

WYVERN TECHNOLOGY INC.

RTTY Contesting Software

Operators Guide

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Welcome!

You have selected the most powerful contesting tool available to amateur radio teletype contesters and DXpeditioners. For the remainder of the manual, I will refer to a DXpedition as a contest, since it *IS* a contest of sorts. RTTY by WF1B has been carefully designed to give optimum performance during contest conditions. Features needed to increase your score, increase accuracy, and decrease fatigue have been carefully integrated to create a very powerful tool.

RTTY by WF1B has been under development for over 10 years, and has been available as a commercial product since 1990. During the previous decade, many areas of computing and amateur radio have changed quite radically. Several of these changes have been incorporated into the program, and will continue to be made on a regular basis. These changes are incorporated into the program and made available via the Internet, specifically, the World Wide Web.

What RTTY by WF1B is not is a rag-chew type program. Yes, you may use it to make QSOS, chat with others, and even log your usual DX type contacts, however, the intended market and aim of the product is to be the most complete, versatile, RTTY contesting program available.

Thank you for your support and purchase of this product, it is the fruit of much labor, and I am delighted to share it with you. If you discover errors in the program, feel free to give a call or send email. Of course, compliments are graciously accepted ☺

Installing RTTY From Your Distribution Diskette

Installing the program is a straight forward process to unarchive the data on the floppy, thereby creating a executable program on your hard disk..

The easiest way to install RTTY is to run the supplied installation program. Simply type `A:INSTALL<ENTER>` to begin running the installation program.

The program is supplied on a single 3½inch diskette in archived format. The provided installation program will verify your version of DOS, verify sufficient disk space available on your hard drive, then proceed to unarchive the data into your `\RTTY` directory. When the installation program has completed, it will begin the registration program. The registration program will ask for your callsign and the supplied registration number. You may locate the registration number on your sales receipt. It is suggested that you write this number on the space provided on the distribution diskette.

The supplied installation program is a very simple program, and is likely to satisfy most users. However, if you are unsuccessful in using the installation program, or you wish to have complete control of the installation process, then you may wish to perform a manual installation. The manual installation requires you to perform the following steps:

1. create a RTTY directory (e.g. `MD RTTY`)
2. unarchive the diskette (e.g. `DISK1.EXE`)
3. run the registration program (e.g. `REGISTER.EXE`)

If you have downloaded an update from the Internet you should use you favorite unzip program to unarchive the archive into your RTTY directory. For most users, this will be your `C:\RTTY` directory.

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Written by Ray Ortgiesen.

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REGISTRATION & DEMO FEATURE

Due to the wide spread pirating of software, I have been forced to implement a registration number for the software. How this affects you depends on the type of RTTY user you are! Which are you?

1. You use your callsign all the time
2. You travel to far off lands to give the deserving new countries
3. You want to try out the program

For type (1), run the REGISTER.EXE program provided, when the program asks for your callsign and registration number, just enter them in the format shown. (e.g. AA1AA & 12341234). This will work fine for you even if you sign portable (e.g. AA1AA/KH6, AA1AA/M, P4/AA1AA).

For type (2), you'll need to contact me to get a temporary registration number for your trip IF and ONLY IF you will be operating a contest. The DXPedition mode does not require a registration number! The process for obtaining a temporary registration number is painless and quick. You give the callsign and I'll give you the number, then run the REGISTER.EXE program with the temporary number:

eg G0AZT & 11111111 is permanent number, but for 8R,

8R1TT & 22222222 is temporary number, good for several months.

Type (3), if you want to try out the program, that is to DEMO it; you simply do not use any registration number at all. Remove the registration=##### (if it exists) from the RTTY.INI file. You will be able to use ALL the features of the program. The catch is that it will log only enough contacts for you to get a feel for operation the program.

If you have any questions at all about the registration number procedures, please feel free to contact Wyvern Technology, Inc.

Overview of RTTY installation

The process of installing RTTY all at one time can be daunting, due to its many options. However, using a phased approach, you will be up and running with RTTY in a very short time. And best of all, the settings are all retained so that the next contest will be a "fire up the engines and go" operation!

1. install from diskette
2. specify hardware
3. setup terminal unit & test
4. setup radio control & test
5. setup packet interface & test
6. setup networking & test

Manipulating The RTTY.INI File

Endless features can be tailored through a simple text file. This initialization file is your friend, become very familiar with it.

RTTY has many features with user customization options available. An INI file is simply a plain text file which uses various keywords to relay information from you to the program which is operating. When you decide to change your RTTY.INI file (or *any* INI file), be sure to use a plain text editor. If you do decide to use a word processor to change these files, be sure to save as text only. Do not have the file with text formatting control characters embedded, RTTY will get quite confused by the presence of the control characters..

As an example, consider the following:

```
[PROFILE]
Name=Ray Ortgiesen
```

The [PROFILE] is called a section header, and is similar to a chapter heading in a book. The Name= is called a keyword, a keyword is a way to identify a specific value to the operating program. In this example, the “profile” section has a keyword of “name” with a value of “Ray Ortgiesen”. Let’s try another example:

```
[COM1]
BaseAddress=$3F8
IrqNumber=4
```

In this example, the COM1 section has 2 keywords identified, and supplied with values: The base address of the serial port is passed to RTTY via the “BaseAddress” keyword, and the IRQ number assigned to the asynchronous serial port is passed via the “IrqNumber” keyword.

As you can see, the INI file is a simple idea, one which allows the user to set values which can be access internally in the RTTY program. Please take the time to become comfortable with the concepts involved with the INI file, it will make “tweaking” RTTY more fulfilling as you discover ways to alter the performance and capabilities of RTTY.

Personalizing your copy

Let’s begin by adding some text information, such as your name and address into the INI file. This will give you a comfort level as you gain confidence with working the INI file settings. Using your favorite text editor, open the RTTY.INI file. Please use a plain text editor (such as EDIT.EXE or NOTEPAD.EXE), use of a word processor may embed control characters into the INI file which may confuse the operation of RTTY.

When you initially open the INI file, notice near the top of the file, information similar to the following.

```
[PROFILE]
Call=WF1B
Registration=B1566361
Name=
Street=
City=
State=
ZipCode=
Club=
CqZone=05
Latitude=
Longitude=
```

This information is used for several purposes while RTTY is in operation, and is important to have entered the above correctly. The registration process enters the `call` and `registration` for you; there is no need to change those two settings. Use the arrow keys to position the cursor just after the `Name=` , then type in your complete name. *DO NOT PRESS ENTER.* Just use the arrow keys to position the cursor just after the `Street=` , then type in your street address.

Proceed down the list, using the same technique. Position the cursor just after each item, then type in the appropriate information. The club information is displayed on the printed summary sheet. The CQ Zone, is one of the 40 zones of the world, as defined by CQ Magazine.

Latitude and Longitude

The latitude and longitude settings are used to assist in determining the correct beam headings to the contest multipliers. The degrees are entered as decimal portions, not as minute notation.

The following table illustrates several locations, and their approximate location using decimal notation.

Location	Latitude	Longitude
Rhode Island, USA	41.80	71.40
Japan	35.70	-139.80
Germany	51.00	-10.00
New Zealand	-36.90	-174.80
Chile	-33.50	70.80

You may notice above, that **EASTERLY** longitudes use a - notation, and that **SOUTHERLY** latitudes use a - notation.

Defining Your Hardware

Although slightly more time is spent initially, identifying your serial ports before executing the program will save countless hours chasing down apparent failures.

Since RTTY depends on serial ports in several important areas, the setup and configuration of serial ports is the most crucial portion of the pre-operation installation. Before you prepare your initialization files you'll need to gather some facts first, use the following template to record your serial port information.

Serial Port	Base Address	Interrupt	Device, Comments, Etc.
1			
2			
3			
4			
5			
6			
7			
8			

Use this template to record your serial port settings.

The first column identifies the serial port you are documenting. The second column is the actual base address of the serial port. The base address is the actual location in the memory map where the hardware is installed. COM1 and COM2 are extremely standard, \$3F8 and \$2F8 respectively. The serial ports higher than COM2 are not standard please refer to your system documentation to find the values. The third item listed is the interrupt. The interrupt is one of the lines on the PC bus that is used to request a hardware interrupt. Any device that needs to interrupt the CPU (such as a UART) does so via an IRQ line. Finally the last column is where you can make a notation of the device actually attached to the serial port (i.e. DSP-4100).

The table below shows the exact installation in use in my contest station. The computer is an old 486/40 clone which has an STB-4 4 port serial board installed. This table shows the serial ports, the base addresses, interrupts, and devices used in a typical contest operation.

Serial Port	Base Address	Interrupt	Device, Comments, Etc.
1	\$3F8	4	Packet (KAM) 9600 baud
2	\$2F8	3	Mouse
3	\$3E8	2	Radio (TS-850) 4800 baud
4	\$2E8	5	Terminal Unit (PK-232) 9600 baud

Here is information for WF1B's "radio" computer

If you have installed expansion cards to support more than 2 serial ports, then you are likely to be well aware of the concepts of base address and interrupts. If your computer uses only the standard COM1 and COM2 serial ports, then you can skip the identification since the first two

comports have well documented standards. Again, it is only the “upper” serial ports, those COM3 and higher, which will require your efforts.

Now that you have completed your research into your particular installation, we can notify RTTY of these facts. The RTTY.INI file is used to record all this information, and be available for all subsequent contest or DXing activities.

Using your favorite editor (example EDIT), open the text file called RTTY.INI, if you are using a word processor, be sure to use a *text only* mode, not a document mode. Add or modify the sample settings for the COM ports using the table you filled in above.

Shortcut! A menu option exists which shows “most” of the settings in an easy to use grid, relieving you of working with a text editor to manipulate some of the more common settings for in the INI file for the serial ports. To access the RTTY menu, you should start the RTTY program, enter “sample” as a filename at the prompt. If you need help to start the RTTY program, skip ahead to the chapter referencing RTTY quick start. Press <CTL-Enter> to close the worksheet and begin the main program. When the main screen appears, press ` to activate the menu. (The ` keys is to the left of the 1 on a standard 101 key keyboard). Select the System menu, select the serial port option. Modify the various settings until they match your computer specific settings. Press <CTL-Enter> to close the window. Press <Alt-X> to exit RTTY. Use your editor to verify the settings are satisfactory.

Here are all the possible options for defining a serial port. Of course, depending on your particular hardware, not all options are required. For COM1 & COM2, the most common setting is just the baud rate! When you work with the so-called upper comports, you *must* have the base address and IRQ numbers associated with them. It is nearly impossible for the software to guess what they might be.

