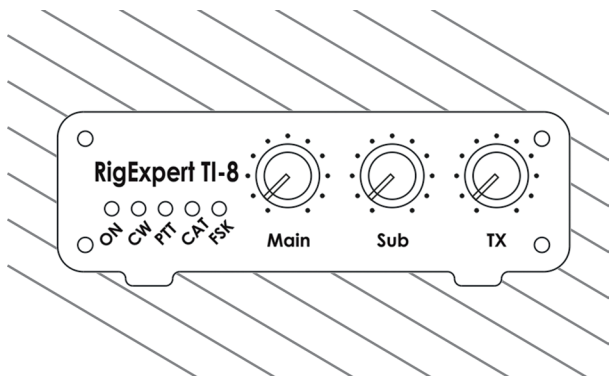


TI-8

USB Transceiver
Interface

RigExpert®

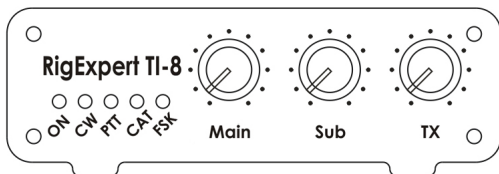


User's manual

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Introduction



Thank you for purchasing a **RigExpert TI-8** USB Transceiver Interface! We did our best to make it powerful yet easy to use.

RigExpert TI-8 is a device for operating phone, CW and digital modes using personal computer with USB port.

It provides:

- **Transceiver audio interface**

Analog audio interface is a connection to transceiver audio output (external speaker connector or line output) and transceiver audio input (microphone connector or line input). Audio interface enables operating digital modes, recording and playing voice, as well as other useful functions (such as measuring levels of a signal from the air) by using a computer.

Input (main and sub channels) and output volume levels are adjusted by potentiometers on the front panel of the device.

- **CAT interface for various transceiver models**

CAT (Computer Aided Transceiver) system provides control of transceiver frequency, operating mode and other functions by computer software. Normally, modern transceivers have serial (with various signal levels) link providing CAT interface.

A virtual COM port is created for the CAT system so the computer software can communicate to the transceiver.

- **FSK output**

FSK (Frequency Shift Keying) is a popular method of transmitting digital messages over radio primarily used in radioteletype (RTTY) mode. Most transceivers provide FSK modulator feature to make the RTTY signal stable and clear.

A separate virtual COM port is created for the FSK function.

- **PTT and CW output functions**

Transceivers provide PTT (Push To Talk) and CW (Continuous Wave) keyer inputs to allow setting the transmitter on or off and operating CW using external device (PTT pedal, CW bug or paddle, terminal node controller, or personal computer).

A separate virtual COM port is created for PTT/CW outputs.

- **CW keyer**

Built-in RigExpert implementation of WinKey.

WinKey is a Morse keyer that is designed to attach to a PC's serial port and provide accurate transmitter keying from a Windows based ham radio software.

A separate virtual COM port is created for WinKey.

- **Squelch input**

Some software, such as EchoLink, requires the interface to provide a squelch input to detect if the radio channel is busy.

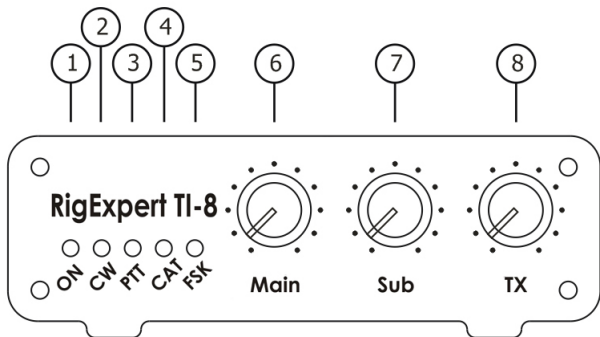
In RigExpert TI-8, the squelch input is assigned to the DCD line of the virtual COM port used for PTT and CW outputs.

