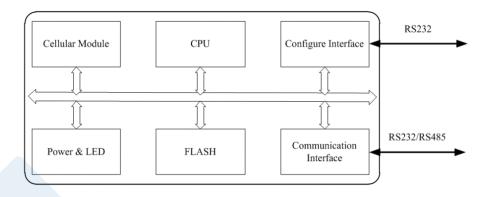


Figure 1-2-1 hardware structure

1.2.2 Software Functions

DTU332/324 implements wireless data communication between the serial port device in the remote station and the central control system. The main functions are as follows:

Function	Description		
Network	Wireless cellular network		
Serial port	Special configure tool is DTU Tool, can configure DTU by any of serial port		
Status Displays running status using LED.			
Mounting mode	Desktop installation or wall-mounting		
Wireless DDN	Supports the wireless DDN service of China Mobile and the VPDN service of China Telecom and China Unicom.		
Data transparent transmission Transmits application data transparently in two directions.			
Protocol conversion	Custom UDP for DC and Modbus bridge		
Long connection	DTU will actively dial up and establish a PPP link.		
Short connection	DTU does not actively dial up and establish a PPP link. According to different configurations, there will be different activation policies, and dialing and networking will start after activation.		
Local data active	In short connection mode, the network can be activated via local data transmission when the device is in hibernation		
Phone active	In short connection mode, when the device is in hibernation, the network can be activated by phone call.		
Auto active	Start timing when entering sleep mode, reach the scheduled time, then re-dial up		
Auto offline Start timing from the successful dialing, and when the schedule reached, restart the communication module and enter the sleep			
Log Enables the log function to output logs through the serial port, helping			

Table 1-2-1 Basic functions

	engineering personnel observe the device running status.		
Multi-serial port communication speed	Baud rate: 1200-115200 bps		
RS 232/485	Supports RS 232/485 communication. Depends on the device model.		
Software watchdog Prevents accidental crash.			
Hierarchical user authentication	Supports two user levels: administrator and common user. Default administrator user name/password: adm/123456; Common user name/password: guest/123456.		
Real-time clock	Upon power-off, a built-in super capacitance powers the RTC to avoid the loss of system time. The power must persist for more than two hours; otherwise, the clock is restored to the system time. Only some models support this function.		
Factory settings restoration	Clears settings and writes default settings. This function is implemented by configuration program.		

Table 1-2-2 Network functions

Function	Description		
PPP	Point-to-point dialing protocol.		
СНАР	Authentication mode.		
PAP	Authentication mode.		
Automatic authentication.	Uses PAP and CHAP in turn. When a client requests to go online, DTU performs PAP authentication first. If the authentication fails, DTU performs CHAP authentication. If the authentication fails again, DTU performs PAP authentication. The preceding procedures are repeated.		
PPP echo	Maintains the connection between DTU and carrier network, preventing forcible dormancy and detecting the stability of dialing connection.		
ICMP detection	Maintains the connection between DTU and peer host.		
Application layer echo	Detects the connection with application server by monitoring the heartbeat at application layer. Eg. TCP keep-alive or user-define packet.		

Table 1-2-3 Advanced functions

Function	Description
Upgrade	Locally upgrade by serial port or remotely upgrade by IP network
Import/export	Exports configuration to files or imports configure file to device.
Log storage	Stores key logs to the Flash memory, which can be read by using configuration tool or serial port.
DM remote network	Once enables the DM function, Through the DM platform, you can read and

management	update its configurations, read device status, perform remote upgrade, and locate the base station.
RTOOL	Remotely update the DTU firmware or configuration by RTool. The network should be accessed between RTool side and DTU when using this function.
55 AA command	Please refer the IHDMP user manual
Short message management	Supports remote configuration, forcible login, status query, and reboot.
Multi-center	Supports multiple IP centers in poll or parallel mode. The application cernter IP center must be configured firstly, and then configure the extended center in sequence.
Link maintenance	To avoid network congestion caused by the problem of the operator network optimization parameters, a byte of IP packets is sent to the detection host every network idle interval after this function is enabled. (This function is applicable only to V1.4.3 and later versions.)



Caution

The DM platform, for the use scenarios of the mainland and overseas, the corresponding domain names are http://c.inhand.com.cn and http://g.inhandnetworks.com; the platform also supports setup or install on the client's private server.

2 Quick Start

The procedure for quickly starting the InDTU as a client is as follows:

- 1. Correctly insert the SIM card.
- 2. Correctly connect the power cable, RS232/485 serial cable, and antenna.
- 3. Correctly configure the DTU parameters, including the IP address, APN, and port number.
- 4. Enable the DTU to communicate with the master station and read data from the terminal. For details, see section <u>4.2 "Connecting the DTU to the Master Station</u>.
- 5. Restart the device for the configurations to take effect.
- 6. Browse, count, and analyze data by using user software of the master station, such as DM cloud platform software.

3 Hardware description

3.1 Installation

3.1.1 InDTU332

DTU332 is housed in a snap-type plastic shell. Figure 3-1-1 shows:



Figure 3-1-1

Open the case, slide the top cover, insert the SIM card correctly, and then close the top cover, as shown in Figure 3-1-2.

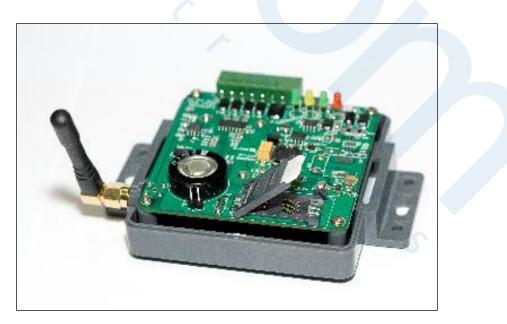


Figure 3-1-2 Installing SIM card into DTU332

Connect the antenna, the cables for serial interface and DC power cable, as shown in Figure 3-1-2.

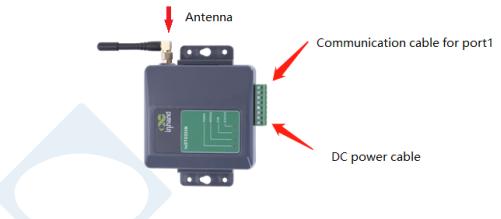


Figure3-1-3 DTU332 wiring

Pin	Function Remarks	
GND	Digital ground Provide serial port grounding.	
TXD/485-	RS232 sending or RS485-	Data sending port of serial port 1
RXD/485+	RS232 receiving or RS485+	Data receiving port of serial port 1
RXD2	RS232 data receiving Data receiving port of serial	
TXD2	RS232 data Transmitting	Data sending port of serial port 2
GND	Digital ground	Provide serial port grounding.
V-	Power Negative	Support 5 V DC to 35 V DC input, with
V+	Power Positive	ripple wave lower than 100 mV.

The interface terminal of DTU332 is shown as below:



Figure 3-1-4 DTU332 interface

3.1.2 InDTU324

Step 1: Install the SIM card. Press and hold the ejection button of the SIM card holder to eject it, and install the SIM card, as shown in Figure 3-1-5.



Figure 3-1-5 Installing the SIM card of the InDTU324

Step 2: Install the antenna. Gently rotate the movable part of the metal SMA-J connector to the end with your hand, until the external threads of the antenna connection wire cannot be seen. Do not hold the black rubber sleeve and twist the antenna forcibly. See Figure 3-1-6.



Figure 3-1-6 Installing the antenna of the InDTU324

Step 3: Connect the terminal wires. Remove the terminal from the device during installation, loosen the locking screws on the terminal, connect the corresponding wires to the terminal, and tighten the screws, as shown in 3-1-7.