Serial Port INI Settings

Keyword	Comments	Default (if any)
BaseAddr	The base address of the serial port. Common values: COM1=\$3F8, COM2=\$2F8, COM3=\$3E8, COM4=\$2E8	
BaudRate	Data transfer rate	9600
BufferSize	Allocates internal buffer space in RTTY for handling data from serial device that arrives while some other task is performed. This buffer space is in addition to any built-in device buffering. Lower limit is 256, upper limit is 8192.	256
DataBits	Number of data bits, usually 8	8
Delay	Usually not needed, provides some delay for data processing	0
HandShake	Xon, CTS/RTS, DTR/DSR, None indicates types of flow control used for the device	None
IrqNumber	Irq numbers from 2-15 are supported. On some computers, the 2 & 9 get confused because of cascading. If you try them unsuccessfully, try the other cascaded interrupt.	
Parity	Usually None, others are Even, Odd.	None
StopBits	Usually 1, other option is 2.	1


```

[COM1]
BaudRate=9600
DataBits=8
StopBits=1
HandShake=None

; ** COM2 ** is not defined because it is used by a mouse

[COM3]
BaseAddr=$3E8
IrqNumber=2
BaudRate=4800
StopBits=2

[COM4]
BaseAddr=$2E8
IrqNumber=5
BaudRate=9600
DataBits=8
StopBits=1
HandShake=Xon

```

Excerpt from WFIB's actual RTTY.INI file

COMMENTS

The example above shows that there are 4 COM ports available in my system. We can see that COM1 is using the standard base address and IRQ since none were specifically identified.

You can see a comment line that I have entered to remind me that COM2 is reserved for the mouse. Any line, which begins with a semi-colon, is a comment line. Feel free to add comments lines to your INI file, they are ignored by the computer, but will help you out in the future.

We can see that next is COM3, which I have identified as being located at memory address \$3E8, and is associated with interrupt 2. The baud rate is specified at 4800, and a special case of 2 stop bits being needed is shown.

Finally, COM4 is shown to exist at base address \$2E8, using interrupt 5. The baud rate, data bits, stop bits, and handshake mechanism are all specified.

HAL Communications Products

If you are using a HAL product such as the PCI-3000, PCI-4000/M, and P38 you may wish to identify the location of the bus card. It is not necessary to perform this task, as RTTY will scan memory locations to locate the HAL product. *However*, there are several "clone" type Ethernet cards in the computer marketplace which will lock your machine when the memory address is read. This is an incorrect action for the device, but unfortunately due to a manufacturer shortcut, it will present occasional problems to some users.

In your RTTY.INI file, you should document the base address using the following example as a guide.

Product	Default Address	Example
PCI-3000	\$260	[PCI-3000] BaseAddress=\$260
PCI-4000/M	\$360	[PCI-4000] BaseAddress=\$360
P38	\$360	[P38] BaseAddress=\$360

Since the HAL products do not use, nor do they need to use interrupts, the only other important aspect to defining your devices is to let RTTY know where the support files are located. These support files are provided by HAL when you purchased your product. These are files ending with .S28 and .LOD and are usually located in the following directories.

PRODUCT	SUPPORT FILE LOCATION
PCI-3000	-no support files-
PCI-4000/M	C:\PCC
P38	C:\P38
DSP-4100	C:\DSP41\FIRMWARE

```
[PCI-4000]
Path=C:\PCC
BaseAddress=$360

[P38]
Path=C:\P38
BaseAddress=$380

[PCI-3000]
BaseAddress=$0260
```

Excerpt from WF1B's actual RTTY.INI file

Specifying Your Terminal Unit

This is the first phase of setup, we'll be copying RTTY signals in just a few moments!

Of course, you've purchased the finest terminal unit known to the human race, and you'll be using it with RTTY to nail some wood (i.e. Win a Plaque!). Here's the good news/bad news with terminal units. Some are very easy to setup, and are practically self-starting. Others are a bit crotchety in startup up, but work great once initialized. We'll work through a few examples, and explain a few of the more common problems encountered, and how to correct them.

First, the easy part. Fire up your editor with the RTTY.INI file, and scroll down to the section identified by TNC1, it should look similar to the following:

```
[ TNC1 ]  
ComPort=1
```

Here you can see that COM1 has been specified as the serial port to use for the terminal unit. (quick review, section header=TNC1, Keyword=ComPort, Value=1). If your terminal unit was on a different serial port, you would just change the value to the appropriate number, for example, Comport=3.

If you are using a PC card device, or RITTY, then no comport specification is necessary.

HINT ! Always use store bought, premium cables, since many of the problems uncovered while programming were directly related to cables or 25-to-9 pin adapters. Buy quality whenever possible.

HAL Communications Products

PC CARD DEVICES

Most of the work in setting up a PC card device was done during the hardware definition phase. Select the appropriate card from the TNC selection on the worksheet, the PC card options are "PCI-3000", "PCI-4000" and "P38".

P38 Lightning & PCI-4000

If you are using one of these units, and you have installed their program in a place other than the default (PCI-4000=C:\PCC, P38=C:\P38) then you **MUST** update the appropriate section of RTTY.INI

Example:

```
[P38]
Path=C:\APPS\HAM\P38
```

If you do not like the way the bar graphs are dancing, then there is an adjustment you can make. First, you should know that the bar graphs actually represent numbers between 0 and 254. In a perfect world, we would make a bar graph 254 characters wide and be done with it. But, fortunately, the actual values usually stay within a range (e.g. 80-150), and this fact can be used to your advantage. By experimenting, you can determine what the low value is for your station. The way to adjust the values is with the following INI section.

```
[PCI-4000]
DisplayScale=aaa
```

The DisplayScale variable represents the "low" number that is normally available from the HAL unit. The default value is 124. These were the values that were provided HAL. If you would like to determine the numbers for your particular station, add this line to the appropriate section

```
CollectNumbers=Yes
```

A tab delimited text file with all the numbers collected will be written to disk when the program stops. Load this file into a spreadsheet to get a graphical view of your tuning range numbers.

Disabling Tuning Display

If you would like to disable the on-screen-tuning display, you may add the following line to the [PCI-4000] or [P38] section:

```
NoDisplay=True
```

PCI-3000

If you are using one of these units, and you are having difficulty with program initialization, you may add the following line to your RTTY.INI file

```
[PCI-3000]
BaseAddress=$260
```

```
IF THE PROGRAM CAN DETERMINE THIS ADDRESS (UPON SELECTION OF THE PCI-
3000 IN WORK SHEET), THEN THE PROGRAM WILL ADD THIS LINE FOR YOU.
SERIAL PORT DEVICES
```

The ST-8000 terminal unit will use the "BAUDOT-DRV" selection from the worksheet. The DSP-4100 unit will use the "DSP-4100" selection. There have been reports that the higher speed (over 9600 baud) options do not work with the DSP-4100, but I have been unable to confirm the problem. Both test computers here run the DSP-4100 at 19,200 baud successfully. It may be a matter of hardware or cabling, to run high speed you must have a newer UART chip on your serial card.

RITTY, from K6STI

Brian Beezley, K6STI, has written software called "RITTY" that uses the sound card to encode and decode radio teletype without special hardware. Though a cooperative effort, we have integrated our products via a TSR program. In the RITTY documentation, you'll find many

good ideas for setting your RITTY program to optimal contest settings. In the worksheet, you'll select the TNC option called "K6STI". Use the following steps to use the programs together.

- RITTY I (loads RITTY as a TSR)
- RTTY (starts RTTY for the contest)
- RITTY U (removes RITTY from memory)

TimeWave/AEA Products

Over the years, AEA has introduced several TNC's that are very similar in operation. For example, from a RTTY point of view, the PK-232, PK-232MBX, PK-900, DSP-232, and PK-1132 are all very similar. Unfortunately, they are not alike. As a matter of fact, different ROM versions within product often behave differently! Since programming commenced for the PK-232 in 1989, the ROMS have been in a constant state of change yet no documentation was supplied. Luckily for the amateur community, TimeWave has purchased the products and seem very willing to assist developers. This is a relationship I am looking forward to!

However, lets address the current situation.

1. If you have a PK-232 or PK-900, try selecting the "PK-232" or "PK-900" TNC option on the worksheet menu. If the program begins without error messages, you are ready to tune RTTY and move to the next chapter.
2. If you have one of the other units, or step 1 failed to operate, select "AEA Command" on the TNC menu of the worksheet. This will attempt to operate the unit using the command mode interface. The command mode is the same as you would use from a terminal program, and is often the best, safest option for all the units above.
3. If the unit still fails to play, from the DOS prompt, run the supplied utility call Aeautl.exe which will attempt to analyze the serial port, trying various port settings and initialization commands to the unit. When the correct combination is found, the utility will offer to change the current settings to the optimal settings (9600/8/1/None). The best option here is to accept by pressing "Y". Return to step 2.

USING THE AEA SETUP UTILITY

At the DOS prompt, enter AEAUTIL followed by a "/" and the comport number. For example, to probe the unit on COM3, enter AEAUTIL /3.

True Terminal Units

Terminal units such as the ST-8000, ST-6000, ST-5000, DSP-599ZX, AF4Z Multi-Modem, HD-3030, IRL FSK-1000 are units which rely on the RTTY software to handle the 5 level baudot code to 8 level ASCII code translations. From a software point of view, the only area to be concerned with is specifying "BAUDOT-DRV" in the worksheet. The hardware aspect is that you do have to wire a special cable to handle the control signals. Use the following table as a guide developing your cable.

Signal Name	DB9	DB25	Input/Output	Comment
RD	2	2	Input	carries the receive data from the terminal unit to the computer
TD	3	3	Output	carries transmit data from the computer to the terminal unit
DTR	4	20	Output	High for transmit, low for receive
Ground	5	1,7	-	Required
RTS	7	4	Output	High for transmit, low for receive

Terminal Unit signal lines pinout

The remaining terminal units

The remaining terminal unit's usual requirement is to select it from the TNC setting field of the worksheet. Occasionally, there may be startup problems, however, experience has taught that most failures are due to cables or adapters. Please note that RTTY uses hardware flow control whenever possible, so it is important that you do not use the 3-wire RS-232 unless you are certain that no hardware handshaking is required. Hardware flow control is more reliable, and faster, than software flow control (Xon/Xoff).

Testing it on the air

Now that we've specified the hardware as described in a previous chapter, and now we've covered how to select the correct terminal unit, it is time to give the terminal unit a quick on the air test.

1. At the prompt C:\RTTY\> RTTY SAMPLE<enter>
2. Tab to the TNC field, press <Space> until your TNC is displayed
3. press <Ctl-Enter> to continue
4. if a setup window(s) appear(s), press <Ctl-Enter> *no need to change for this quick test*

The program will display various messages onto the screen, ending with a final message of "READY". At his point you should be able tune a RTTY signal and have the text appear on the screen. **If it is not printing**, here are a few of the more common problems that can occur:

1. Incorrect baud rate specified
2. Incorrect data description (data bits, stop bits, parity)
3. Incorrect port specified
4. Incorrect port description in RTTY.INI



Please confirm operation of the terminal unit before proceeding to the next chapter! It is easier to locate mistakes by performing and testing one phase at a time.

Specifying Your Radio

In this phase, we'll add radio control to your arsenal of weapons!

Radio control is a very simple operation involving just a few short steps. First, we'll identify your radio, second, we'll identify which serial port it is attached to, and finally we'll give it a quick test drive. Below you will find a partial list of radios supported, new models are being added quite often.

