KB2000 Data Converter
User's Manual

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1. Overview

KB2000 is data protocol converter which transmits the data between RS232/RS485 and TCP/IP network.It is special used for Internet network data transmission, also can be used in Local network. KB2000 will receive the data from converter's RS232/RS485 COM Port and transmit the data to Network Data Server of TCP/IP network transparently; the Network Data Server will transmit data to the KB2000's RS232/RS485 COM port. In other words, so long as connect two KB2000's COM port with different PC or device, their Network Port be connected with internet, the different PC or device can communicate through internet.

KB2000 supply 10M/100M Ethernet interface upwards, and supply one standard RS232 (or RS485) COM port. It have 16K buffer, its parameters can be set by software, the baud rate support from 300bps to 115200bps. KB2000 can suit for all kinds of network environment. KB2000 can apply to all kinds of network environment, network parameter and COM parameter, KB2000 can be set by configuration software or by User's programming.

Two types of KB2000:

Type A (KB2000-A), this type mainly for Main station (Master station), as control center, it commonly connect with PC;

Type B (KB2000-B), this type mainly for slave station, as remote terminal, it commonly connect with user's devices, instruments, meters and so on.

Mainly Application (based on Internet):

- Remote AMR system
- LED Display information issue system
- water conservancy, atmosphere monitoring
- POS network
- Power automatically , transformer monitoring system
- Industry instruments and meters automation engineering
- Linkage or multinational group device monitoring network

2. Interface and appearance

2.1 Indicator light

LED1：Above LED, Double color, Network cable connected it show green(No connected No light),if 串口 data send and receive from Serial port, It will be red.

LED2: Below LED, Double Color, when power supply connected It will show red, when KB2000 connected with server, it will change to green.

2.2 Network interface: RJ45，connect with TCP/IP network.

2.3 COM interface: RS232 or RS485.

KB2000 have 10 pins，from left to right : PIN1-PIN10 they are defined as follow:

VCC	GND	UTXD1/A	URXD1/B	Output1	Input1	GND	Output2	status	Input2

Pin No.	Definition	Description	For User
1	VCC	Power: DC6~24V	
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	
6	Input1	Input No.1 of IO	
7	UGND	Ground (COM)	RS232,TTL, RS485:Data groud
8	Output2	Output No.1 of IO	
9	Status	Online is high,offline is low	
10	Input2	Input No.2 of IO	

3. The parameters of KB2000

3.1 General parameters

Name: Named current KB2000, the Max length is 16bytes (ASCII code);

Password: When you set the parameters of KB2000, you must input password, password is 6bytes ASCII code;

Type: Include A and B two types. Type A is mainly used in Main station, Type B is mainly used in slave station;

ID: Current KB2000's ID;

Target ID: If the type of KB2000 is type A, this item just is used. When type A wants to communicate with type B, this item value is set to the ID of type B;

Zone valid: If you want to use Zone, you must set it to ON;

Zone: The current KB2000's Zone number of the Network; if type A wants to communicate with a quantity of type B, you must set type A and type B the same Zone number, and the Zone valid all be set ON;

Heart beat: The interval of KB2000 connection or communicate with remote server.

3.2 Network parameters

IP: IP address of KB2000, when it join into one subnet, its IP must be distributed depend on the network section.

Gateway: The gateway of subnet which KB2000 accessed.

Subnet Mask: It depends on the subnet.

Get IP from: The type of getting IP include Manually and Automatic. In Manually, IP address can be set, KB2000 will use the IP address which user set. If in Automatic, KB2000 can get the IP address by DHCP protocol, DHCP server must be in the subnet, if you can not get IP through automatic, please use manually.

Protocol: Network protocol support UDP and TCP;

Target IP: KB2000 is client-side working way, it must have server IP.The default value is Kingbird's, if user don't have server, can use Kingbird's server for free (if quantity is less) or hire Kingbird's server (if quantity is more), then this value no need to reset.

Target TCP port: The TCP port for specified KB2000 communicate with Target Main machine, The default value is the TCP port of Kingbird's, if user don't have server, can use Kingbird's server for free (if quantity is less) or hire Kingbird's server (if quantity is more), then this value no need to reset.