Figure 3-1-7 Order of terminal wires of the InDTU324

There are two terminal wire sequences depending on the product models: RS-232 and RS-485.

Pin	Signal Name		Description	
RS-232	RS-232/RS-485 Pin Definition			
1	GPO		General GPIO port for indicating the online and offline states of the DTU	
2	RX1 B (–)		DTU serial port 1 for receiving data (RS232–/RS485–)	
3	TX1	A (+)	DTU serial port 1 for sending data (RS232+/RS485+)	
4	TX2		DTU serial port 2 for sending data	
5	OFF		Power control: disabled at a high level $(3.0-10 \text{ V})$ and enabled at a low level $(0-0.3 \text{ V})$ or in the suspended state	
6 RX2			DTU COM port 2 for receiving data	
7	7 GPI		General GPIO port, reserved	
8	8 GND		DGND for COM port grounding	
9	9 GND		Negative pole of power input	
10	10 V+		Positive pole of power input	

Table 3-1-2 Two terminal wire sequences of the InDTU324

3.2 LED Indicator

3.2.1 InDTU332

InDTU332 has 3 indicator lights: POWER (red), SIM (yellow), STATUS (green); POWER: the equipment should be kept on after POWER on; SIM and STATUS lights: indicate the working STATUS of DTU.

DTU STATUS	POWER	SIM	STATUS
Power on	On	Off	Off
Dialing, no fault.	On	Off	Off
Dialing, fault.	On	Off	On
Dialing is successful, and connecting the center.	On	On 🤇	Off
Dialing is successful, but failed to connect to the center.	On	On	5 On
Connected to the center.	On	Blinking slowly with the same frequency	
When DTU is used as TCP Server, if any client connection succeeds	On	Blinking slowly with the same frequency	

Short connection to be activated.	On	Off	Blinking slowly
SIM card is faulty.	On	Blinking slowly	On
In TROY mode.	On	Blinking fast alternatively	

3.2.2 InDTU324

InDTU324 has 3 indicator lights: POWER (red), SIM (yellow), STATUS (green); POWER: the equipment should be kept on after POWER on; SIM and STATUS lights: indicate the working STATUS of DTU.

DTU STATUS	POWER	SIM	STATUS
Power on	On	Off	Off
Dialing, no fault.	On	Off	Off
Dialing, fault.	On	Off	On
In AT/TROY mode.	On	Flash alternately	
Dialing is successful, and connecting the center.	On	On	Off
Short connection to be activated.	On	Off	Blinking slowly
Dialing is successful, but failed to connect to the center.	On	On	On
Connected to the center.	On	Blinking slowly with the same frequency	
When DTU is used as TCP Server, if any client connection succeeds	On	Blinking slowly with the same frequency	
SIM card is faulty.	On	Blinking slowly	On

4 Configurations

4.1 Wiring

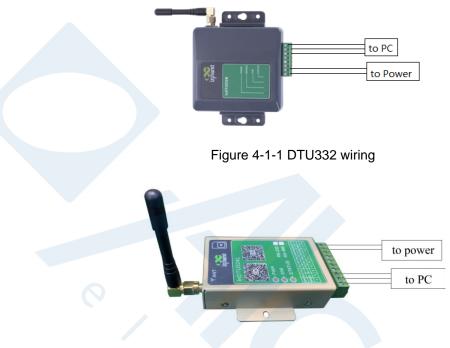
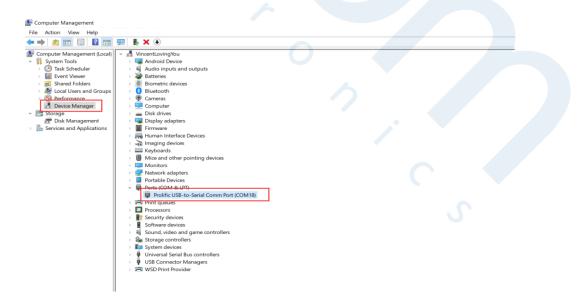
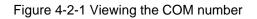


Figure 4-1-2 DTU324 wiring

4.2 Connecting the DTU to the Master Station

Step 1: Access the **Device Manager** UI of the PC and record the COM number of the serial port to which the PC is connected.





Step 2: Connect the device and enable the DTU tool



Click Connect, enter the user name and password (adm/123456 by default), select the recorded COM number, check Automatic, and click Connect, as shown in Figure 4-2-2.

Modify the configuration parameters after the "Configuration read succeeded" message is displayed, as shown in Figure 4-2-3.

		InDTU Configuration Tool	- ×
Status	InDTU typ	e:	
Configurations	Connect to InDTU		
Tools	Username	Connect via serial port Connect via bluetooth	
Help 中文	adm	Serial port	
	Password 2		
	Forget password?	3	h
	r orget passivoro.	Property 8 Vone 1 V	
		Automatic	ication center
		4	
1	Prompt: Please connect seria	l port or Bluetooth before start Refresh serial port Cancel Connect	
Connect	Refresh every 15s	Reboot Factory rese	t Read again

Figure 4-2-2 Logging in to the configuration tool

	InDTU Configuration Tool
Status Configurations	InDTU type: InDTU332LH09-DS-LP Serial number: DL3321905091151
Maintenance Tools	Firmware version: InDTU3XX_STD_V1.5.4 Oct 8 2019 10:02:32 InDTU time: 2019-11-15 13:45:26 Synchronize time to PC
Help 中文	Summary Physical layer Network layer Application layer
	Configuration read succeeded
	InDTU Base station Application center
Disconnect	Refresh every 15s Reboot Factory reset Read again

Figure 4-2-3 "Configuration read succeeded" displayed on the UI

(Optional) Step 3: Choose Configurations > All Configurations setting > Serial port 1 setting/Serial port 2 setting.

Set the serial port parameters of the InDTU, which must be the same as those of the connected device, as shown in Figure 4-2-4.

Set the parameters of serial port 1 when the InDTU acts as a client, and set the parameters of serial port 2 when the InDTU acts as a server:

Default settings of serial port 1: 9600, 8, None, 1; default settings of serial port 2: 115200, 8, None, 1.

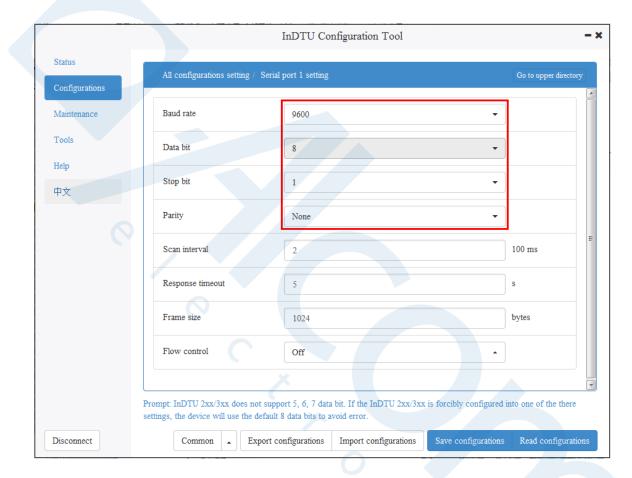


Figure 4-2-4 Setting the parameters of the local serial port

Step 3: Choose Configurations > All Configurations setting > Dial parameters setting.

Enter the APN provided by the SIM card operator and the network dial username/password, as shown in Figure 4-2-5.

