**qwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmrtyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmrtyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmrtyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmrtyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmrtyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmrtyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmrtyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnm**

|  |
| --- |
| CWCOM Morse Code Practice  Installation, Configuration and Operations Guide v1.6  March 19, 2017  **Don Trotter (**VE1DTR)  **Gerry Emson** (GEMS) |

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# Acknowledgements

I embarked on this adventure to try and provide a guide for the Halifax Amateur Radio Club in Halifax, Nova Scotia, Canada to offer a Continuous Wave (CW) or Morse Code class for local hams who are interested in learning CW. I did significant research on the Internet to find resources that could be utilized to support the learning process and CWCOM seems ideally suited to support an instructor led class and to a certain extent, allow students to access the resources online and not have to drive to the club in order to participate.

I wish to acknowledge the assistance and feedback provided by Gerry Emson from Portsmouth, England (GEMS on CWCOM) or [morsepower@shutter.plus.com](mailto:morsepower@shutter.plus.com) whose excellent blog provided invaluable input into this document along with his volunteering to provide detailed feedback regarding the document content. I have included him as co-author as this guide would not have been possible without his help and assistance. Please take time to visit his blog page and view the detailed information related to CWCOM.

<https://morsepower.blogspot.ca/p/blog-page.html>

73,

Don Trotter

VE1DTR

Halifax Amateur Radio Club

March 2017

**CW Communicator 1.50**

# Part I – Installation and Configuration

# Introduction

The MRX CWCOM application is a Windows program that can be downloaded from MRX Software and provides a means to support learning Morse code**. CWCOM was originally written for Windows by John Samin (**[**http://www.mrx.com.au/d\_cwcom.htm**](http://www.mrx.com.au/d_cwcom.htm)**) but it can also be used on Linux and MAC machines:**

**Linux:** <https://morsepower.blogspot.ca/2016/11/cwcom-cwcom-new-instructions-for-linux.html>

**MacOS:** <https://morsepower.blogspot.ca/2016/12/mac-users-how-to-install-cwcom-on-mac.html>

CWCOM can be downloaded FREE and is FREE to use, with no registration, no login, and no requirement for Amateur Radio call signs.

|  |  |
| --- | --- |
|  | [CWCom for Windows - MRX](https://exchange.mobiainnovations.com/owa/redir.aspx?C=a-Z-1TC1lUmlJrkcVgUjvBjYFeLMbtQITB2BB7XvZgnQ_Ih2m6XtVA478AXCftZRdxL24jnPFmE.&URL=http%3a%2f%2fwww.mrx.com.au%2fd_cwcom.htm)  www.mrx.com.au  CWCom Download. CWCom is a Morse code chat program for Windows and NT operating systems. You can use CWCom to transmit and receive Morse code and text messages … across the Internet … |

The application has the ability to:

1. Play practice code at various speeds from a central ‘Ionosphere’ server (Reflector)
2. Allow a key to be interfaced to the computer and allow sending of practice code privately. Alternatively, the mouse can be used for CW input
3. Provides a server based reflector where operators (2 or more) can practice interactively

Anyone can use this application, you are not required to hold an Amateur Radio Operator’s license to use the application or participate in group communication sessions using the application across the Internet. The ‘Ionosphere’ server is the web server supported by MRX Software that provides the reflector and code practice functionality and supports the live communications between operators.

# Installing the Application

Each computer should run its own copy of the application. If you run the program from a shared drive there will be configuration conflicts.

Follow these steps to install CWCom on your system:

1. Download the installer from <http://mrx.com.au/downloads/cwcom_inst.exe>

Underscore ↑

1. Run the installer from your browser or locate the file using ‘Windows Explorer’ after downloading the installer. Typically, it will be in your ‘Downloads’ folder
2. Run the “cwcom\_inst.exe” to install the application
3. Click on the CWCom icon  to run the program.

# 3.0 Key Interfacing

Most Morse code keys can be interfaced to CWCOM using a serial interface connection. The key needs to be connected (typically) to a DB9 female connector as follows:

DB9 – 9 Pin Serial Port Connection

|  |  |
| --- | --- |
| * Pin 6 – straight key or left paddle * Pin 4 – straight key/paddle common (ground) * Pin 8 – right paddle |  |

With modern computers, the ‘old’ serial ports are largely gone but a USB port can support a serial connection through a ‘USB to Serial Adapter’ shown on the left below. Check monoprice.com: ~$8USD (shipped from Hong Kong), also available in Canada but typically ~$30CDN.

The paddles and straight key are connected similarly through the ‘USB to Serial’ adapter by terminating the terminals on the key to a female DB9 connector that is then connected to the male connector on the ‘USB to Serial’ adapter.

A more in depth treatment of connecting your key to the computer can be found at:

<https://morsepower.blogspot.ca/2016/08/cwcom-getting-started-connecting.html>

If you don’t have a key at the moment, the mouse can be used as a substitute for a paddle or straight key with the left mouse button sending ‘dits’ and the right mouse button sending ‘dahs’. This is covered in more detail under Operations, Section 5.1 below. The following YouTube video shows some ‘Extreme Mouse CW’.