Operating the TI-8

Front and rear panels

Front panel:

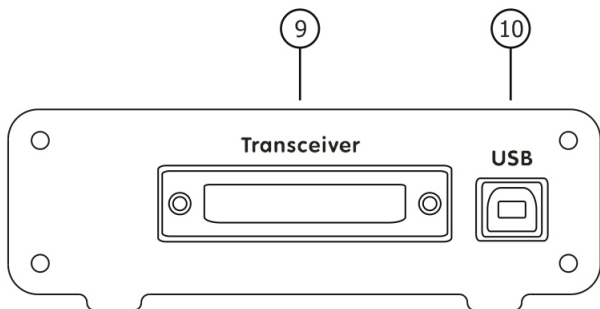
1. ON. Lights when the RigExpert TI-8 device is plugged to the computer.
2. CW. Shows transmissions in CW mode.
3. PTT. Indicates when the transceiver transmits.
4. CAT. Monitors CAT data exchange between transceiver and computer.
5. FSK. Lights when RigExpert TI-8 is sending FSK data.
6. Main. Input level, main receiver audio.
7. Sub. Input level, sub receiver audio.
8. TX. Output level, audio to the transmitter.



Rear panel:

9. TRANSCEIVER. 25-pin transceiver connector.

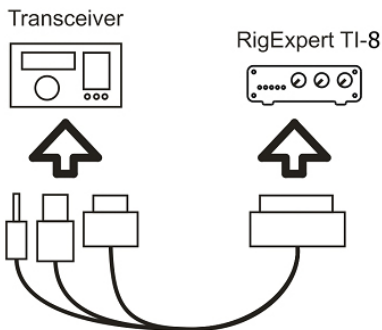
10. USB. Connect to the computer USB port.



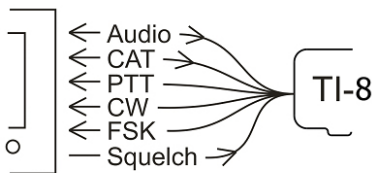
Transceiver and computer connection

The connection to your transceiver is made by using a specialized cable. A specific type of the cable depends on the manufacturer and the model of the transceiver.

Please watch the marking to make sure all plugs are inserted properly to corresponding sockets located on your transceiver.



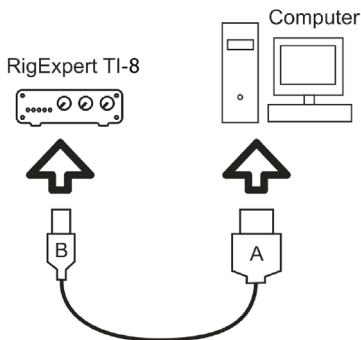
You may either order a transceiver cable with your TI-8 or assemble it yourself. See the schematic diagrams on our website, www.rigexpert.com.



A number of analog and digital signals are routed between your transceiver and RigExpert TI-8. Cables for most modern rigs (Icom, Kenwood, Yaesu, Ten-Tec, Elecraft) are available; future rigs are supported by design of the universal 25-pin connector of RigExpert TI-8.

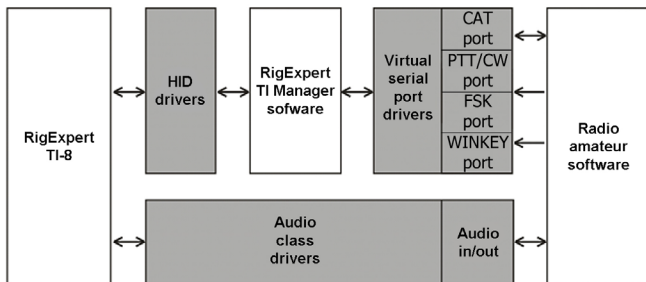
The squelch connection is not available in all cables manufactured by our company. The user has to add this connection, if necessary.

Use a standard USB A-B cable (up to 5 meters long) to connect your RigExpert TI-8 to a USB port of your computer. It is recommended to use USB sockets located at the back panel of the PC.



Once the cable is connected, computer detects a new device. "HID" and "Audio class" device drivers are installed automatically; the user does not have to interact at this step. Please wait a few seconds until the drivers are installed.

The drivers are invisible for the user; however, they provide four serial ports (CAT, PTT/CW, FSK and WINKEY) as well as a sound card interface necessary for various radio amateur programs.



Downloading and installing the TI Manager software

Please download the latest version of software and documentation from our website: rigexpert.com/ti-8 (Software downloads section, SetupRET18.exe file). Start the SetupRET18.exe and follow on–screen instructions.