		InDTU Configuration Tool	
Status Configurations	All configurations setting / Dia	al parameters setting / SIM card 1	Go to upper directory
Maintenance	Network dialing number	*99***1#	
Tools	APN	comnet	
Help 中文	Network dial username	name	
	Network dial password	123456	
	Authentication mode	Auto	•
	Network mode	Auto	•
	Local number		
	SMS center number	8613800100500	
	Default bearer settings		•

Figure 4-2-5 Set SIM card parameters

Step 4: Select a transparent transmission protocol.

	InDTU Configuration Tool	- ×
Status	All configurations setting / Application center setting	Go to upper directory
Configurations	× ×	^
laintenance	DTU ID 0001	
ools	Application center	0
elp	Application center link mode TCP	
文 (Encryption type Not encrypted	
	Max retransmit times 5	
	Timeout for no received data from 0 sever(minutes)	
	Forced DC heartbeat Close	
	Application center heartbeat(min)	
	Application center heartbeat(s) 0	Ĵ
nnect	Common Export configurations Import configurations Save configuration	ns Read configurations

Figure 4-2-6 Selecting a connection protocol

In step 4, If UDP is selected, user-defined packets must be set.

You can customize the login, heartbeat, and logout packet type and content.

There are three types of packets: ASCLL, HEX, and DC. In a HEX-type packet, a space is counted as a byte. In an ASCLL-type packet, spaces are not counted as bytes. A packet contains a maximum of 32 bytes. If the DC type is selected, the packet content does not need to be configured.

Choose **Configurations > All Configurations setting > User defined packets setting**, select the type of packets to be defined, and define the packet content, as shown in Figure 4-4-7 and Figure 4-4-8.

	InDTU Configuration Tool	-
Status	All configurations setting / User defined packets setting	Go to upper directory
Maintenance	Login	D
Tools	Login ack	6
Help	Heartbeat	•
中文	Heartbeat ack	•
0	Exit	•
	Exit ack	•
Connect	Advanced . Export configurations Import configurations Save configurations	Read configurations

Figure 4-4-7 User defined packets setting (1)

Γ			InDTU Co	nfiguration Tool		- ×
	Status Configurations	All configurations setti	ng / User defined packets	setting / Login		Go to upper directory
	Maintenance	Packet type	ASCII		•	
	Tools	Packet body	123			
	Help					
	中文					
	Disconnect	Advanced	Export configurations	Import configurations	Save configurations	Read configurations

Figure 4-4-8 User defined packets setting (2)

4.3 TCP Server

When the GPRS DTU works as a TCP server, note that:

- The DTU must have a fixed IP address. That is, the wireless DDN private network service is required.
- The DTU detects link availability by monitoring the wireless side data. If there is no data from the wireless side in two hours (this interval cannot be set), GPRS disconnects the PPP link and redials.

Step 1: Choose Configurations > All Configurations setting > Application center setting.

Set Local TCP server port (for example, to 21022), as shown in Figure 4-3-1.

	InDTU Configuration Tool	-
Status	All configurations setting / Application center setting	Go to upper directory
Maintenance	Application center heartbeat(s) 0	
Tools	DNS IP1 8.8.8.8	
Help 中文	DNS IP2 0.0.0.0	
	SNTP service Close	•
	SNTP server time.nist.gov	
	GPI slave address 0	
	Exchange local serial ports Close	•
	Local TCP server port 21022	
	Prompt Can be filled in IP or domain name, up to 32 bytes, for example: time.nist.gov	
Disconnect	Common Export configurations Import configurations Save configurations	rations Read configurations

Figure 4-3-1 Setting the TCP server (1)

Step 3: Enter the APN provided by the SIM card operator and the network dial username/password, as shown in Figure 4-3-2.

	InDTU Configuration Tool	- ×
itus		
nfigurations	All configurations setting / Dial parameters setting / SIM card 1	Go to upper directory
intenance	Network dialing number *99***1#	
bls	APN commet	
p t	Network dial username name	
	Network dial password 123456	
	Authentication mode Auto	•
	Network mode Auto	•
	Local number	
	SMS center number 8613800100500	
	Default bearer settings	J D .
connect	Common . Export configurations Import configurations Save	configurations Read configurations

Figure 4-3-2 Setting the TCP server (2)

Step 4: Set the ICMP parameter to prevent the DTU from automatically restarting when detecting no network data in two hours. **Link maintenance function** must be set to **Close**, as shown in Figure 4-3-3.

		InDTU Configuration Tool	-
Status	All configurations setting / ICM	IP setting	Go to upper directory
Maintenance	Link maintenance function	Close	•
Tools	ICMP host	10.5.16.21	
Help 中文	Max lost packets	3	
	ICMP detect interval	55	s
	Broken detection interval	10	s
	ICMP timeout	5	s
	Forced ICMP detect	Close	•
	function is used to avoid network cor	of IP packets is sent to the probe host every network id gestion caused by the problem of the operator network e ICMP detection function will be invalid and the traffic	optimization parameters. Please

Figure 4-3-3 Setting the TCP server (3)

Step 5: After setting the parameters, click Save configurations. The parameter settings take effect after a restart.

Step 6: In InDTU3XX_STD_V1.5.4 and later versions, if a client is successfully connected to the DTU that acts as a TCP server, view the IP address and connection status of the client by using the configuration tool.

-
rate
ead again
) Re

Figure 4-3-4 Client successfully connected

4.4 Modbus-Net-Bridge

Modbus-Net-Bridge is used for conversion between Modbus RTU and Modbus TCP. The Modbus TCP master station can access the Modbus RTU device connected to local serial port 1.

Step 1: Select Modbus-Net-Bridge.

	InDTU Configuration Tool	
Status Configurations	All configurations setting / Application center setting	Go to upper directory
Maintenance	DTU ID 0001	
Tools	Application center	Ð
Help	Application center link mode Modbus-Net-Bridge	•
中文	Encryption type Not encrypted	•
	Max retransmit times 5	
	Timeout for no received data from 0 sever(minutes)	
	Forced DC heartbeat Close	•
	Application center heartbeat(min) 1	
	Application center heartbeat(s) 0	
	Prompt: Encryption type: only some devices such as devices with the '-SEC' suffix.	
Connect	Advanced Advanc	rations Read configurations

Figure 4-4-1 Modbus-Net-Bridge setting 1

Step 2: Enter the APN provided by the SIM card operator and the network dial username/password, as shown in Figure 4-4-2.

	InDTU Configuration Tool	- × -
Status		
	All configurations setting $/$ Dial parameters setting $/$ SIM card 1	Go to upper directory
Configurations Maintenance	Network dialing number *99***1#	
Tools	APN comnet	
Help 中文	Network dial username name	
	Network dial password 123456	
	Authentication mode Auto	•
	Network mode Auto	•
	Local number	
	SMS center number 8613800100500	
	Default bearer settings	Ο
Disconnect	Common 🔺 Export configurations Import configurations Save of	configurations Read configurations

Figure 4-4-2 Modbus-Net-Bridge setting 2

Step 3: After setting the parameters, click Save configurations. The parameter settings take effect after a restart.

4.5 Multi-application Center

Step 1: Choose Configurations > All Configurations setting > Application center setting > Application center.

		InDTU Configuration Tool	
Status	All configurations setting /	Application center setting / Application center	Go to upper director
Configurations Maintenance	Gateway IP	52.81.2.255	
Tools	Gateway domain name		
Help	Gateway port	32001	
中文	Local port	0	
	0		

Figure 4-5-1 Setting Gateway IP

Step 2: Choose Configurations > All Configurations setting > Multi application center setting > Extended application center 1 and set the extended gateway.

