

Operation: ALERT2 Field Decoder

Version 1.4

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Overview:

The Field Decoder has 3 major components:

1. A portable **receiver/demodulator** that communicates with and is powered by a laptop or other computer via USB port
2. A **decoder application**, A2FieldDecoder_XX.exe (where “XX” is the version number), which communicates with the receiver /demodulator to produce standard ALERT2 output strings (P, N, and S messages)
3. A Windows **display application**, ALERT2DisplayX-X.exe (where “X-x” is the version number, which parses and displays decoder output.

Installation

Connect USB cable for power and data: Connect the Receiver/Demodulator to a Windows based computer with the included USB A to micro USB cable.

Connect Antenna: Connect the included VHF antenna to the BNC connector on the rear panel. The included right angle connector is typically used to position the antenna vertically. Optionally any 50 ohm VHF antenna may be connected to the BNC.

Install Software: Copy the decoder application (A2FieldDecoder_XX.exe) and display application (ALERT2DisplayX-x.exe) executables from the CD into the same directory on a Microsoft Windows PC (XP, Win 7 or Win8). The Display program is used to start and close both processes; it is handy to make a shortcut to the ALERT2Display executable and pin it to the start menu or desktop and then launch the programs with the shortcut.

Start: Launch the display application (ALERT2DisplayX-X.exe). Open the **Select Port** drop down box in the lower right and choose the serial port instantiated for the USB connection. This will launch the decoder application (A2FieldDecoder_XX.exe) in a command window. Then click on the **Start** button to begin decoding and logging (if enabled).

Important Notes: 1) The ALERT2 Field Decoder runs on both Windows 7 and Windows 8. However, a required file, MSCOMM32.OCX may be missing or incorrectly registered on newer computers. In this case, you will get an error message to this effect when launching the Field

Decoder. See the last section of this document, “**Known Issues and Fixes**” on how to install the missing ocx.

2) The decoder application will not operate on a COM port number above “COM9”. If the Field Decoder instantiates as a COM port number greater than COM9 the decoder will not start. See the last section of this document, on how to remedy this issue.

DISPLAY APPLICATION SOFTWARE UPDATE AUGUST 1, 2014

The latest version of the display application includes:

- Improved display resizing;
- Improved display of rain tips; and
- Corrected message length calculation.

The latest version of the display application, ALERT2Display1-3.exe also automatically launches the newest version of the decoder application, A2FieldDecoder_03.exe, therefore the directions included in the “**Known Issues and Fixes**” section titled “SOFTWARE UPDATE JUNE 4, 2011” are not relevant and should be ignored.

Hardware Operation

Radio Channel Control: The desired radio channel is selected with the “Radio Channel” rotary switch on the front panel. The eight radio channel frequencies are programmed by default as listed in the file “BWD Field Decoder VHF Freq List 3.pdf”. If custom frequencies were requested on the order they have been programmed. The custom frequencies programmed are listed on a paper note with the Field Decoder.

Speaker Control: The un-squelched radio audio volume is controlled by the “Speaker” knob on the front panel. It can be turned off by rotating counter-clockwise until it is in the off position.

Front Panel LEDs: The green “ON” LED will flash when the system/DSP is powered and operating correctly. The yellow “Frame Sync” LED will flash when the demodulator correctly decodes an ALERT2 preamble frame sync pattern and data will start streaming out the serial port. The blue “Bit Sync” will flash when the demodulator decodes a potential ALERT2 bit sync pattern in the received audio.

Radio Channel Reprogramming: On the rear panel is a DB15 connector that can be used to reprogram the Ritron DTX-LS. The system must be powered by the USB connection. Connect Ritron’s “DTXL-PCPS” programming cable to the rear panel DB15 and start the “DTXL-PCPS” software application on the computer. (Version 2.3.3 and above is known to work.)

Antenna BNC connector: On the rear panel is a BNC female connector used to attach the antenna. Any 50 ohm impedance antenna is suitable.

Software Operation

Data displays: The Display has 4 boxes in which various forms of the received data are shown. The top scrolling box displays each decoded string of types “P”, “N”, and “S”. It is the “N”, or MANT packets which are parsed further; the N message most recently processed appears in the next box down, which is only 1 line deep.

The third window displays the MANT packet information in a more human readable form, including time of receipt, source address, path taken, hop limit, and repeated length of the packet. It also contains information from the Application Control Byte: the PDU Identifier and whether the message is flagged as “test”.

The bottom window contains the sensor data parsed from the application packet. It shows the time each reading was made, as opposed to the time of MANT receipt. The receive time is provided by the host computer on which the Decoder and Display programs reside, and its accuracy is that of the computer’s clock. However, as long as the computer is within 6 hours of being correct, the sensor reading time will be accurate to the second. Each window can contain 1000 entries, after which the oldest is removed as each new one is added.

The minimum screen resolution is 1024 x 768. The right and bottom sides of the ALERT2Display window can be dragged to expand the data display boxes on larger screens.

File names: The control box in the lower right allows you to name the source file and log files for raw data, header information and sensor reports. The program has default values for these file names, and if no entry is made, they will be used by the Display. All application and log files associated with the Decoder must be kept in the same directory. The default log file names are “A2RawData.txt”, “A2Headers.txt” and “A2Reports.txt”. Alternative file names can be entered before the start button is clicked, and like most settings, these can be saved by clicking the “Save Settings” button. These values are stored in the registry and used at startup until changed by the user. The Display receives data from the Decoder via an exchange file written in the applications’ directory. The file name used for the decoder output and the display input must be identical; the default name in both programs is “FieldToolMANTout.exe”. A different name can be entered in the “Exchange File” text box and saved with “Save Settings”, but the Decoder output file name would need to be changed to match. You can change the Decoder’s exchange file name by starting it once with the Decoder Name and a command line parameter as:

A2FieldDecoder_XX.exe -e(*NewFileName*).

