CG Antenna

SB-2000 MK2 USB Radio Interface

Operating Manual

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FEATURES

- **Connect your computer with USB port. No need serial or parallel port.**
  Most of Radio programs are built based on COM serial port of PC computer. But the most latest PC computers don't have a serial port.

- **USB to UART bridge by FT2232 single chip. Support 2 serial ports.**
  To be compatible with the legacy radio program, we still have to keep using serial port. That's why we choose to use USB to UART bridge which converts the USB to serial port. The new FT2232 chip supports 2 serial ports. So you can use digital operation and rig control at same time without extra simulation software.

- **CAT, CI/V controller and audio transformer are combined together.**
  No sophisticate software setting. Very clearly operate from reachable setting on the control panel. It supports CAT with RS232 protocol. So it's compatible with the most latest YAESU and KENWOOD transceivers.

- **Complete isolation between computer and radio station.**
  1. Optical isolation used for digital signal.
  2. Audio signal isolated by 1:1 transformer. It has internal static isolation. Excellent EMC (Electromagnetic compatibility)

- **Operated by computer USB power. No need extra power.**
  When you are in your expedition or mobile, you will not have extra power headache with SB-2000 MK2. It uses the power from your computer's USB port.

- **Very compact size, easy to carry.**
  Weight less than 400 grams. Pocket size only.

- **Supply with full accessories.**
  It comes with USB, CAT or CI/V, data and audio cables.

FUNCTIONS

SB-2000 MK2 links your radio transceiver with the computer.

- **Control radio operation via CAT, CI/V.**
  You can control your radio if it supports CAT or CI/V protocol from your computer.

- **Operate RTTY, PSK31, SSTV, FAX, Packet and other digital modes.**
  From your computer you can easily operate digital mode with proper software. Turn your computer into a professional expensive DTE.

- **Transmit and receive CW.**
  If you want to be relaxed to operate CW, you can choose to use software to send or receive Morse code. Use your computer keyboard instead of paddle or straight key. Read all received Morse code from your computer screen.

- **Support ECHOLINK to control remote station.**
  ECHOLINK allows radio stations to communicate with one another by using Voice over IP (VoIP) technology on the Internet.

- **Record your SSB voice session.**
  For further record or training purpose, you could use your computer to record your conversation.

- **Support FSK operation.**
  Some radio interfaces only support AFSK for RTTY operation. The SB-2000 MK2 supports not only the AFSK but also the FSK.
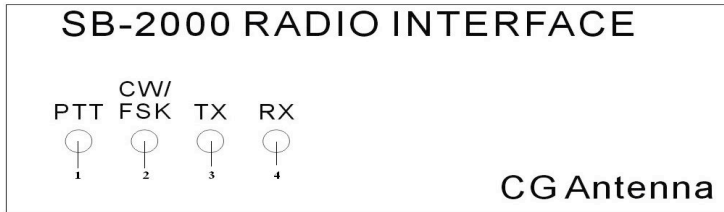
FRONT PANEL

Front panel has all the indicators.
Diagram 1.

SB-2000 RADIO INTERFACE

CW/
PTT FSK TX RX

1   2   3   4

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1. **PTT** indicator
   This indicator lights on when it's under operating RTS control signal. Usually it's the PTT output.

2. **CW/FSK** indicator
   This indicator lights on when it's under operating DTR control signal. Usually it's the CW or FSK output.

3. **TX** indicator
   This indicator lights on when the computer sending CAT or CI/V signal to the transceiver.

4. **RX** indicator
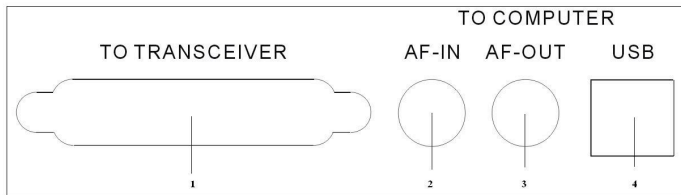   This indicator lights on when the computer receiving CAT or CI/V signal from the transceiver.

REAR PANEL

Rear panel has all the jacks to the computer and the transceiver.

Diagram 2.

TO COMPUTER

TO TRANSCEIVER   AF-IN   AF-OUT   USB

1   2   3   4

1. **TO TRANSCEIVER** port
   This 25-pin female DB-25 port connects to the data, CAT or CI/V and CW port of transceiver.