		InDTU Configuration	n Tool	
Status	All configurations setting / Mr	ulti application center setting /	Extended application center 1	Go to upper directory
Maintenance	Gateway IP	10.5.16.56		
Tools	Gateway domain name			
Help 中文	Gateway port	32001		
	Local port	0		

Figure 4-5-2 Setting an extended gateway

Step 3: Repeat steps 1 and 2 to set extended application gateways in sequence.

4.6 Connecting the DTU to the DM Cloud Platform

Select **SMS+IP**, access the DM address page, enter the address of the DM cloud platform, and click **Save configurations**.

		InDTU Configuration Tool	
Status	All configurations setting / DM s	setting	Go to upper directory
Maintenance	SN	DL3321937645558	
Tools	DM mode	SMS + IP	•
Help 中文	White list		
	DM ID	332645558	
	DM address		•
	Heart beat inteval	120	S
	Status data reporting interval	3600	s

Figure 4-6-1 Connecting to the DM cloud platform (1)

	InDTU Configuration Tool	- ×
Status	All configurations setting / DM setting / DM address	Go to upper directory
Configurations Maintenance	IP 0.0.0	
Tools	Domain name iot.inhandnetworks.com	
Help 中文	port 20003	
		C V
Connect	Advanced 🔺 Export configurations Import configurations	Save configurations Read configurations

Figure 4-6-2 Connecting to the DM cloud platform (2)

4.7 Transmission Mode

Long connection: The InDTU communicates with the center uninterruptedly.

Short connection: The InDTU communicates with the center intermittently. Only **Short connection** needs to be activated.

Activation method:

Phone active: Dial the SIM card of the InDTU with your phone, wait 20s or longer, and log in the device to check the connection status. The device is successfully connected to the center.

Local data active: Send data to the InDTU via serial port 1 of the device for activation.

	InDTU Configuration Tool	- :
Status	All configurations setting / DTU Work mode setting	Go to upper directory
Maintenance	Conection type Long connection	•
Toois	Phone active Long connection Short connection	
Help 中文	SMS active On	-
	Local data active On	-
	Auto active interval	min
	Auto offline interval	min
	Network/SMS Network	-
	Transmit recieved SMS to serial Off port	-
l	Configuration mode Stream mode	
Disconnect	Advanced - Export configurations Import configurations Save co	onfigurations Read configurations

Figure 4-7-1 Selecting a connection type and an activation method

4.8 ICMP/Link Maintenance Function

ICMP host: used to detect whether the network is normal, as shown in Figure 4-8-1.

Link maintenance function: used to avoid network congestion caused by the problem of the operator network optimization parameters, as shown in Figure 4-8-2.

Note: The link maintenance function and ICMP detection function are mutually exclusive. When the link maintenance function is enabled, the ICMP detection function is unavailable.

Configurations	tions setting / ICM nance function	P setting Close 10.5.16.21	Go to upper directory
Tools ICMP host Help Max lost pac			
Help Max lost pac	kets	10.5.16.21	
Max lost pac	kets		
		3	
ICMP detect	interval	55	s
Broken detec	ction interval	10	s
ICMP timeor	ut	5	S
Forced ICM	P detect	Close	•
function is used to	avoid network cons	of IP packets is sent to the probe host every network i gestion caused by the problem of the operator network ICMP detection function will be invalid and the traffic	optimization parameters. Please

Figure 4-8-1 ICMP parameter setting

	All configurations setting / ICM	(I) antiling	Contra manage disectores
nfigurations		4P setting	Go to upper directory
inigurations			
intenance	Link maintenance function	Open	•
ols	ICMP host	10.15.6.21	
p		10.15.0.21	
£	Max lost packets	3	
文 文			
	ICMP detect interval	55	s
	Broken detection interval	10	s
	ICMP timeout	5	s
	Forced ICMP detect	Close	-
	Prompt: After being turned on a byte	of IP packets is sent to the probe host every network i	dle interval. The link maintenance
	function is used to avoid network con	ngestion caused by the problem of the operator network	optimization parameters. Please
	note: After this function is enabled, the this feature if it is not necessary.	the ICMP detection function will be invalid and the traffic	: will be increased. Do not enable

Figure 4-8-2 Link maintenance parameter setting

4.9 Dual-SIM Switching Function

Step 1: Choose **Configurations > All Configurations Setting > Dial parameters setting**, and set **Dual SIM mode** and **Switch card without connecting the center** to **Open**, as shown in Figure 4-9-1.

	InDTU Configuration Tool	-
Status Configurations	All configurations setting / Dial parameters setting	Go to upper directory
Maintenance	Auto dial Yes	•
Tools	PPP heartbeat interval 50	S
Help 中文	Redial interval 60	S
	Max redial times 3	
	Dual SIM mode Open	•
	Switch card without connecting Open the center	•
	SIM card 1	Ø
	SIM card 2	Ð
Disconnect	Advanced . Export configurations Import configurations Save co	onfigurations Read configurations

Figure 4-9-1 Dual-SIM switching setting 1

Step 2: Choose Configurations > All Configurations Setting > Application center setting and set Application center link mode to TCP, because Switch card without connecting the center is available only when Application center link mode is TCP, as shown in Figure 4-9-2.



Configurations All configurations setting / Application center setting Go to upper Maintenance DTU ID 0001		InDTU Configuration Tool	
Tools Application center Heip Application center link mode 中文 Max retransmit times 5 Timeout for no received data from 0 sever(minutes) Forced DC heartbeat Close Application center heartbeat(min) 1	Status	All configurations setting / Application center setting	Go to upper direct
Application center Help 中文 Application center link mode TCP Max retransmit times 5 Timeout for no received data from osever(minutes) Forced DC heartbeat Close Application center heartbeat(min) 1 Application center heartbeat(s) 0	Maintenance	DTU ID 0001	
Application center link mode TCP 中文 Max retransmit times 5 Timeout for no received data from 0 sever(minutes) Forced DC heartbeat Close Application center heartbeat(min) 1 Application center heartbeat(s) 0	Tools	Application center	D
Max retransmit times 5 Timeout for no received data from 0 sever(minutes) Forced DC heartbeat Close Application center heartbeat(min) 1 Application center heartbeat(s)	Help	Application center link mode TCP	•
sever(minutes) Forced DC heartbeat Close Application center heartbeat(min) 1 Application center heartbeat(s)	中文	Max retransmit times 5	
Application center heartbeat(min) 1 Application center heartbeat(s) 0		•	
Application center heartbeat(s) 0		Forced DC heartbeat Close	•
		Application center heartbeat(min) 1	
DNS IP1 8.8.8.8		Application center heartbeat(s) 0	
		DNS IP1 8.8.8.8	
Prompt: It only takes effect when Application center link mode is TCP, time range is from 0-255, if the value is more this period of time, if there is no data received from sever, it will automatically disconnect the current TCP connection rebuild a TCP connection, and if the value is set to 0, without any operation. Disconnect Advanced Export configurations Import configurations Save configurations Read con		this period of time, if there is no data received from sever, it will automatically discon- rebuild a TCP connection and if the value is set to 0, without any operation	nnect the current TCP connection and

Figure 4-9-2 Dual-SIM switching setting 2

Step 3: Choose **Configurations > All Configurations Setting > Other setting** and set **Max login times** as required, as shown in Figure 4-9-3.

Example:

(1) Currently, one center is configured, and **Max login times** is set to **3**. When the number of failures to establish a connection to the center reaches 6, the SIM card is switched for redialing.

