



F8101ALE v2 User's Guide

RadCommSoft, LLC presents F8101ALE v2

F8101ALE v2 is remote control software for the **ICOM IC-F8101E**®, and includes a modem controller for the **RapidM TC4**® which may be internally installed in the radio (external RapidM RM2 modems will work also via the J-15 port).

F8101ALE v2 allows the user to control ALE linking and de-linking (based on radio programming) directly from the software without touching the radio. This allows the radio to be installed in a position that is not directly accessible to the operator.

The **TC4** (or RM2!) modem controller allows the user to set waveform, data rate and interleave settings of the modem and to configure transmit audio level and the receive de-acquire limit. The modem controller displays the received auto-baud data rate and interleave as well as SNR, BER, Doppler and Multipath indications directly from the modem.

The program also collects information regarding ALE stations heard while scanning. This information is logged and the included **NetMon** app aggregates that information and presents it in another window for evaluation. **NetMon** is included in the base software distribution.

System Requirements

The F8101E radio MUST have ICOM firmware version 4.08 or newer installed.

F8101ALE v2 requires Microsoft® Windows® version 7 or newer. Older versions of the operating system are not supported. When Windows 7 is discontinued by Microsoft, it will become unsupported for F8101ALE v2 as well. A Linux tar.gz package is available upon request.

Software Installation

F8101ALE is installed using the supplied installer. Follow the simple instructions supplied in the installer and place the program in a convenient place on the personal computer. A startup shortcut should be created to help the user launch the program from the Start menu or page in Windows. **(NOTE: If you buy two product keys to use with two radios, install the software into two different folders in order to keep the configurations separated.)**

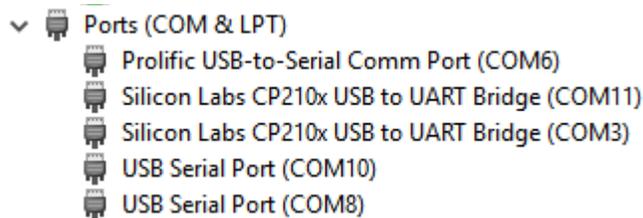
Software Configuration

Things you need to find out...and how to do so

1. Radio serial port _____
2. Modem serial port _____
3. RadCommSoft Product Key _____ (32 chars)

Plug the USB cable from the ICOM IC-F8101E radio into the personal computer.

In Windows, open Device Manager and expand the twistie labeled “**Ports (COM & LPT)**”



Note the two ports that have loaded the Silicon Labs driver provided by ICOM or by Windows directly. These are your two serial ports to use for the **F8101ALE** software. **TYPICALLY**, the lower number of the two is the **Modem serial port**, and the higher of the two is the **Radio Serial port**. Record those two values above (radio COM11, and modem COM3, for the example above).

You have now gathered all of the basic information necessary to configure **F8101ALE**.

Start it up!

Using the shortcut created by the installer, start **F8101ALE**. You will likely receive a **serial port error dialog**. **Simply acknowledge it and continue**. You will likely see a **Product Key error dialog** as well. **Fill in the Product Key in the radio tab of the configuration dialog**.

Once the main screen has loaded, click the gear button in the upper right portion of the window (if not already opened for you). This will launch a configuration dialog screen with a number of tabs.

The screenshot shows the 'F8101ALE Configuration' dialog box with the 'Radio' tab selected. The 'Connection Settings' section contains the following fields: 'Serial Port Name' (COM1), 'Serial Baud' (38400), 'Bit Params' (8N), and 'CI-V Timeout (ms)' (50). Below these is a checkbox for 'Use NetPort' and three input fields: '192.168.0.17', '9873', and 'FEFE8AE0....FD'. A 'Send CI-V' button is located to the right of these fields. The 'Other Settings' section includes a 'Priority Channels' group with six 'Pri Chan Alpha Name' fields (P1-P6). Below these are 'Start in Scan Type' (ALE), 'Mic Gain' (6), 'Station Name for Logging' (RADIO1), a checkbox for 'Show Freq on ALE Scan', 'Product Key' (32 Characters), and 'Num Day to Keep Log Files' (0). At the bottom, there are three buttons: 'Load Memory Channels', 'Save Settings', and 'Cancel'.