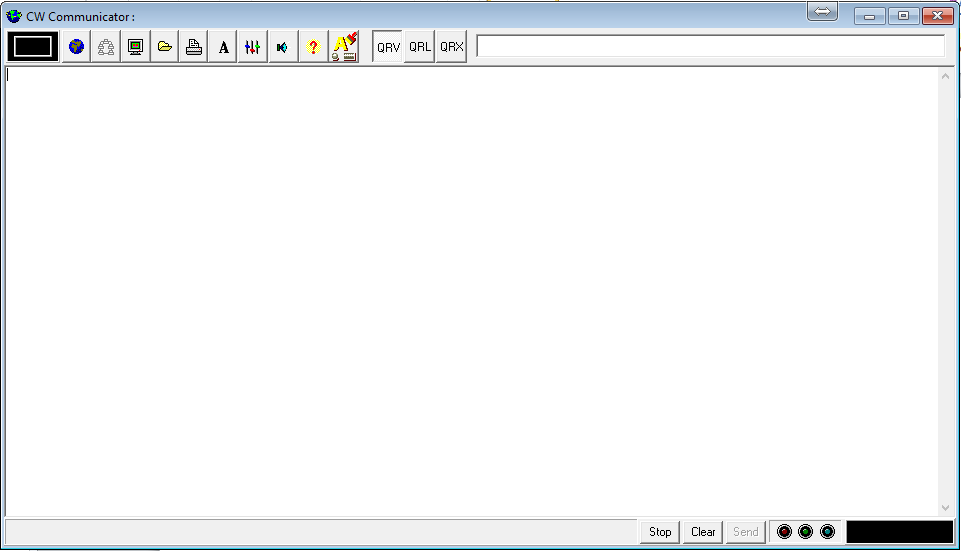
<https://www.youtube.com/watch?v=hRVYkbTaRbg>

# 4.0 The Application Interface

The following sections describe the various configuration options for the application.

## 4.1 Interface Overview

The following is the default or ‘Home’ window displayed when CWCOM starts:



## 4.2 Interface Options

The buttons across the top of the window are used to configure and run the application:



With the exception of the Mouse Keyer/Activity icon (black square on the left) and the status icons (starting with QRV on the right), each of these icons spawns a new window that is independent from the Home window and may be opened or closed without affecting the behavior of the Home screen (unless you change a setting). Note also that the ‘flashing’ in the Mouse Keyer/Activity icon can be switched on or off in the configuration window – see Section 4.9.1 for details. The interface icon bar has the following functions and each is documented in more detail in the sections that follow:

| **Icon** | **Function** | **Description** |
| --- | --- | --- |
|  | **Mouse Keyer/Activity** | Clicking in the black box on the left hand side of the icon bar with the mouse pointer will send a ‘dit’ if the left mouse button is pressed and a ‘dah’ if the right mouse button is pressed. The ‘inner box’ flashes white when you or someone else is sending, no matter which input method is being used. |
|  | **Connect** | Displays the ‘Connect’ window (see below) |
|  | **Users Active on Channel** | Shows the current users on the MRX CWCOM server (but only if you are already connected) |
|  | **Web View of All Users** | Shows the Active Users and Active Practice Channels on the ‘Ionosphere’ server |
|  | **Open Library File/Send File** | Check the MRX site for more details on the Morse Library functions |
|  | **Print** | Print a copy of the conversation. Note: you should be able to ‘Print to a PDF’ as well, if you wish to save the session – Copy/Paste does not work in the Home window |
|  | **Fonts** | Change the font type and size |
|  | **Configuration** | Modify the application defaults (see Section 4.6.1 below) |
|  | **Audio** | Modify Volume and Tone settings |
|  | **Help** | The html help file for CWCom |
|  | **Morse Library Editor** | Create and edit new Morse symbols and text associations |
|  | **QRV** | I am ready to receive |
|  | **QRL** | I am busy |
|  | **QRX** | I am away |
|  | **Connect Message** | Message displayed to others when you connect to the ‘Ionosphere’ server – enter before clicking ‘Connect’ |

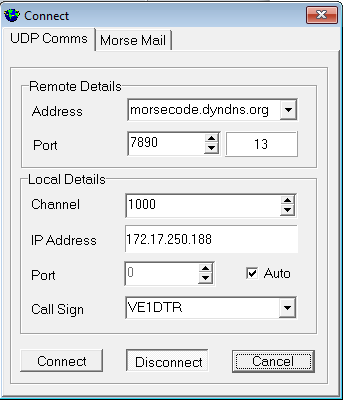
## 4.3 Mouse Keyer/Activity

The Mouse Keyer/Activity ‘mini-window’  servers two purposes. When activity is detected by the application, the inside box ‘flashes’ white to show the activity. This behavior can be controlled by the ‘Morse’ tab in the Configuration window (see Section 4.9.1 below). Both the visual and audio behavior can be controlled from that configuration screen.

The ‘Mouse Keyer’ functionality is also available within the ‘mini-window’, if you place the mouse pointer inside the inner box and press the left and right mouse buttons with the left mouse button sending ‘dits’ and the right mouse button sending ‘dahs’.

## 4.3 Connect Window

To connect to the ‘Ionosphere’ server, click the  icon:



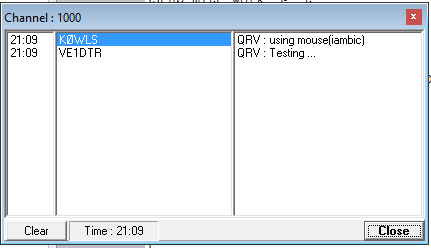
The Remote Details should default to the correct values. Local details control your appearance on the ‘Ionosphere’ server. The Channel defaults to 1000 that is typically used by other users. If a group would like to participate separately, coordinate a common channel shared among all participants (e.g. 1002). Code practice channels are specified by MRX on the ‘Ionosphere’ server and are typically >2300).

