

KB3050 GPRS DTU User Manual



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1 Brief Introduction

Thanks for you to use our products!

1.1 Brief Introduction

KB3050 GPRS DTU (Data Terminal Unit) is wireless data transmitting terminal of GPRS/SMS and embedded with High reliable ARM7 CPU.

Based on the public net, KB3050 GPRS DTU transmit widely, stably and reliably, KB3050 GPRS DTU is widely used in unattended operation device, Remote AMR, remote data acquisition, remote AMR, remote scheduling and so on. Due to this product is designed for industry integrated, we adopt special designs in the temperature scope, shaking, EMC and interface multiform and so on, to keep it good stability in the severe atmosphere, ensure high quality for your device.

Aim at different scope user's requirements to supply different define GPRS Terminal unit, it needs taking industry characteristics for developing on hardware & software and system integration. GPRS mobile net can supply TCP/IP connection; GPRS DTU can be use for internet connection, data transmitting application and so on. KB3050 GPRS DTU (Data Terminal Unit) is special GPRS wireless device that send the data from COM port through GPRS mobile data network.

KB3050 GPRS DTU is used in electric power automatic system, industry monitoring, traffic management, atmosphere, pro-environment, pipe network monitoring, finance, securities departments and so on. Consider the networking request from different application scope, achieve Virtual data private network in network structure. It is applicable to small and medium data transmitting of the Center to multi-points, multi-points scatter.

1.2 Product Feature

- Standard industrial products, EMC anti-jamming design, strong adaptiveness.
- Independent research and developing, embedded 32 bit ARM7-CPU with real-time operating system.
- Embedded Watchdog chip, provide multiple Reset mechanism, can be controlled by software, achieve industrial security mechanism perfectly.
- Working Frequency adopt 900MHz/1800MHz which is suit for most countries all over the world except North America and South America;
- Advanced and strict data communication protocol, with the function of correction and encryption. Never lose package when data transmission, can achieve pictures over than 100K and Flash animation files transmission, no Mosaic happened.

- Various working mode: DTU (default), Modem, SMS Modem. DTU mode is GPRS data transmission which can get the data from device's COM port (RS232/RS485/TTL) and transmit to the server in Internet. It also can receive SMS Message when DTU mode (it needs to switch IO port to SMS when send message). SMS Modem is SMS transmission mode, user can set to type A (with protocol) or type B (transparent). When set to Modem, compatible standard AT command (GSM07.05 and 07.07). user can write AT command software to realize the function user need.
- DTU and SMS Modem can switch through User configuration software and also can change the working modem through IO port. Set the parameter of Modem mode must after it is power-on.
- SMS Modem feature:
 - Various networking ways: Under SMS Modem, the device with protocol (A) can network with the device without protocol (B), the device with protocol (A) also can network with the device with protocol (A).
 - Under SMS Modem, KB3050 can receive and send the MAX data 1024 bytes a time.
 - Under SMS Modem, support Sending and Receiving Data form: hex, ASC II , UCS2. User is advised to set this parameter through our configuration software before use it.
- Various networking ways: KB3050 can work with NET Converter KB2000 and KB3050 (it is convenient to use GPRS without internet). This can achieve networking of peer to peer, center to multi-points.
- Plug and play: when work with KB2000 or KB3050 of our product, no need to develop any software and hardware, can build large SCADA system.
- Automatical IP register mechanism, can achieve various server modes, build complete super large SCADA system.
- Remote sleep and awake: User can use appointed cell phone number to dial or send message can sleep or awake DTU, it is convenient for user to save a lot of GPRS Flow Fee when no need to use DTU.
- Remote modify DTU parameters: Support that SMS and data service center modify DTU parameters.
- IO switching value function: Two channels input, two channels IO output. Remote control and reading. Alarm status threshold, automatic alarm signal report function.
- Strong communication backup function: Support automatic switching between main server and backup server, support TCP and UDP automatic switchover (now don't have TCP and UDP automatic switching function). It will connect to backup server when main server has problem, and will take UDP to communication once TCP off line.
- Strong server software support, application for many years, strong function.
- Support special APN, data center support fixed IP and DDNS.
- Working temperature range: -40℃-80℃, communication is not effected at -40℃.

1.3 Safe Use

KB3050 GPRS DTU Completely complied with national radio product safety technical regulations.

Warm Tip: You must not touch the antenna with your hands or body. During 15 seconds after KB3050 DTU started, Please keep away from the antenna. If the antenna is damaged, you must replace it in time, assorted and qualified cable and antenna.