On the **Radio** tab, enter the **Product Key** into the field provided at the bottom of the window. The software will not function without the product key.

Select the Serial Port Name from the list provided that corresponds to the one you recorded in the previous step, above. The defaults for Serial Baud and Bit Params should be left alone. The CI-V timeout is a value that should only be adjusted under very specific circumstances and will be discussed later.

Leave **Use NetPort** unchecked. This is for advanced operation only under special circumstances. The NetPort application is NOT included with F8101ALE v2.

Note in the **Other Settings** group box that these are a list of up to 6 priority channel names as they are assigned in the ICOM programming software for particular channels. The text must match EXACTLY what was programmed into the radio (including case). If you set the P1 – P6 button label text, bear in mind that they are very small buttons, so they will only hold about 3 characters without bleeding over the edge of the button.

You may also set the “Mic Gain” on this panel. Whenever you change the value for Mic Gain, it is changed on the radio as soon as the configuration dialog has been saved.

The button, **Load Memory Channels** will interrogate the radio for the memory channel list. This is an immediate command, and you may watch the main program display as it cycles through the list of memory channels. A channel list is saved to the INI file and is loaded when the program starts. **Any time channel programming changes, it is REQUIRED to use this button again to refresh the list of memory channels.**

Station Name for Logging is used to denote this station name in the log file (also displayed by NetMon).

The screenshot shows the 'F8101ALE Configuration' dialog box with the 'TC4' tab selected. The 'Enable RapidM TC4' checkbox is checked. The 'Serial Port Name' is set to 'COM2', 'Baud Rate' is '115200', 'Bit Params' is '8N1', and 'DTE Mode' is 'ASYNC'. The 'TX Audio Level (dB)' is '-15' and 'Dequeue Limit (s)' is '1'. Under 'Modem Data Input/Output Method', 'Use TCP Socket' is selected with IP '10.0.0.3' and 'TCP Port' '8101'. 'Use Serial Port' is also an option with 'ttyS1' and '115200 8 N 1'. There is a 'Hexadecimal RAP1 Command to ...' field and a 'Send CMD' button. Checkboxes for 'Track Incoming SNR (unattended ops)' and 'Track Incoming Data Rate (unattended ops)' are present. Below these are several input fields for data rates: 150 bps > -2, 300 bps > 0, 600 bps > 6, 1200 bps > 10, 2400 bps > 15. At the bottom, there are buttons for 'Load Memory Channels', 'Save Settings', and 'Cancel'.

On the **TC4** tab, you will find a similar configuration dialog. Select the **Serial Port Name** from the list provided that corresponds to the one you found in the step above for the Modem Serial Port. The defaults for Baud Rate and Bit Params should be left alone unless there is a compelling reason to change them. The TC4 runs at a default rate of 115200 baud on the serial line. DTE Mode is almost always ASYNC, though High Speed ASYNC is accommodated if required.

The serial port timeout should also be left at 50 (ms) unless there is a compelling reason to change it.