Channel 1000 is the default channel, therefore all stations around the world will initially open on this channel, in effect it is the "calling channel" and while there are not hard and fast rules on CWCOM, it would be appreciated if any QSO`s in operation on Channel 1000 monitor the "on channel" window, and QSY if this seems appropriate, to free up 1000 for other users to establish their QSO`s.   Stations may also be "called in".

Note: When you enter the Call Sign value for display on the server, you are not required to enter an ‘official’ Amateur Radio issued Call Sign (which conforms to the AA9AAA or similar format) and the length of the identifier is not restricted. Users can choose a unique value for the Call Sign entry that uses their ‘real’ call sign but can choose from a variety of other values (e.g. initials, name, nick name, email address, etc. .), as long as it is unique for the duration of the session. The Call Sign value is preserved by CWCOM between sessions.

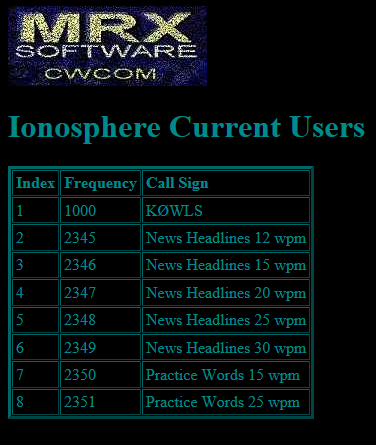
## 4.4 Users Active on Channel

This function  displays the list of ‘Users Active on Channel’ window for the Channel you specified in the Connect window. If you are not connected to ‘Ionosphere’, it is inactive and the window will not open:



## 4.5 Web View of All Users

Clicking on the  icon displays the list of users and practice channels on the ‘Ionosphere’ server:



The page should update automatically, every 60 seconds. The positions of those on channel may change; this is ‘normal’. ‘Duplicate’ entries of Call Signs may also be displayed, which results when stations have not "disconnected" before closing or their internet connection has temporarily failed, and it auto re-enters the call on reconnection.   This facility is ‘buggy’ and sometimes you will see all the channels have many duplications. Normally this clears itself at when the server’s date changes. Keep your "on channel" window in view, to ascertain who is on your channel.

## 4.6 Open Library File/ Send File

The folder icon  allows a customized library file (another language, perhaps) to be loaded. Text files may also be sent but this feature is seldom used.

## 4.7 Print

The Print icon  will open the Print window and allows the Home window content to be sent to a printer (or to a PDF, if you have a ‘Print to PDF’ print driver installed on the computer).

## 4.8 Font

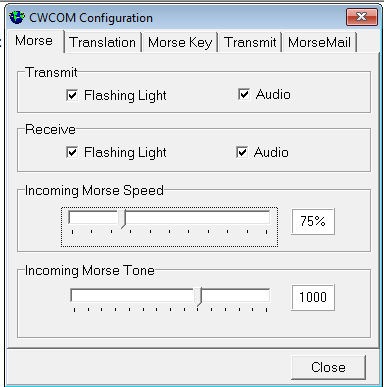
The font icon  allows the currently installed Windows fonts to be selected for the Home window. This font change is local only, the receiving stations utilize the font selected by the local operator.

## 4.9 Configuration

The Configuration icon  opens a window that has five tabs that control application behavior.

### 4.9.1 The Morse Tab

The Morse tab controls the flashing light and audio settings on Transmit and Receive, Speed and Tone of the incoming signal.

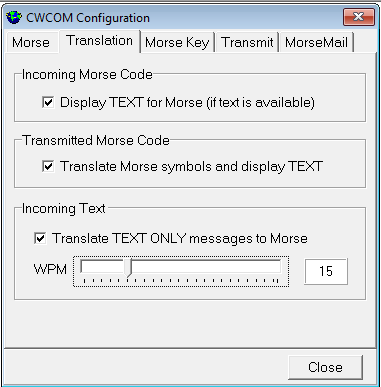


Many new users find the Flashing Light distracting and this is where you can ‘uncheck’ the Flashing Light feature. The Incoming Morse Speed setting defaults to 100%. It is recommended to set it to **75%**.

Rationale: When a distant station transmits, it goes into the receiving station`s "buffer" as shown by blue or red squares along the bottom of the screen that are displayed as the audio is processed. At the moment the distant station transmission ends, with a ‘K’ (**important to do this, even typing on the keyboard**), there are potentially tens of seconds of text still in the buffer. The result is a delay of up to 90 seconds before the receiving station`s reply starts to appear on the transmitting stations screen.  
Changing this value to 75% ensures that the delay is almost eliminated and the "flow" of transmission and response is very much like on live HF radio with no delay between ‘overs’. Additionally, if left at 100%, there will be difficulty in "breaking in" or answering a station before another station (set at 75%) answers.

### 4.9.2 Translation Tab

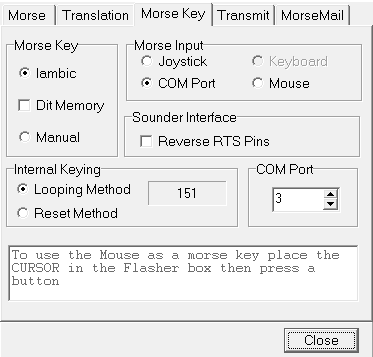
The Translation tab controls whether text will be displayed as text and code displayed as text. Text only messages can be rendered as code:



The Incoming Text option should be enabled with the check box on this screen. The speed for this setting should be increased to 15 WPM as this will assimilate the student into the "sound" of the letters more easily and helps to decrease the actual time that the typing takes to appear on screen.