<u>Radio</u>	<u>Value</u>	<u>Radio</u>	<u>Value</u>
All Kenwood	Kenwood	ICOM IC-738	IC-738
ICOM IC-1271	IC-1271	ICOM IC-751	IC-751
ICOM IC-271	IC-271	ICOM IC-761	IC-761
ICOM IC-275	IC-275	ICOM IC-765	IC-765
ICOM IC-375	IC-375	ICOM IC-775	IC-775
ICOM IC-471	IC-471	ICOM IC-781	IC-781
ICOM IC-475	IC-475	ICOM IC-820	IC-820
ICOM IC-575	IC-575	ICOM IC-970	IC-970
ICOM IC-706	IC-706	ICOM IC-R7000	IC-7000
ICOM IC-725	IC-725	ICOM IC-R71	IC-R71
ICOM IC-726	IC-726	ICOM IC-R7100	IC-R7100
ICOM IC-728	IC-728	ICOM IC-R72	IC-R72
ICOM IC-729	IC-729	ICOM IC-R9000	IC-R9000
ICOM IC-735	IC-735	Yaesu FT-1000	FT-1000
ICOM IC-736	IC-736	Yaesu FT-1000MP	FT-1000MP
ICOM IC-737	IC-737	Yaesu FT-990	FT-990

Kenwood

The Kenwood programming interface is standard across the product line, so for any model Kenwood radio, your INI settings should look like the following:

```
[RADIO]
Type=Kenwood
ComPort=2          << specify the associated comport number here
```

Yaesu

The Yaesu specifications vary slightly among the various models, so specification of the exact model is necessary. Use the appropriate value from the supported radio list.

```
[RADIO]
Type=FT-1000MP
ComPort=2          << specify the associated comport number here
```

Icom

Icom uses a bus mechanism, which requires that each radio have it's own unique address. RTTY uses the default values for the address, however, if you have changed the address, you must specify the address via the INI file. First, look at a typical IC-765

```
[RADIO]
Type=IC-765
ComPort=2          << specify the associated comport number here
```

Please notice that the radio is specified using a shortened name, such as IC-765, and not "Icom 765" or "Icom-765". It is important to use the shortened name for the radio control to function correctly.

Now lets look at a customized setup. For example, the IC-765 default address is \$2C, but perhaps you have changed your to be \$3C. Your INI file settings would appear as follows:

```
[RADIO]
Type=IC-765
Address=$3C        << specify the non-default address here
ComPort=2          << specify the associated comport number here
```

In addition, the ability to specify alternative addresses allows any new radio from Icom to be specified via it's unique address. For example, a new model, the IC-999 has an address of \$62 could be identified as

```
[RADIO]
Type=IC-765        << specify an existing, supported model here
Address=$62        << specify the new product address here
BaudRate=9600      << specify any special baud rate needed here
ComPort=2          << specify the associated comport number here
```

TenTec

TenTec is supported via the IC-735 compatibility of the radio.

Common INI settings

The use of the ALT-F1 & ALT-F2 to control your band changes from the computer side has an advantage which is the ability to specify the frequency on the band for the QSY. Use the [RADIO] section to identify those frequencies.

```
[RADIO]
80=3620
```

40=7088
20=14080
15=21080
10=28080

Testing it on the air

Now that we've specified the hardware, the terminal unit, and now the radio, it is time for another on the air check. Start RTTY using the same command as before

1. At the prompt C:\RTTY\> RTTY SAMPLE<enter>
2. press <Ctl-Enter> to continue
3. if a setup window(s) appear(s), press <Ctl-Enter> *no need to change for this quick test*

The program will display various messages onto the screen, ending with a final message of "READY". A message will appear on the screen(you can scroll back through the rx-buffer using <Ctl-pgup>, <Ctl-pgdn>, and <Esc> to review messages if they scrolled off the screen.

```
Radio assigned to COM2
```

If RTTY was unable to communicate with your radio, you will receive messages such as

```
[Radio] section of RTTY.INI is incorrect!  
Unable to initialize radio, will not be used.
```

Press <Alt-F1>, notice that the band changes. Press <Alt-F2> the band returns to the original band. In addition, change the band on the radio, it will be reflected on the action bar (screen updates occur once per second).

If the radio control does not appear to be functioning, here are a few of the more common problems that can occur:

1. If <Alt-f1> and <Alt-f2> change bands, but the radio band change does not update RTTY then the IRQ setting is not correct
2. If neither the function keys or radio bands work, then it is likely the baud rate or Icom address
3. Incorrect port specified
4. Incorrect port description in RTTY.INI
5. Weak or dead battery in radio control interface



NOTE!

Please confirm operation of the radio before proceeding to the next chapter! It is easier to locate mistakes by performing and testing one phase at a time.

Specifying Your Packet Interface

Although using packet in a contest can be more fun, be sure your entry is properly classified by the rules of the contest.

Beep. The latest WWV announcement is shown on the very bottom of your screen in the message window. BEEP. An announcement of a needed multiplier now appears. Keeping an ear on the network can be a lot of fun, please verify the contest rules allow packet use if you are going to submit your score. Most contests qualify you as a multi-op if you use packet!

Whew! Now, let's add the packet interface to the growing arsenal of weapons in the RTTY wars. The packet interface is actually a window to a serial port, any device you can control serially can be attached here, including possibly a modem. The window can be accessed via the pull down menu under the network menu heading. To incorporate packet, you'll need to identify which serial port has the packet TNC attached to it.

```
[ CLUSTER ]  
ComPort=3  
Beep-ok=Yes  
Beep-Frequency=1200  
Beep-Duration=500
```

The serial port for this setup is COM3, the values for the baud rate and data length will be collected from the [COM3] section. The lines with the "Beep" values control if, and what, the beep will sound like when a packet notification is received.

Packet via the network

If you are setting up an advanced multi-operator or multi-transmitter station, and the packet cluster is attached to a serial port on a networked computer, then use the following notation for the packetcluster identification.

```
[ CLUSTER ]  
ComPort=NET
```

Testing it on the air

Now that we've specified the hardware, the terminal unit, radio control, and now packet, it is time for another on the air check. Start RTTY using the same command as before

1. At the prompt C:\RTTY\> RTTY SAMPLE<enter>
2. press <Ctl-Enter> to continue
3. if a setup window(s) appear(s), press <Ctl-Enter> *no need to change for this quick test*
4. access the full screen packet window
 - press ` to activate the pull down menu
 - select Network
 - select Packet
5. you can now communicate with your TNC, type Connect <node>

This portion of the program should be very familiar to anyone who has used a so called “dumb terminal” program. You can use all the normal packet commands, connect, disconnect, etc.

OK, NOW WHAT?

Once the packet window appears to be functioning properly, you can press <Esc> to return to the main screen. When a WWV post or announcement arrives, it will be displayed on the bottom line of the screen in the message window area. Additionally, if a needed RTTY spot appears, it will be shown on the right, lower corner of the screen. The rules for determining a RTTY spot are

- if comment contains “RTTY”, “TTY”, “FSK”, or “TEST”
- if comment is empty but frequency is in range of 14070..14105, 21070..21105, or 28070..28105

When a spot appears you may wish to QSY to the frequency, press ALT-A to bring up a window which contains the latest packet spots. From within the window, you’ll be able to click on a callsign, or use the arrow keys and press <enter>, which will make the radio QSY. Your terminal unit will begin to decode the rty and the screen will print the signal (provided the spot is good, and propagation is good also!)



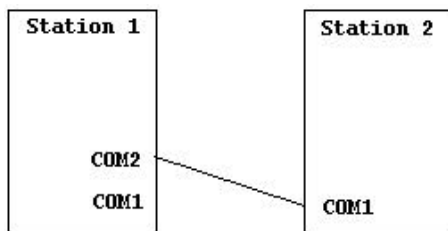
NOTE!

Please confirm operation of the packet interface before proceeding to the next chapter! It is easier to locate mistakes by performing and testing one phase at a time.

Specifying Your Networking

*The final category of hardware configuration is multi-station networking.
This is also the method for a single op to run 2 (or more) stations.*

With the addition of a networking feature, RTTY has the ability to support multi-multi, multi-single, and single-multi. One of the hottest areas in RTTY contesting is operating 2 radios, each on a different band. The rules usually allow for it, unless it is excluded by a 10 minute rules. Both transmitters are not allowed on the air together, so most common practice is to CQ on one radio, while tuning for needed QSO's on the other.



station.

Here is an example of a 2 station network. We can see that COM2 of station 1 is connected to COM1 of station 2. This connection is made with a standard null-modem cable. Often in the computer stores, it is called a “LapLink” cable, named after the popular software. The simple network shown here will allow both stations to keep the logs “in-sync” with each other, or allow for easier multiplier spotting on the second

As you are well aware by now, the INI file will contain the configuration details for the network. Since the hardware configurations were entered in a previous chapter, here we can concentrate on the new section needed to support networking.

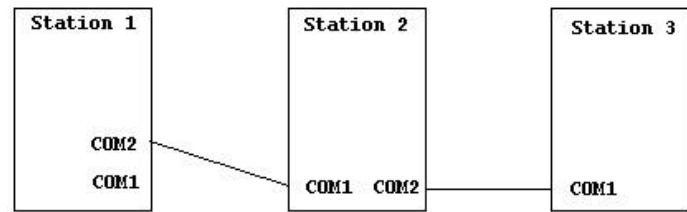
```
[NETWORK]
StationNum=1
ComportA=2
Snippet from Station 1 RTTY.INI file
```

The StationNum keyword identifies this station to the fledgling network, the limit is 8 nodes, and there should always be a station 1. The ComPortA specifies the first serial port to be used in this computer for networking. In this example, our first serial port for networking is COM2.

```
[NETWORK]
StationNum=2
ComportA=1
Snippet from Station 2 RTTY.INI file
```

The StationNum keyword identifies this station as # 2 to the fledgling network. The ComPortA specifies the first serial port to be used in this computer for networking. In this example, our first serial port for networking is COM2.

Now we'll expand the network just a little by adding a third station. We can see from this diagram that COM2 of station 2 will be connected via a null modem cable to COM1 of station 3. This will enable all three computers to share QSO and multiplier information, as well as keep the clocks synchronized with station 1.



```
[ NETWORK ]
StationNum=2
ComportA=1
ComportB=2
Revision to Station 2 RTTY.INI file
```

```
[ NETWORK ]
StationNum=3
ComportA=1
Snippet from Station 3 RTTY.INI file
```

Testing it on the air

Now that we've specified the hardware, the terminal unit, radio control, packet, and now the network, it is time for another on the air check. Start RTTY using the same command as before

1. At the prompt C:\RTTY\> RTTY SAMPLE<enter>
2. press <Ctl-Enter> to continue
3. if a setup window(s) appear(s), press <Ctl-Enter> *no need to change for this quick test*
4. access the network menu
 - press ` to activate the pull-down menu
 - select Network
5. send a test packet between from station 1 to station 2
 - select Ping
 - select the Ping 2 option

After the ping option has been selected, a message will appear on both screens. Station 1 message will indicate “**Propagation is good to S # 2**” and station 2 message window will indicate “**Ping from S# 1**”. These 2 messages indicate a complete, 2-way network is now enabled.

↪ NOTE! ***Please confirm operation of the networking feature before proceeding to the next chapter! It is easier to locate mistakes by performing and testing one phase at a time.***

Quick Start

If you didn't read the previous chapters, you must go back and do so!

Alright, we've made it this far. The needed hardware specifications have been entered, and tested. You have started and exited RTTY at least 1 time, more likely from 3 to 6 times before you reach this point in the documentation. ***Congratulations!*** The hard part is all over, it's time to operate and get an idea of what operating RTTY by WF1B has in store for you.

