

Preliminary SPEC for WINMOR TNC

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1.0 Scope

This Spec is to serve as a working document during development and to form the framework for the interface spec for those wishing to use the WINMOR TNC in other host applications.

2.0 Program Name and Purpose

The program name will be WINMOR TNC.exe and will be compiled as a stand alone .NET Windows application. It will contain any necessary DLLs (e.g. IPWorks, DirectX etc.) in its install setup. It is compiled on “any computer” mode for use in both 32 and 64 bit Windows OS from Windows XP upward. The program along with a standard PC sound card implements a virtual TNC and the bit level WINMOR protocol.

3.0 Initialization

The program will have an initialization file “WINMOR TNC.ini” that resides in the execution directory. That file will contain the minimum information to allow the program to start automatically (e.g. from Windows startup or by a startup call without parameters of another Host application). This will include;

- Initial WINDOW locator (Top, Left) (default 100,100)

- TCP IP Control Port number for Command (default = 8500)

 - Data Port is always next sequential port.

- Station Call sign (optional, default empty)

- Station Grid Square (optional, default empty)

- Call sign specific Registration key (default empty, not registered)

- Flag to select start minimized (default not minimized)

- Flag to enable debug logging (default false)

The ini file may be edited using the Basic setup menu on the WINMOR TNC form. The ini file will *not* be updated by any parameter changes requested by command from the calling Host program.

Example WINMOR TNC.ini file:

```
[WINMOR TNC Form]
Top=100
Left=100
TCP Control Port=8500
MyCallsign=KN6KB
MyGridsquare=EL98PF
StartMinimized=False
Registration=ACD16D9D5E344FB4BDFC8CFDA7603170
DebugLog=True
```

4.0 WINMOR TNC User Interface

The only user interface will be:

1) A WINMOR TNC “virtual panel” that may be made visible or hidden by the host application. The user can relocate the panel (position saved) if it is displayed.

2) A Help button/menu on the virtual panel will bring up a Help file specific to the WINMOR TNC. The Help will explain the various indicators of the virtual panel including information about and a link for registration. On the Help drop down list will be a link and mechanism for registration.

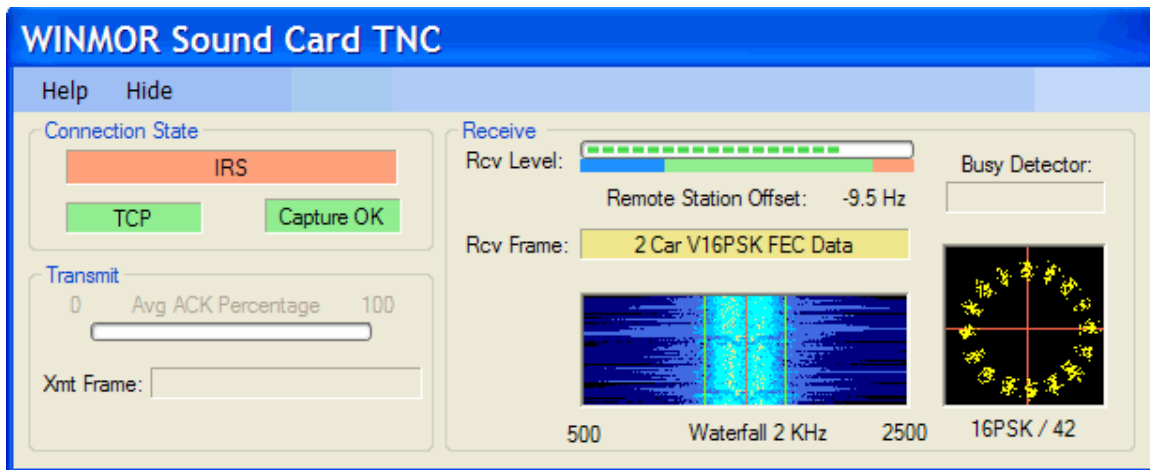


Fig 4-1 WINMOR TNC “Virtual Panel”

5.0 Control Interface

The control interface will be via TCPIP ASCII commands sent to the TCPIP control port set up in the .ini file. All commands will be plain (readable) text, not case sensitive and terminated with a <Cr>. No command may include a <Cr> or space as part of a command. The DISCONNECT command will be responded to with an echo of the command *as received* which will be terminated with a <Cr>. If a command contains errors in the command or optional parameters it will be answered by a fault description. FAULT <fault description> <Cr> Commands that do not include parameters will cause a “echo back” of the current parameters.