The Decoder DOS window will display the exchange file name when it starts. We do not recommend changing the exchange file or application names.

Field Decoder Start-up: When the Receiver-Demodulator is connected to a USB port on the computer, in most cases, Windows will find the appropriate driver. The Display is launched like any windows program by clicking on a shortcut icon, double clicking its file name, etc. This is the time to make any desired changes to the file names. It comes up with the Start Button disabled. To enable it, a valid serial port must be chosen from the Select Port drop- down; it is used by the Decoder to communicate with the Receiver-Demodulator.

Select Port: Click on the arrow on the right side of the drop-down box labeled “Select Port”. If there are no entries, no available Com ports were found, and this will need to be remedied before continuing. Selecting a Com port will launch the Decoder, which will begin writing decoded messages to the exchange file. The Decoder runs in a DOS command window which is opened on top of the Display. This will also enable the “Start” button. Until the “Start” button is clicked, the Display will permit update of control box fields, but does not process any data.

Start: Clicking the Display’s “Start” button causes the Decoder Run window to drop behind the Display, but it remains active. If there is already data in the exchange file, it will be processed by the Display in a single batch which can be viewed by scrolling back. The Display looks for new records several times a second.

Pause: Clicking “Pause” will cause the program to idle so that a message may be examined more closely. Pausing stops display processing, but has no effect on the Decoder, and output will accumulate in the exchange file. When “Start” is pressed again, accumulated messages are processed in rapid sequence and can be viewed by scrolling back.

Clear: This clears all data from the 4 data display boxes. It has no effect on logging.

End: Clicking “End” stops the Decoder program, closes its Run Window and ends the Display program.

Source Address Filter: Entering a single source address in this box will limit all but the Messages (raw data) window to data originating at that source address. (For concentration messages, that will be the repeater where the message was converted to ALERT2). The source address filter can be saved with the “Save Settings” button. Changes to the filter are accepted on the fly.

Time Display: Messages exported from the Decoder are time-stamped in GMT. By default, Display messages are shown in the local time of the host computer, including adjustment for

Daylight Savings Time. A different offset can be used by selecting the “Use GMT Offset” button and entering a value, in hours, in the associated text box. Data can be shown in GMT by clearing the text box and saving the settings. Unlike file name changes, time changes take effect immediately.

Logging: Data can be logged to text files. The raw data display, header information display and the sensor reports display produce separate log files, as multiple sensor reports may be carried by a single message. The radio button offers two ways of logging data. The default choice, “Selection” allows you to double-click any display entry (not just the current one) to save it to the appropriate log file. Each saved entry is marked with an asterisk when saved. The other choice is “Displayed”, which causes every message and every sensor report to be saved to its respective file as it is received. These choices can be toggled while the program is active.

Save Settings: File names, source address filter, time display and logging preferences are saved in the registry any time the program is running, and will be loaded at the next start-up. If “Save Settings” is not used, the program will load default names at startup.

Restore Defaults: This button clears the registry entries and returns the program to displaying its default configuration. Changes are effective only on the first start of the program each time it is launched.

Known Issues and Fixes:

1) Installing MSCOMM32.OCX on Windows 7 or 8

The ALERT2 Field Decoder runs on both Windows 7 and Windows 8. However a required file, MSCOMM32.OCX, may be missing or incorrectly registered on newer computers. In this case, you will get an error message to this effect when launching the Field Decoder. A copy of MSCOMM32.OCX is included with this distribution and/or can be downloaded from one of several on-line dll/ocx libraires: search on “MSCOMM32.OCX download”.

You will need administrator privileges on the computer.

- Copy the MSCOMM32.OCX file to **c:\windows\syswow64**
- Click the Start button and type "**cmd.exe**" in the *Search programs and files* box. A DOS window comes up. In the command window –
- Type "**cd \windows\syswow64**" and hit enter.

- Type "**regsvr32 MSCOMM32.OCX**" and hit enter. You should get a message that registration was successful.

2) Renaming COM port to be less than COM9

The decoder application will not operate on a COM port number above "COM9". And in some cases removing the Field Decoder does not release the COM port. Therefore, when the Field Decoder is re-attached the next higher COM port number is assigned to the Field Decoder. Eventually this causes decoder application to fail because the assigned COM port is above COM9 since the lower port numbers are shown as "(in use)". This problem is confirmed by showing the "hidden" devices in the Windows Device Manager. The document called "RESETTING YOUR COM PORT.pdf" included on the CD describes a method to remove all "in use" assignments of the COM port numbers and resolve this issue.

3) DECODER APPLICATION SOFTWARE UPDATE JUNE 4, 2014

By default the version of the display application named ALERT2Display1-0.exe, launches an older version of the decoder application, "A2FieldDecoder_01.exe". This older version of the decoder application contains an error such that if a single MANT packet in an AirLink frame is longer than 255 bytes that MANT packet and remainder of the AirLink frame will not be decoded correctly.

The corrected decoder application is included on the CD, named "A2FieldDecoder_03.exe".

Until a new display application program is available, the A2FieldDecoder_03.exe should be configured to be the new "default decoder application" by doing the following:

- 1) copy the included "A2FieldDecoder_03.exe" into the same directory as the "ALERT2Display1-0.exe" executable;
- 2) launch the ALERT2Display1-0.exe, but do not use the **Select Port** drop down box or click the **Start** button;
- 3) in the text box labeled **Decoder Name** in the lower right hand side of the window, edit the decoder executable name to "A2FieldDecoder_03.exe";
- 4) click the button in the lower right hand portion of the display **Save Settings**.

From now on the Field Decoder will use the updated "_03" version of the decoder.