To start RTTY simply type RTTY at the DOS prompt. You will be prompted to enter a filename, for our testing we used *sample*, so type `sample<enter>`. The information sheet will then be presented for your customization. You'll specify the TNC (as we've done in the earlier chapter) and press `<Ctl-Enter>` to continue to the main screen.

RTTY Command Line

RTTY filename [-MIN] [?][-NOADVICE]

Filename	is the worksheet file name
-MIN	use minimal memory configuration
-NOADVICE	disables the error checking for logging
?	displays this list

Exiting RTTY

You may press `<Alt-Q>` to quit RTTY. A prompting window will appear to confirm, if you press Y you will exit the program otherwise you will return to the program.

Work Sheet

The 'Work Sheet' dialog box is one of the methods used to communicate contest specific values to RTTY. The fields are filled in once, before the contest has begun, and normally would not need to be changed during the contest. If you need to change data on the Work Sheet, simply press `<Alt-I>` to bring up the dialog box again. The `<ENTER>` key and `<TAB>` keys are used to maneuver the cursor to the field you wish to modify. Press `<Ctl-Enter>` to leave the Work Sheet and proceed to the next data entry screen.

Work Sheet Contents

CONTEST TITLE	The title of the contest is displayed here. Press the space bar to toggle choices. This field cannot be changed after RTTY has started.
CALL	Enter your call sign here.
ZONE	Enter your CQ zone here. It is not really necessary for ARRL sponsored contest, however it is printed on the summary sheet. The CQ Zone must be a number from 01 through 40.
NAME, ADDRESS, CITY, STATE, ZIP	This information is used two ways. First to determine your section for the exchange, and secondly for the mailing information on the summary sheet.
AFFILIATION	If your score is to be accumulated with a club, enter the club name in this optional field.
CLASS	Press the space bar to toggle the various operating class choices available, then select the most appropriate by pressing ENTER.
POWER	Enter your output power here. This will be used on the summary sheet.
WORK SHEET	The file name which contains this information.
LOG DATA	This field shows the output file name to contain contest log.
TNC TYPE	Press the space bar (or use the + and – keys) to toggle the choices available. Select NONE if no TNC will be attached. Select BAUDOT-DRV if you are using a terminal unit, which requires software translation from 5 level baudot code to 8 level ASCII code. An example of such a terminal unit is a HAL ST-8000.

Sample Contest Session

This is the first phase of setup, we'll be copying RTTY signals in just a few moments!

There is a driving philosophy behind RTTY by WF1B, this is it: "Maximize score, minimize QSO exchange time". This is a philosophy to assist you in generating a higher score, to either beat others, or simply to beat your personal record. RTTY will try to complete as much of the QSO information as possible, you must verify any pre-filled data, as it is your responsibility to sign the dotted line when it is over. Let's work through a sample QSO during the CQWW RTTY contest.

Run Operating

Incoming RTTY signals will be displayed in the upper left window as they are received. If a call sign is detected by RTTY, it will be displayed in high intensity enclosed in quotes and beep the console. If this call sign has been worked before, several beeps will be sent to the console, along with the word "DUPE", to let you know he has been logged previously. At this point you must decide to work him again or tell him to *go away*. Press <Alt-B> to send a worked before message to the calling station. If this is a good QSO with a previously worked station, the previous QSO information fills the log area with the previously logged information. This saves you valuable time and reduces error rates. In order to work and log this QSO use these steps:

Press <INS> to (or press the RIGHT mouse button on the first letter of call sign)

This will cause ALL of the following actions to occur:

1. Place captured call sign in log area (if one is not already entered)
2. If known, retrieve state/province and zone
3. Update the callsign and country windows
4. Place the TNC in transmit mode
5. Send report and exchange
6. Place the TNC back into receive mode

Now we can see at a glance that we need K3MM on all bands, and we need his country on all bands, all this while transmitting out information to him.

- Verify state or province (if blank, you may press the LEFT mouse button on state/province.
- Verify CQ zone(if blank, then press left mouse button on the CQ zone)
- Press <PgDn> to log contacts and send QRZ? As an alternative, you may press the LEFT mouse button on the [TU] icon on Action Bar.

The operating screen has a plethora of operating data available, to aid your contest operation. Working from top to bottom, and left to right:

- WF1B calling CQ (using F1)
- K3MM answering the call (he used F4)
- Info windows updated:
 - ◊ callsign window (upper right corner)
 - ◊ country window(just below callsign window)
- WF1B sending exchange to K3MM (using F2)
- K3MM sending exchange to WF1B (he used F2)
- WF1B sending the Thanks/QRZ message (using PgDn)
- In the log area CQZ indicates
 - ◊ new country mult
 - ◊ new QTH mult
 - ◊ new Zone mult
- QSO is worth 1 point

Let's move forward in time, now on 80M calling CQ, and K3MM answers our call again. When the call is detected by RTTY, the call & country windows update, so we can see that it is a needed callsign, but not a needed country. By clicking on his call with the RIGHT mouse button or pressing <INS> , his previous information will be pre-filled into the log area.. When you press the <INS> you'll notice that "MD" now appears next to the current QSO (the top K3MM). You verify this by watching the incoming text, and when the exchange is complete, press <PgDn> or click on the [LOG] action line button. Once logged, it will show as a CQZ since the country, QTH, and Zone are all new on 80M.

ANOTHER EXAMPLE QSO

This is another example of a QSO taking place. This is another guide for using RTTY by WF1B to obtain maximum throughput and maximum score.

◆ YOU CALL CQ

Press the <F1> key (or press the LEFT mouse button on the [1] icon). This will key the transmitter and send the contents of message buffer 1. Keep your CQ buffers short, but send them often! As most contesters will agree, many short CQ's are better than one very long CQ.

◆ WHEN SOMEONE ANSWERS

Press <INS> (or press the RIGHT mouse button on the first letter of the call sign) which will:

1. Place captured call sign in log area(if one is not already entered)
2. If known, retrieve state/province and zone
3. Update The callsign and country windows
4. Place the TNC in transmit mode
5. Send report and exchange
6. Place the TNC back into receive mode

-or-

If call sign was not captured, enter it into the call sign field then press <F2> to send the exchange.

◆ THEY SEND EXCHANGE INFORMATION

As the information arrives, enter his CQ Zone and QTH. You may press the LEFT mouse button to select the state/province and also the CQ Zone. Be sure to place the mouse cursor on the first letter of the data you wish to select.

◆ PRESS <PgDn> (or press the LEFT mouse button in the [TU] icon)

This will log the contact to disk, update your statistics, thank him for the QSO, and ask QRZ?

This is all that is required for logging routine contacts. If you prefer to search and pounce your way through the bands, then try these alternative operation ideas:

- Set a function key to "<1> DE <11> <11> K" for answering someone else's CQ message.
- Set a function key to "TNX UR <16> <15> <12> DE <11> BK" for sending your exchange info.
- Use the END key to log the contact without calling QRZ.

Detailed Sample of Starting, Logging, Exiting RTTY

1. Change to your RTTY by WF1B directory
 - C:\>CD \RTTY <ENTER>
2. Start the program
 - C:\RTTY\>RTTY <ENTER>
3. Start a new contest file
 - At the File Name prompt, type SAMPLE <ENTER>
4. Fill in the Information Sheet

- Press the <**SPACE BAR**> to select the ARRL RTTY Roundup
 - Press <**TAB**> to highlight the serial port field. Press the <SPACE BAR> repeatedly until the correct serial port is shown.
 - When complete, press <**Ctl-Enter**> to continue
5. Verify the 'My Information fields'
- Instead of WF1B, I wish to use WF1B/1 when portable in Vermont.
 - Press <**Ctl-Enter**> when complete
6. You are now ready to enter contact information. Refer to the Sample QSO section for specifics for QSO handling.
- type WF1B <**TAB**> RI <**END**> -- This logs your QSO
 - Now try G0ARF<**TAB**><**TAB**>100<**END**> -- This logs a DX QSO
7. Lets quit the program and restart (i.e. to simulate a break or rest period)
- Press <**Alt-Q**>, Press <**Y**> to quit the program
8. --- rest period ---
9. Change to your RTTY by WF1B directory
- \>CD \RTTY <**ENTER**>
10. Start the program
- \RTTY\>RTTY <**ENTER**>
11. Press <**ENTER**> to see your list of contest files
- Use the arrow keys to select the SAMPLE contest file then press <**ENTER**>
 - Double check the information sheet to be sure its OK
 - Press <**Ctl-Enter**> after any needed changes are made
12. The 2 sample contacts will be re-loaded in and you're ready to enter more
13. Repeat this cycle as necessary when starting or continuing a contest effort.

Generating Contest Reports

This is the final step, to create the reports needed for the contest sponsor.

All the printed output is actually sent to text files. This is for you to modify the results, increase your score, add needed multipliers, ... NOT! The report files are generated so that you may customize their appearance if you wish, before they are printed. The reports generated are acceptable by the contest sponsors as is, but many users have requested the ability to change the fonts, margins, and other formatting options.

Generating the Reports

The command to generate all the needed reports is called WRITELOG. To generate the reports, enter WRITELOG in the callsign field, then press <enter>. As the reports are generated, messages will be generated for each report as it is created. The contents and which reports are generated depend on the contest sponsors requirements, and have been pre-programmed.

Send Reports to Printer

You can send the files to the printer directly by entering the following command for each file to be printed:

Using the DOS "COPY" command, you can copy the files to your printer in this manner:

e.g. `C:\>COPY TESTCQWW.ALL PRN`

Using the DOS "PRINT" command, you can print the files in this manner:

e.g. `C:\>PRINT TESTCQWW.ALL`

Important!

If you choose to load the files into your word processor, be sure to use a fixed font (often referred to as mono spaced font). Do not select a proportional font as this will lead to user-unfriendly alignment of the documents!

Command and Functions

All the command and functions that are available during contest operation.

Commands are entered in the call sign input area, once the command has been typed in, press <enter> to execute the command. On the other hand, most functions are activated by pressing a combination of keystrokes, such as <Alt-H> and usually execute immediately. Not every command or function is supported by all TNC's.

