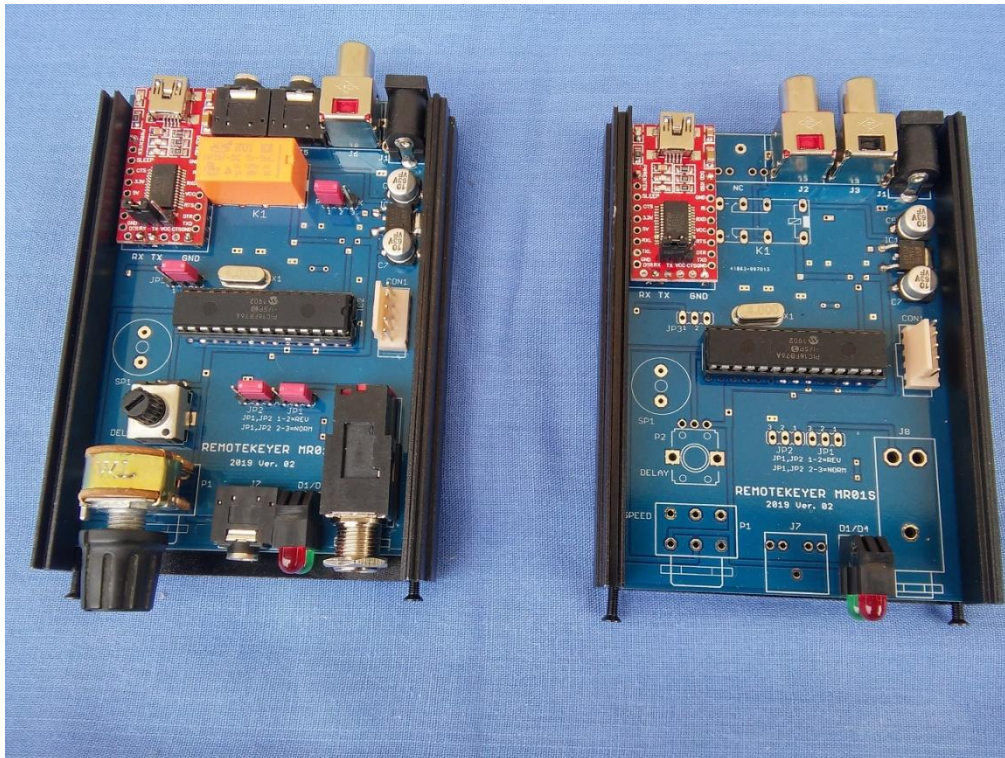# CW REMOTE KEYER with PTT

1. **Introduction**

It is not easy to find a cheap and suitable solution for remote radio keying over the Internet.

That is why I developed the **MR-01C** Client and **MR-01S** Server Remote Keyer units.

The built simple client and server unit must meet the following requirements:

- Client side:

Built-in electronic key with external mechanics,
Manual keyer connection possibility,
Ability to PC keyboard keying, (contest programs),
Possibility to connect headphones, switch to self-tone when transmitting,
Radio PTT switch-on option, (automatic PTT bit on CW, footswitch on SSB)
USB connection to PC, (serial-USB convertes is inside)
Key speed adjustable from 5 to 40 WPM.

- **Server side:**
   Key output to radio,
   PTT radio TX on/off,
   USB connection to PC, (serial-USB converter is inside)

2. Execution

Both units are physically housed on the same printed circuit board.
The PIC contains both client and server side software, so the same microcontroller can be used on both panels.
Power is supplied by a 12V plug-in power supply. (external unit)
The panels are mounted in a standard 105x78x35mm aluminium box.

3. Commissioning

- **Client side:**
Connect the 12V power supply to the unit.
On the front of the client unit plug in the keyboard mechanics (6mm Jack), plug in the manual keyer into the 3.5mm Jack socket, or plug a serial port controlled keyer in.
The **Input** Jack of the client unit connects to the audio output of the PC and the **Out** connects to the headphones.
By default this is used to hear the radio voice and when transmitting the key's self-tone.