(2) Currently, one center is configured, and **Max login times** is **5** by default. When the number of failures to establish a connection to the center reaches 10, the SIM card is switched for redialing.

	1	InDTU Configuration Tool	- ×
Status Configurations	All configurations setting / Other	setting	Go to upper directory
Maintenance	Max login times	5	
Tools	Allow teinet	No	•
Help 中文	Debug mode	Yes (serial port 1)	•
	Debug level	Detailed log	•
	Low power mode	Low power consumption	•
	Verification code for blue-tooth key	12345678	
Disconnect	Advanced Lexport co	nfigurations Import configurations	Save configurations Read configurations

Figure 4-9-3 Dual-SIM switching setting 3

Step 4: If multiple centers need to be configured: choose **Configurations > All Configurations Setting > Multi application center setting > Extended application center 1** and complete the settings, as shown in Figure 4-9-4.

	InDTU Configuration Tool -*
atus	All configurations setting / Multi application center setting / Extended application center 1 Go to upper directory
nfigurations	Gateway IP 10.5.16.56
	Gateway domain name
p Z	Gateway port 32001
	Local port 0
Visconnect	Advanced Advanc

Figure 4-9-4 Dual-SIM switching setting 4

Example:

- (1) Currently, one center is configured, and **Max login times** is **5**. When the number of failures to establish a connection to the center reaches 10, the SIM card is switched for redialing.
- (2) Currently, two centers are configured, and **Max login times** is **5**. When the number of failures to establish a connection to the center reaches 20, the SIM card is switched for redialing.

Step 5: Choose Configurations > All Configurations Setting > Multi-center mechanism setting and set Max reconnect interval as required (the default value is **15s**), as shown in Figure 4-9-5.

Example:

When it is set to **15s**, the device attempts to establish a connection to the center every 15s until it is successfully connected to the center.

Step 6: After setting the parameters, click Save configurations. The parameter settings take effect after a restart.

		InDTU Configuration Tool	- ×
Status			
Configurations	All configurations setting / N	Multi-center mechanism setting	Go to upper directory
Maintenance	Min reconnect interval	15	s
Tools	Max reconnect interval	15	S
Help	Poll/parallel	Poll	
中文	r ou pai anci	Роц	•
	· · · · · · · · · · · · · · · · · · ·	se be not less than the reconnection minimum interv	al (seconds)
	, , i		(seconds)
	, , , , , , , , , , , , , , , , , , ,		(seconds)
			(seconds)

Figure 4-9-5 Dual-SIM switching setting 5



The SIM card is also switched in the following cases:

- (1) The number of lost ICMP packets exceeds the maximum value.
- (2) No data service is available due to insufficient tariffs or incorrect APN settings.
- (3) PAP/CHAP authentication fails (usually on private networks).
- (4) The SIM card in the SIM 1 slot is faulty (for example, the SIM card is not detected).
- (5) The signal strength is low (CSQ < 8), insufficient for data communication.
- (6) Network registration fails.
- (7) Network attaching fails.
- (8) Dialing for data services fails (an ATD error occurs).

4.10 Maintenance

4.10.1 View Real-Time/ History Logs

Run the InDTU Configuration Tool and log into the device via serial port 2 of the DTU.

Select the "Advance mode>Configurations>Other " to configure the Debug Level and Debug mode as shown below.

ſ			InD	TU Configuration Too	1	- >
	Status Configurations 2		All configurations / Other	3		Go to upper directory
	Maintenance		Max log—in times	5		
	Tools		Allow telnet	No		•
	Help	4	Debug mode	Yes(serial port 2)		•
		5	Debug level	Detailed log		•
			Low power consumption	Low power consumption		•
			Password for blue-tooth key	12345678		
	Connect ↔	1	Advanced . Export to	file Import from file	Save configurations	Read conifgurations

Figure 4-10-1 the configure about debug mode

Click "Maintenance > Real-time log/ History log". To display logs, click "Start reading". Wait for several seconds, and the logs are displayed. To stop updating the logs, click "Stop reading". To delete all displayed logs, click "Clear Screen". To export displayed logs, click "Export log", as shown in Figure 4-10-2/4-10-3/4-10-4.



Figure4-10-2Viewing real-time logs

	InDTU Configuration Tool	- ×
Status		
	Real-time log	
Configurations		•
	Starting reading real-time log. Please make sure DTU is in correct debug mode.	<u>^</u>
Maintenance		
	<6><388><0>2018-8-23 10:26:17 SYSWATCHER:Task dial sig handle, signo:3	
Tools	<6><388><0>2018-8-23 10:26:17 DIAL :Start	
	<7><388><0>2018-8-23 10:26:17 DIAL :get want_ip:0x0	
Help	<6><388><0>2018-8-23 10:26:17 DIAL :Args->dial.ppp_echo_interval:50	
	<6><388><0>2018-8-23 10:26:17 DIAL :Args->dial.last_dial_ts:388	
	<6><389><0>2018-8-23 10:26:17 DIAL :Args->dial.apn:cmnet	
	<6><389><0>2018-8-23 10:26:18 DIAL :Args->dial.number:*99***1#	
	<6><389><0>2018-8-23 10:26:18 DIAL :Args->dial.name:GPRS	
	<6><389><0>2018-8-23 10:26:18 DIAL :Args->dial.password:GPRS	
	<6><389><0>2018-8-23 10:26:18 DIAL :Args->sms.center:8613800100500	
	<6><389><0>2018-8-23 10:26:18 DIAL :Args->icmp_timeout:10	
	<6><389><0>2018-8-23 10:26:18 DIAL :Args->icmp_interval:55	
	<6><389><0>2018-8-23 10:26:18 DIAL :Args->icmp_dst.addr:0.0.0.0	
	<6><389><0>2018-8-23 10:26:18 DIAL :Args->icmp_max_lost:3	
	<6><389><0>2018-8-23 10:26:18 DIAL :Args->dial.sim.network_mode:0	
	<6><389><0>2018-8-23 10:26:18 DIAL :Args->dial.sim.auth:Auto	
	<7><389><0>2018-8-23 10:26:18 DIAL :Power on ME909s	
	<7><391><0>2018-8-23 10:26:20 DIAL :Wait for ME909s starting	
	<7><391><0>2018-8-23 10:26:20 DIAL :AT	
	<7><393><0>2018-8-23 10:26:22 DIAL :AT	
	<7><395><0>2018-8-23 10:26:24 DIAL :AT	
		v
Disconnect 🥝	Clear Screen Export log Start reading Stop	reading

