# Maine Digital Comms Guide Part 2

There follows notes on connecting to amateur radio data systems in the State and some examples.

## Contents

# 1   Client Software & Attachments

## 1.1   Winlink Express

**Winlink Express** is the preferred Winlink radio email client and runs on all the Microsoft Windows operating systems introduced in the last 10 years, i.e. those since MS Vista; the current version (v1.5.8) can be downloaded from https://www.winlink.org/WinlinkExpress. After installing and setting up your call sign, name, grid, etc., you can compose a new message by selecting **New Message** from the **Message** menu, as illustrated in Figure 1:
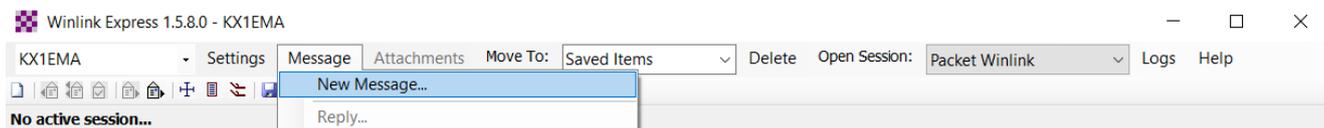


**Figure 1    Starting a New Message in Winlink Express**

You address the message as you would a regular email, with the additional feature that you can send messages both to BBS addresses and Internet addresses, as illustrated in Figure 2:
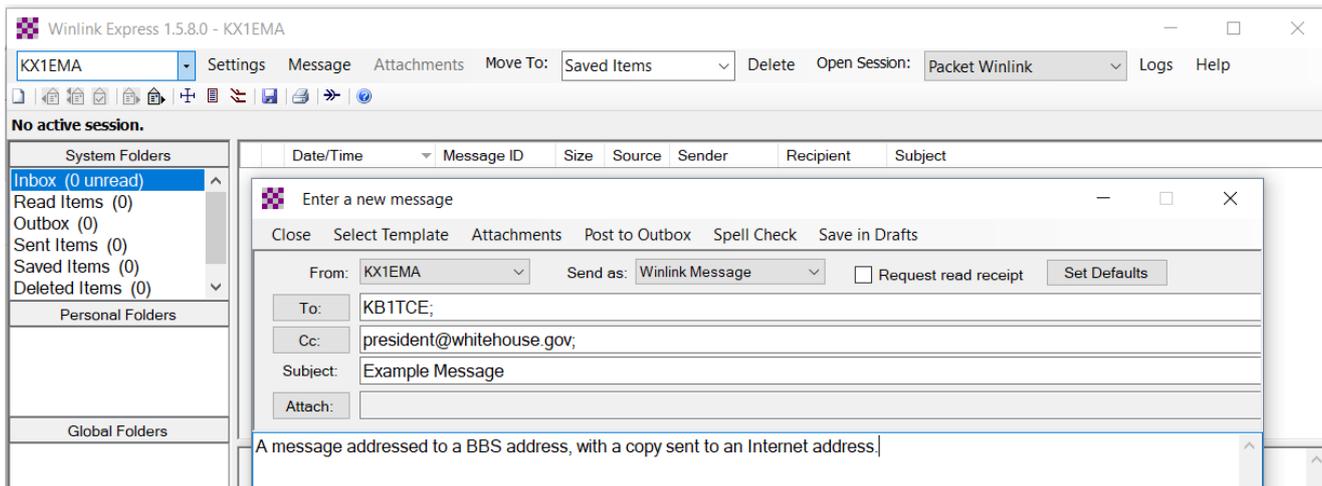
**Figure 2    Addressing a Winlink Email Message**

Once completed, and posted to the Outbox, you have a choice of sending methods; common methods include **Packet Winlink**, using VHF and UHF radio, and **Winmor**, using HF radio; examples of using the former method are given in section 3.1 below.