This is necessary because the delay would prevent us keying correctly.
When you press the key lever, you hear the self-tone. If necessary, the PTT delay can be corrected with a trimmer on the panel inside.

A footswitch can be connected to the **PTT** Jack on the rear panel, allowing you to conveniently switch your radio to on-air in SSB mode.

Never use the footswitch in CW mode!

- **Server side:**
Connect the 12V power supply to the unit. On the back side, the power jack is located.
PTT Jack on the rear panel connects to the Radio PTT input and the **KEY** connects to the Radio Key input.
The green LEDs on both units indicate ready status and the red LEDs indicate PTT active status.
For keying to work a serial server program must be installed between the client side PC and the server side PC. This could be a program created on the HRD program for example, or a simple **server program of SM7LCB**, but usable also other serial programs for similar purposes.
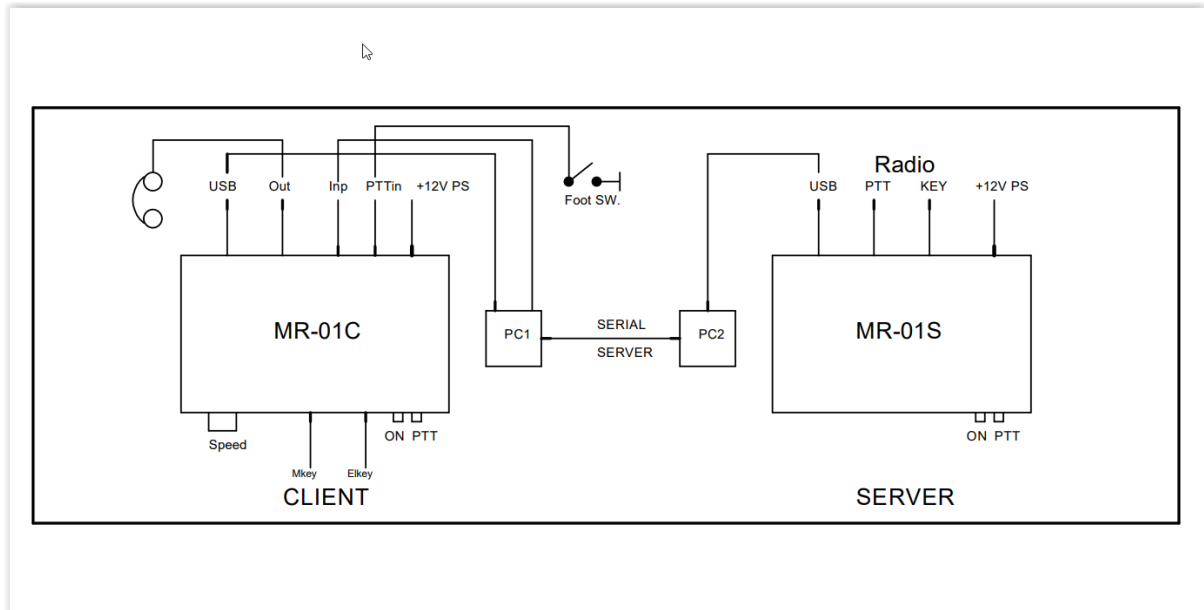

4. Experiences

The equipments have been working flawlessly for several years at my remote station.
Based on experience keying works well even at 2-300mS access time.
This simple remote keyer can be used with any type of radio and remote control.