2. **AF-IN** jack
   This RCA jack connects to the **audio-out** or **speaker** socket of the sound card in the computer.

3. **AF-OUT** jack
   This RCA jack connects to the **audio-in** or **microphone** socket of the sound card in the computer.

4. **USB** port
   This USB port connects to the USB port of computer.

HARDWARE INSTALLATION

Cable connection
Please use the suitable cables that are provided by CG Antenna. Most cables of modern transceiver are existed.

Rear panel to transceiver
The 25-pin data socket connects to the data, CAT or CI/V and CW port of the transceiver.

The RCA-3.5 mm connects the AF-IN and the audio output of the computer's sound card. Also connects the AF-OUT and the audio input of the computer's sound card.

USB A-B cable connects the USB ports of the radio interface and the computer.

SOFTWARE INSTALLATION

SB-2000 comes with software driver for Windows 98/2000/XP, Vista, Win 7, Win 10, Mac OS X and Linux.

Computer system requirement
CPU: Intel P3 500 MHz
RAM: 256MB
CD-ROM
USB port
Sound card

Installing software driver on Windows 2000, XP, Vista & Win 7
* Please do not connect SB-2000 MK2's USB cable to the computer at this moment
• Insert installation CD into CD-ROM.
• Click 'My Computer', Click the icon your CD driver. E.g.: E:\
• Double click e:\driver\Winxp_2k_vista_win7\SB2000_setup.exe

Now connect the SB-2000 MK2 to your computer's USB port via USB cable. The system will detect it. And several messages will be prompted.

ⓘ **Found New Hardware** ☒

Dual RS232

ⓘ **Found New Hardware** ☒

USB Composite Device

ⓘ **Found New Hardware** ☒

USB Serial Converter A

ⓘ **Found New Hardware** ☒

USB Serial Converter B
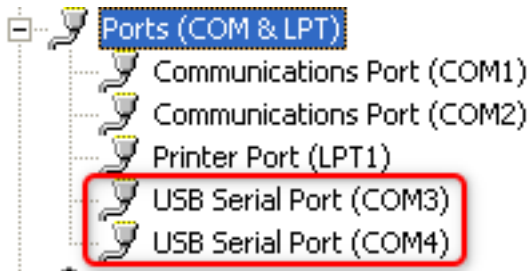
ⓘ **Found New Hardware** ☒

USB Serial Port

ⓘ **Found New Hardware** ☒

Your new hardware is installed and ready to use.

Check COM port configuration
In the Control Panel -> System -> Hardware -> Device Manager
You will see 2 new ports be added. **Write down the port number.** You need it for your software setting.

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Serial port

The first port is reserved for digital data operation and the second port is reserved for CAT/CIV computer control.
If you get the Serial port COM3 & COM4, then COM3 is for RTTY, PSK or any digital operation software, COM4 will be reserved for computer control program.
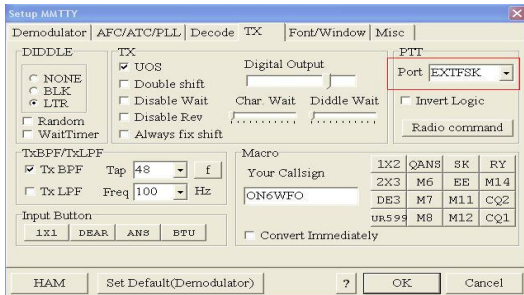
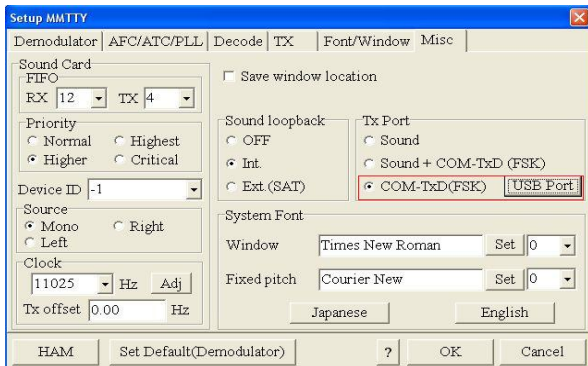You can always change port number. Just right click the port that you want to change.
In Properties -> Port Settings -> Advanced, you could change to any available COM port number.
After the update, you need to process 'Scan for hardware changes'.

Please keep the port number ordered sequentially. So you won't be confused later on.