Upon a connect request to the TCP Control port in the .ini file and the TCP Control port has no current connections the connect request will be accepted and the following response issued: "CMD<Cr>". The data port (TCP Control Port # + 1) will then be enabled. It is not necessary to connect to the data port until actual binary data is to be transferred

After completing execution of a command the TNC will respond with:

CMD <Cr> indicating it is available for the next command. Commands *must* be sequenced using this CMD response. Note some commands can take up to 3 seconds to execute (e.g. SPEEDTEST).

The following is the current list of commands with Explanation. What is between the “<>” are the options separated by “|” or the response given in the return

AUTOBREAK <False|True>

Disables/enables automatic link turnover (BREAK) by IRS when IRS has outbound data pending and receives an IDLE frame from ISS indicating its' outbound queue is empty. Default is True.

BREAK

Initiates a BREAK (link turnover request to ISS) if in IRS or IRS Mode Shift state otherwise no effect. Forces ISS to clear its outbound queue and acknowledge.

Normally not required if AUTOBREAK is enabled.

BUFFERS

Gets the current buffers and current 1 minute average throughput. Reply format is:

BUFFERS <in queued> <in sequenced> <out queued> <out confirmed>

< 1 minute avg throughput in bytes/minute>

Values are all integers and space delimited. BUFFERS is also sent asynchronously whenever there is a change in any of the BUFFER parameters.

BUSY

Returns channel status. (BUSY TRUE = channel busy or BUSY FALSE = channel clear. Busy status also reported asynchronously on a busy status change (see below)

BUSYBLOCK<False|True>

Disable/Enable Busy channel blocking. (Details TBD)

BW <500|1600>

Set/gets bandwidth 500 Hz or 1600 Hz (setting applies to server inbound connects only). Attempting to change bandwidth while a connection is in process will generate a FAULT.

CAPTURE <device name>

Sets desired sound card capture device. If no device name will reply with the current assigned capture device.

CAPTUREDEVICES

Returns a comma delimited list of all currently installed capture devices.

CLOSE

Provides an orderly shutdown of all connections, release of all sound card resources and closes the WINMOR TNC program.

CODEC <False|True>

Start the Codec with True, Stop with False. No parameter will return Codec state.

When set to True will check Registration Key against MYC.

CONNECT <remote Call>

Initiates connect request cycle to <remote Call>

CWID <False|True>

Disable/Enable the CWID option.

DEBUGLOG <False|True>

Enable Debug log with True

DIRTYDISCONNECT

Initiates an immediate disconnect and return to the DISCONNECTED state. Normally should not be used or required.

DISCONNECT

Initiates a normal disconnect cycle. May take up to 15 seconds to complete.

DRIVELEVEL <0-100>

Set Drive level. Default = 100 (max)

FECRCV <False|True>

Disable/Enable FEC (unproto) Receive mode. Must be in DISCONNECTED state or will generate a fault. Default = False

FECSEND <Off|500|1600>

Enable/disable FEC broadcast (unproto) mode for 500 Hz or 1600 Hz. Must be in DISCONNECTED or FEC500 or FEC1600 states or will generate a fault.

GRIDSQUARE <6 character grid square>

Sets or retrieves the 6 character grid square (used in ID Frames)

ISREGISTERED

Returns True if MYC call sign matches the Registration key in the .ini file otherwise False.

LISTEN <False|True>

Enables/disables server's response to an ARQ connect request. Default = True

LOG <False|True>

Enable Log with True

LOGINSECURE <Login Key>

Processes the Login Key from the remote TCP address. If Key matches expected then Data port is enabled otherwise the control port is disconnected. See appendix B.

MODE

Gets current data mode. < FSK4_2CarShort|FSK4_2Car|FSK4_8Car|
PSK4_2Car|PSK4_8Car|PSK8_2Car|PSK8_8Car|
PSK16_2Car|PSK16_8Car>

MODE is also sent asynchronously upon any MODE change.

MYC <call sign>

Sets current call sign. Codec must be not running (CODEC FALSE) If not a valid call sign or Codec is running generates a FAULT.

OUTQUEUED <0>

If sent with the parameter 0 (zero) it will clear the output QUEUE. If sent without a parameter will return the current number of outbound bytes queued.