COMMAND	DESCRIPTION
#####	enter a frequency for instant QSY e.g. 14088 will QSY to 14.088.0, 1408 will QSY to 14.080.0, 3620 will QSY to 3.630.0, 359 will QSY to 3.590.0, etc.
AUTOSAVE ON/OFF	enable or disable autosave
BEEP ON/OFF	enable or disable beep (from RX screen, not packet)
CBAUD ##	Change baud rate to ## (i.e. 45)
CWPM ##	Change baud rate to ## words per minute (i.e. 60)
DETECTOR 1	Change callsign detection algorithm to basic "DE" detection, has lowest memory and CPU requirements
DETECTOR 2	Change callsign detection algorithm to use both "DE" and whitespace delimited callsigns. This is default detector.
DETECTOR 3	Change callsign detection algorithm to search all incoming text for callsigns listed in master.cal, requires a fast CPU.
ECHO ON/OFF	enable or disable local echo
EDIT RQTC	edit received QTC data
EDIT SQTC	edit sent QTC data
FLUSH	force all data from memory buffers to disk, and refreshes the on screen edit window
PING #	test network connection to station number #
PRINT ON/OFF	enable/disable printing of each contact as it is logged
RPT F# DELAY	Activate repeat CQ function. Send function key f# every <i>delay</i> seconds. This is often called the "auto CQ" function. e.g. RPT 1 10 ... sends F1 every 10 seconds or until <Esc> pressed

COMMAND	DESCRIPTION
RPT	Reactivate the “auto CQ” using the previous parameters
RPT OFF	Turns off auto CQ, (it’s quicker to just press <Esc>!))
SAVELOG	Write the current .bin and .ndx files to location specified in INI file
SAVELOG X	Write the current .bin and .ndx files to either A or B disk drive (X = A or B)
SENDFILE	Allows transmission of a plain text file, excellent for dxpedition announcements or brag tapes
SETTIME	In a network, this command will synchronize all clocks with station 1
WRITELOG	The most important command, creates all the needed reports for the sponsor

FUNCTION	DESCRIPTION
F1-F10	Send buffer 1 to 10
Shift F1-F10	Send buffer Shift 1 to 10
Alt-F1	Change band down
Alt-F2	Change band up
Ctl-F1	Activate “Enter My Information” window
Ctl-F3	Activate “Set User Defined TNC” window
Ctl-F4	Super-Check partial
Ctl-F5	Display DXCC Status
Ctl-F6	Display All country codes
Ctl-F7	Activate “Modify buffers” window
Ctl-F8	Activate “Excluded Words” window
Ctl-F9	Check callsign
Ctl-F10	Check Country
Ctl-<up>	Scroll through call queue
Ctl-<down>	Scroll through call queue
Ctl-Q	Display WAE Qtc status
Ctl-R	Display WAE “receive” qtc window
Ctl-S	Display WAE “send” qtc window
Alt-=	Toggle normal/reverse receive shift
Alt-B	Transmit “worked before” buffer
Alt-C	Activate Call-Queue
Alt-D	Display Districts window
Alt-E	Edit log

FUNCTION	DESCRIPTION
Alt-F	Force figures in receive window
Alt-H	Display Help Window
Alt-I	Edit Worksheet
Alt-K	enter keyboard mode for chatting on the air
Alt-L	Force letters in receive window
Alt-M	Display Country Multipliers Window
Alt-N	Add a note
Alt-P	Partial callsign search (current contest only)
Alt-Q	Quit RTTY
Alt-S	Show score
Alt-T	enter the keyboard for working with command mode tnc's
Alt-W	Wipe out the current QSO
Alt-Z	Show CQ Zone multipliers
Home	Put call sign in log
Insert	Put call in log, send exchange
PgDn	Log call sign, send QRZ message (F3)
End	Log call sign
Keypad *	Reset RIT on radio to 0.00
<Esc>	Stop transmitter, clear buffers, general stop everything command
`	Activate Pull down menu. The 1 is just to the left of the 1 on standard keyboard

Features

There are many features of RTTY that have been developed over the years. This is the place where they are documented.

Longtime users of RTTY often comment to me that they have just discovered something “new”. Then they will look quizzically when it is explained that the feature has been there for years, unknown to them. This chapter attempts to document many of the features available while contesting or dxing. Several of the options are set before hand using the RTTY.INI file to store keyword values, other features are seemingly “hidden” but appear when some event occurs. Several have written stating that this information is overwhelming to a beginner RTTY contestor. Perhaps it is so, perhaps not. Only you can make that decision.

Friend File

Customize your buffers for your friends! This special file, called FRIEND.INI file is used when buffers are sent. Keep in mind that it will slow your rate slightly to send the names. Also, some small delay is introduced when the name is looked up in the file. Available through the Internet, are several large friend.ini files maintained by others, et available from www.wf1b.com.

The results of adding a friend.ini file to your contesting is best shown by example:

```
[HI ]
WF1B=RAY
KI1G=RICK
W2JGR=JULES
```

FRIEND.INI Sample File

Sample F2 Buffer: <1> TNX <HI> 599 QSL? BK

When working WF1B the buffer would send WF1B TNX RAY 599 QSL? BK

When working KI1G the buffer would send KI1G TNX RICK 599 QSL? BK

When working W2JGR the buffer would send W2JGR TNX JULES 599 QSL? BK

When working K1NG (not in friend.ini), the buffer would send K1NG TNX 599 QSL? BK
(ps. John is my friend!)

Radio Control

- enter the frequency in the callsign field for instant QSY
- use alt-f1/f2 to QSY to your favorite place in the band, use the radio band up/down to change bands
- press the keypad '*' to reset your RIT back to 0.00

Log Editor

Use the built-in log editing function to modify the log as previously entered. The editor is invoked by pressing <Alt-E>. If you are making post-contest changes to the log, you **MUST** exit and reload the data before generating your final contest paperwork. The program will verify the changes that you have made are accurate. It will also adjust your score according to those changes.

NOTE: This editor will allow you to change values directly to the log. Please be aware of the potential consequences.

Search

Search for the first occurrence of a call sign. When **F1** is pressed, a small dialog box will ask for the call sign to search for. You may enter the entire call sign or a partial call sign. The function will stop when the first logged contact matches the inputted call sign.

Continue search

If the first found occurrence was not the call sign you were searching for, then press **F2** to search for the next matching occurrence.

Save & Exit

Press **F3** to save your changes to the current contact and return to the main receive window.

Exit

When you wish to exit the edit log function press **F4**. This will cancel changes to the current QSO and return to the receive window.

Scroll Back

In order to scroll back through log press **F7**. Each depression of **F7** will go 'back in time' one QSO.

Scroll forward

In order to forward in the log press **F8**. Each depression of **F8** will go forward in time one QSO.

Delete

To delete a contact you must first find the call sign or scroll through the log to find the call sign. By pressing **F10** it will ask if you are sure. Press **ENTER** to delete the contact or any other key to cancel.

Cancel changes

Pressing ESC will cancel changes to the current QSO and return original values of the various fields. This does not restore all changes made during the edit session.

Saving all Received Text

If you would like to have a copy of your contest for reference, you can! RTTY has the ability to save all data that was received into a plain text file. This file will literally have all the contents of your receive screen for the entire contest, that includes all the noise. However, some have found that having a copy of the contest is a valuable means of identifying areas of operating improvement. The INI file settings to enable this feature:

```
[PROFILE]
RecordData=True          <<  enable  recording  of  incoming
data
DataCount=40            <<  save  to  disk  every  40  characters
```

Use the built-in log editing function to modify the log as previously entered. The editor is invoked by pressing <Alt-E>. If you are making post-contest changes to the log, you MUST exit and reload the data before

RX Scrollback options

The ability to control the scrollback receive area has been added to the INI file. You can control the number of lines available for scrollback, and the amount (increment) of each scroll.

```
[RX-Scrolling]
Lines=100                <<  min=25, max depends on free memory
Increment=5              <<  min=1, max=15
```

The increment value controls how much the screen moves up or down when you click the scroll bar, or use the <Ctl-pgup> and <Ctl-pgdn>.

COMn Section Details

The COMn section contains very specific information required to configure your serial ports. Each serial port used during RTTY must have a section defined for it. However, the COM1 and COM2 settings have become somewhat standard, so you'll probably need a [COMn] section only for serial ports higher than COM2. The settings are below with some comments for their use.

```
[COM1]
BaseAddr=$3F8
IrqNumber=4
```

```
[COM3]
BaseAddr=$2F8
IrqNumber=9
HandShake=DTS
```

```
[COM6]
BaseAddr=$1E8
IrqNumber=15
HandShake=None
```

[COMn] The section name identifies the serial port you will be configuring (COM1 to COM8)

BaseAddr=\$nnn Identifies the location in memory where the serial port hardware is located.

Some common values:

Com1 \$3F8
Com2 \$2F8
Com3 \$3E8
Com4 \$2E8

IrqNumber=n Identifies which interrupt will be used by serial port. Valid values range from 2-15.

Some common values:

Com1 4
Com2 3
Com3 2 (values here are VERY system
Com4 5 specific!)

Handshake=x-x Setting controls how data flow control between the computer and the serial device.

Options are

DTR/DSR - use the DTR and DSR control lines
CTS/RTS - use the CTS and RTS control lines
XON/XOFF - use software data flow control
None - do not use any data flow control

Tweaking the Hal Communications Sections

```
[P38]  
Path=E:\P38  
BaseAddress=$350  
DisplayType=2T
```

```
[PCI-4000]  
Path=C:\PCC  
BaseAddress=$260  
NoDisplay=True
```

```
[PCI-3000]  
BaseAddress=$260
```

The HAL Communications section contains specific information required to control the operation of the HAL boards. The settings are below with some comments for their use.

Path=xxxxxxxxx Specifies the location of the HAL supplied .LOD and .S28 files. This is usually the C:\PCA directory (for the PCI-4000) or the

C:\P38 directory (for the P38).

BaseAddress=\$nnn This specifies the location in memory of the board. The default values for these settings correspond to the HAL supplied defaults

DisplayScale=nnn A value between 1 and 255. Usually 90-130

NoDisplay=x-x You can disable the on screen bar graphs by using a value of True.
(eg NoDisplay=True)

DisplayType=XXXX The type of tuning display, choices:
"Zero" or "0" - displays the zero center offset numerically, along with a bar graph showing amplitude. Most popular option.

"One Bar" or "1" - this is a single tuning bar which displays a combined mark and space amplitude. Tune for maximum display.

"Two Bar" or "2" - two bars show mark and space amplitude individually. Tune for equal length bars and maximum display.

"Two Bar Touch" or "2T" - two bars show mark and space amplitude on a single line. The mark bar will grow from right to left with increase of amplitude. The space bar will grow from left to right with increase of amplitude. Tune for the two bars to touch each other in center of display.

"Four Bar" or "4" - four bars show low, mark, space, and high amplitude individually. Functional for P38 only. Tune for equal length and maximum display of the center bars.

CollectNumbers=YES or Generate a table of display values
NO

If you would like to get a table of the values that your board is reading, you should set this control variable to YES. Best use: set the variable to YES, start RTTY, tune the band for about 10 minutes or so. When you exit RTTY, you will find a file created (either P38.RPT or PCI-4000.RPT). The middle of the file will look something like this:

```
<snip>
100    24   22
101    18   12
102     4   14
.....
.....
150    24   32
151    20   15
<snip>
```

This table shows each possible value for the tuning bars, along with the number of times it has occurred during that sampling session. What to do with this huge list of numbers? It was designed to be imported easily into a spreadsheet and converted to a graphical format.

Word Wrap in Receive Window

Word wrapping is available in the receive window by settings a INI keyword with the value of the column to begin word wrapping. When a space is received after the designated column, the window will wrap (line feed) to the next row of the screen. This eases the problem when a call sign is partially on one line, and the remainder is on the next line.

```
[ PROFILE ]  
AutoCr=50
```

Use A Mouse, Save Time and Effort!

There are many features of RTTY which are just simpler to perform if you have a mouse attached to your computer. This is especially true if you are not a very good typist! Please read the list below, it identifies various tasks the mouse can perform for you to optimize you contest effort.