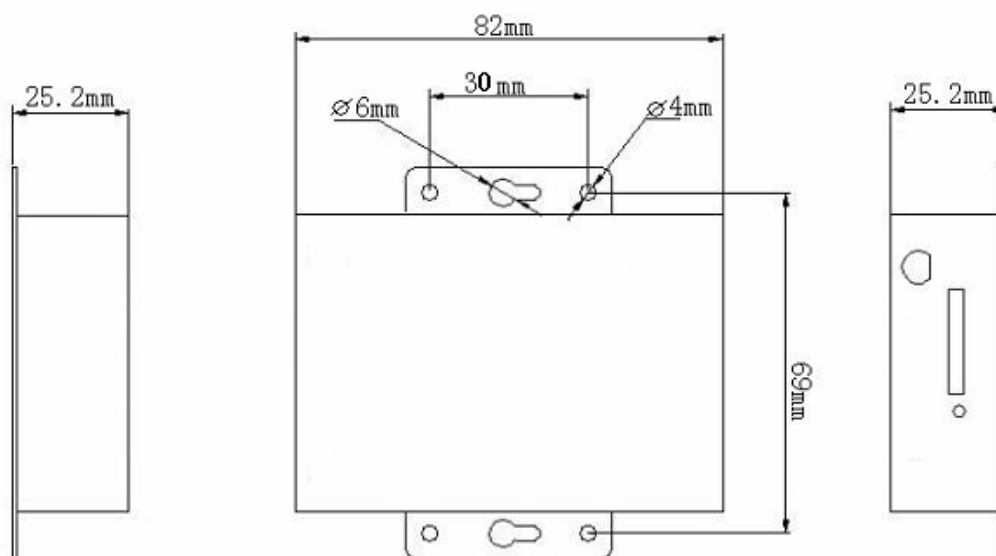
1.4 EMI

Now most electric device all has electromagnetic pulse hardening, but some old device may have no, under RF power radiation, it may go wrong. When you use KB3050 GPRS DTU, please check the device nearby have electromagnetic pulse hardening or not.

1.5 Appearance and Interface

KB3050 GPRSS DTU has three physical interfaces:

- . The first is 10 pins main interface: RS232/RS485/TTL (5V)/CMOS (3.3V), Power supply, Modem COM port
- . The second is SMA RF interface: For the antenna
- . The third is embed SIM socket: For SIM card
- . Size: 82mm(L)*59mm(W)*25.2mm(H)
- . Weight: 170g



2 Technical Specification

3 KB3050 GPRS DTU Technical Parameters

2.1 GSM/GPRS:

Frequency Band: EGSM900MHz/DCS1800MHz

GPRS Multi-slot Class 12

GPRS Mobile Station Class B

GPRS Coding: CS1~CS4

Output Power: Class 4 (2W) at GSM850MHz and GSM900MHz

Class 1 (1W) at DCS1800MHz and PCS1900MHz

Sensitivity: <-107 dBm (typ.) at GSM900 MHz <-107 dBm (typ.) at DCS1800MHz

Compatible standard AT command (GSM07.05 and 07.07)

Support extend command

Support SMS、USSD、CSD

Embed TCP/IP Protocol

2.2 Basic Function:

Embed TCP/IP Protocol

Embed standard AT command (GSM07.05 and 07.07)

Support extend command

Support SMS、USSD、CSD

Transparent data transmitting

Support IP address or domain name

Support special APN

2.3 User Interface



1. User Interface: Interface as follow (From left to right):

1	2	3	4	5	6	7	8	9	10
VCC	GND	UTXD/A	URXD/B	Output1	Input1	UGND	Output2	Status	Input2

Pin No.	Definition	Description	For User
1	VCC	Power: DC5~24V	
2	GND	Ground	
3	UTXD	TXD (DTU COM/RS485: A)	RS232,TTL:RXD; RS485:A
4	URXD	RXD (DTU COM/RS485: B)	RS232,TTL:TXD; RS485:B
5	Output1	Output NO.1 of IO; User can set it as RTS hardware flow control port (Default: Output1)	
6	Input1/RST	Input No.1 of IO; User can set it as RST reset pin (Default: Input1)	
7	UGND	Ground (COM)	RS232,TTL, RS485:Data groud
8	Output2	Output No.1 of IO; User can set it as CTS hardware flow control port (Default: Output2)	
9	Status	Online is high,offline is low	
10	SW/Input2	Input No.2 of IO; High is DTU, low is SMS, user can set it as Input 2 of IO(Default: SW)	

Red LED: power light, will light after power-on.