### 4.9.3 Morse Key Tab

The Morse Key tab controls the key type and configuration of your key using the COM Port or the Mouse. **Note: The ‘Morse Input’ area defaults to ‘Keyboard’ on startup of the application and the user must open this window and select COM Port (if using a key) or Mouse.**



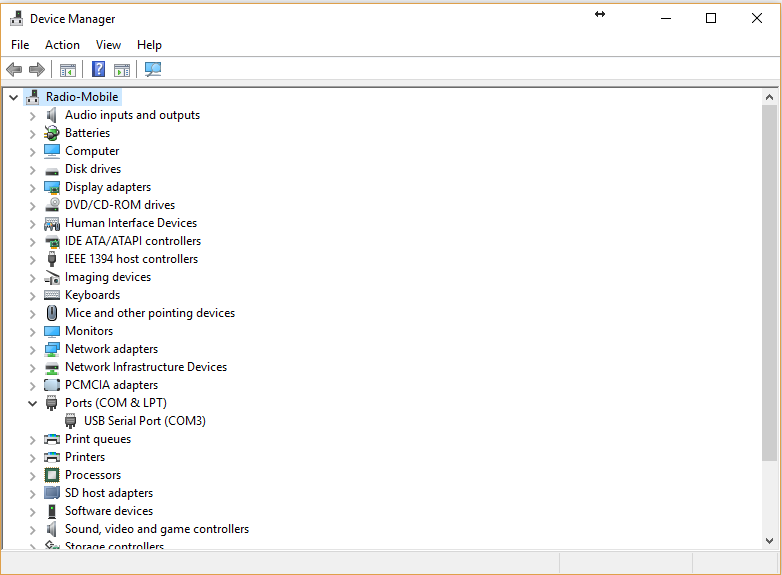
If you are using a ‘straight key’ set the Morse Key setting to ‘Manual’. If using ‘paddles’, choose the ‘Iambic’ setting. Set the Morse Input setting to COM Port for either style of external key. Select the ‘Mouse’ setting, if you do not have an external key. The COM Port setting is stored by CWCOM and will be maintained correctly as long as the ‘USB to Serial adapter’ remains connected to the same USB port.

Additional information on connecting your key can be found here:

<https://morsepower.blogspot.co.uk/2016/08/cwcom-getting-started-connecting.html>

The Internal Keying area allows you to choose the (default) Looping Method or Reset Method. If characters are not being recognized by the system, try the Reset Method.

Using a physical serial port or a ‘USB to serial converter’ requires a check of the COM port assignment in Windows Device Manager to ensure that the COM Port setting in CWCOM matches the hardware configuration in Windows. The following screen shot is from a Windows 10 Device Manager and indicates that the ‘USB to serial converter’ has been assigned to COM3 by Windows. Note: It will only appear in Device Manager when the cable is physically attached to the computer.



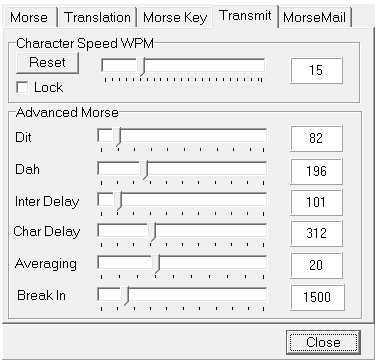
### 4.9.4 Transmit Tab

Making changes on this tab can seriously affect how the application behaves, so make sure a copy of this screen is saved ‘just in case’ changes are made that negatively impact application behavior.

The settings on this tab set the parameters that control the timing of the reading of the elements of the symbols that you are creating with your key. These settings control the ‘Dits’, ‘Dahs’, ‘Spaces’ , time between words (Inter Delay) and the time between characters (Char Delay). The application collates these parameters together and produces the "Character Speed" value and displays it as WPM.

For example, if you were a novice and sent the ‘R’ using your key as ‘dit dah dit’, the outcome could be ‘TTT’ or ‘E T E’ on the Home window, depending on the timing, and the previous setting of the speed.  As the operator increases in proficiency, the ‘R’ will be more like ‘di da di’ and if correctly timed & calculated, be shown on screen as ‘R’.  
  
**Note: The *speed on this screen must be set to within 5 wpm either side of your estimated transmit speed for the application to interpret the input properly and to time your elements and symbols correctly.***   
  
If you have a good straight keying "fist", it is recommended that you "lock" the speed in the ‘Character Speed WPM’, once you have achieved about  98% accuracy on screen - minor variation can still be read correctly by the program.    
  
If you use an Iambic paddle key, the WPM setting determines the speed of repetition on each paddle. In effect, it acts as a ‘keyer’ and outputs the ‘dit’ and ’dah’ elements at the speed set here. It has been suggested elsewhere that it is not wise to "lock" if using a paddle key but the user could and should experiment with this setting to see what works best for their situation.   
  
In summary, if the estimated speed is 18 WPM, set the speed by dragging the slider to about 18 WPM. Test the application at consistent speed to evaluate if the program is consistently recognising the sent elements.     
  
Setting the WPM high (e.g. 25WPM) will not make 5 WPM actual speed into 25 WPM. It will, in fact, typically show corruptions on the screen because of the mismatch between the speed set and the actual speed being sent.

Sometimes, you may have the "transmit speed" correctly set, but it still produces TTT  T TTT TTTTTT TTT TT TTTTT  on screen,  in which case you need to change from "Internal keying " to "Reset Method" on the Morse Key tab.   
  
Please be sure to record or print the values from this tab once you have fine-tuned them for your personal capabilities. It is expected that the speed values would increase over time.