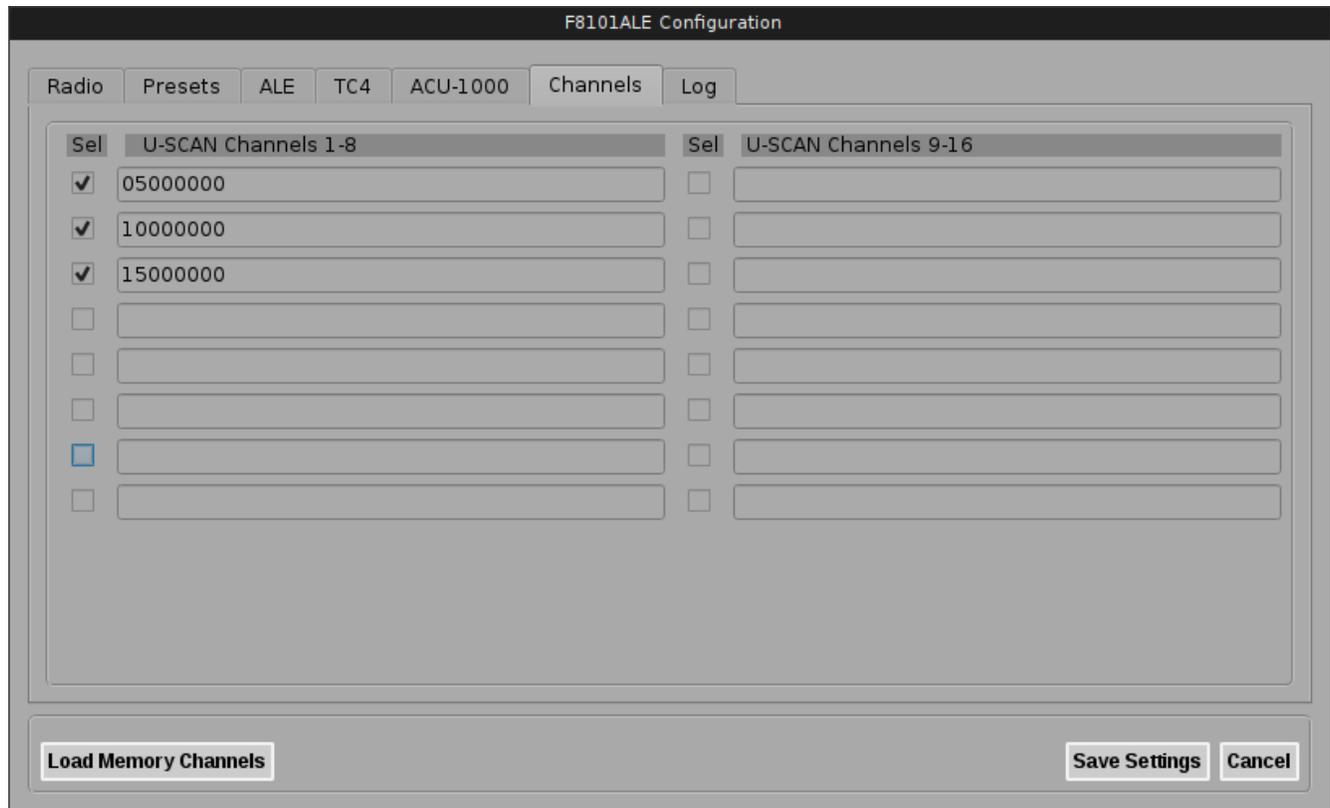
You may set the values here for the transmit audio level (typically -10 to -15 db) and the Deacquire Limit (typically 1 sec).