Target UDP port: The UDP port for specified KB2000 communicate with Target Main machine, The default value is the TCP port of Kingbird's, if user don't have server, can use Kingbird's server for free (if quantity is less) or hire Kingbird's server (if quantity is more), then this value no need to reset.

3.3 COM parameters

Baud rate: The data transmit speed. User must set it same as PC or terminal device which connected. The bard rate of KB2000 support from 300pbs to 115200pbs;

Data bits: In COM port asynchronous transmission, a group data real include data digit. KB2000 support 5-8Bits data bits. Data bits must be set the same as the PC or terminal device which connected. In general it is 8bits;

Verify: KB2000's COM verify have three types: None, Even, Odd. User must set it same as PC or terminal device which connected.

Stop bits: In COM port asynchronous transmission, a data digit to indicate the end of this group data. KB2000 support one and two stop bits. User must set it same as PC or terminal device which connected. In general the stop bits is 1bit;

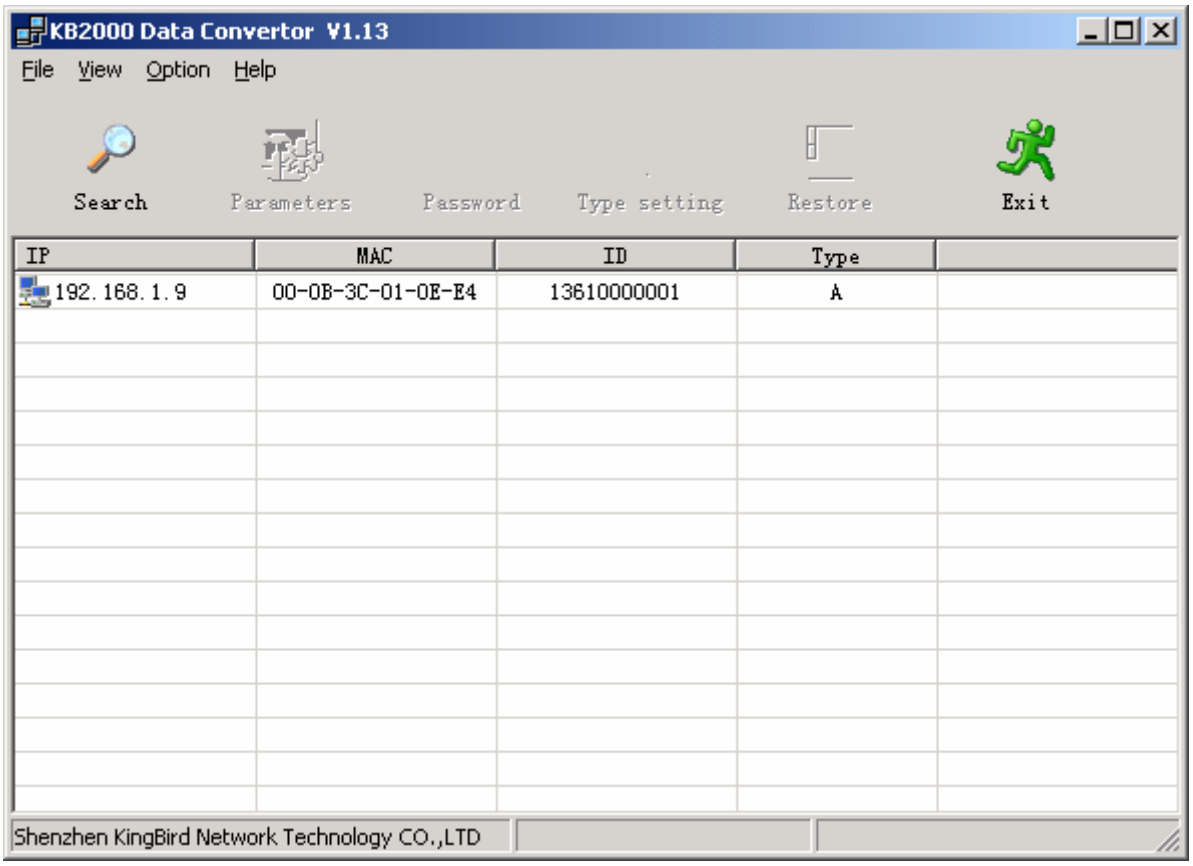
Max MEM. Time: When KB2000 received data from COM port, it will go into the buffer, if over Max MEM Time, and there are not next data come in, KB2000 will transmit the data to the network.