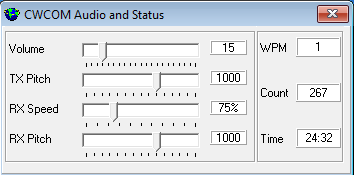


**4.9.5** MorseMail

Morse Mail is no longer used.

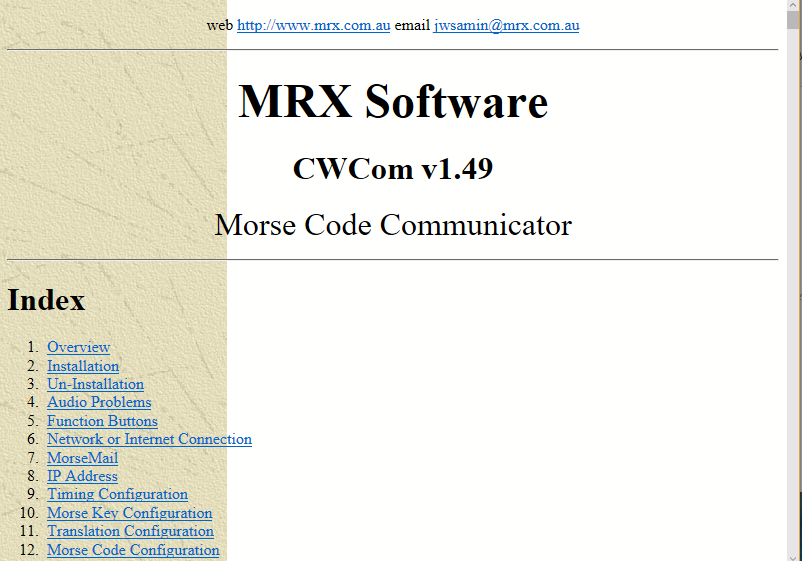
## 4.10 Audio

The audio icon  activates a window that is used to control the volume, transmitted pitch, receive speed and receive pitch.



## 4.11 Help

The Help icon  activates the web help maintained online by MRX Software. The screen shot below shows the opening page of the online help:



## 4.12 Morse Library Editor

The Morse Code Library Editor  allows the user to customize the characters and symbols recognized by the system. Details on using the editor are beyond the scope of this document but there is an excellent online reference on the MorsePower Blog:

<https://morsepower.blogspot.ca/2016/08/cwcom-editing-morse-library.html>

Examples of symbols that would be useful are BT to render an ‘=’, AR to create a ‘+’ or IMI to display ‘?’.

## 4.13 Status Icons

The remaining icons are used to communicate your status to other users:



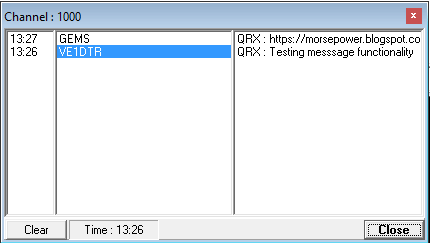
The following are the interpretation of the statuses within the context of CWCOM:

QRV – Online, listening

QRL – I am busy

QRX – I am away

The box to the right of the status icons is for a message that is displayed in the Users Active on Channel display when you are connected to the ‘Ionosphere’ server.

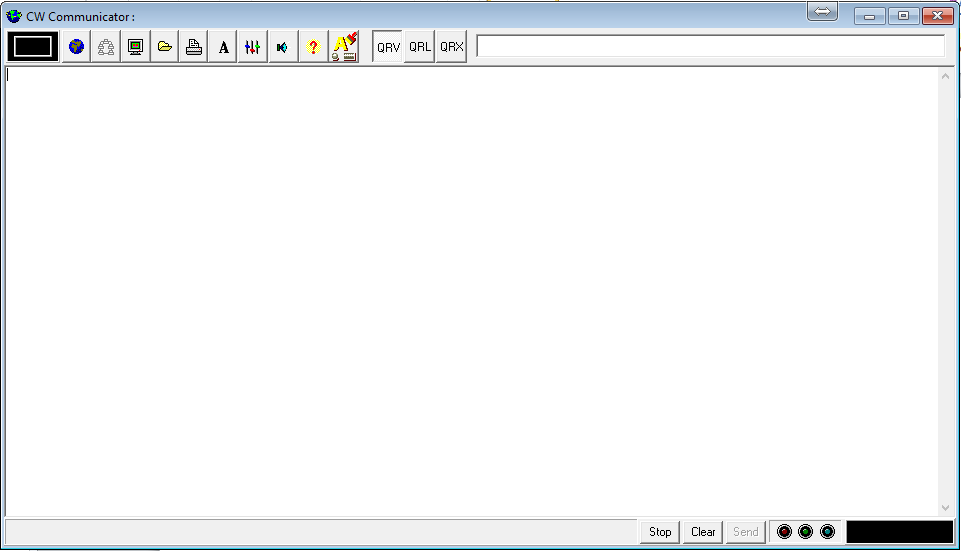


This message can be used for any info you would like to pass along to others sharing your channel.