Modem Data Input/Output Method

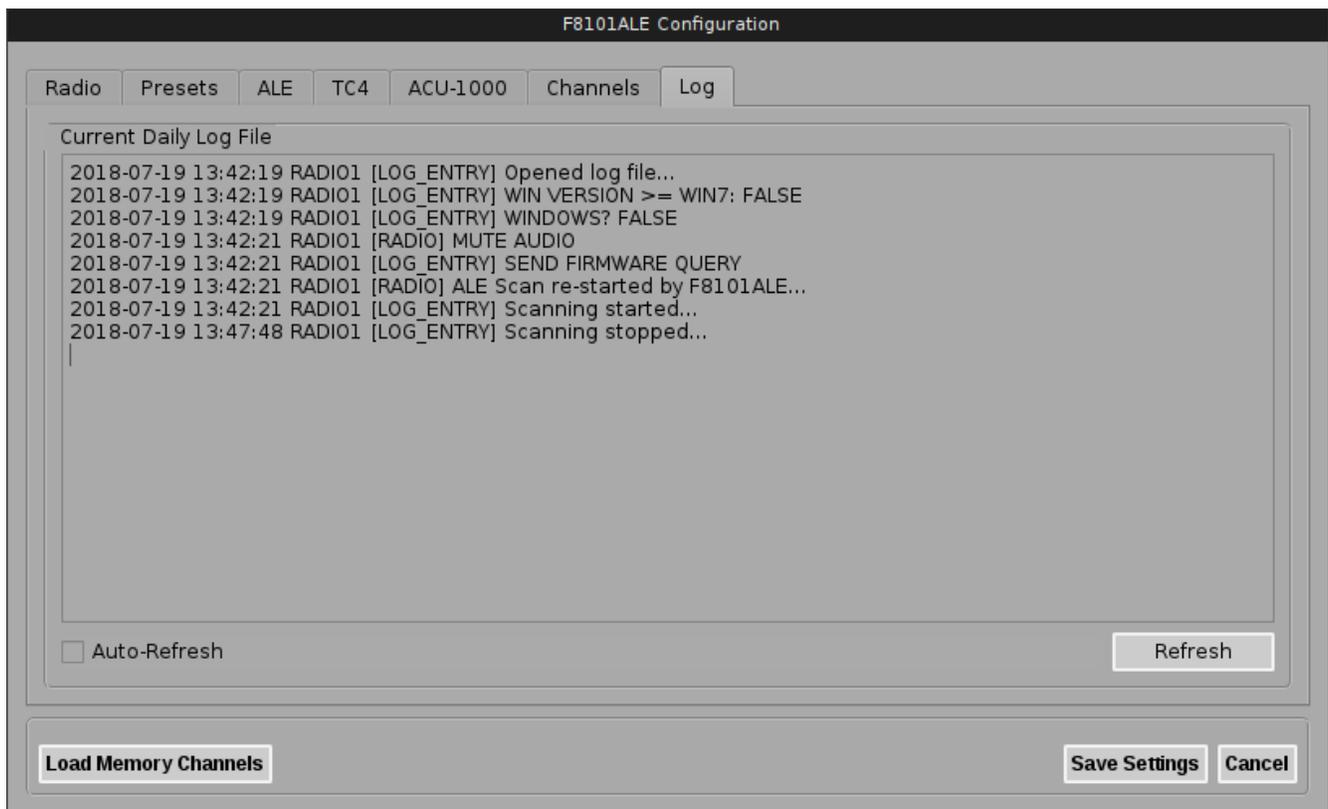
You may choose either **Use TCP Socket** or **Use Serial Port** for the method which is used to transfer data to and from any terminal or control software. Make your selection and provide the data required. If you choose **Use Serial Port**, YOU must create a pair of virtual serial ports on your computer in order to connect the **F8101ALE v2** software to the terminal or control software. No support for installing or configuring virtual serial ports is available.

Use TCP Socket And **TCP Port** should match the IP address and TCP port that your terminal software expects for receiving the incoming data from the modem. For example, Station Manager users will set their Station Manager configuration to "TCP Socket" and set these same to values to match what is set in the F8101ALE v2 software.