Max MEM. Bytes: When KB2000 received enough length data from COM port, KB2000 will transmit the data to the network. KB2000 will transmit the data to network when it satisfies Max MEM. Time and Max MEM. Bytes in one of two conditions.

4. Operation and Management

Firstly user is advised to connect KB2000 with the same subnet through network cable by Switch or HUB, and power on it, User can set KB2000.

User can Manage KB2000 with the program (NetConvertor.exe). NetConvertor can manage all KB2000 in current subnet. It can search KB2000, view KB2000 parameters, set KB2000 and so on. The interface of the program as follow:

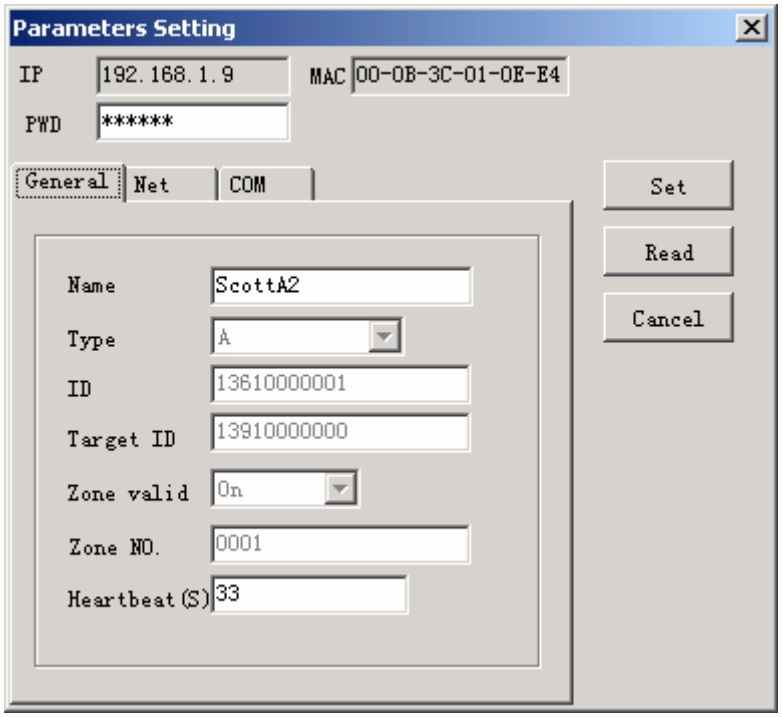


4.1 Search KB2000

User can find all KB2000 through “Search” in the subnet. Please chose File menu, then Search. Or you can click Search button on the toolbar.

4.2 View parameters

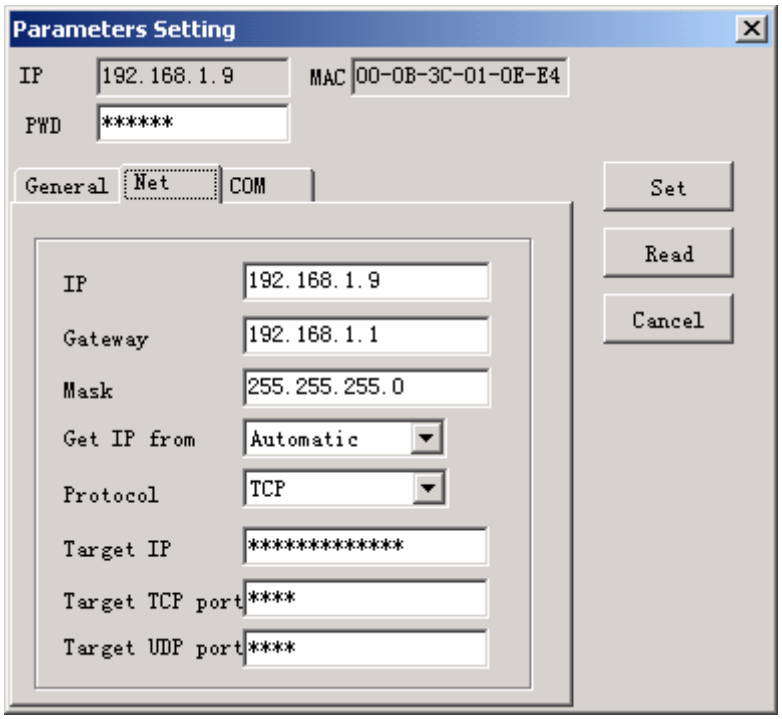
Please double click the icon of KB2000 that searched, or after you searched KB2000, you can click Parameters button on the toolbar. Just as below picture:

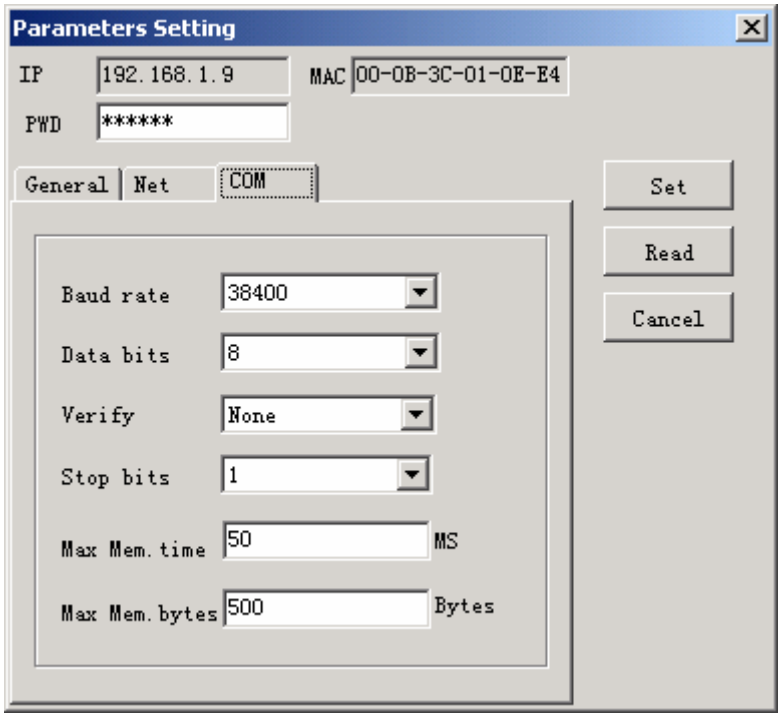


Click Read button in this dialog, read the parameters again.

4.3 Set KB2000

If you want to amend parameters of KB2000, you can set them in the parameters setting dialog. Chose a KB2000 in the list, then click parameters button in the toolbar, you will go to the parameters setting dialog, the interface as follow:





If you need to amend some parameters, Please click “Set” button after amendment, then the parameters will be set.

Note:

1. When you set KB2000, you must input password, the default password is ‘000000’;

2. If you forget your password, please connect the PE pin to the GND pin when you set parameters, thus the password can not be required.

3. Some parameters must not be changed, the software have forbid them.

4. If you want to use IO function, please ask for IO control protocol from our company.

5. Setup Network and Application

5.1 KB2000 Application Step

1. Set KB2000 Network Parameters

Generically KB2000 is connected with internet through LAN. First net parameters need to be set according to the situation of LAN. Please connect KB2000 with LAN, then run KB2000 manage software, set the parameters of Gateway and subnet Mask same as LAN, and set its IP unique (must not conflict with other PC or device)

Note:

(1)You'd better set get IP from: By manually, for your LAN may have no DHCP server.

(2) Generically KB2000-A and KB2000-B are not in one LAN, so you must set different network parameters depend on the LAN which be connected.

2. Set other parameters

KB2000's other parameters as baud rate, data format and so on, You can set them depend on your device.

Other parameters as ID, Target ID, heard beat, No need to reset.

3. Connect with KB2000

KB2000-A connect with PC: Connect its RJ45 interface with the switch or Router of the LAN by network cable, then connect the RS232 interface with the COM of PC by RS232 cable.

KB2000-B connect with the device: Connect its RJ45 interface with the switch or Router of the LAN by network cable, then connect its COM port with RS232 or RS485 of the device.

