



EBYTE

成都亿佰特电子科技有限公司

Chengdu Ebyte Electronic Technology Co.,Ltd.

Wireless Modem

用户使用手册

NB-IoT Serial Server

E840-DTU (NB-02)



本说明书可能会随着产品的改进而更新，请以最新版的说明书为准
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E840-DTU(NB-02) can realize the communication between serial port device and network server via NB network. With simple AT command, users can easily use this product to achieve bidirectional transparent data transmission from the serial port to the network.

This manual focuses on the brief introduction of E840-DTU(NB-02). It explains how to make the simplest hardware environment and test the transparent transmission of E840-DTU(NB-02). The transparent transmission is between UART devices (referring to PC) and net sever (replaced by TCP testing tools).

Features

- Based on NB-IOT communication standard, it can realize more 20dbi gain than GSM.
- Support Single Tone, Sub-carrier 15kHz and 3.75kHz : 21.25kbps (Downward)
- Support multiple network protocol, such as CoAP , UDP , IPv4 ,LwM2M etc.
- Support 3GPP TS 27.007 V14.3.0 (2017-03) and Quectel intensified AT command.
- Support 8-28V wide voltage power supply, and adopt DC and terminal as the two power supply methods.
- RS485 circuit use the electrical isolation, lightning protection and surge protection scheme, it has anti-interference ability.

1. Introduction

1.1 Brief Introduction

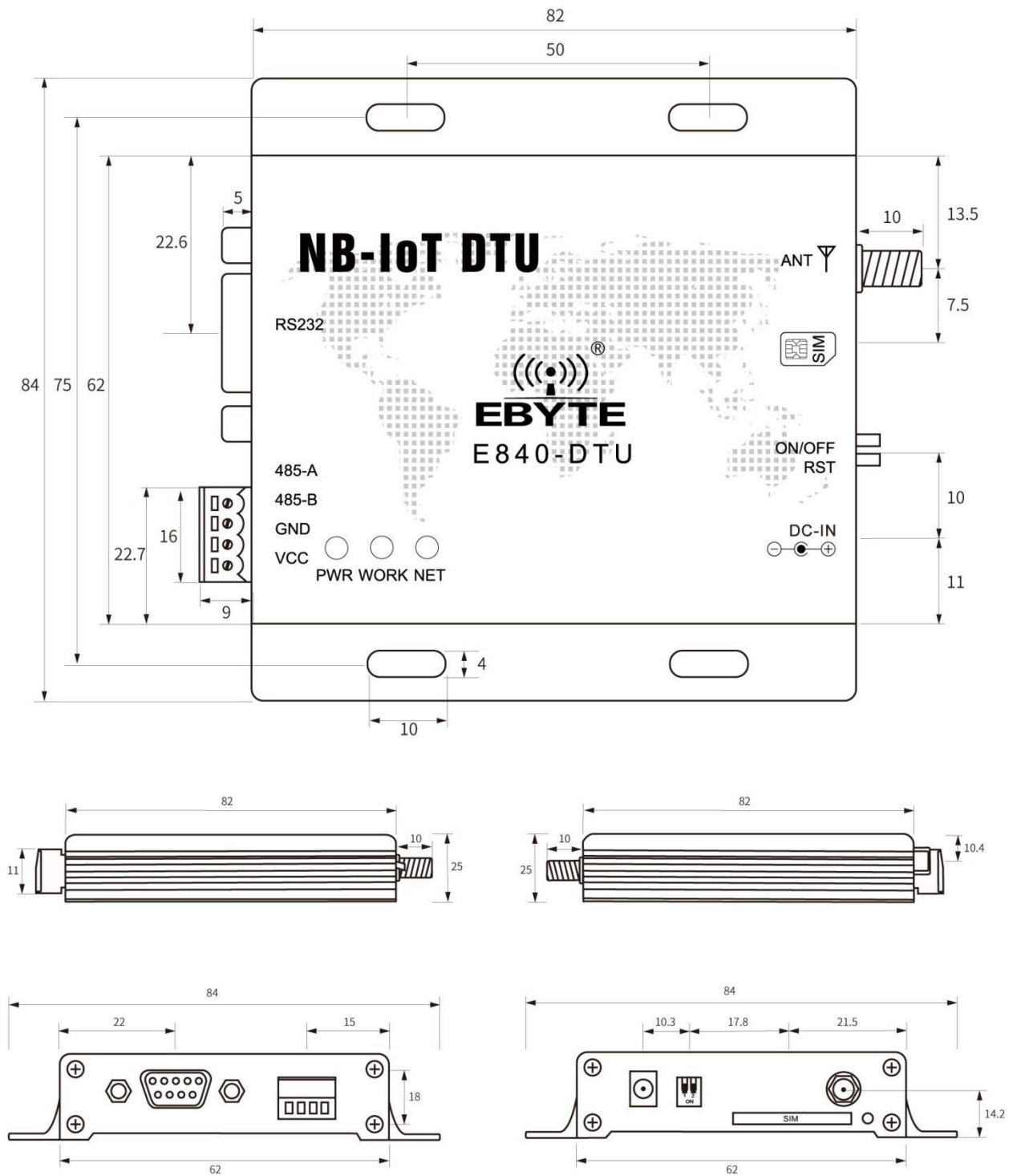
E840-DTU(NB-02) is a NB-IoT DTU produced by Ebyte. It features a certain scope of applications which cover most common application scenarios. The user can realize bidirectional transparent data transmission from the serial port to the network server by simple setting.