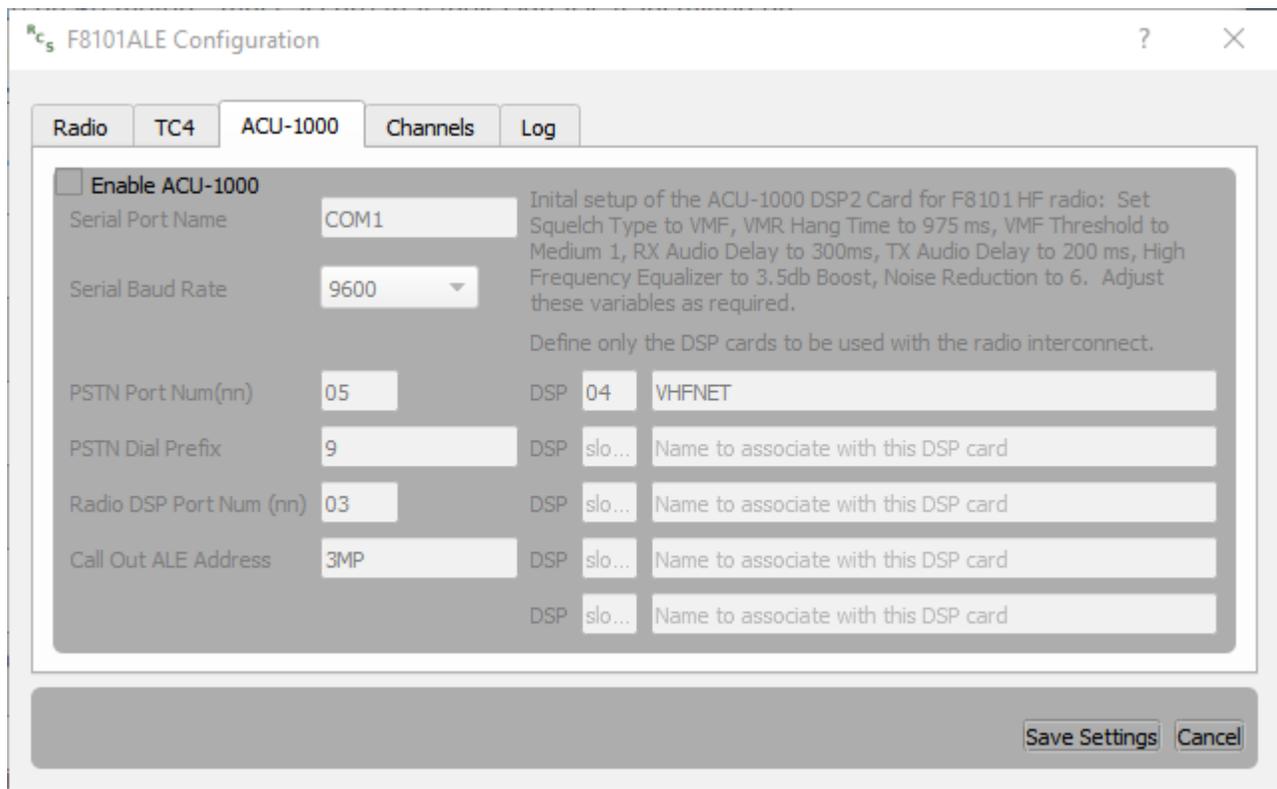
Use Serial Port and it's configuration values must represent one end of a virtual serial pair of ports. No support for installing or configuring virtual serial ports is available.



The **Channels** tab holds USER defined channels for the **U-SCAN** function (discussed later). These frequencies are **NOT** programmed into the radio, but are software defined channels which may be scanned. Enter the frequency for each U-SCAN channel in 8 full digits with leading zeros if required. To enable a channel for the U-SCAN function, you must check the checkbox next to the channel or it will not be scanned. This is helpful if a particular channel has a busy state or has heavy interference that makes the squelch open each time. The user may un-check that channel and it will be skipped in the scanning cycle.



The **Log** tab simply displays the running ZULU day log of activity. The **Auto-Refresh** button may be checked to periodically update the log listing. Otherwise, the user may click the **Refresh** button to manually update the log listing. Activity, ALE links and soundings, ACK or NACK (error) messages may be viewed here. It is a good diagnostic tool.



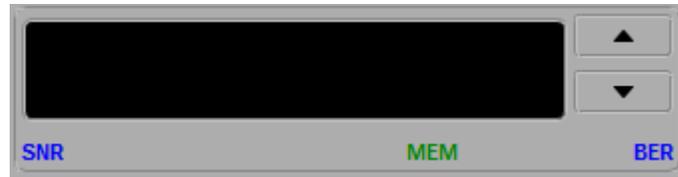
Most users will find that the **ACU-1000** ® tab is greyed out and not usable. This tab is related to the **OPTION JP** which allows the software to link ALE calls with specific AMD messages attached to the JPS ® patching hardware for linking disparate nets or radio or PSTN systems. The OPTION JP is a custom add-on to the base **F8101ALE v2** software at an additional cost.

Using the NetMon App

F8101ALE v2 includes an app called **NetMon** which allows the user to view a list of ALE transmissions heard at the local station. This list includes a time stamp, the logging information provided by the F8101ALE program. This data may be used for real-time propagation decisions when scanning one or more ALE networks as programmed into the radio. Auto-ref updates the display every few seconds. Print ALE also prints ALE lines from the log file, rather than just HEARD lines. # Lines = 0 means show all. Otherwise, NetMon will only show that latest # Lines. Prev Day shows zulu yesterday's log file. To return to the current day's log file, click Refresh. Refresh manually refreshes the current zulu day's log file display.