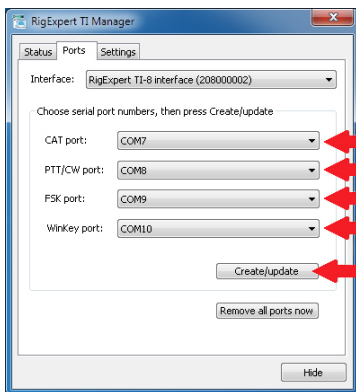
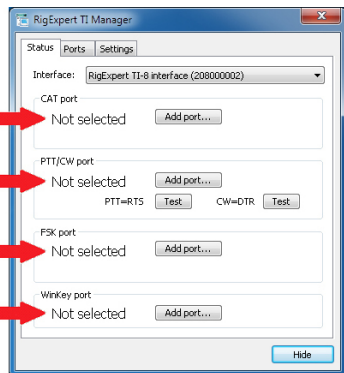


Once the setup program is finished, the virtual serial port drivers and the TI Manager software is automatically started. The TI Manager program is necessary for the RigExpert TI–8 to function. Please watch the RigExpert TI Manager icon in the system tray of your Windows desktop: normally, the program should stay minimized. The TI Manager is started automatically, and will stay in the system until you uninstall the TI–8 software.

Setting up the TI Manager software

The TI Manager program lets you configure virtual serial ports. These ports are needed for other software to communicate to your transceiver. Double click the TI Manager icon in the system tray to open the main window.

Initially, no ports are created, so you will see Not selected instead of port numbers.



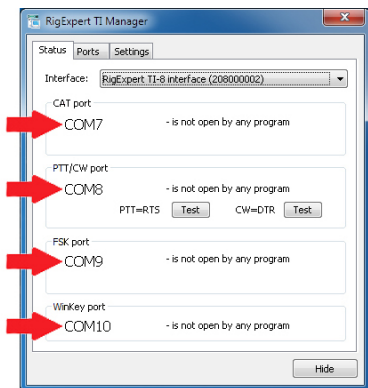
Press Add port and select serial port numbers for CAT, PTT/CW, FSK and WINKEY ports. For instance, assign port numbers COM7, COM8, COM9 and COM10 for these functions.

Do not forget to press the Create/update button.

A few seconds later the virtual serial ports will be created and you will see the port numbers at the Status tab.

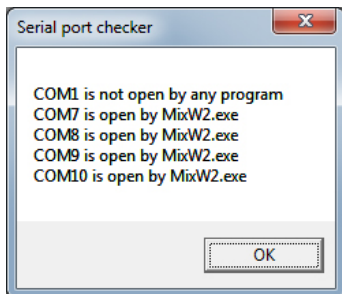
Use the Test buttons to test PTT and CW outputs of your RigExpert TI-8.

You may press the Hide button to put the program in the system tray.



Checking the serial ports

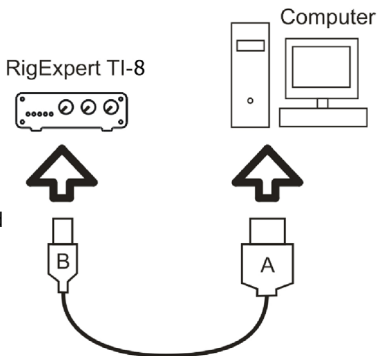
To diagnose various problems related to virtual serial ports, please run the Check serial ports utility from the Start – All Programs – RigExpert TI-8 menu.



Updating the firmware

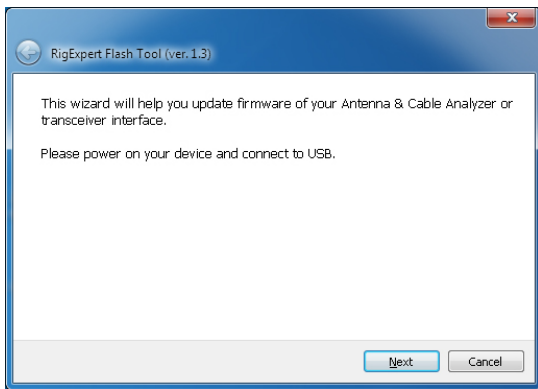
- Connect your RigExpert TI-8 to your computer

Use a standard USB A-B cable (up to 5 meters long) to connect your RigExpert TI-8 to a USB port of your computer. It is recommended to use USB sockets located at the back panel of the PC.