4. Run SCADA software to read/control

After set the KB2000-A and KB2000-B and connect with network, you can run SCADA software to read or control (or AMR)

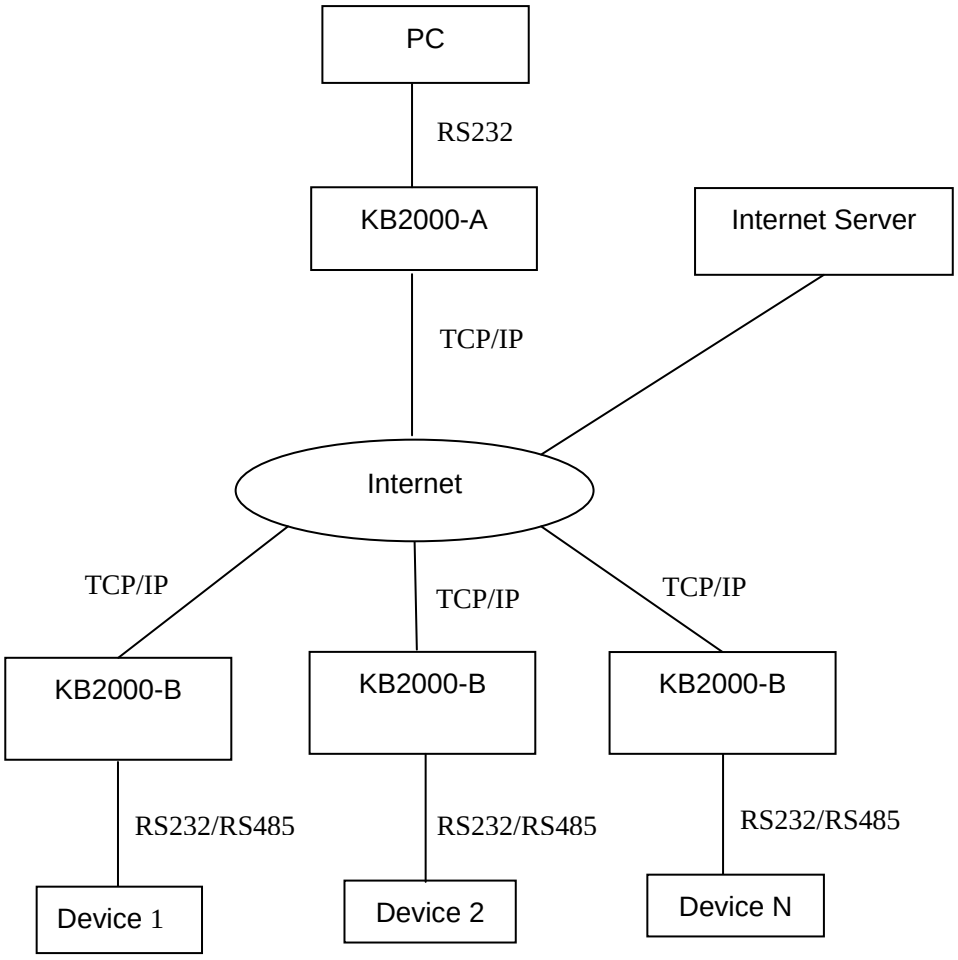
Note: The communication way of SCADA software must base on COM (RS232/RS485). In the SCADA software, please open the COM port that be connected with KB2000-A, its baud rate and data format must be same with KB2000-A.

6 . "plug and play" Solution

6.1 KB2000-A Work with KB2000-B

KB2000 is used as Client-side, it is applied to single PC or multi-PC system. The single PC or multi-PC can communicate with remote equipments or devices. In this way, KB2000-A is used as Client-side. When the host machine needs to communicate with remote equipments or devices, KB2000-A will send TCP connection request to specified server and communicate after power on. At the same time KB2000-B which connect with equipments or devices send TCP connection request to server, after they are connected, the PC and remote equipments or devices can be communicated each other. In other words the PC can communicate with every KB2000-B. The quantity of KB2000-B can be unlimited.