- left click on a received call sign, it will be dupe checked, multiplier checked, and place in the QSO input area. This can be especially useful for stations who do not send a "de" before their call signs.
- left click on the received state/province then it will be placed in the QTH field(if active for the contest). RTTY will try to determine what you have clicked and place it in the most appropriate Current QSO area input field.
- left click on the received serial number, it will be placed in the Serial Number field(if active for the contest). Again, RTTY will try to determine what you have clicked and place it in the most appropriate Current QSO area input field.
- left click on the received time, it will be placed in the Time field(if active for the contest). Finally, RTTY will try to determine what you have clicked and place it in the most appropriate Current QSO area input field.
- If the contest uses both the Time and Serial Number, they will be filled in from left to right. Therefore, select the contact exchange time first, then select the contact serial number.
- Right click on a call, this will bring up the transmitter, and send the F2 message, dupe-check, multiplier check, and shut off the transmitter. This is an immediate action, so do not press the right button until the instant the other station as unkeyed his transmitter.
- You may click on inverted numbers (e.g. PPT=005 or TOO=599). This works for all numbers except for 26, 28, 38, 48, 75, 94. Why these numbers? Because when translated, they become WY, PEI, RI etc. !

- Use the [TU] action bar icon to both log the contact and call QRZ? This is the same function as the PgDn key.
- Use the [W] action bar icon to wipe out the current QSO information. This is the same as <Alt-W>.
- Use the [LOG] action bar icon to record the contact onto your hard disk. This option will not call QRZ after the data has been saved. This is the same function as <END>.
- Use the [NOR] action bar icon to toggle from [NOR]mal to [REV]erse for printing those using “upside down” tones.
- You may left click on the band. This will cause the band to increment. For example, if the band was '20', a left click will cause the band to change to '15'.
- When the partial search is active, double click the callsign you wish to retrieve, it will close the window, and place the call sign in the current QSO area.
- Left click on the top line of the screen to activate the pull down menu, the mouse may then be used to navigate the menu.
- Left click a dx spot in the <Alt-A> window to move the call sign into the current QSO area, QSY your radio, and update multiplier status windows.
- Use the left mouse button to scroll the receive text window, the arrows along the right frame of the window indicate the direction of scrolling.

Action Bar

The bottom of the receive window contains a line with many “buttons” appearing on it, this is called the action bar. The action bar has most of the features needed for contesting without a keyboard.

Each function the action bar is capable of performing is explained below. If you are an avid mouse user, this is the list to memorize!

Button	Key Board	Action
[W]	ALT-W	Erase (wipe-out) the current QSO input area
[1] . . [10]	F1..F10	Send buffer 1 through 10
[Que]	ALT-C	Display the call queue
[20]	ALT-F1/ ALT-F2	Left click this area to move band up 1. (ie. 20->15->10->80->40->20) Right click this area to move down by 1 band
[TU]	PgDn	Send F3 and Log Contact

[Log]	End	Log Contact with no transmission
[NOR]	ALT-=	Toggle normal/reverse sense for receive of inverted baudot signals

Assisted Mouse Movement

Here is a handy feature, when this option is enabled, the mouse cursor will move up the screen with the incoming text, making it very easy to click on the items.

```
[MOUSE]  
AutoScroll=True
```

Call Queue Scroll

You may 'scroll' through (up to) the last 10 call signs which were auto detected by RTTY. Use the <Ctl-up> and <Ctl-down> arrows to quickly scroll through the call-queue list.

Call Queue Feature

CAUTION High productivity & complex function ahead! Not for the faint of heart!

The Call-Queue function is a powerful feature that stores the last 10 call signs which were automatically captured by this software. The main use of this feature is when you have CQ'd and several stations call in simultaneously. The Call Queue will 'remember' all the callers for you. You to select the best order to work the callers. The Call Queue dialog box will allow you to select a call sign for QSO#1 and when QSO#1 is about to end; pow! the next station to work is sent his exchange. This happens immediately after ending QSO #1! When viewed from the receiving end, you appear as the smoothest operator know to mankind! In order to give the illusion of being a super smooth operator, you must be a good typist, or good mouser. Here is how the operation is performed.

When you press <Alt-C>, a pop-up window will display a list of call signs for you to select. You may select a call by pressing the number next to the call(0=10 in window), press the up and down arrow keys or left click it with the mouse. Both **F2** and **F10** keystrokes will retrieve any and all information it can determine from the selected call sign.

Once a call sign is selected, you may perform any of these operations:

- ◆ <Esc> or <Alt-C> to close window
- ◆ **F2** update QSO area and send F2 message
- ◆ **F7** delete the selected call from list
- ◆ **F8** delete all call signs in this list
- ◆ **F10** thanks current QSO and sends F10 to selected call sign

Automatic Saving (Backup)

This feature will save the data once an hour to a designated backup location. The default AUTOSAVE location is floppy drive A: However, via RTTY.INI file customization you can control the directory location for the backup files. The recommendation is to store the backup on a different physical device in case of device failure. When it is time for an automatic backup,

a small window appears asking if it is OK to perform the backup. The reason for the interruption is that you may be in the middle of a very important QSO with an exotic multiplier, and interrupting that would be more devastating than skipping a backup!

```
[AUTOSAVE ]  
Minute=00          << control the minute of the hour for backup (00-59)  
Path=D:\RTTYBKUP\ << specify an alternate backup device (default is A:\)
```

Use the AUTOSAVE ON command to enable automatic data saving, and the AUTOSAVE OFF command to disable the function.

Manual Backup

You may wish to not use automatic backup, but to backup your data manually on demand by using the SAVELOG command.

```
SAVELOG           << save data to location specified in [AUTOSAVE]  
SAVELOG A        << save data to A:\  
SAVELOG B        << save data to B:\
```

Paper Backup

You can save each contact as it is logged to your printer. Enable this feature using the PRINT ON/OFF command. There is no automated way to recover the paper copy, but it may come in handy.

Sending A Text File

At times, you may have a need to send a text file over the air to another station. This may be to give a short explanation of the contest rules, or QSL manager information for a expedition. Enter the SENDFILE command in the callsign area, then press <enter> to bring up the text file input dialog. Type in the file name to send, then press <Ctl-Enter> to send the file.

Chatting

If you wish to have a chat with someone, rather than using programmed buffers, press the <Alt-K> to activate the keyboard mode. While in the keyboard mode, the text you type is immediately sent over the air. Press <Alt-K> to return to the normal contesting mode. While in the keyboard mode, you will notice a flashing [KDB] in the lower corner of the receive window to remind you that you are in fact in the keyboard mode.

Check Partial

Press <Alt-P> to display a list of call signs that have been worked during this contest. You can select a callsign to retrieve by using the arrows and <enter> key or using the mouse.

Super Check Partial

The Super Check Partial Window (<Ctl-F4>) will search the MASTER.CAL text file. This file has been developed over the years with input from many active contestors. Highlighted call signs need to be worked, dimmed call signs have already been worked. Use the arrow keys to navigate around the screen. Press <ENTER> to select a callsign. The '*' before a callsign

indicates that you have worked this callsign during the current contest. You can select a callsign to retrieve by using the arrows and <enter> key or using the mouse.

Network Functions

If you have enabled the network feature for multi-op or multi-transmitter operation, there are a few features available from the network menu option of the pull down menu to assist the multi-op contest.

Synchronize Time

Station 1 can send a message to all the other stations in the network which will “reset” their clocks to agree with station 1. This is important (but not critical) to keep the logs clean for later analysis.

Send Message

Any station can send a message to any other station via this option. The Send Message dialog box will ask for the destination station number, and the message to be sent. When the message arrives, it is displayed in the message window of the receiving station.

Send Announcement

Essentially identical to Send Message except that no destination station number is entered, as the message will be sent to all stations within the network.

Ping

When the specific station has been selected from the Ping... sub menu, a message will appear on both screens. For example, the station 1 message will say “**Propagation is good to S # 2**” and station 2 message window will say “**Ping from S# 1**”. These 2 messages indicate a complete, 2-way network is now enabled.

Needed Mults

Use <Alt-A> to activate the needed multipliers window. You can select a displayed callsign for instant QSY and entry into the current QSO area.

Packet Window

Use pull down menu, network option, packet to activate a full screen interface to your packet tnc. This window has no special features, it is a so-called dumber terminal window for you to enter your connect and disconnect commands. If a disconnect does occur, a message is displayed and an alarm is sounded to inform you of this important fact.

Saving Packet Data to Disk

If you are going to use packet, this feature will allow you to save all your packet text to a plain text file for use with a standard editor. The file will contain all packet activity such as spots (all, not just RTTY), WWV, announcements, etc. Inspiration for this feature was the ability to analyze missed DX spots, and possible effects on the final score.

```
[ CLUSTER ]
```

```
SaveToDisk=Yes
```

```
FileName=CLUSTER.TXT
```

```
<< identify the file to store the packet text
```

Defining Your Own TNC Control

If you would like to use RTTY with a TNC which is not currently supported, you may use the USER DEFINED option to enter the control codes. Simply select USER-DEF in the TNC type selection list. In order to use an unsupported TNC model you must know the character string to:

- ◆ Place TNC in RECEIVE mode(e.g. <Ct**l-R**>)
- ◆ Place TNC in TRANSMIT mode(e.g. <Ct**l-T**>)
- ◆ Clear the TNC transmit buffer(e.g. <Ct**l-X**>)

NOTICE!

This option is not needed for almost any user, it is here for testing of new devices, or if you own a RTTY terminal unit which has no compatibility with any of those that have been programmed.

Using the sample above, use this technique to set up a user defined TNC:

1. Press <Ct**l-F3**> to bring up 'Set User Defined TNC' window
2. Verify the cursor is in Transmit String Input Area
3. Press <^><T> (control character to start transmitter)
4. Press <T**AB**>
5. Press <^><R>(control character to start receiving)
6. Press <T**AB**>
7. Press <^><X>(control character to clear buffer, if available)
8. Press <Ct**l-Enter**> to end dialog box

Changing Serial Numbers

During the contest, you may find it necessary to change the serial numbers you are sending. When this becomes the situation, activate the pull down menu, select then system option, select change serial numbers option. A window will appear like the one show. You may change the values shown, beware the consequences of changing your exchange midway through the contest, be sure what you are doing is correct. Enough warnings!

Message Buffers

The tuning of your messages is one of the primary ways to increase your throughput. Yet if they are too short, you send repeats too often. Find the delicate balance!

Optimizing your buffers is as much art as it is science. How many is too many? How long is too long? Factor in band conditions, your expected signal strength in the target region, whether the band is open or marginal. This is a pre-contest and during the contest function you should perform. Please do change the buffers however, since they have sample data in them. All function keys **F1** through **F10**, and **Shift-F1** through **Shift-F10** are programmable. Some keys have a historical meaning or have special uses with RTTY. For example, F1 is the *world-standard* CQ key. However, any buffer key can be changed to taste, just keep this in mind: (1) the help screen will be invalid, and (2) some functions may work incorrectly (e.g. **INSERT** and **PGDN**). Also remember that **F2**, and **F10** are used by various functions.

Any combination of buffer tags may be placed in the buffers. These tags will be updated as the buffer is sent. The maximum buffer size is 100 characters before dynamic substitution, and 150 characters after dynamic substitution. Dynamic substitution occurs as each buffer tag is converted to it's meaningful data. You will notice as you type in your buffers, the display will scroll across the screen allowing for a full 100 character buffer area.

The time variables in each buffer tag cluster section (e.g. <3>, <13>, <33>) indicate time which was exchanged during the QSO in the contest. Not all contests exchange the time of QSO as contest exchange information. The same list of buffer tags is used by the QSO label function.