# Part II – Operating

# 5.0 Input Method

Open the application and display the main screen:



The keyboard is always active, so you may type messages directly into the Home window using the keyboard as well as the key or the mouse. When connected to the ‘Ionosphere’ server, the typed text is sent to the other participants the same as characters or symbols entered using the key or mouse. Remember to format the messages using the HF radio convention that ends the message with a standalone ‘K’. For example:

‘You are sending too fast for me K’

## 5.1 Mouse Keyer/Activity

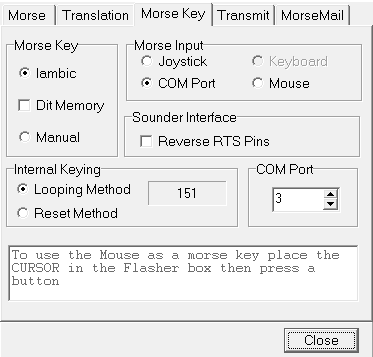
The mouse keyer input method is not active by default – the ‘Configuration’ ‘Morse Key’ ’Mouse’ option needs to be selected at startup in order to activate the mouse as a ‘key’. Once the mouse has been selected as the ‘Morse Key’ active option, the mouse pointer may be moved over the centre of the ‘Mouse Keyer/Activity’ box and press the mouse buttons. The left mouse button should sound a ‘dit’ and the right mouse button should sound a ‘dah’. If you don’t have a regular key and interface cable, this can be used to practice sending code. The ‘Mouse’ key is also enabled if the COM Port option is selected from the ‘Morse Key’ window.



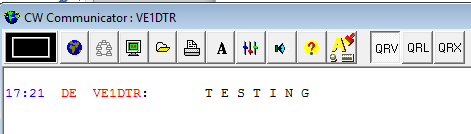
The mouse pointer MUST be kept inside the black box on the top left of the Home window during mouse transmission. Note that you are not broadcasting the audio to the ‘Ionosphere’ server until you open the ‘Connect’ window and click the ‘Connect’ button. Code is not sent to the server in this mode and practice will remain private. To clear the screen, press the ‘Clear’ button at the bottom of the screen.

## 5.2 Morse Key and Interface Cable

Upon opening the application, click the ‘Configuration’ icon  and check the ‘Morse Input’ setting. The application reverts back ‘Keyboard’ each time the application is started and the COM Port or Mouse selection must be made each time you start the application. Note that CWCOM does not save the configuration when you exit.



Select the COM Port option if using an external key or the Mouse option if using the Mouse. CWCOM stores the COM Port setting and it is maintained between sessions. The text below was sent using a key connected to the COM Port after updating the configuration:



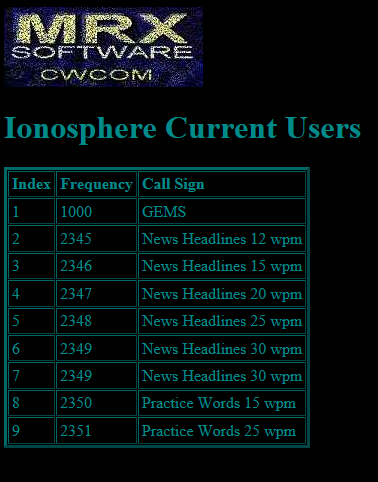
Note that code is not sent to the server in this mode and practice will remain private. To clear the screen, press the ‘Clear’ button at the bottom of the screen

# 6.0 Interactive Sessions

The CWCOM server provides the ability to connect to other users or code practice ‘channels’ on the ‘Ionosphere’ server. Check what services are currently available by pressing the Web View/ All Users icon:



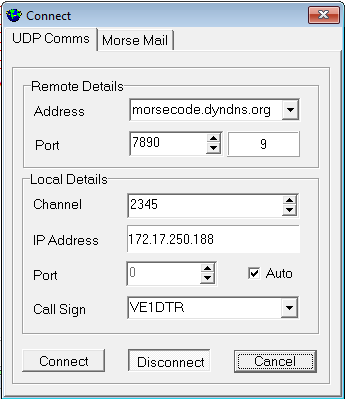
The currently available channels will be displayed in a browser window:



In this case, one user (GEMS) is connected to channel 1000 (the default channel). Channels 2 through 9 are code practice using either News Headlines or Practice Words at various speeds and these can be selected by entering the port number for the practice session in the ‘Channel’ field on the ‘Connect’ window.

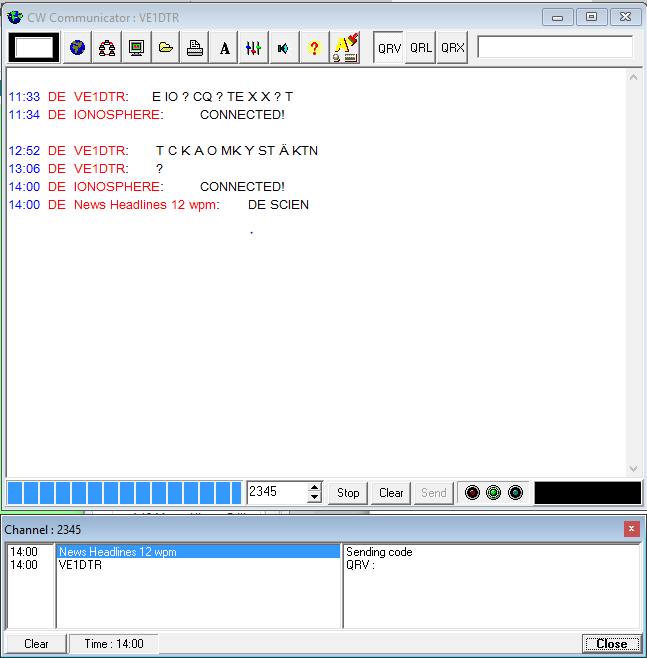
## 6.1 Connect to Code Practice

Open the ‘Connect’ window that is activated using the  icon:



To connect to a practice channel, enter the channel number in the ‘Channel’ field and make sure there is an identifier in the Call Sign field. Press the ‘Connect’ button and a connection to the ‘Ionosphere’ server will be established. The default channel is 1000 and is often used by users that wish to share a session.