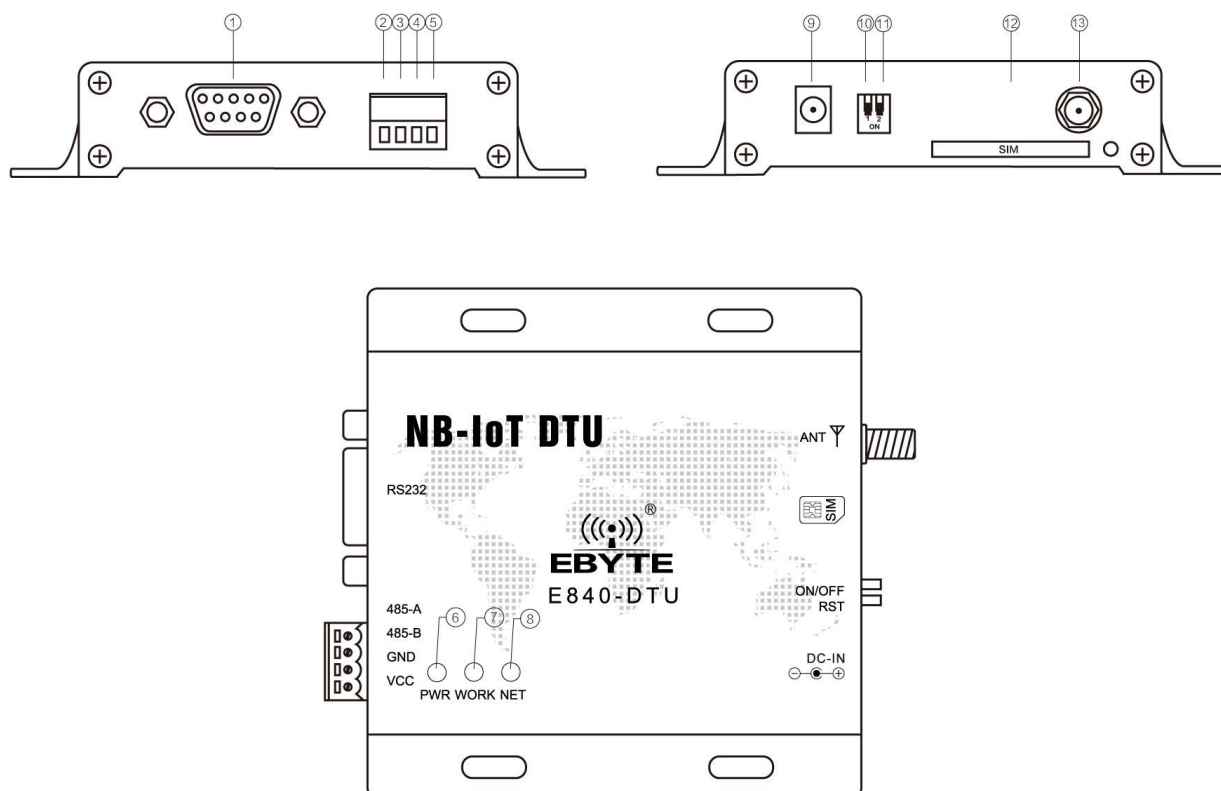
E840-DTU (NB-02) supports DC and RS485 terminal power supply. Its voltage ranges from 8.0 to 28.0V. 5.0V works too. RS232 and RS485 apply electric isolation which enables anti-interference. It is applicable in some environment with strong electromagnetic interference like power sector.