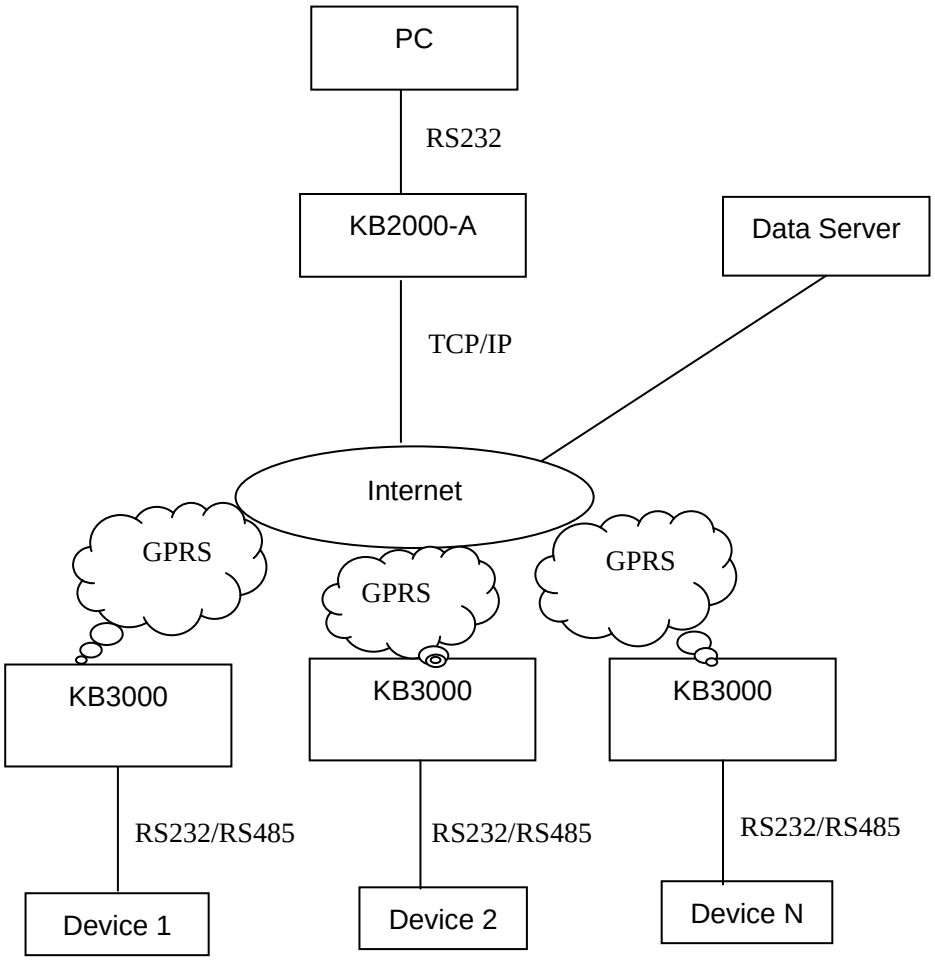
The system schematic structure as follow:



6.2 KB2000-A Work with KB3000

KB2000-A can be network not only with KB2000-B, but also KB3000. KB2000-A worked as Client-side, It is applied to single PC or multi-PC system, the single PC or multi-PC can communicate with remote equipments or devices. In this way, KB2000-A is used as Client-side. When the host machine needs to communicate with remote equipments or devices, KB2000-A will send TCP connection request to specified server and communicate after power on. At the same time KB2000-B which connect with equipments or devices send TCP connect request to server, after they are connected, the PC and the remote equipments or devices can be communicate each other. In other words the PC can communicate with every KB3000. The quantity of KB3000 can be unlimited.