5. Wiring diagram

Usage of SM7LCB serial server to the keyer: (other similar serial server program is usable)
The SSB mode works seamlessly with a laptop or PC for example, and the Remote station can be remote controlled as described above.
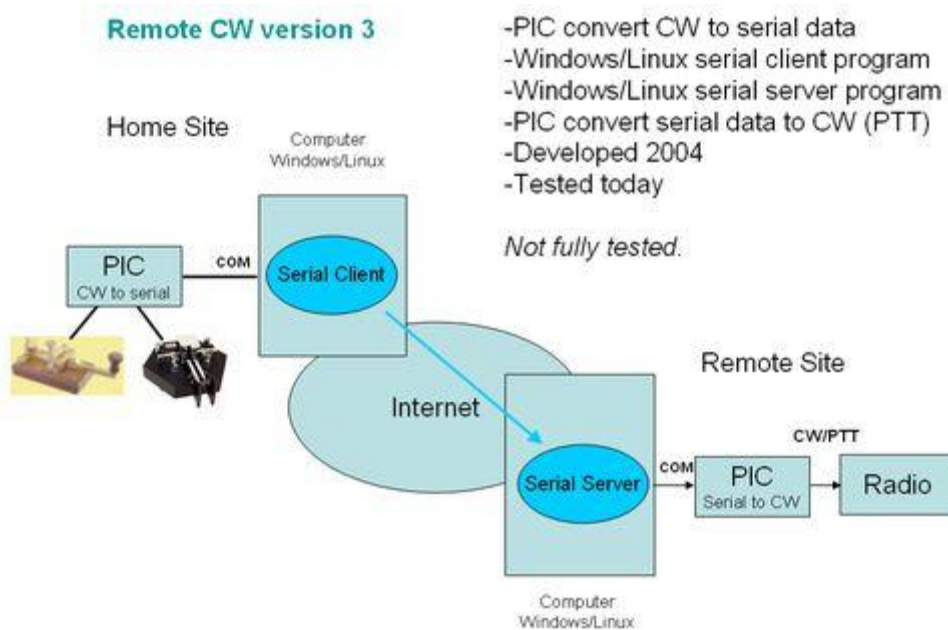
For CW keying you need a Remote keyer interface client, (**MR-01C**) on the PC, this interface creates a serial port. A similar Remote keyer "server" interface (**MR-01S**) is connected to the remote PC, which creates a serial port too, and performs the radio keying and switching to transmit on the remote station. The signals generated for client-side keying and radio PTT turn-up can be transmitted from the client to the remote station over a serial network. This is the server program written by SM7LCB and must be run on both the client and server machines. On the server (radio side) this program is always running, along with Remaud.)

To get our CW signals to the radio we need to start this keyboard server program on our PC. Once the connection has been established, we can use the hotkey built into the Remote keyer to key the radio over the Internet. The program also sends a PTT switch-on bit at the beginning of the packets, which switches the remote radio to transmit. No VOX or PTT switching is required! If we connect a footswitch to the Remotekeyer client interface, we can control the radio on SSB with this   footswitch   (the   pedal   is   connected   to   the   red   RCA   socket)

Do not use the footswitch on CW because it causes signal distortion!

The Remote keyer interface has an elkey mechanics input (6.3mm jack) and a 3.5mm mono jack next to it. This can be used to connect a handheld keyboard or the keyboard interface used in contest to the computer (this time you plug the serial keyboard interface into the Remotekey, not the radio, e.g. a standard NPN open collector serial port), so that the remote keyer can be used with the contest software (DxLog, Wintest, N1MM etc.).

The front panel of the Remote keyer interface has a speed pot, this sets the speed of the key.

On the backside of the box you can find a DC jack (+12v, centre positive, 200 mA min.), an RCA socket (footswitch) and 2 stereo 3.5mm jacks. The USB connector is closer to the speaker part of the headset (green jack plug)

The   other   jack   (red)   connects   to   the   Mic   input   of   your   PC   or   laptop. On reception, the radio signals appear in the headphones. And when you transmit, you hear the key's echo. Because of the transmission delay, it's impossible to keying while listening to the echo coming back from the radio!

There is also a USB mini socket on the back, which connects to a USB port on your PC.