Using the F8101ALE Software



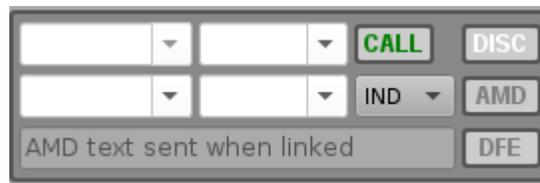
Frequency and Status Display Area

This part of the main window will display the current frequency (when available) as well as indications for the ALE SINAD measurement as provided by the radio, the BER measurement as provided by the radio and the channel label that corresponds to the frequency (when available) as programmed into the radio using the ICOM supplied programming software.



The up and down arrow buttons allow the user to scroll through the set of programmed channels in the radio once the software has successfully interrogated the radio programming at startup (or has saved the programming to the configuration file).

NOTE: the keyboard up and down arrows are also mapped to the channel up and down function. Once in memory mode, the keyboard may be used for navigation through the channel list.



ALE Control Area

This part of the main window is where the user controls the linking and de-linking of ALE calls. The **CALL** button initiates an ALE linking call. The *type* of ALE linking call is determined by the small combo box directly below the CALL button. The default setting is **IND** which means an INDIVIDUAL (station to station) ALE linking call. Other options include, LQA (Link Quality Analysis polling call), NET (initiate a call to a pre-defined NET (not network)), and ALL (an ALE ALLCALL).

The four combo boxes to the left of the CALL button allow the user (within the limits of radio programming) to choose which NET, which NETWORK, and which SELF ADDRESS to use. Invalid combinations of any of these values will simply not function. Associations between nets, networks and self addresses **MUST** be programmed into the radio in order for these choices to be valid in the software. **NO RADIO PROGRAMMING ASSISTANCE is provided by RadCommSoft, LLC.** Seek help from other qualified individuals, or from ICOM directly.

The **DISC** button allows the user to initiate a de-linking call or to abort a currently in progress calling sequence. ALL links will be dropped. If currently in an LQA update process, LQA data will not be recorded by the radio.

The **AMD** button allows the user to send AMD messages which are entered in the AMD line edit below. There should be an existing link first otherwise the button will be disabled.

The **DFE** button allows the user to program a specific frequency on a VFO. This can be used when there is no channel programmed for a specific frequency that the user needs to use. IT IS NOT ASSOCIATED WITH ALE OPERATIONS IN ANY WAY. It is simply a convenient way to use the AMD text line edit for a secondary purpose. To use the DFE function, select either VFO A or VFO B, type the full frequency (in Hz) into the AMD text line edit and click the DFE button. The radio's VFO frequency should be set to this value. If not, ensure that you have specified the frequency in Hz (typically 7 or 8 digits).

The **AMD Text Line Edit** allows the ALE linking call to include AMD text. The AMD text is included at the appropriate part of the linking exchange based on how the radio is programmed. Once linked the AMD button will be enabled and AMD messages may be sent to the linked station(s).

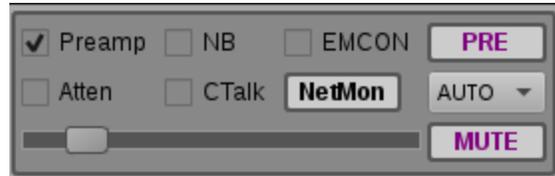


Mode and Priority Channel Area

The mode and priority channel area serves multiple purposes:

- Change the current RF power in use
- Select a memory channel from a drop-down list.
- Change the operating mode of the radio
- Select either memory mode (**MEM**) or VFO mode (**VFO A, VFO B**)

- Provides a **TUNE** function to key the transmitter in the AM mode to provide a carrier for tuning antennas or to assess SWR
- Provides six priority channels which are configured using the configuration dialog as previously noted
- The gear button  opens the configuration dialog.