Green LED: Communications light, when KB3050 connect Server OK, it will often light green, otherwise, it will flash.

2. SIM Card Interface

SIM Card Interface is on the side of the antenna. When you plug in the SIM card, please note the direction and front /back side. First please push the point nearby, the drawer socket will go out automatically. Then take out the drawer socket and put the SIM card into it, at last push the whole drawer socket(IC side of SIM card face down) into the hole of DTU. Just as below picture:



Notes: Please don't plug or move SIM card after power-on, if you need to plug and move, please put equipment blackouts first.

2.4 Electric Specificity

Work Voltage: 5V~24V DC (7-60V can be custom made)

Power:

Standby: < 25mA@5V

Communicating: < 125mA@5V

Peak point current: 1.5A@5V

2.5 Circumstances Specificity

Working Temperature: -40℃~80℃

Storage Temperature: -45℃~125℃

Relative Humidity: 20%~ 95% (No Condensation)

3 Terminal Setting

3.1 Overview

KB3050 GPRS MODEM must correct installation just can achieve design functions, usually equipment installation must be approved in our company under guidance of

qualified engineers.

Note: please don't charged when install KB3050 GPRS MODEM.

3.2 Unpack

For transportation safety, usually KB3050 GPRS MODEM needs reasonable packaging, when you please keep unpacking packaging materials used for future need transshipment. KB3050 GPRS MODEM includes the following parts:

KB3050 GPRS MODEM	1Unit (Packaging depend on order quantity)
Electronic instructions (CD-ROM)	1 copy
Small chuck antenna or club-shaped antenna (SMA interface)	1 root
5V / 2A industrial power adapter	1
KB3050 special cable	1

When unpacking the case, check the specific items according to the packing of user's ordering contract.

3.3 Antennas and SIM card installed

Antenna support SMA female pedestal, spin the left from MODEM and lock it.

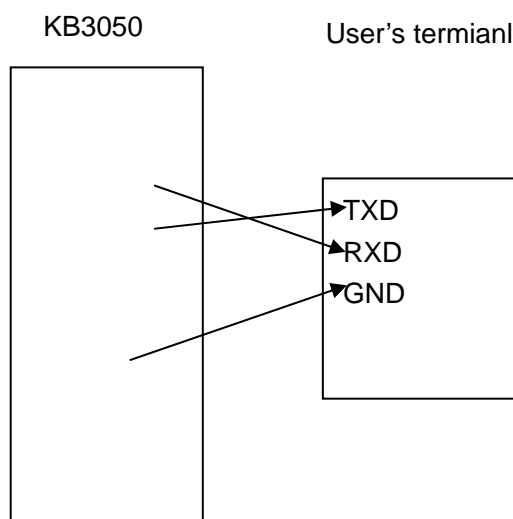
Insert SIM card from the antenna side of KB3050, please note that SIM card metal surface outwards, make sure insert the SIM card to drawer with stuck feeling, to avoid SIM card fall off when SIM card not insert in place or handling equipment vibration. Remove SIM card, click the left little point of SIM card with pointed thing, SIM seats can pop up.

Note: Please don't charged operation when connection with the antenna and install SIM card, please don't power-on KB3050 first.

3.4 Serial cable connection

KB3050 GPRS MODEM

The cables interface type and connections of KB3050 as figure 3.2 show:



3.2 Serial connection schemes

KB3050 user data interface cable connectors is green connectors, spacing: 3.5 mm,

10Pin.

3.5 Inspect network situation

Connect cable and antenna, insert into effective SIM card, power-on KB3050, the power light of MODEM will flash, after 10 seconds later, the power light will always light, it means KB3050 into a normal work condition and connect with network successfully.

Note:

Before power-on, must confirm KB3050 connect with cable correct;

Before power-on, make sure to connect the antenna, to avoid RF impedance mismatch and damage module.

4 Working mode switch

KB3050 default value is DTU modem, the way of switch working mode as below:

1. Switch to SMS modem: it has two ways, when under DTU mode, can change the device type to SMS modem when set DTU parameters. Another way is that switch the IO port (put the Pin 10 to low) to change the working mode.

2. Switch to Modem mode: when run the product, put AT command: AT+QLOCPU=0 to change working mode to Modem.

3. Switch to DTU mode: it has two ways, when under SMS Modem, can switch the IO port (put the Pin 10 to high) to change the working mode to DTU. Another way is under Modem, put AT command: AT+QLOCPU=1 to change working mode to DTU when run the product.

More information please visit our website

<http://www.kingbirdnet.com>