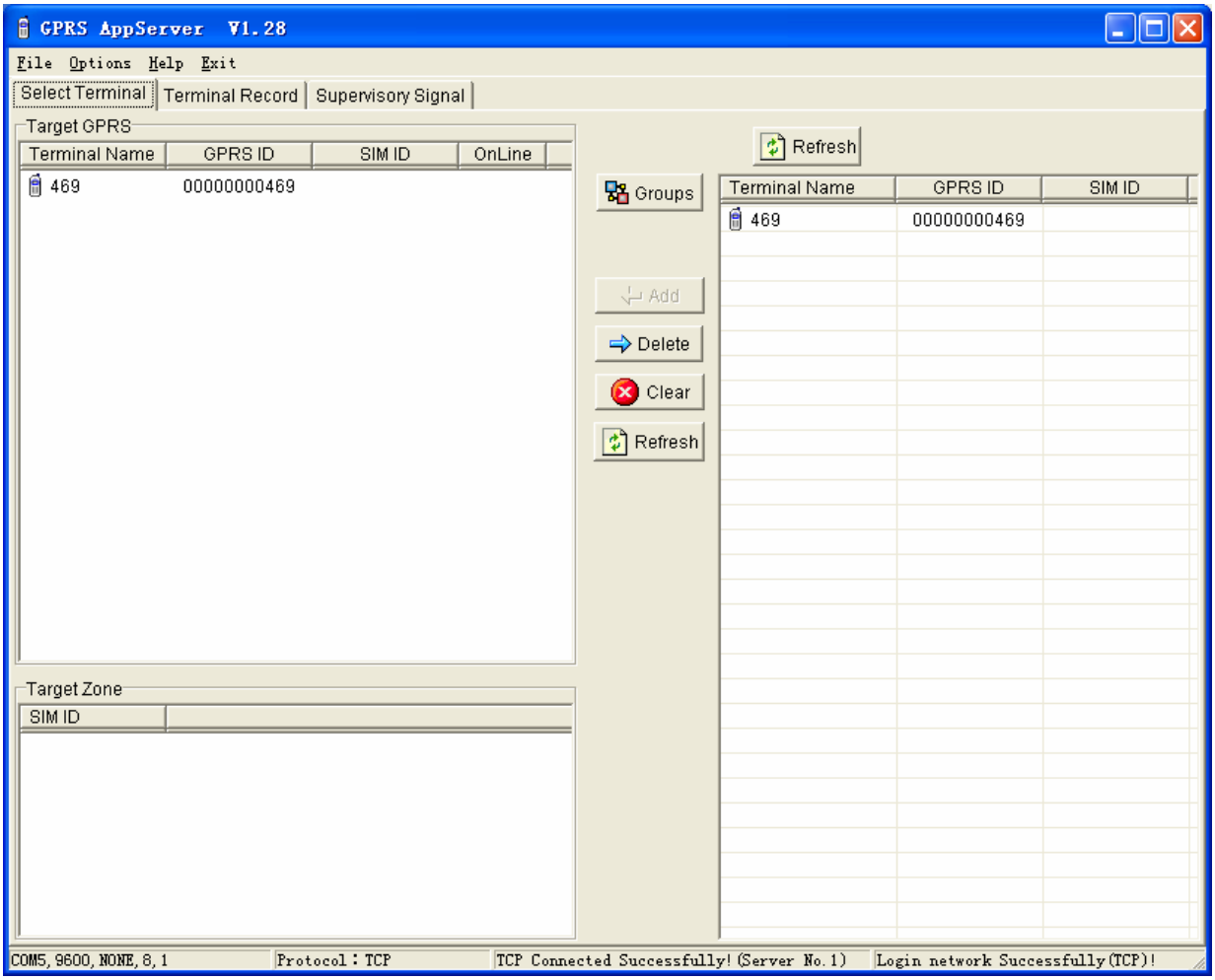
The system schematic structure as follow:



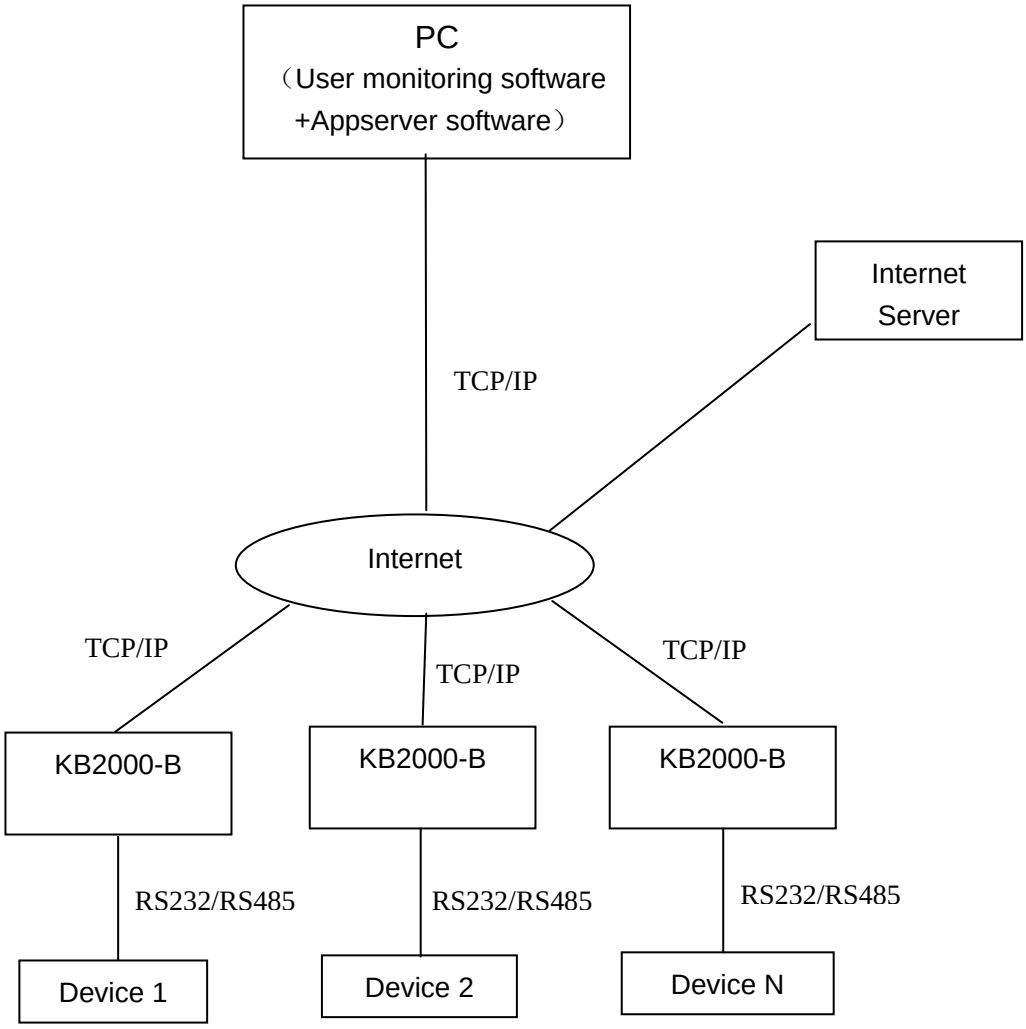
6.3 Appserver software With KB2000-B

Appserver software is the client-side communication software developed by our company and application in one single host or multi host system, the single host or multi hosts in network need data communications with the equipment. Appserver software can combine to use with user's device control software (based on COM port), it can obtain the data from user's device control software through COM part and send the data to the remote KB2000-B. In this way, when a host needs to communicate with device, Appserver software send TCP connection request to designated server, then communication with it. At the same time, the KB2000-B which connected with device sends the TCP connection request to server, after connection established, KB2000-B can communicate with server, then user can use Appserver software in host communicate with every KB2000-B through server. This network mode is very suitable for that equipment and PC software are serial communication mode, and need for remote data communication projects. Such as, LED display information issue system and so on.

The Appserver interface as follow:



The system schematic structure as follow:



7. NOTE

7.1 If you choose manually (get IP from configuration), the IP must not have been used(other KB2000, network device or PC).

7.2 When the KB2000 connect with Switch or HUB, please use direct cable, when the KB2000 connect with PC, please use Cross cable.

8. Technical specifications

Buffer size: 45K;
COM baud rate: 300-115200bps
Power supply: 6-24VDC
Average working electric current: <60mA
Power consumption: <500mW
Working temperature: -30℃-80℃
Size: 82mm(L)*59mm(W)*25.2mm(H)
Weight: 200g

9. Guarantee repair

Our Company supplies “three guarantees” (for repair, replacement or compensation of faulty products). But if it because force majeure, user open or modify it himself without permission, our company can not supply “three guarantees”.

User can replace products if he bought product within one month which installation and use regularly.

Guarantee repair free of charge period: one year. Maintain for life.

Packing list

Item NO	Name	quantity	unit	memo
1	KB2000	1	Pcs	
2	Power supply	1	Pcs	
3	RS232 cable	1	pcs	Provide only RS232
4	RS485 data line	1	pcs	Provide only RS485
5	User manual	1	Pcs	
6	Software CD	1	Disc	