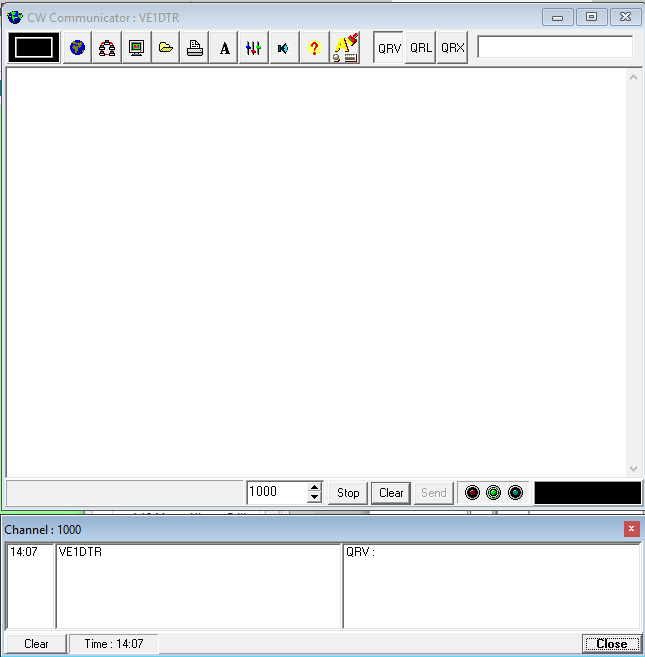
In the example below, channel 2345 was activated for ‘News Headlines 12WPM’ and it began playing the Morse code audio along with the displaying the characters on the screen. The Channel window shows all the users that are on that channel and can be closed, if desired.



To Disconnect, press the ‘Connect’ icon again and then press the ‘Disconnect’ button. Note: it takes a few seconds for the buffered characters to clear after Disconnect is selected. The ‘Connect’ window can be closed using the ‘X’ in the top right corner of the window.

## 6.2 Joining or Creating a Shared Channel

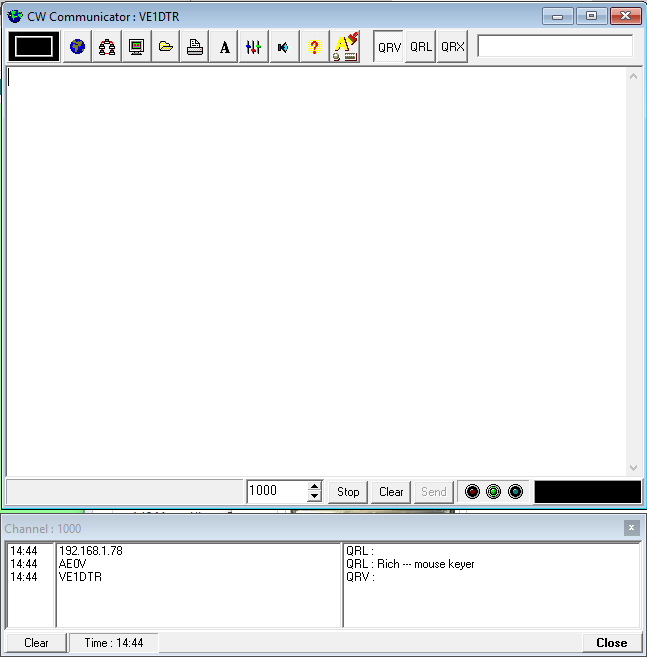
Users may practice privately using their key or mouse and the application will provide audio and visual feedback without disturbing others. Once users have sufficient capability to interact with others, they may join an existing channel (e.g. 1000) by entering that value in the ‘Channel’ field of the ‘Connect’ window and pressing the ‘Connect’ button (see Section 4.3). Users can also choose to create a new active channel – the ‘controller’ (first one in) connects to an unused channel on the ‘Connect’ window (e.g. 1002).



Note that the window arrangement above is recommended in order to keep track of the users active on the channel. The lower window is opened by pressing the ‘Users Active on Channel’ icon and should be resized to display as shown.



Other users wishing to join simply identify the active channel they wish to connect to on the Web View/All Users screen and then enter the channel number in the ‘Connect’ window and press the ‘Connect’ button or they can use the up and down arrows in the Channel field at the bottom of the Home window.



Users can then join or drop off from the channel as they wish using the ‘Connect’ window. As users join, the Channel window will be updated with their info.

Channel 1000 is selected ‘by default’ on opening CWCOM - UNLESS it was left on another channel from the previous session. CWCOM will preserve the channel setting between sessions, so the previous session channel will be the default channel on opening CWCOM. This is an important point as it may not be spotted by new users **therefore always change back to 1000 before closing CWCOM** and also important, **use the ‘Disconnect’ button in the ‘Connect’ window, before closing the application with the X in the top right corner of the Home window.**

## 6.3 Operating Procedures

This content was largely provided by Gerry (GEMS) from his blog: <https://morsepower.blogspot.ca/2016/08/cwcom-working-procedures.html>