6. Installing the SM7LCB serial network:/example/
 (other similar serialserver program is also usable for the remotekeyer!)
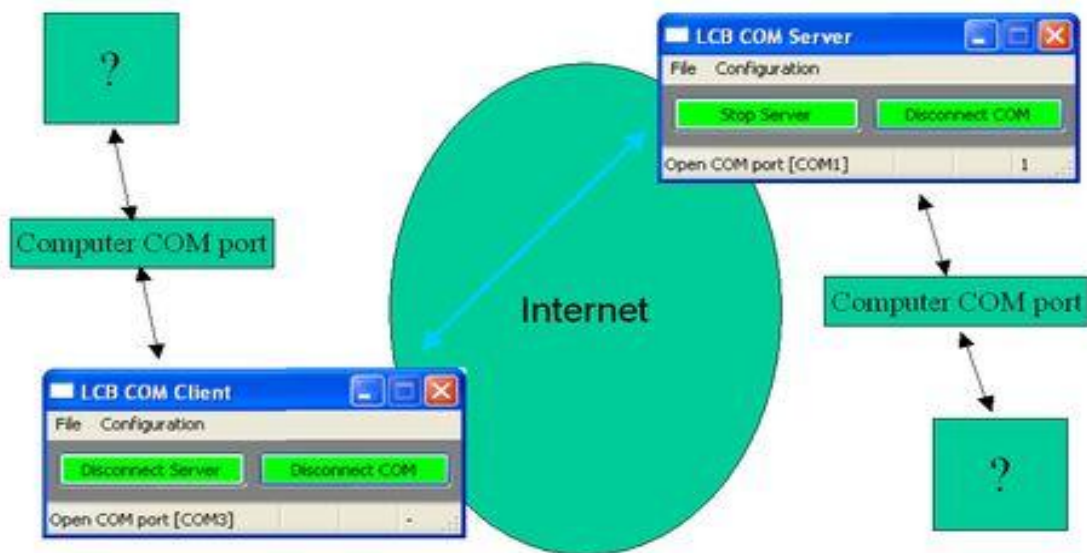
Download the SM7LCB remote serial network software from the location above. Right-click on the icon, then right-click on the wxLcbSerialNetwork line and right-click again. Then left-click on the "Run as administrator" line.

The program runs in administrator mode ONLY!

Under the Application selector, select " LCB COM client".After an LCB icon, a small square appears, here you have to configure the key on the serial port and the serial server network itself.

Install the CW **server connection** to the **remote machine** on your computer:

Click Configuration, then Server, type the following:

Server Name: xx.xxx.xx.xx

Server port number: 8800 (for example- on client and server side must be same!)

Server autostart: check it
(Don't forget to open the 8800 port on server router, pointing to your machine IP addr-192.168.x.x)

Install the **local serial port** to connect to the Remote keyer:
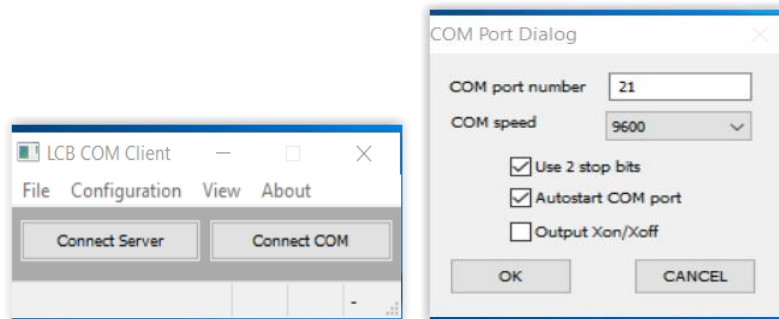
Click on Configuration again, then on Configure COM port.

In the PC Device Manager, check which COM port the Remote client key appears on your computer.

COM port number: enter the assigned port (21 in the example)
COM speed: 9600

Tick the 2nd box below it and OK-check the settings

Click on the COM port checkbox, if the remote keyer is connected, the checkbox will turn green and print the port number,
Click on File and save the configuration under a name, this is what it will load next time.
The server machine is always configured and started, if both boxes are green, you can now remote control the radio in CW.
For fast link the typing is flawless, sometimes -I have noticed that the dot at the beginning of a new word is a bit longer, but if you type continuously the typing is flawless, at any speed, even around 500mSec reach time.
Good luck with remote operation!

Literature: website of SM7LCB