## 1.2    FLMSG

**FLMSG** is a simple forms management editor; the current version (v4.0.3) can be downloaded from the SourceForge site at https://sourceforge.net/projects/fldigi/files/flmsg/

Along with this editor, you need to download the latest American Red Cross form templates; these are available at the SourceForge site https://sourceforge.net/projects/fldigi/files/flmsg/templates/

These templates should installed in the appropriate folder within your FLMSG setup. In Microsoft Windows 10, the path to this folder is

C:\Users\<User Name>\NBEMS.files\CUSTOM

Now when you start the current version of **FLMSG**, you will see the window shown in Figure 3:
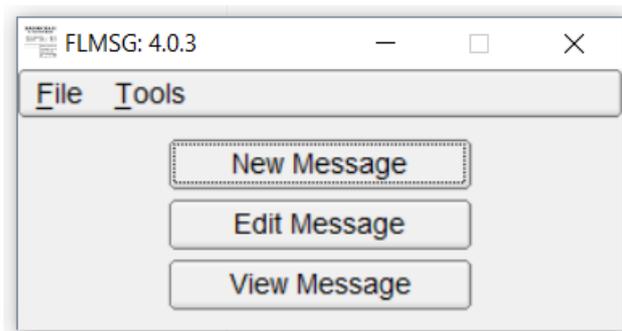


**Figure 3    The FLMSG Main Window**

Click on the **New Message** button and you will see the various American Red Cross form templates that you installed in your **Custom** folder. Detailed usage instructions are bundled with the forms in the .zip file you downloaded; an example is given in section 3.5 below.

## 1.3    Attachment Names

In the interests of efficiency and to minimize confusion during emergency operations, there is a convention for naming any form that you attach to your Winlink email. This ensures the form contains traceability and precedence information in a standard format that can be readily determined without having to open it.

The form's file name is made up of the following 4 components:

1. RF Delivery Mechanism (BBS. WIN, NBEMS)
2. Sending station (Tactical if used, otherwise call sign)
3. Sending station serial number assigned by the radio operator
4. Message precedence (E, P, W, R)

For example, the seventh form sent over the BBS packet system, originating from operator NY1B and with precedence 'Priority' would be named:

```
BBS_NY1B_7_P.<extension>
```

The extension would depend on the method used to generate the form, e.g. if the form was generated from a **FLMSG** template, the full file name would be:

```
BBS_NY1B_7_P.k2s
```

# 2  Connecting

## 2.1    Nodes - Physical Location

In Knox County there are two nodes, WD1O-15 and KX1EMA-15, and one digipeater, WD1O-1, as illustrated in Figure 4.



**Figure 4    Physical Location of Nodes in Knox County**

Each node is comprised of a BBS that is connected via a gateway to the Internet, as illustrated in Figure 5; for example, for the node KX1EMA-15, the BBS is KX1EMA-2 and the RMS gateway is KX1EMA-10.
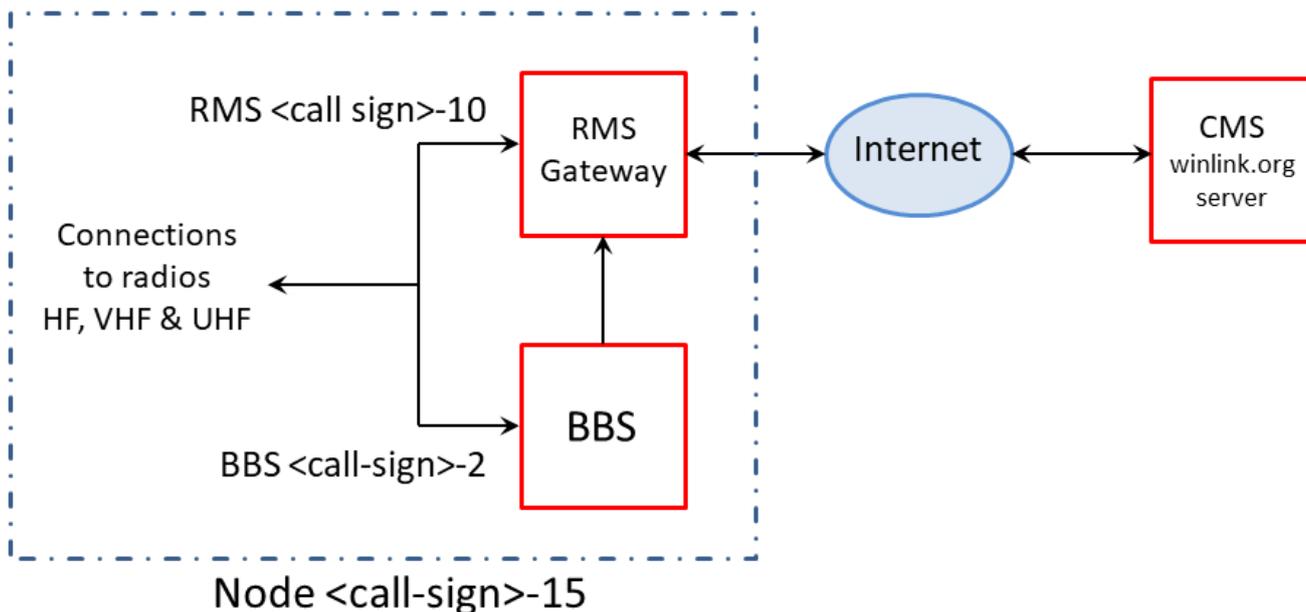
**Figure 5     Components of each Node**