Figure4-10-3Viewing real-time logs

	InDTU Configuration Tool	-
Status		
Configurations	History log	
	<6><3208><0>2018-8-23 10:10:36 DIAL :SIM not inserted	^
Maintenance	<6><3211><0>2018-8-23 10:10:39 DIAL :SIM not inserted	
Maintenance	<6><3214><0>2018-8-23 10:10:42 DIAL :SIM not inserted	
Tools	<6><3217><0>2018-8-23 10:10:45 DIAL :SIM not inserted	
10012	<6><3220><0>2018-8-23 10:10:48 DIAL :SIM not inserted	
	<6><3223><0>2018-8-23 10:10:51 DIAL :SIM not inserted	
Help	<6><3226><0>2018-8-23 10:10:54 DIAL :SIM not inserted	
	<6><3229><0>2018-8-23 10:10:57 DIAL :SIM not inserted	
	<6><3232><0>2018-8-23 10:11:0 DIAL :SIM not inserted	
	<6><3235><0>2018-8-23 10:11:3 DIAL :SIM not inserted	
	<6><3238><0>2018-8-23 10:11:6 DIAL :SIM not inserted	
	<6><3241><0>2018-8-23 10:11:9 DIAL :SIM not inserted	
	<6><3244><0>2018-8-23 10:11:12 DIAL :SIM not inserted	
	<6><3247><0>2018-8-23 10:11:15 DIAL :SIM not inserted	
	<5><3247><0>2018-8-23 10:11:15 DIAL :Module AT+CIMI timeout goto exit	
	<6><3258><0>2018-8-23 10:11:26 SYSWATCHER:Task dial sig handle, signo:3	
	<6><3258><0>2018-8-23 10:11:26 DIAL :Start	
	<6><3258><0>2018-8-23 10:11:26 DIAL :Args->dial.ppp_echo_interval:50	
	<6><3258><0>2018-8-23 10:11:26 DIAL :Args->dial.last_dial_ts:3258	
	<pre><6><3258><0>2018-8-23 10:11:26 DIAL :Args->dial.apn:cmnet</pre>	
	<6><3258><0>2018-8-23 10:11:26 DIAL :Args->dial.number:*99***1#	
	<6><3258><0>2018-8-23 10:11:26 DIAL :Args->dial.name:GPRS	
	<6><3258><0>2018-8-23 10:11:26 DIAL :Args->dial.password:GPRS	
	<6><3258><0>2018-8-23 10:11:26 DIAL :Args->sms.center:8613800100500	
	<6><3258><0>2018-8-2	
Disconnect Ø	Erase log on DTU Export log Start reading	Stop reading

Figure4-10-4 Viewing History logs

4.10.2 101 Detection

Prerequisite: The DTU is connected to the master station that supports the 101 balanced protocol.

	InDTU Co	onfiguration Tool	- ×
Status	InDTU type: InDTU332LH09-DS-LP		
Configurations	Serial number: DL3321905091151		
	Firmware version: InDTU3XX_STD_V1.5.4 O	oct 8 2019 10:02:32	
Maintenance	InDTU time: 2019-11-08 13:54:20	Synchronize	time to PC
Tools	Reboot info: Hardware restart		
Help	Summary Physical layer Network layer	Application layer	
中文	Thysee ages intervolation	approximpton mjor	
	InDTU	Base station	Application center
		A	Application center

Figure 4-10-5 Connected state

Choose **Maintenance** > **101 detection** to start detection. The "Detection success" message is displayed after detection is completed.

		InDTU Configuration Tool	- x
	Status Configurations	Maintenance	
	Maintenance 1	Click items below to maintain DTU.	
	Tools Help	Upgrade firmware Use IHD file supported by Inhand to update the DTU software version.	
	中文	Real-time log Read Real-time output data from DTU serial port.	
		History log Read historical logs saved in the DTU.	
		Blue-tooth Set the blue-tooth and view its status.	
		2 Detect whether the link is connected through the 101 protocol.	
4			
	Disconnect		

Figure 4-10-6 101 detection (1)

	InDTU Configuration Tool	- ×
Status Configurations Maintenance Tools Help 中文	InDTU Configuration Tool 101 detection function	- x
Disconnect		Detecting

Figure 4-10-7 101 detection (2)

4.11 Other Functions

4.11.1 Login Settings for the Administrator

The DTU provides multi-level management for administrators and general users. The accounts and passwords must be set at the same time.

		InDTU Configuration Tool		- ×
Status Configurations	All configurations setting / Adm	ninistrator setting		Go to upper directory
Maintenance	Administrator account	adm		
Tools	Administrator password	123456		
Help 中文	General user	adm		
ŦX	General user password	123456		
Connect	Advanced - Export	configurations Import configuration	s Save configurations	Read configurations

Figure 4-11-1 Setting the account and password of an administrator or a general user

4.11.2 Import/Export Configuration

DTU supports below 2 types configuration file:

The .ini or .cfg file is a plain-text file with comments and easy to read/view.

The .ini or .cfg file is a binary file with a smaller file size.

Step:1 After establishing a connection with the DTU through the configuration tool and logging in. Click the <Export to File> or <Import from File> button to export or import the configuration file, as shown in Figure 4-11-2.

Step:2 After importing the configuration file, click **Save configurations**. The parameter settings take effect after a restart.

	InD	TU Configuration Tool	l	- :
Status Configurations	All configurations / Other			Go to upper directory
Maintenance	Max log—in times	5		
Tools	Allow telnet	No		•
Help	Debug mode	Yes(serial port 2)		•
	Debug level	Detailed log		•
	Low power consumption	Low power consumption		•
	Password for blue-tooth key	12345678		
			1	
Disconnect Ø	Advanced . Export to	file Import from file	Save configurations	Read conifgurations

Figure 4-11-2 Importing/Exporting configuration

4.11.3 Upgrade Device

Choose "Maintenance > Upgrade firmware".

(1) Select a new DTU firmware to upload, as shown in Figure 3-4;

(2) Click the "Upgrade" button to start the upgrade, and its progress bar is displayed, as shown in Figure 3-5;

(3) Popup a message box to remind you restart the device, as shown in Figure 3-6;

(4) The DTU device will establish a connection with DTUTool again, log into the device, and check the firmware version currently in effect in the status bar to confirm whether the upgrade is successful, as shown in Figure 4-11-3.

St		
St		InDTU Configuration Tool
	itatus	
Co	Configurations	Upgrade firmware
М	laintenance	Firmware of InDTU: Browse file
Т	ools	
He	lelp	
		■ 选择升级文件 ? ×
		My Computer SeigeDownload MyDownloads Phone Wecharm
		Ref_Data
		Tools VsPrj
		Windows10Upgrade
		File name:
Di	isconnect Ø	Files of type: Upgrade file(*.IHD) Cancel Upgrade
		InDTU Configuration Tool
S	Status	
C	Configurations	Upgrade firmware
N	Maintenance	Firmware of InDTU: E:/Inhand_PD_DTU/InDTU_Image/InDTU3XX_STD_V1.5.2.IHD
Т	Fools	
Н	Help	

Figure4-11-4 upgrade firmware

	InDTU Configuration Tool	- ×
Status Configurations	Upgrade firmware	
Maintenance Tools Help	Firmware of InDTU: E:/Inhand_PD_DTU/InDTU_Image/InDTU3XX_STD_V1.5.2.IHD	
	DTU will switch to new firmware version after reboot.	
	Confirmation	
Disconnect Ø		Upgrade

Figure4-11-4 popup after upgrade

Serial number: Software version: InDTU time: Reboot info:	InDTU332GS52 DG3321312079327 InDTU3XX_STD_V1.5.2 A 2019-01-21 14:57:16 Software reboot cal layer Network layer	ag 22 2018 17:10:00 Application layer	Synchronize time to PC
Serial number: Software version: InDTU time: Reboot info: Summary Physi	DG3321312079327 InDTU3XX_STD_V1.5.2 A 2019-01-21 14:57:16 Software reboot	Application layer	Synchronize time to PC
InDTU time: Reboot info: Summary Physic	2019-01-21 14:57:16 Software reboot	Application layer	Synchronize time to PC
Reboot info: Summary Physic	Software reboot		Synchronize time to PC
Summary Physic			•
	cal layer Network layer		•
	8		•
InDTU	כ	Base station	Application center
🔲 Pefrah anari 15 ana			
		InDTU	

Figure4-11-5 confirm the upgrade result

4.11.4 Power Mode

Choose **Configurations > All configurations setting > Other setting** and select a power mode for the DTU, as shown in Figure 4-11-6.