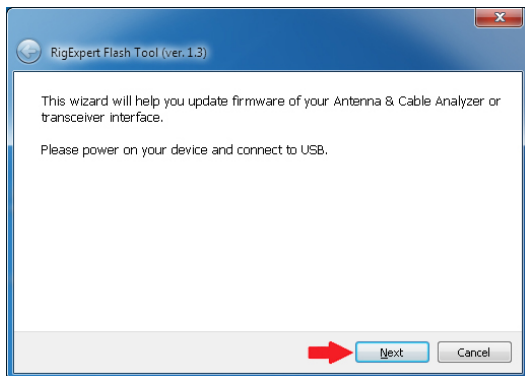


- Start the RigExpert Flash Tool

You may find Flash Tool at the Downloads section of the website, www.rigexpert.com.

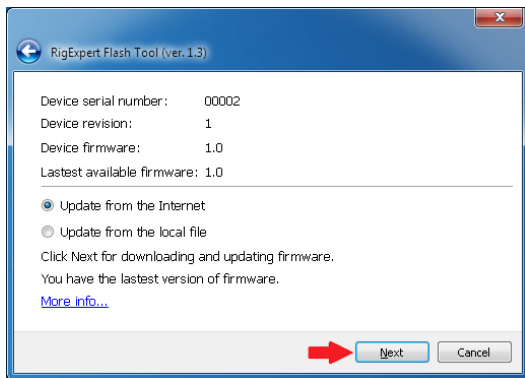


- Press Next to continue

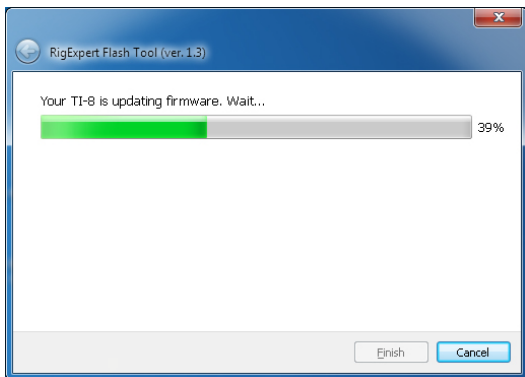


- Choose the option of update

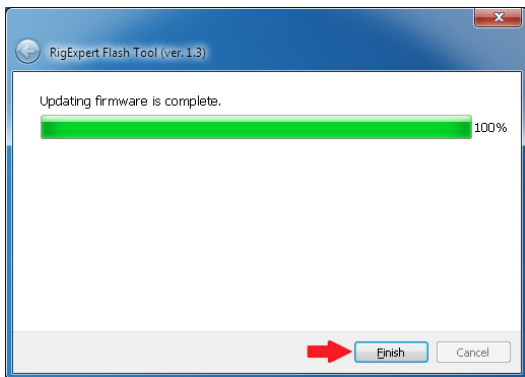
You may update your TI-8 via Internet or with local file (you may find firmware file at the Downloads section of the website, www.rigexpert.com). After choose press Next button.



- Wait until RigExpert Flash Tool will finish the update firmware of your TI-8



- Press Finish button



Now your TI-8 is ready for use!

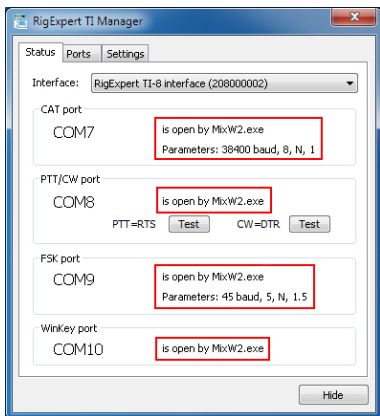
This process is fail-safe: in case of a problem, just start over.