This figure illustrates various capabilities of a node:

- Incoming radio messages can be routed either to the BBS or the RMS gateway.
- Outgoing messages from the RMS gateway and the BBS can be routed over the radios.
- The RMS gateway can send and receive messages from the winlink.org servers via the Internet
- Messages from the BBS can be routed to the RMS gateway and onwards to the Internet.

The next two sections describe the frequencies and addressing to reach the BBS and RMS Gateways of the nodes and digipeater.

## 2.2    BBS Nodes – Type and Connection

Table 1 lists the details of the BBS nodes and digipeater in Knox County.

| Call Sign | Location | Type | Dial Frequency, MHz | Connection Mode |
|-----------|----------|------|---------------------|-----------------|
| WD1O-1 | Benner Hill | Digipeater | 433.100 | Packet |
| KX1EMA-2 | County EMA, Rockland | BBS | 433.100 | Packet |
| | | | 145.010 | |
| WD1O-2 | St. George | BBS | 433.100 | Packet |
| | | | 145.010 | |
| | | | 28.110 | PACTOR & WINMOR |
| | | | 7.101 | |
| | | | 3.588 | |

**Table 1     Details of BBS Nodes & Digipeater in Knox County**

Note that the digipeater, WD1O-1, and the two BBS, KX1EMA-2 and WD1O-2, all share a common frequency, 433.100 MHz. Thus, within the county, if you are unable to connect directly to one of the

nodes, you can instead connect to either of them via the digipeater.

In addition, the BBS at the County EMA, KX1EMA-2, is reachable at 145.010 MHz. The BBS at St. George, WD1O-2, is also reachable at 145.010 MHz and at various HF frequencies

## 2.3  RMS Gateways – Type and Connection

Table 2 lists the details of the RMS Gateways & digipeater in Knox County.

| Call Sign | Location | Type | Dial Frequency, MHz | Connection Mode |
|-----------|----------|------|---------------------|-----------------|
| WD1O-1 | Benner Hill | Digipeater | 433.100 | Packet |
| KX1EMA-10 | County EMA, Rockland | RMS Gateway | 433.100 | Packet |
| | | | 145.010 | |
| WD1O-10 | St. George | RMS Gateway | 433.100 | Packet |
| | | | 145.010 | |
| WD1O | St. George | RMS Gateway | 28.110 | PACTOR & WINMOR |
| | | | 7.101 | |
| | | | 3.588 | |

Table 2    Details of BBS RMS Gateways & Digipeater in Knox County

To improve the availability of the gateway connection to the Internet, the nodes are set to automatically forward over radio if their local Internet connection fails.

For example, if the Internet connection fails at WD1O-10, then the node will first attempt to forward messages via KX1EMA-10, over the VHF or UHF packet connection, and use the Internet connection at the County EMA; if that fails, then it will try forwarding via up to three HF stations using PACTOR.

Similarly, if the Internet connection fails at KX1EMA-10, the node will try forwarding via WD1O-10, over the packet connection. If all forwarding attempts fail,  messages for the Internet are held at the RMS gateway until the local Internet connection is restored.