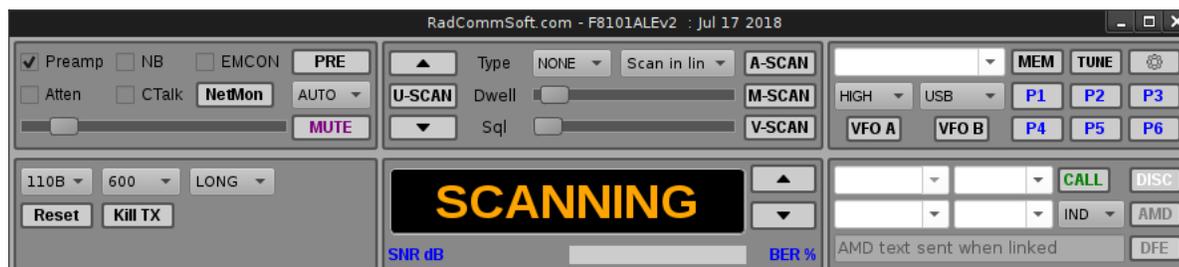


Receive and Audio Area

This area allows the user to set the AF Gain (speaker volume), to **MUTE** the AF Gain, and to set the Pre-amplifier on or off, the Noise Blanker on or off, the Attenuator on or off and the ClearTalk DSP filtering on and off. The user may choose the AGC level as well.

The **NetMon** button launches the NetMon app. See below for NetMon instructions.

PRE hides and un-hides a list of 16 preset buttons which appear along the bottom edge of the window. These preset buttons are programmed on the **Presets** tab of the configuration dialog. Supply the case sensitive channel name and optionally a short button name.



Scan Control Area

This area comprises all of the scanning controls. There are 4 modes of scanning available to the user.

1. **A-SCAN** initiates ALE scanning based on the radio programming.
2. **M-SCAN** initiates squelch based S-meter scanning based on radio programming of S-Meter based networks of programmed channels.
3. **V-SCAN** initiates squelch based Voice scanning based on radio programming of Voice based networks of programmed channels.
4. **U-SCAN** initiates squelch based scanning based on user defined frequencies as explained in the configuration discussion above. User based scanning also allows a zero scan dwell which is useful for making a quick sweep of a set of frequencies to see if there is any interesting activity.

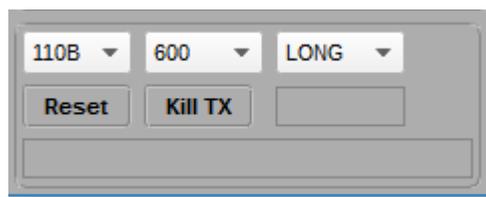
For modes 2., 3., and 4. adjust the squelch to an appropriate level so that the scanner will not stop on channels with no activity. **NEVER use squelch for the A-SCANmode.**

The Dwell control is set to the number of seconds to wait on a channel where the S-meter or Voice squelch has opened. After you set the Dwell value, hover over the slider control and it will show you the number of seconds of Dwell time.

For **U_SCAN** the squelch reading response from the radio sometimes is not quick enough to allow the program to stop at the channel with the activity. The Up and Down buttons above and below the **U-SCAN** button allow the user to find the activity manually if it is interesting.

A-SCAN, M-SCAN, and V-SCAN are FULLY dependent upon radio programming.
RadCommSoft, LLC does not provide any assistance for radio programming. Seek help from other qualified individuals, or from ICOM directly.

The **A-SCAN** (ALE scanning, Call scan in ICOM terminology) mode offers an adjustable timeout timer action for ALE activities. Either OFF, Termination, Scan or Scan in link. See the ICOM documentation for details, but most people will wish to use Scan or Scan in link.



Data Modem Area

This area allows the user to control the internally installed RapidM TC4 modem for waveform, data rate interleave and allows the user to immediately stop an ongoing transmission. This area also provides the auto-baud indication for data rate and interleave of an incoming signal from another station as well as the SNR and BER values associated with that signal. These link quality indications are for the data modem only and have nothing to do with the ALE LQA data which is reported in the frequency area as discussed above.

The **Reset** button allows the user to perform the equivalent of a power on reset of the data modem. A dialog box will question the user as to whether they truly wish to do this. If the user answers **Yes** then the command will be sent to the TC4 to reset it. The user **MUST RESTART THE F8101ALEv2 SOFTWARE** in order to use the modem for subsequent receptions and transmissions because the link to the software was lost during the reset as well as all of the modem startup configuration. Close and re-open the software to restore connectivity.

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