Sample Buffers

Below are some sample buffers showing both the input buffer(as you have selected to set up), and the resulting transmitted buffer(after dynamic substitution during transmission). Assume WF1B in RI is working W9OL for the purpose of these examples.

SAMPLE BUFFER F2

BEFORE

<1> DE <11> <16>9 <15> <12> BK

AFTER

W9OL DE WF1B 599 05 RI BK

SAMPLE BUFFER F3

BEFORE

AFTER

<1> TNX-QRZ TEST <11> K W9OL TNX-QRZ TEST WF1B K

SAMPLE BUFFER F4

BEFORE

<1> DE <11> <11> K

AFTER

W9OL DE WF1B WF1B K

SAMPLE ALT+B

BEFORE

<1> B4 <22A>M @ <23A> - QRZ <11> K

AFTER

W9OL B4 20M @ 1250Z - QRZ
WF1B K

SAMPLE BUFFER F7

BEFORE

ITS <20E> <20D> AT <21A> BK

AFTER

ITS SUNDAY 29.FEB.99 AT 1800Z
BK

Buffer Tags 1-8

These tags are used for the QSO in progress. The tags represent the values that are currently in the current QSO input areas (which are in the lower screen).

- <1> RX Call sign
- <2> RX State/Province
- <3> RX Exchange Time
- <4> RX Serial Number
- <5> RX CQ Zone
- <6> RX RST
- <7A> QSO Date yy/mm/dd
- <7B> mm/dd/yy
- <7C> dd.XII.yy
- <7D> yy.DEC.dd
- <7E> day of week
- <8A> QSO Time hh:mmZ
- <8B> hh:mm
- <9> Operator Age

Buffer Tags 11-16

These tags are used for your information as entered on the Information Sheet and the 'Set My Information' dialog box.

- <11> TX Call sign
- <12> TX State/Province
- <13> TX Exchange Time
- <14> TX Serial Number overall
- <14A> TX Serial Number current band

- <15> TX CQ Zone
- <16> TX RST
- <19> TX Operator Age

Buffer Tags 20-22

These tags represent miscellaneous values that may be of interest to send in an exchange.

- <20A> Today's Date yy/mm/dd
- <20B> mm/dd/yy
- <20C> dd.XII.yy
- <20D> yy.DEC.dd
- <20E> day of week
- <21A> Current Time hh:mmZ
- <21B> hh:mm
- <22A> Current Band Mtr 20
- <22B> MHz 14
- <23A> Previous QSO time this band 12:34Z
- <23B> Previous QSO time this band 12:34

Buffer Tags 31-36

These tags hold the values of the previously logged QSO. You may want to set up a buffer key for repeats after the contact has been logged. Remember that tags <1> through <9> are for the current screen (which is cleared when you log a contact!).

- <31> Previous Call sign
- <32> Previous State/Province
- <33> Previous Exchange Time
- <34> Previous Serial Number
- <35> Previous CQ Zone
- <36> Previous RST
- <39> Previous Age

Special Buffer Tags

- <BT> Insert Break Text. Pops-up a window to allow you to enter an additional 50 characters directly into the outgoing message.
- <CR> Insert a carriage return
- <SP> Insert a required space
- <HI> Locates callsign within friend.ini file and sends value associated to callsign.
- <TU> Locates callsign within friend.ini file and sends value associated to callsign

windows (with a small w)

Windows™ is a trademark of Microsoft, so here are my windows for displaying information about operational data such as multipliers.

There are many windows available within RTTY to assist your contest operation. Below are many samples along with a brief description of it's contents. The "*" indicates that the multiplier has been worked on a particular band, a "." Indicates that the mutiplier is needed on a particular band.

Country Multipliers

Alt-M

Displays a list of countries, by continent for easy viewing. Press <M> or <Space> to proceed to the next continent. Press <Esc> to return the main screen.

Zone Multipliers

Alt-Z

Displays a list of CQ zones listed across the screen, the bands are listed down the screen. At the intersection of these fields indicates if the zone is needed or not. For example, zone 14 on 20M is a "*" indicates that it has been worked, and is not needed.

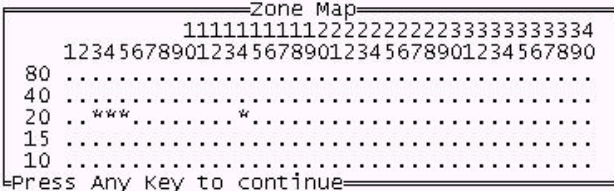


Figure 1 Zone Multipliers

District Multipliers

Alt-D

Displays a list of districts and if they are worked or needed. The countries listed in the window will vary by contest rules.

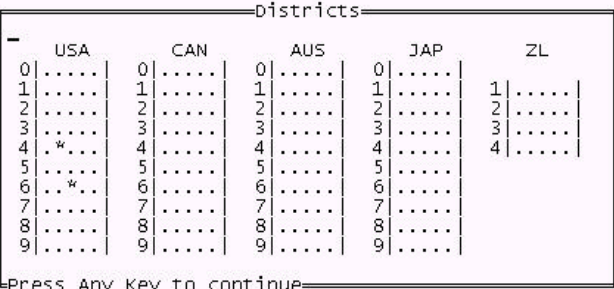


Figure 2 District Multipliers

US State/VE Province Multipliers

Alt-U

Displays a list of the VE Provinces and US states. There are actually 2 lists since the ARRL based VE province list is different than the CQ based VE province list. C'est la vie.

CT	.....	AL	.....	CA	.....	IL	.....	VO1	.....
MA	.....	FL	.....	IN	.....	IN	.....	VO2	.....
ME	.....	GA	.....	AZ	.....	WI	.....	NB	.....
NH	.....	KY	.....	ID	.....	CO	.....	NS	.....
RI	.....	NC	.....	MT	.....	IA	.....	PCI	.....
VT	.....	SC	.....	NV	.....	IA	.....	VE2	.....
		TN	.....	OR	.....	KS	.....	VE3	.....
NJ	.....	VA	.....	UT	.....	MN	.....	VE4	.....
NY	.....			WA	.....	MO	.....	VE5	.....
		AR	.....	WY	.....	NE	.....	VE6	.....
DE	.....	LA	.....			ND	.....	VE7	.....
MD	.....	MS	.....	MI	.....	SD	.....	VE8	.....
PA	.....	NM	.....	OH	.....			VV1	.....
		OK	.....	WV	.....			
		TX	.....					

Figure 3 US State/VE Province Multipliers

I/EA/SP/R Province Multipliers

Alt-U

Displays a list of provinces appropriate for the contest you are participating in. For example, the EA contest will show EA provinces, and not SP provinces.

A	CA	CR	H	PO	TF
AB	CC	GU	MA	S	TO
AL	CE	H	NL	SA	V
AV	CO	HU	NU	SE	VA
B	CR	J	NA	SG	VI
BA	CS	L	O	SO	Z
BE	CU	LE	OR	SS	ZA
BU	GC	LO	P	T		
C	GT	LU	RM	TE		

Figure 4 Province Multipliers

Universal Multiplier Key

The ALT-U key is mapped in each contest to the corresponding multiplier list that is needed for that contest. For example, in CQWW, alt-u shows US/VE provinces. In the EA WW contest, alt-u shows the EA province list. In most cases, this alleviates you of memorizing the keystroke for the particular multiplier and instead just use ALT-U whenever possible.

WAE QTC Exchange Techniques

WAEDC is a very interesting contest which combines rate with traffic handling, try it, you'll like it.

WAEDC contest exchanges serial numbers, and appears to be very much like any other contest, however, there is a catch! The rules allow for exchanging of QTC data for extra points. These QTC data can greatly increase your score. Please, please, please! Try these techniques before the contest! Practice using the QTC windows, learn to accept the QTC in different formats, there are many ways to send this data. Be ready for anything.

It is highly recommend using a contest filename of WAE96, or similarly short name due to the many files needed to support the QTC data. The WRITELOG command generates report files (e.g. WAE96_R.RPT, WAE96_R.SUM). The .RPT is a detailed report of QTC data, the .SUM is a summary of QTC data.

WAEDC is a complex contest if you account for sending and receiving of QTC data. Please study the rules as they are not explained here, but instead advise you of the commands and keystrokes needed...

<u>Keys</u>	<u>Function Performed</u>
CTL-S	Send QTC window
CTL-R	Receive QTC window
CTL-Q	Query status for callsign

<u>Commands</u>	<u>Function Performed</u>
EDIT SQTC	Allow editing of entire sent QTC data file
EDIT RQTC	Allow editing of entire received QTC data file

WAEDC Mouse Features

Many features activated by the mouse during QTC sending and receiving activity. You can select an individual data item(such as call, time or serial number).

Also, you can select an entire data line by using mouse button 2. This option works best when another user of RTTY by WF1B is sending the QTC data. Since the data will be in a predictable format.

Menus

The QTC editing windows have a menu on right side of the QTC data window. The mouse has been enabled to select a menu option by clicking mouse button 1 on the desired option.

Basics of sending QTC's to a station

1. Put the stations callsign in the callsign input field
2. Press <CTL-S> (to send QTC data)
3. Ask other operator if he is ready, press <Alt-Q> (are you QRV?)
4. Upon acknowledge of QRV, press <Alt-A> (send all QTC data)
5. If other op needs repeat of a QTC, press the F# to match the fill. If he needs fill for QTC #4, then press F4)
6. If other op needs repeat of entire QTC report, press <Alt-A> (send all)
7. Upon completion of exchange, press <Ctl-Enter> to save to disk

Basics of receiving QTC's from a station

1. Put the stations callsign in the callsign input field
2. Press <Ctl-R> (to receive QTC data)
3. Tell other operator you are ready, press <Alt-Q> (I am QRV)
4. your options for getting the QTC data from the screen into the edit window:
 - ◆ type data into fields (time, callsign, serial number)
 - ◆ left click each item, cursor will advance automatically
 - ◆ right click IF and ONLY IF data sent from another RTTY by WF1B user or the data matches the following specifications
 - ◆ TTTT*CCCC*SSSS where
 - ◇ TTTT = time
 - ◇ CCCC = callsign
 - ◇ SSSS = serial number
 - ◇ * = ', ', or '/'
5. If you need a fill, press the corresponding F# to get fill for number 6, press <F6>
6. If you need entire QTC report, press <Alt-A> (request send all)
7. Upon completion of exchange, press <CTL-Enter> to save to disk

Transmitted Buffers

Most of the data and formats for the QTC exchange has been carefully designed for optimal speed and accuracy. Therefore, many of the options are “hardwired” into the RTTY program and cannot be changed. However, a few messages may be tweaked and modified via the RTTY.INI file.

[Send QTC]

Alt-Q=<1> QRV? DE <11>

Alt-A=<1> GOT THEM OK? BK

(last line of ALT-A block)

[Recd QTC]

Alt-Q=<1> I'M READY! DE <11>

Alt-A=<1> SEND THEM ALL AGAIN BK

(last line of ALT-A block)

Utilities

Programs that are not usually needed during the heat of battle are waiting in your RTTY directory.

External utilities are programs which are separate from the main RTTY.EXE program. These external utilities should be run from the DOS prompt(i.e. C:\RTTY>).

Index Files

RTTY by WF1B uses an indexed access method to maintain high speed data entry and retrieval. The index key is the date and time combination, so the QSO's will always be kept in correct sequence according to date+time.