1.2 Parameters

Item	Value	Description
Frequency	Band 5	Receiving Frequency : 869MHz~894MHz Transmitting Frequency : 824MHz~849MHz
Hardware features	Antenna Type	SMA
	Data Interface	RS485 /RS232
	Baud Rate	9600bps
	Maximum transmitting power	23dBm±2dB
	Sensitivity	-129dBm±1dB
	Dissipative Flows (typical value) :	Power-saving mode (PSM) : 3.6uA Idle Mode (Idle) : 2mA @DRX=1.28s
	Working Voltage	DC 8 V~28 V
	Working Temperature	-40°C- 70°C
	Storage Temperature	-40°C- 85°C
	Size	82×84×24mm
	RS485 /RS232	Electrical isolation, and with RS485/RS232
Software features	Wireless rate	Single Tone , Sub-carrier 15kHz and 3.75kHz : 21.25kbps (downward) , 15.625kbps (upstream)
	Working Mode	Power-saving mode (PSM) Idle mode (Idle) Continuous mode (Active)
	Setting command	Abide by 3GPP TS 27.007 V14.3.0 and Quectel intensified AT command
	Network protocol	Support multiple protocol, such as CoAP , UDP , IPv4 ,LwM2M etc.
	Device ID	Users can configure the device ID via AT command

1.3 Interface Description






1.4 Pin Definition

Pin No.	Name	Description
1	RS232	RS232 interface
2	485_A	Side A of external interface for other RS485 devices
3	485_B	Side B of external interface for other RS485 devices
4	GND	Ground electrode
5	VCC	Power supply , default: 8~28V
6	PWR	Power indicator
7	WORK	UART communication indicator
8	NET	Net working indicator
9	DC-IN	Power adapter interface
10	RST	Reset dial switch (down , reset)
11	ON/OFF	N/A
12	SIM	SIM card slot
13	ANT	Antenna interface (SMA-K , 50Ω)

2. Quick Start

2.1 Device Preparation

	
<p>E840-DTU(NB-02)</p>	<p>12V Power adaptor</p>
	
<p>USB to RS485 adaptor or USB to RS232 adaptor</p>	<p>NB-IoT sucker antenna</p>

Please get UART, SIM card, sucker antenna and etc. ready according to the recommended circuit before test.

2.2 Data Transmitting Test

Software is needed for data transmitting test:

Xcom is applied here for the test and you can download it at our website. Users can also apply other test tools that are available.

2.2.1 Test Steps:

1. Insert the SIM card into E840-DTU(NB-02) and connect it to the computer according to the above mentioned methods. Open the Xcom, set the parameters of corresponding UART NO. and baud rate(only 9600 is available)and turn on the UART.
2. When powered on with the power adaptor provided by us, POWER indicator on and NET indicator blinking shows that the transceiver is ready.
3. Wait for 3s-5s to use the serial AT command to access the module.
4. Normal network process

Neul // Waiting 3s after module is powered on

OK

AT+CFUN=1 // configure cfun , "1" means open all the function of module

OK

AT+CIMI //Inquire IMSI——Delay 3s to inquire to ensure the module can

recognize the card.

460012345678966

OK

AT+NBAND?

+NBAND:5 // Read the current frequency, "5" means

850MHz;

OK

AT+NCDP=139.199.157.166,2017//configure CDP server

OK

AT+NCDP? //read the current CDP server

+NCDP:139.199.157.166,2017

OK

AT+CGATT=1 //register network

OK

AT+CSQ //read the current signal intensity +CSQ:21,99 ;

OK

AT+CGATT? // Inquire the network status-it takes times for module to join network. Query within

30s until it is 1, "1" means connection already.

+CGATT:1

OK

AT+CEREG? //Inquire network registration status, "1" means success;

+CEREG:0,1

OK

Note: Before the module joining the network, the IMSI of sim must be registered in the core network, or it cannot register the network.

Revision history

Version	Date	Description	Issued by
1.00	2018/03/07	Initial version	huaa

Important Statement

1. CDEBYTE reserves the right of final interpretation and modification of all the contents of this manual.
2. As the hardware and software products continuously improving, this manual may subject to change without notice, please refer to the latest version.
3. Everyone is responsible for protecting the environment: to reduce the use of paper, we only provide electronic documents of the English manual, if necessary, please go to our official website to download.

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