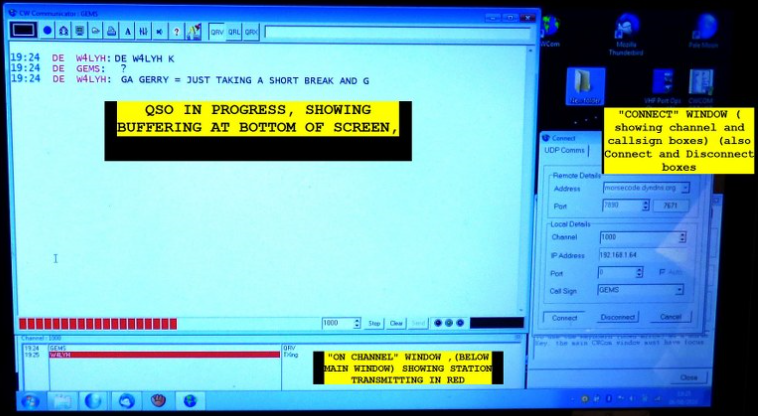
As with many things, a common sense approach to ‘working procedures’ in CWCOM is achieved through shared understanding and courtesy in sharing a limited resource among a large group of users. There are no official rules and regulations related to operating in the system, so the conventions documented here are the ‘generally accepted rules that operators comply with voluntarily. In general, the procedures followed by existing operators are very similar to that of Amateur Radio operators, using the same Q codes and "overs" system but there are some nuances that need to be understood by novice participants.

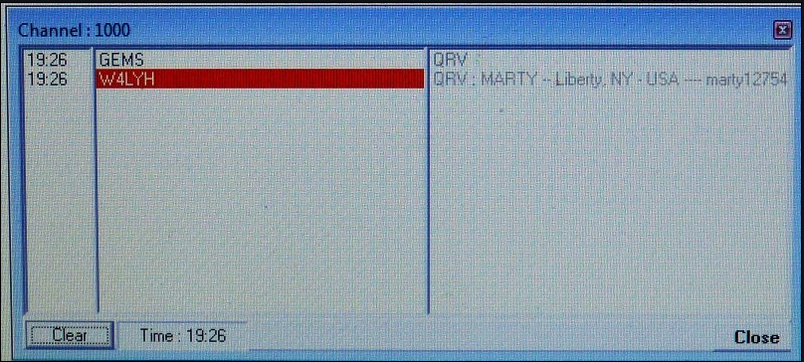
Signal reports are not used in CWCOM – the communication method (Internet) eliminates the need for these status updates.

Channel 1000 is the Primary or DEFAULT channel and can be considered as the CALLING FREQUENCY and once a QSO has been started, it is "common sense" to QSY or "shift to another channel”, if the channel becomes busy with multiple participants. The user can easily announce the new channel e.g. "QSY 999" once they can ‘Break In’ to the conversation or update their Connect Message at the top right of the Home window. Note that the channel can be changed using the up or down arrow on the channel window at the bottom of the Home window. This will then leave the "Default" or calling channel free for newer stations to be able to establish their own QSO.

Use the "Web View" icon  at the top of the text screen, you can find out what channels other stations are working on.  
  
In the past few years, channel 1000 has become the "general chat channel" because there have not been many users on the system and it was unnecessary to QSY. Effectively, it has become "habit" to continue QSO`s on Channel 1000. If a number of other stations start CWCOM they will also, by default, be on channel 1000 and because a QSO is in progress, will typically politely wait for the QSO to end or be invited in to the conversation. Attempting to ‘Break In’ can cause a collision within the QSO in progress and negatively affect the participating users.

Sometimes a "collision" is unintentional, due to new users not knowing how CWCOM actually works but at other times, it is deliberate, due to frustration of waiting, and being ignored.  
  
It is a good idea to re-size the main screen, so that the "On Channel" window can be positioned below the main screen and when new users join the channel, they will be shown on that screen, and hopefully, those in the QSO, will call them, or arrange a QSY to free up 1000 again.





If everyone uses the "On Channel" window as described above, then it is possible to pass a message to other stations using the "message box" at the top of the screen, to the right of the QRX box. Messages here are displayed alongside the call sign on the "On Channel" window and are updated in real time. It would be possible to ask another station (not involved in the existing QSO) to QSY to 1001 and start a new QSO, without interrupting the existing one.  
NOTE: To remove messages, delete by backspacing, or highlighting and backspace, then press SPACE BAR and then RETURN key. This, in effect, puts a new message (the space) on the message box.  
  
A word about typing: Some stations have removed all the CAPITAL LETTERS from their Morse Library to have a more pleasing appearance in the Home window. See the tutorial ‘Editing the Morse Library’:

<https://morsepower.blogspot.ca/2016/08/cwcom-editing-morse-library.html>

To understand how to control the interpretation of the audio by CWCOM. The impact of removing the capital letters from the library is that whatever is typed in capital letters does not have a Morse sound when received (although the text appears on the receiver(s) Home windows.   Also, when typing, you will not hear the sound of your typing in Morse code.  
  
As is common practice, it is "good manners" to use "lower case" when typing, as this is "not shouting" although it is only an advisory matter. Some Australian Post Office Telegraphists of the Landline era still like to see the text in Upper Case, as that is what they used on their typewriters.   
  
Also when typing... you should still follow the conventions of the HF Amateur Radio operations, and "be nice to each other"!  
  
 Finally and most importantly, end your transmission with the letter K or AR as you would if sending Morse on Ham Radio to let the distant station know you have finished typing.

## 6.4 Learning the Code

There are a lot of resources available online to help with learning to send and receive Morse code. Gerry (GEMS) has some recommendations on approach on his blog:

<https://morsepower.blogspot.ca/2016/09/how-to-learn-morse-code.html>

Gerry recommends G4FON as a trainer to help train your brain to recognize the audio artifacts for each letter or symbol.

Other useful tools to investigate are Just Learn ‘Morse Code’ and ‘Learn Morse Code Online’ (LMCO). There are also reference documents that may be useful listed in Appendix A. The most important thing is to practice, in short sessions (<30 min), daily or as close to daily as ‘Life’ allows.

# Appendix A – CW Resources