Auto-Reindexing

RTTY by WF1B now incorporates automatic rebuild of the index each time the program is started. This allows the index to be in near perfect condition for performance at the start of each session.

Rebuild Index Utility

If you are sure there is something wrong with the index file, or during a tech support call, I request you to manually run the procedure, here is how it is performed.

Invoke the Rebuild Index function with the following command at the DOS command prompt:

e.g. REINDEX <ENTER>

The rebuild index function will ask for the .BIN file name, simply enter the name of the binary log file(e.g.. CQWW97.BIN). The function will then create or replace the damaged index file.

Note! ***For safety sake, Always backup your files first!***

Merge and Extract Utilities

Some have asked for the ability to manipulate multiple logs as the case would be if you're running multiple transmitters without a network. The MERGE and EXTRACT utilities

provide this capability. Please be sure to give these programs a try BEFORE the contest! It is possible that you can destroy your files if the commands are used without discretion.

Merge

Merging 2 logs

Lets say you have a radio on 20 meters and a radio on 15 meters generating logs called CQWW20 and CQWW15 respectively. In order to combine the logs top create a master log you would use the following command:

```
MERGE CQWW20 CQWW15 CQWWMAST
```

If the file CQWWMAST did not exist then this would work fine, essentially 'adding' the 2 files together to create the third. If the CQWWMAST already existed then the command would fail. An option parameter, /O allows you to 'o'verwrite the existing CQWWMAST file.

```
MERGE CQWW20 CQWW15 CQWWMAST /O
```

Extract

Extracting a band

Suppose you have a master log file called CQWWMAST that contains data for all of your operation thus far in a contest. And now another operator wants to look for mults on a different band, you could create a 'copy' of the band data for him using this command:

```
EXTRACT CQWWMAST 15 CQWW15
```

If the CQWW15 file already exists, then you may use the same option parameter as the merge, that is the /O parameter which allows 'o'verwriting of the output file.

Fix_Mine

Removing a specified callsign from the log

It is a common technique to log your own callsign for a QSO which is "no good" and go delete it when the contest is over. Here is the utility that will let you remove all your own QSO's from the log. Enter fix_mine at the DOS prompt.

Country Update Utility

The country update function has been provided to ease the function of maintaining the country/prefix list. This function is menu driven and is fairly simple to use. Invoke the country update function use the command at the DOS command prompt:

```
C:\RTTY>COUNTRY <ENTER>
```

RTTY by WF1B uses a separate file of prefixes and a separate file of country codes to determine the DX country of the call sign entered. The accuracy of this depends on you to update the country list as DXCC countries are added and deleted.

The prefix is extracted from the call sign (e.g.. TY1PS = TY, WF1B/KH6 = KH6), then RTTY looks for the prefix in the prefix file. When the prefix is found, the country, zone, and other

information is placed in the current QSO area. If the country is not found, you may go fill it in later.

The following menu choices are available to assist you in maintaining your prefix/country list. You must OPEN your files before you can work with the prefix/country list.

NOTE!

WF1B is not a "*big gun DX'er*" so if you see changes that should be made to the country files, please send them along. Thanks!

Add Country

When a new country has been approved for the DXCC or WAE lists, use the ADD function to add a new country with its approved prefixes. Keep the following in mind as you add a new country:

- ◆ Code cannot be used by another country
- ◆ Continent must be NA, SA, EU, AF, AS, OC or AN.
- ◆ Zone must be 01-40
- ◆ Can be any value for your use, bearings, comments, etc.
- ◆ Prefixes cannot be used by any other country

Cancel Changes

Select this option if you would like to cancel all changes made during this country update session.

Change Country

This option will allow you update an existing country. The edit window is identical to the ADD window. Also, the same rules regarding codes, prefixes, etc. do apply. Remember that the country code is case sensitive to allow for entries such as KC6/e.

Delete Country

Select this option if you would like to delete a country from the list. This can occur when a country is deleted from the list, or when two countries are merged(e.g.. DL=Y2).

List Countries

Display the list of country codes in your files. This display is very much like the Display All Country Codes of the RTTY program.

Open Files

The country and prefix files must be OPENed before you may use the other functions to add/update/delete countries and prefixes. Press the space bar to toggle the country file choices.

Save Changes

Select this function when you are done modifying the country and prefix lists. This will save the changes back to the disk files. If you have really messed up the country/prefix list, just recopy the files from the distribution diskette.

Read in K1EA .cty

The country update function can convert a K1EA-CT compatible country file for use by RTTY. When you choose this option, a window will ask for the text file name (this is the K1EA country file). Enter the path and name of the text file to convert. The text file should be in the following standard form:

- ◆ Country name followed by a colon
- ◆ CQ Zone followed by a colon
- ◆ Country Code followed by a colon
- ◆ Prefixes separated by commas, followed by a semi-colon
- ◆ Continent Abbreviation (NA, SA, EU, AF, AS, OC)

Read in K1EA .dat

The country update function can convert a K1EA-CT compatible .DAT country file for use by RTTY. When you choose this option, a window will ask for the text file name (this is the K1EA country file). Enter the path and name of the text file to convert.

Exit

Selecting this option will terminate the country update function. Remember to save your country/prefix data by using the SAVE option.

Country List Utility

The country list utility provides a handy way to get a listing of all the prefixes and countries available. The format is similar to the ever-popular .CTY format. To get a country list, type CTYLIST<ENTER> at the DOS prompt.

QSL Label Utility

The QSL Label function facilitates the printing of QSL labels for QSL cards. Design the QSL label using any ASCII text editor (the one included with DOS is fine). The buffer tags are the same as the function key buffers tags.

A sample file has been included called QSL.INF. You should customize this QSL file to suit your taste. Remember that it must be called "QSL.INF". Use your regular DOS editor to modify this file.

One possibility to enhance your QSLing activity is to use the Call sign Only option of the Conversion Utility to generate a list of call signs worked. This list of call signs can then be used in conjunction with a call sign database such as SAM or BUCKMASTER to create address labels.

The output of the QSL labels function is sent to LPT1:.

Open Bin File

Begin your label printing session by selecting the appropriate .BIN file to work with. The dialog box will display window to show you possible files (.BIN's) for selection. Use the arrow keys to highlight the file you wish to work with then press **ENTER**.

Specific Call sign

Select this option if you would like to print all the QSL labels for a specific call sign.

Specific Band

Select this option if you would like to print all the QSL labels for all contacts on a specified band.

All Labels

Select this option if you would like to print labels for all contacts. This function excludes any duplicate QSO's.

Only Country Multipliers

Print only those QSL labels that were country multipliers. This means the first contact in a country for each band.

Only Zone Multipliers

Print only those QSL labels that were zone multipliers. This means the first contact in a zone for each band.

Only US/VE Multipliers

Print only those labels that were VE multipliers or US multipliers. This means the first contact in each state or province for each band.

Sort by...

This option is a toggle for sort order of the labels. The two sort orders are by time, and by call sign.

Color Modification Utility

You may want to change the colors used to suit your taste. Changes which you make will modify the RTTY.INI file. Invocation of the Color Modification function is the following command at the DOS command prompt:

```
C:\RTTY>COLORSET <ENTER>
```

Change Colors

Functions keys **F1-F7** will change the attribute values. Each key corresponds to an attribute type that is noted by a phrase such as Window, Header, etc. Pressing **F1-F7** will increase the attribute value by 1, holding the shift key and pressing **F1-F7** will decrease the value by 1.

Reset Default Colors

If you decide you would like the default color scheme, press **SHIFT-F10**. This will be the blue/gray combination described above.

Alternate Colors

If you would like an alternate color scheme press **SHIFT-F9**.

Save and Exit

Select this option (press <F10>) when you are satisfied with the color scheme selected. It will write the changes to disk as a new RTTY.EXE file.

Cancel and Exit

This option (press <Esc>) will exit the function without changing the values anywhere.

Conversion Utility

A conversion utility has been provided to convert RTTY by WF1B data files to other format files. The converted files are formatted for various other pieces of software such as DxBase and DxTrak. The conversion utility is provided as a separate program called CONVERT.EXE. Type **CONVERT** at the DOS prompt, a menu will be presented displaying the current conversion formats.

ADIF (Amateur Data Interchange Format)

The ADIF format was developed by a group of software writers who agreed to devise a new data format file that is independent of computer, operating system, database formats. The provided ADIFCONV.EXE will create an industry standard data file for importing into many logging programs. The following companies and individuals are supporting ADIF at the time the manual was written.

Company	Product
Barron, Robert KA5WSS	LOGCONV data conversion utility
EI5DI	Super Duper contesting
EQF Software	Log-EQF
Jim Larsen, KK7A	TR contesting
Jim Reisert, AD1C	CT contesting
K1EA Software	CT contesting
Koch, Bernd DF3CB/AL7MQ	QSL mgmt and printing
LX1NO	Lux Log
Personal Database Applications	LOGic
Rapidan Data Systems	DX4WIN
WA1W, Ira Chavis	Log Windows
WJ2O Software	WJ2O Master QSO
Wyvern Technology	RTTY by WF1B

Statistics Utility

The STATS.EXE utility creates a short report showing various rates for 48 hours of contest time beginning with the day of the first QSO. For Example, if STATS is run for the ARRL contest, the first hours of contact data will be at 1800Z when the contest begins. The hours from 00-1700 will have no counts as you should not have made QSO's before the contest began.

Host to Command Utility: PK-232

The AEAUTIL.EXE utility will place an AEA controller into a known state. It tries various combinations of baud rate, parity and stop bits. When proper communications has been established, it will ask if you would like the AEA unit to be placed into a standard configuration. If you try to use RTTY with a PK-232 and the software seems to ignore your PK-232, then try running this program to see if it can straighten out the situation.

Registration Utility

If you change your callsign, or for any reason receive a new registration number, use this utility to enter the data into the INI file. It will ensure it is entered in the correct place.

Glossary

Baud Rate	A measure of modulation rate, not communications speed. Baud rate means the number of signal changes per second.
Com Port	We use this term to refer to an asynchronous serial communications port.
CTS	Clear To Send. This is a modem control signal that is raised by the modem when it is ready to accept characters.
Data Bits	This bits in a serial stream of data that hold data as opposed to control information.
DSR	Data Set Ready. This is a modem control input signal to a UART that tells that the remote device is active and ready to transmit data.
DTR	Data Terminal Ready. This is a modem control signal raised by the UART to notify the remote device that it is active and ready to transmit.
Flow Control	A facility that allows either side of a serial communications link to request a temporary pause in data transfer. Hardware flow control is implemented via changes in the CTS and RTS signals. Software flow control is implemented via the exchange of Xon and Xoff characters.
HandShake	See Flow Control
Interrupt	One of the lines on the PC bus that is used to request a hardware interrupt. Any device that needs to interrupt the CPU (such as a UART) does so via an IRQ line.
Parity	A bit that is used to check the integrity of a byte. The parity is set by the transmitter and checked by the receiver.
Port	Short-cut name sometimes used to refer to an asynchronous communications device in your PC.
RTS	Request To Send. This is a modem control signal that the UART uses to tell the modem that the UART is ready to receive data.
Stop Bits	The bits in a serial stream that indicate all the data bits have been sent.
UART	An acronym for Universal Asynchronous Receiver Transmitter. This is the device that serializes and de-serializes data between the CPU and the serial data line.

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