## 3  Examples

## 3.1  Communicating with Knox County EMA (KX1EMA) via BBS

If you are located in the eastern and/or southern part of the county, you can use **Winlink Express** to make a packet connection directly to the KX1EMA-2 BBS, either at 145.010 or at 433.100 MHz. When you start the **Packet Winlink Session** in **Winlink Express**, your connection type should look like Figure 6.



Figure 6    Details of Direct Connection to KX1EMA-2

Otherwise you should connect via the WD1O-1 digipeater at 433.100 MHz. When you start the **Packet Winlink Session** in **Winlink Express**, your connection type should look like Figure 7.

**Figure 7    Details of Connection to KX1EMA-2 via Digipeater WD1O-1**

If you are using a Kenwood D710, make sure the TNC Data Band is assigned to the respective frequency band, i.e. if the 433.1 MHz frequency is set on Band B, then access the menu via **[F]-Tuning** to setting **601** (in APRS listing) and set
- Data Band to B-Band
- Data Speed to 1200 bps

Also in the **Winlink Express** packet setup, set the corresponding TNC type, i.e. in this example B-Band, corresponding to the actual radio setting, as illustrated in Figure 8.
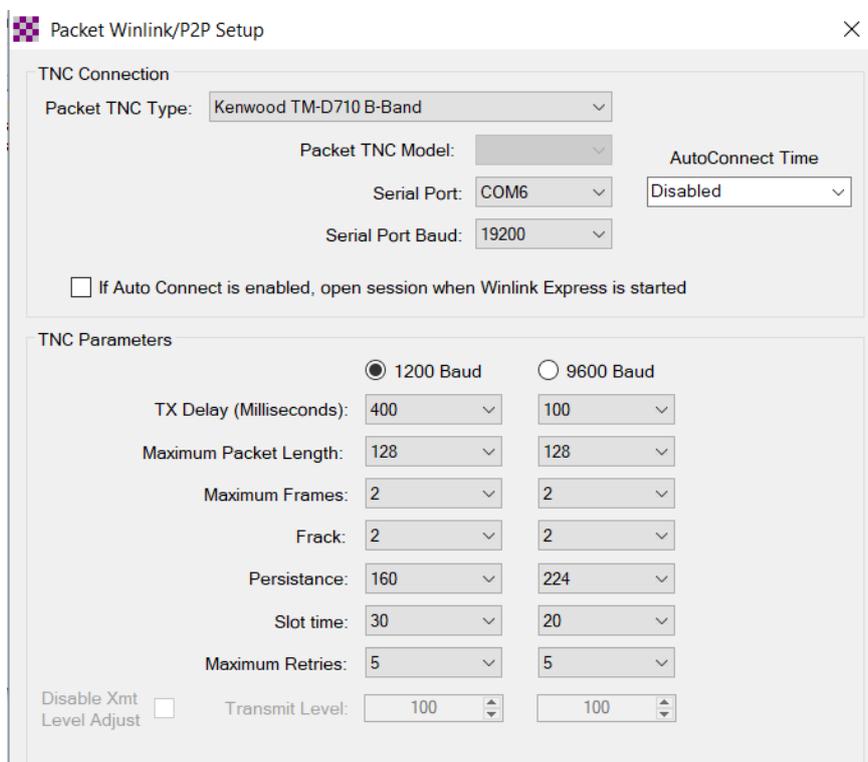


**Figure 8    Details of Winlink Express Packet Setup**

Note that the COM port number and speed should correspond to your settings in **Microsoft Windows Device Manager**

## 3.2    Communicating with RMS Gateways

The procedure is essentially the same as communicating with the BBS, except the difference in call sign SSID, e.g. KX1EMA-10 instead of KX1EMA-2, and WD1O-10 instead of WD1O-2.

Similarly with connecting to the BBS, the digipeater should be used if a direct connection is not possible, as illustrated in Figure 9.

**Figure 9    Details of Connection to KX1EMA-10 via Digipeater WD1O-1**

## 3.3    Additional Notes on BBS

- Each operator has a **home BBS** mailbox, where their messages get delivered; analogous to the operations of the USPS, it does not matter where a message is posted, it automatically end up in the operator's post box.