		InDTU Configuration Tool	-
Status Configurations	All configurations setting / Other	setting	Go to upper directory
Maintenance	Max login times	5	
Tools	Allow telnet	No	•
Help 中文	Debug mode	Ves (serial nort 1)	-
	Debug level	Low power consumption Balanced High performance	
	Low power mode	Low power consumption	-
	Verification code for blue-tooth key	12345678	
	Prompt: Low power mode only support	s by certain models. Please contact Inhand	networks Technical Support for details.
0			

Figure 4-11-6 Selecting a power mode

4.11.5 Restoring Factory Settings

Connect the device and click Factory reset > Confirm to restore factory settings.

Γ			InDTU Configuration Tool		- ×
	Status	InDTU type: InDTU332LH	09-DS-LP		
	Configurations	Serial number: DL332190509	1151		
	Maintenance	Firmware version: InDTU3XX_S InDTU time: 1970-01-01 09	-	Synchronize time to PC	
	Tools	Reboot info: Soft restart			5
	Help	Summary Physical layer 1	Network layer Application layer		
	中文	Confirm		x	
		Are you s	sure to reset the factory settings for Step Cancel Confi	:2	
		InDTU	Base station	I.	Application center
		Refresh every 15s			p:1
	Disconnect			Reboot Factor	y reset Read again

Figure 4-11-6 Restoring factory settings

4.11.6 SNTP Time Synchronization

Step 1: Choose **Configurations > All configurations setting > Application center setting** and enable the SNTP service to synchronize the time on the device with the current time. When the default SNTP server address is unavailable, enter the address that supports time synchronization.

	All configurations setting / Appli	ication center setting	Go to upper director
Configurations			
Maintenance	Application center heartbeat(s)	0	
Tools	DNS IP1	8.8.8.8	
Ielp 中文	DNS IP2	0.0.0.0	
	SNTP service	Open -	
	SNTP server	time.nist.gov]
	GPI slave address	0	
	Exchange local serial ports	Close	
	Local TCP server port	21022	
	Prompt: Can be filled in IP or domain r	name, up to 32 bytes, for example: time.nist.gov	

Figure 4-11-7 Enabling SNTP time synchronization

4.11.7 Short Message Sending/Receiving

Each English short message to be sent can contain up to 160 English characters. A long message is sent if there are more than 160 English characters. The long message is divided into several short messages, each of which contains less than 160 English characters. Sending is based on the long message protocol. When sending English short messages to the DTU, the user device encapsulates the ASCII value of the English characters in the TLV of the short message content.

For example, the short message content to be sent is "hello0123456!".

Step 1: Encapsulate the destination phone number, short message content, and short message format into an SMS command according to the IHDMP protocol. For example, "hello0123456!" and the destination phone number are encapsulated into a hexadecimal instruction according to the IHDMP protocol:

55AA55AA1300258180000B313538313836323330313081810001028182000D68656C6C6F3031323 334353621A25F. (For more information, see the IHDMP protocol documentation.)

Step 2: Download a serial port tool by using the browser, connect to serial port 1 of the InDTU, set the sending/receiving format to HEX, and copy the compiled instruction to the serial port tool, as shown in Figure 4-11-8. (UartAssist is used here.)

· ·	Uart Assistant	₩ - □ ×
COM Configs	Data log	<u>VartAssist V4.3.20</u>
Channel COM7 #U -		*
Baudrate 9600 👤		
Paritybit: NONE 🔻	Step:1	
Databits 8 💌		
Stopbits 1		
- Č Close		
Recv Options		
C ASCII E HEX	🗧 Step:2	
✓ Log display mode		
Auto linefeed Save data to file		
Slient More		
STERC		
Send Options		
C ASCII C HEX		
Use escape chars AT CMD auto CR+L		
APpend checkcode		· · ·
Send from file	Data Send 1. DCD • 2. RXD • 3. TXD • 4. DTR • 5	5. GND 🌒 6. 두 Clear 📩 Clear
Period 1000 ms	55AA55AA1300258180000B31353831383632333031308	
Shortcut <u>History</u>	0D68656C6C6F3031323334353621A25F Step):3 Send
🕼 Readv!	0/0 RX:0	TX:0 Reset

Figure 4-11-8 SMS application example 1

Step 3: Click **Send**. After the short message is sent, serial port 1 receives two acknowledgment instructions, among which the second instruction indicates whether the sending succeeds (01: succeeded; 00: failed), as shown in Figure 4-11-9.

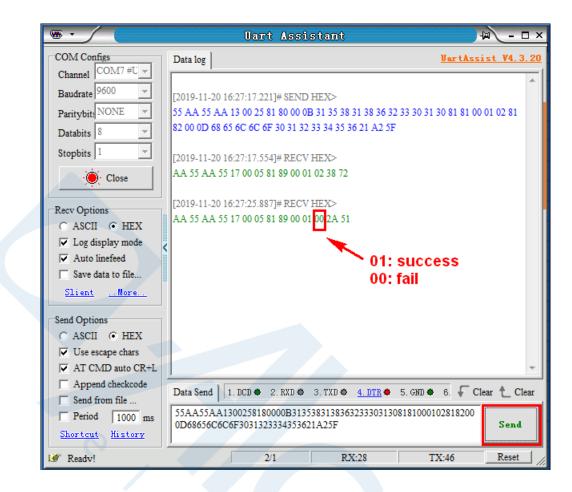


Figure 4-11-9 Failure to send a short message

Step 4: Check whether the phone receives a message. The phone receives "hello0123456!" if the sending succeeds and receives no message if the sending fails.

5 FAQ

1) DTU332/DTU324 reboots frequently.

Troubleshooting procedure:

1. Check whether the device can go online by dialing.

2. Check whether the UIM/SIM/USIM card is correctly inserted into the DTU.

3. Check whether the UIM/SIM/USIM card is suspended for arrears, or damaged.

4. Check whether the dialing parameters (such as dial number, access point parameter, account, and password) are correct.

5. Check whether wireless signal strength is lower than 20. Move the DTU to a place with stronger signal strength and power on it to retry.

6. Check whether the power supply to the DTU is normal.

2) DTU332/DTU324 is powered on, but power indicator is off.

Troubleshooting procedure:

- 1. Check whether the DTU is securely connected to the power converter.
- 2. Check that the 100 V AC to 240 V AC power supply can be provided.
- 3. Check whether the power converter of DTU can output 5 V DC to 35 V DC voltage.
- 4. Check whether the indicator is burned. If so, contact the sales representative of InHand.

3) Failed to configure DTU332/324.

Troubleshooting procedure:

1. Check the serial port cable, whether the PC serial port works normally, and whether the port selected by software is correct.

2. Check whether the output voltage can reach 5 V DC to 35 V DC and whether the polarity is correct.

4) Failed to upgrade the DTU through serial port.

Troubleshooting procedure:

1. Check the serial port cable, whether the PC serial port works normally, and whether the port selected by software is correct.

2. Check whether the output voltage can reach 5 V DC to 35 V DC and whether the polarity is correct.

6 Parameter Settings

6.1 Local Serial Port/Serial Port 2

The DTU serial port parameters should be the same as the serial port parameters of the peer device connected to the serial port.

Parameters	Description	Default
Baud rate	1200, 2400, 4800, 9600, 14400, 19200, 38400, 57600, or 115200, in bps	serial port 1:9600 serial port 1: 115200
Data bit	5, 6, 7, or 8	8
Stop bit	1, 1.5, or 2	1
Parity	None/odd/even	None
Scan interval	Retain the default value.	2
Response timeout	Retain the default value.	5
Max frame size	1024 by default, range: (10-1024)	1024

Table 6-1 Parameter settings for serial port

6.2 Work Mode

According to the below table, set the parameters of the working mode of the DTU, such as the connection mode and activation mode.