Setting up programs for operating phone, CW and digital modes

RigExpert TI-8 is designed to work with various programs, such as MixW, MMTTY, MMSSTV, MMVARI, HRD, WinTest and many others. In general, the following hardware-related settings should be done in the software:

- Choose an audio device for audio input and output, should be “Line in (USB Audio CODEC)” and “Speakers (USB Audio CODEC)”. Please notice that the exact names of audio devices depend on the version and the language of your operating system.
- Select a serial port number for the CAT system. In this example, COM7. Select baud rate and other parameters according to your transceiver manual. (Please notice: all Yaesu transceivers require 2 stop bits.)
- Select a serial port number for PTT and CW outputs (PTT is attached to the RTS wire, and CW is attached to the DTR wire). In this example, COM8.
- If your program is using FSK output, select a serial port for the FSK function. In this example, COM9. (You may also need to check/uncheck the FSK reverse checkbox at the Settings tab of the TI Manager program.)
- If your program is using WINKEY output, select a serial port for the WINKEY function. In this example, COM10.

You may then open the Status tab at the TI Manager's main window to see which program is using virtual serial ports and to check serial port parameters.



To set up a specific program, please refer to the Software Setup examples.

Annex 1

Specifications

General features:

- Transceiver audio interface for operating digital modes, voice recording and playback
- CAT (Computer Aided Transceiver) system
- FSK output
- PTT and CW outputs
- CW keyer (WinKey)
- Squelch input

Computer connection:

- USB (Universal Serial Bus) connector
- Powered from the USB port (consuming 100 mA maximum)
- No external power supply needed

Transceiver connection:

- Single 25-pin connector for transceiver cable
- Various transceiver models supported

Audio interface:

- Insulated from digital nets
- Maximum input/output amplitude is 1V
- Input/output samplerate: 8 to 48 kHz
- True 16-bit DAC/ADC used
- Volume levels are adjusted by the front panel potentiometers

CAT serial port:

- Baudrate: 300–115200 baud
- Electrical compatibility: RS-232, CI-V, TTL or inverted-TTL (Yaesu, Icom, Kenwood, Ten-Tec, Elecraft and JRC transceivers)

PTT/CW outputs:

- PTT output: open collector and TTL-level
- CW output: open collector
- Maximum current is 500 mA

FSK output:

- Baudrate: 45–1200 baud
- Open collector output

System requirements:

- Desktop or laptop computer with USB 1/2/3 compliant port
- Windows 2000/XP/2003/Vista/7/8/10 (32 or 64-bit) operating system
- No USB drivers required
- The RigExpert TI Manager software is provided free of charge

Dimensions: 11 x 13 x 4 cm
(4.3 × 5.1 × 1.6 in)

Operating temperature: 0...40 °C
(32...104 °F)

Weight: 300 g (10.58 oz)

Warranty: 2 years

RigExpert TI-8 is made in Ukraine.

Annex 2

Adjusting input and output audio levels

You can adjust input and output audio levels by regulators on the front panel. However, it is possible to increase range of input and output audio levels.

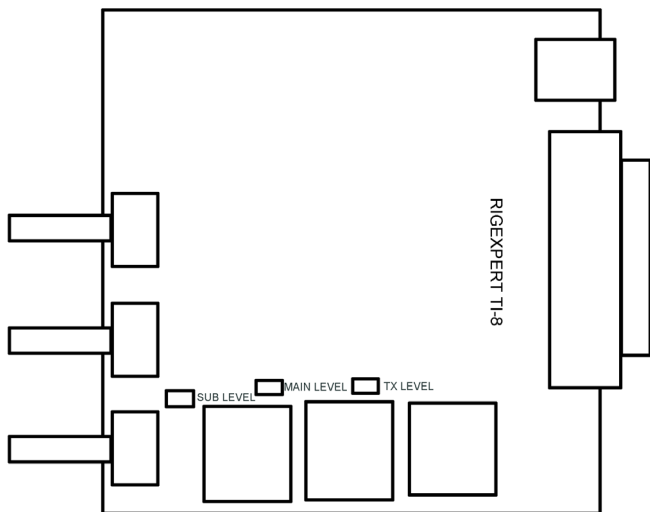
Please, unscrew 4 upper screw (2 on front panel and 2 on rear panel). Then gently lift the top cover. After that you may see printed circuit board (PCB) with 3 jumpers.

To increase volume of Main channel set the **Main level** jumper (**default is unset**).

To increase volume of Sub channel set the **Sub level** jumper (**default is unset**).

To increase volume of TX channel **remove TX level** jumper(**default is set**).

Assemble in reverse order.



<http://www.rigexpert.com>

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