  For  example:
    - N1WJO has a home BBS at KX1EMA-2
    - NY1B has a home BBS at WD1O-2
    - NY1B addresses a message to N1WJO, and connects to WD1O-2 to send it
    - The WD1O-2 BBS knows that N1WJO's home BBS is KX1EMA-2 so forwards the message
    - N1WJO connects to KX1EMA-2 (via the digipeater WD1O-1 as necessary) and picks up NY1B's message

  Since outgoing messages can be 'posted anywhere', and incoming messages automatically get routed to the home BBS, it's most efficient for an operator to connect to their home BBS, to both send and receive messages.

  Table 3 lists the home BBS of some local operators:

| Operator Call Sign | Home BBS |
|---|---|
| AB1YO | KX1EMA-2 |
| K1IRK | KX1EMA-2 |
| K1LX | KX1EMA-2 |
| KB1CCD | KX1EMA-2 |
| KB1DBL | KX1EMA-2 |
| KB1TCD | KX1EMA-2 |
| KB1TCE | KX1EMA-2 |
| KB1YCF | KX1EMA-2 |
| KB1ZUN | KX1EMA-2 |
| KC1BBH | WD1O-2 |
| KX1EMA | KX1EMA-2 |
| N1REX | KX1EMA-2 |
| N1WJO | KX1EMA-2 |
| NY1B | WD1O-2 |
| W1EMA | KX1EMA-2 |
| W4GSB | KX1EMA-2 |
| WD1O | WD1O-2 |

**Table 3    Home BBS of Some Local Operators**

Note that the WD1O-2 BBS is accessible not only at VHF and UHF but also at HF, as listed in Table 1; you can connect to it using WINMOR or PACTOR.

## 3.4  Additional Notes on RMS Gateways

Internet messages can be sent and received from any of the gateways shown on the RMS Maps at https://www.winlink.org/RMSChannels; for example, an operator could equally connect to KX1EMA-10 or WD1O-10 to post and pick up messages.

In addition, any outgoing messages for the Internet can be posted from KX1EMA-2 or WD1O-2, i.e. if you have messages both for an operator on a BBS and also for the Internet, you need only connect to KX1EMA-2 or WD1O-2, as illustrated in Figure 2. Note that this 'shortcut' does not work for incoming Internet messages (to <operator>@winlink.org).

## 3.5  Notes on Using the American Red Cross Emergency Welfare Inquiry Form

Starting **FLMSG** and clicking on the **New Message** button, you will see the templates in your **Custom** folder, including the American Red Cross Welfare Inquiry Form; select this and your web browser will open with this form, illustrated in Figure 10.



**Figure 10    AMR Welfare Inquiry Form**

Complete the form then scroll down to the bottom and click on the **Submit Form** to save it in a convenient directory, using the name convention described in section 1.3, e.g. `BBS_WD1O-5_P.k2s` in C:\Users\<User Name>\Downloads, as illustrated in the example of Figure 11.
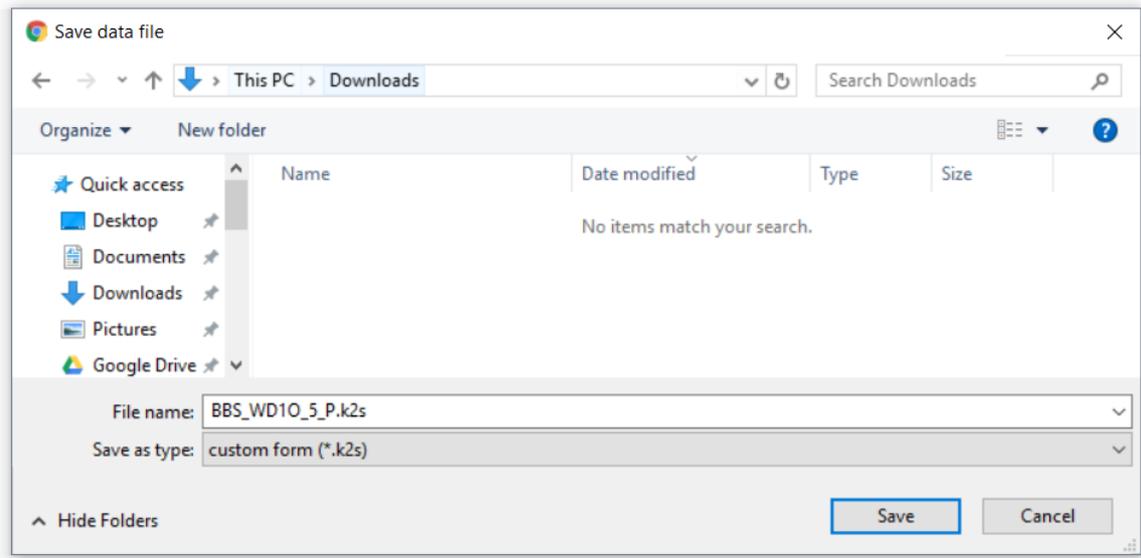
**Figure 11    Example of Saving the Form in a Convenient Directory**