Parameters	Description	Default
Connection type	Long connection or short connection	Long connection
Phone active	Enable or disable phone active	Enabled
SMS active	Enable or disable SMS active	Enabled
Local data active	Enable or disable local data-flow active	Enabled
Auto active interval	5-1440 minute	0
Auto offline interval	0~60 minutes, the minimum setting time is 1 minute If set to 0, it will automatically adapt to the 1 minute.	0
GPRS/SMS	GPRS or SMS link.	GPRS
Transmit received SMS to serial port	Enable or disable the function. If enabled, received messages are transmitted to the working serial port.	Disabled
Configuration mode	Packet mode or stream mode.	Stream mode

Table 6-2 Setting DTU working mode

6.3 GPRS Dialing

Table 6-3 Setting GPRS dialing parameters

Parameters	Description	Default
Auto dial	Enable or disable auto dial.	Yes
PPP echo interval	30 to 3600 seconds.	50
Redial interval	0 to 3600 seconds.	60
Max redial times	Once consecutive failed redial times reach to the predefined limit (1-10), the device will automatically hot restart.	3
Dual SIM mode	Enable this function before use SIM No.2. This parameter is invalid for single-card version of DTU	Close
Switchover card when fail to connect center	This parameter is invalid for single-card version of DTU	Close
SIM card	The associate parameters about each SIM	
GPRS dial number	The dial number to access the special cellular network	*99***1#
APN	Access Point Name	cmnet
APN user name	Account for login the APN	gprs
APN password	Password for login the APN	gprs
Authentication mode	Auto/PAP/CHAP	Auto
Network mode	Auto/4G/3G/2G	Auto
Local APN settings	Default setting about SIM, suitable for LTE 4G.	

6.4 Application Center

Table 6-4 Setting application cen	ter parameters
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Parameters	Description	Default
DTU ID	Custom device identification number. It supports 11 digits number.	0001
Application center	The IP address, port number, and domain name of the center. If the IP and domain name are configured, configure one only.	0.0.0.0/ empty/0
Application center link mode	TCP, UDP, DCTCP, DCUDP, or Modbus bridge The custom heartbeat frame for link maintenance is	ТСР

	recommnad when using UDP.		
Max retransmit times	0 (TCP automatically retransmits data times)	5	
Forced DC heartbeat	This function will take effect only for DC protocol. "OFF" means that heartbeat will sleep when transmitting data; "ON" means that heartbeat always work even transmitting data;	OFF	
Application center heartbeat (min)	The value ranges from 1 to 60,	1	
Application center heartbeat (s)	The application center and extend center will share this parameter.	0	
DNS IP1	The IP address of a dedicated DNS server.	8.8.8.8	
DNS IP2	The final duress of a dedicated Divis server.	0.0.0.0	
SNTP service	Enable or disable the SNTP service. The default time 1970-1-1.	Disabled	
SNTP server IP	IP address or domain name for SNTP server.	time.nist.gov	
Exchange local serial ports	"OFF" means that serial port No.1 is working port, port No.2 is for debug; "ON" means that exchange the role of port 1 and port 2.	OFF	
Local TCP server port	Set the listening port for the TCP server. If the value is 0, this feature (TCP server) is disabled.	8888	

6.5 Multi-application Center

When using multi-application center, enter the IP addresses, domain name and port numbers. The connection types and heartbeat interval for extend application center will share same parameters with application center.



For unused extend application center, the IP address should be default,0.0.0.0, its domain name is empty.

In order to ensure the efficiency of the equipment, we recommend that no more than 3 centers are connected at the same time.

6.6 Multi-center mechanism

Parameters	Description	Default
Min reconnect interval	Set the minimum interval at which TCP/UDP connection is set up again.	15
Max reconnect interval	Set the maximum interval at which TCP/UDP connection is set up again.	60
Poll/parallel	Parallel: sending data to each center simultaneously; Poll: the priority of execute, application center> application center 2> application center 3> application center 4> application center 5	Poll

Table 6-6 Setting multi-connection policy parameters

6.7 Other Settings

Parameters	Description	Default
Max log-in times	Max login times	5
Allow telnet	Enable or disable telnet function	No
Debug mode	Yes or no. If yes is selected, you can view the DTU running logs by using the serial port tool. This setting take effect immediately, the restart is unnecessary.	No
Debug level	detailed log, Chinese brief log, and English brief log.	Detailed log
Low power consumption	Low power consumption, balanced, and high performance. Only some models support the low power mode.	Low power consumption

Table 6-7 Setting application extension parameters



Because DTU will generate real-time logs in debug mode, turn off this feature, the device will run better.

6.8 InHand Device Manager (DM) platform

Parameters	Description	Default
SN	Set a 15-bit character string for the network management platform to identify the device. It is defined when manufacture, cannot be modified.	Empty
DM mode	Only SMS, SMS + IP, or disabled.	Only SMS
White List	The trusted list for accessing DTU, the DTU will interact with white list phone number by SMS. If the list is empty, it will receive the SMS of anyone.	Empty
DM ID	Enter the device ID used by the platform to identify the device.	0
DM address	IP address, domain name and port number for DM	0.0.0.0/g.inhandn etworks.com/ 20003
Heart beat interval	Set the heartbeat interval between the DTU and the platform. The value ranges from 30 to 600 seconds.	120
Update interval	Set the update interval about DTU state information between the DTU and the platform. The value ranges from 1 to 65535 seconds.	3600

Table 6-5 Setting platform parameters

6.9 Administrator Account

Table 6-6 Setting administrator login parameters

Parameters	Description	Default
Administrator	Set the administrator account name.	adm
Administrator password	Set the password for the administrator account.	123456
Common user	Set the name of the common user.	adm
Common user password	Set the password for the common user.	123456

6.10 ICMP

Table 6-7 Setting ICMP parameters

Parameters	Description	Default
RRC link Maintenance	Maintain the link between the communication module and the base station	
Detect interval when network broken	Range 10~120 seconds, only for dual-SIM DTU. If there is no communication data flow at this time interval, ICMP detection will start.	10
ICMP host	The destination IP address for ICMP If the IP is empty, the application center IP will be detected by ICMP.	0.0.0.0
Max lost packets	If the times of consecutive ICMP failure reaches this limit, DTU will redial.	3
ICMP detect interval	1 to 3600 seconds	55
Forced ICMP detect	"OFF" means that ICMP will sleep when transmitting data; "ON" means that ICMP always work even transmitting data.	OFF

6.11 User-Defined Packets

Packet types: ASCII, HEX, and DC.

ASCII type means that the packet uses ASCII characters.

HEX type means that the packet uses HEX characters.

DC type means that packet content will adopt the same format with DC message.

Parameters Description Default The data content and format of submitted packet form DTU to Empty Log-in application center when login The data content and format of responded packet form Log-in ack Empty application center to DTU when login The data content and format of heartbeat packet form DTU to Heartbeat Empty application center after connected The data content and format of heartbeat packet form application Heartbeat ack Empty center to DTU after connected The data content and format of submitted packet form DTU to Log-out Empty application center when log-out The data content and format of responded packet form Log-out ack Empty application center to DTU when log-out

Table 6-8 Setting user-defined packet parameters



Caution

The user-defined frame is valid only when the connection type is TCP or UDP. It is recommended that the login frame and the login ack frame must be used in pair. The heartbeat frame and the exit frame are same condition.

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