Now you can setup your radio program to use the digital operation port to operate.
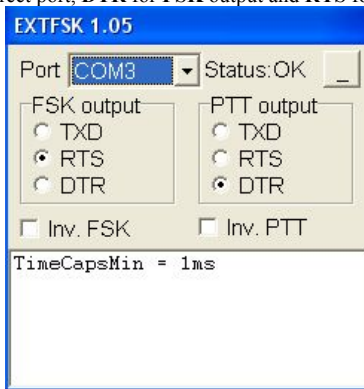
- *If you use MMTTY and you want to transmit in FSK mode, you have to install COMFSK plug-in. Please refer the detail installation to MMTTY's manual.*

Setup MMTTY

Demodulator | AFC/ATC/PLL | Decode | TX | Font/Window | Misc

Sound Card
FIFO
RX 12 ▾ TX 4 ▾

☐ Save window location

Priority
○ Normal ○ Highest
◉ Higher ○ Critical

Device ID -1 ▾

Source
◉ Mono ○ Right
○ Left

Clock
11025 ▾ Hz Adj
Tx offset 0.00 Hz

Sound loopback
○ OFF
◉ Int.
○ Ext.(SAT)

Tx Port
○ Sound
○ Sound + COM-TxD (FSK)
◉ COM-TxD(FSK) [USB Port]

System Font
Window   Times New Roman   Set 0 ▾
Fixed pitch   Courier New   Set 0 ▾
Japanese   English

HAM | Set Default(Demodulator) | ? | OK | Cancel

Configure the EXTFSK to use correct port, **DTR** for **FSK** output and **RTS** for **PTT** (by default)

CABLE SPECIFICATION

1. **SP & MIC cable**
   It is a RCA to 3.5 mm audio jack cable. The impedance of the jack is 600 ohms.

2. **USB cable**
   The 4-din B to the 4-din A USB cable.

3. **DB-25 to data, CAT or CI/V and CW port of transceiver cable**

The right diagram shows the definition of the DB-25 plug.

RS TX/RX
TX/RX function (from computer) in RS-232 protocol. Yaesu or Kenwood uses it for those CAT rig control in RS-232 protocol.
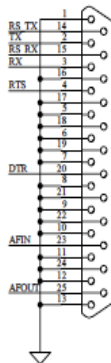
TX/RX
TX/RX function (from computer) in TTL protocol. Both CI/V and CAT use this way.

RTS/DTR
Output control. For most ham radio software setting, RTS is used for PTT and DTR is used for CW/FSK.

AF IN/OUT (Computer sound card based)
AF IN is the audio from transceiver. AF OUT is the audio to transceiver.

NOTICE

The current version of SB-2000 MK2 has very good interference isolation. We don't suggest user to operate rig control with speed above 14400 bps either CAT or CI-V. Even transceiver manufacturers don't suggest.

If you are facing low audio level, you can try to adjust the audio in/out level in your computer system. Also you can adjust the in/out value in your transceiver. The default value of certain Yaesu transceivers are too low or high, you have to adjust it. Please consult the manual of your transceiver.

If your transceiver supports VoX mode in digital operation, enable it.

For Yaesu FT-2000, please go to Setting menu <u>029 GEnE CAT RTS</u>, set it as OFF. Then you can use CAT function properly.

For Yaesu FT-450, please go to Setting menu <u>CAT RTS</u>, set is as DISABLE. Then you can use CAT function properly.

The P3 jumper next to the FT2232 chip is for setting RTS. The default setting allows software uses RTS on both first serial port and second serial port. By removing this jumper, the RTS will be only activated from the first serial port.

The P4 jumper is for setting CI/V high/low baud rate. The default setting allows using CI/V under 14400bps. If you want to use higher rate, you could remove this jumper.

WARRANTY

CG antenna warrants SB-2000 MK2 against defects in material for a period of ONE (1) year unless otherwise indicated.

The warranty does not cover damage, improper use, abuse, or conditions beyond our control (i.e. lightning).

CG Antenna assumes no liability or responsibility for damage to other devices or injuries to persons as a consequence of using our products.

If you don't accept the terms of the above warranty, please return the products in the original package to your reseller for refund (doesn't include the shipping or possible restocking charge).

SERVICE

If you have any problem of your CG product, please contact your local sales directly. Then we can arrange the repair service.

If return for repair is needed, please wrap and pack your unit well to protect damage during transportation or handling. Include a note with your name, address, phone number, email and brief description of the problem.

Technical support: support@cgantenna.com

*CG antenna and our distributors cannot be responsible for unit lost or damage in shipping.