Now you can launch **Winlink Express**, start a new message and add this form as an attachment, as illustrated in the example of Figure 12.
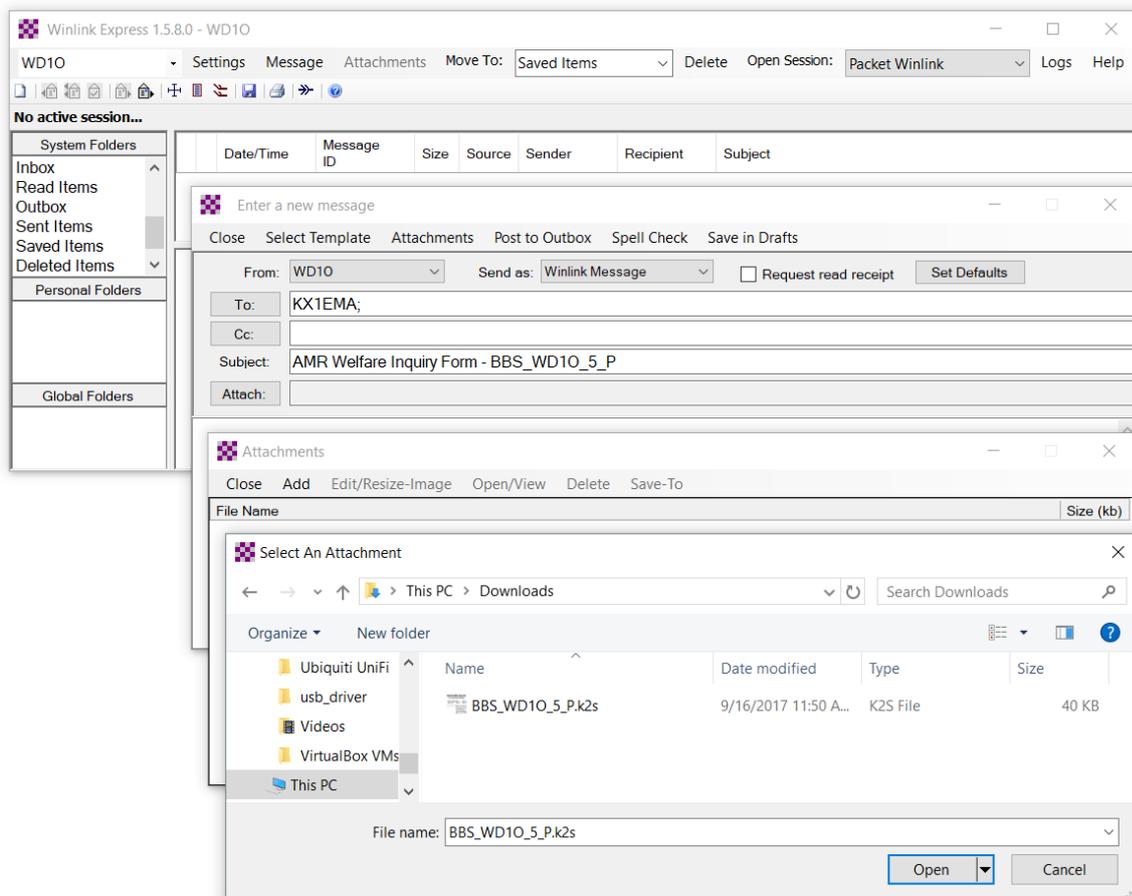


**Figure 12    Example of Attaching AMR Form to Winlink Express Message**

In this example, the message is addressed to KX1EMA and the subject line clearly indicates the contents.