OVER

If in IRS or IRS mode Shift states initiates a BREAK. IF In ISS or ISS mode shift states clears the outbound Queue. Then ISS repeats an OVER Command until a BREAK is received from IRS. Not normally used or required if AUTOBREAK is enabled.

PLAYBACK <device name>

Sets desired sound card playback device. If no device name will reply with the current assigned playback device.

PLAYBACKDEVICES

Returns a comma delimited list of all currently installed playback devices.

PROCESSID

Returns the current process ID (integer) for this instance

ROBUST <False|True>

If true will only use modes < FSK4_2CarShort|FSK4_2Car|PSK4_2Car> regardless of current data mode BW settings above. If in the ISS or ISSMODESHIFT states changes in ROBUST will be delayed until the outbound queue is empty.

SAVEREGISTRATION <Registration key>

If registration key is correct for My Call sign this command will save the registration key and the My call sign in the WINMOR TNC ini file. Note: Use with caution this will update the ini file of the WINMOR TNC.

SENDID <delay in seconds>

This will send an ID frame and if CWID above is enabled also a CW ID after delay seconds. Delay must be an integer in the range 0 – 15. Only may be sent when in the DISCONNECTED state. If SENDID is received while in any state other than the DISCONNECTED state a FAULT response will be returned. Normally the WINMOR TNC automatically takes care of ID at the session end and at 10 minute intervals during the session.

SHOW <False|True>

Show (True) or Hide (False) the TNC form

SPEEDTEST

Returns the integer results of the CPU DSP speed test (requires approx 3 seconds to execute). Values less than 100 may have difficulty or sluggish performance.

STATE

Gets the current WINMOR protocol state <OFFLINE|DISCONNECTED|CONNECTPENDING|CONNECTING|IRS|IRSMODESHIFT|ISS|ISSMODESHFT|IRSTOISS|DISCONNECTING|SENDID> See Appendix A for state diagram.

Every State change is also reported asynchronously with the **NEWSTATE** reply below.

TWOTONETEST

Send 4 second two-tone burst

VERSION

Returns the version of the WINMOR TNC program.

VOX <False|True>

Disable/Enable VOX leader extension (128 ms) Default = True

6.0 Asynchronous Responses

The WINMOR TNC codec will respond on the command port with possible asynchronous responses. All asynchronous responses terminate in <Cr>

This is the list of the current responses:

BUFFERS

Reply format is:

BUFFERS <in queued> <in sequenced> <out queued> <out confirmed>
< 1 minute avg throughput>

Values are all integers and space delimited. **BUFFERS** may also be polled using the **BUFFERS** command with no parameters.

BUSY FALSE

Clear channel detected

BUSY TRUE

Busy channel detected

CONNECTED <remote Call>

A connection has been established. <remote Call> contains the connected call sign.

DISCONNECTED

An existing link has been disconnected or a pending connect was not for this call sign or not decoded.

FAULT <description>

A command or program fault or error condition.

MODE <FSK4_2CarShort|FSK4_2Car|FSK4_8Car|PSK4_2Car|PSK4_8Car|PSK8_2Car|
PSK8_8Car|PSK16_2Car|PSK16_8Car>

MODE may also be polled using the **MODE** command without parameters.

MONCALL <Call sign (grid square)>

Non connected monitor data includes call sign and optional grid square in parenthesis

NEWSTATE <WINMOR Protocol State>

Reports change of WINMOR Protocol state <OFFLINE|DISCONNECTED|
CONNECTPENDING|CONNECTING|IRS|IRSMODESHIFT|ISS|ISSMODESHFT|
IRSTOISS|DISCONNECTING|SENDID> See Appendix A for state diagram.

The current state may also be polled using the **STATE** command without parameters.

PTT <True|False>

Indicates to the host application to key the PTT on (PTT True) or off (PTT False)

7.0 Data transfer:

Data is always transferred on the Data port using binary byte transfers with no headers, delimiters or framing information. Data will be supplied to the application via an asynchronous TCP IP port which is enabled and kept alive while the control TCP port is logged in. The Data port (the next sequential port from the control port) will only be enabled after a successful control port login.

8.0 Multiple Instances

The WINMOR TNC program may operate with multiple instances providing:

- 1) The instances reside in separate directories and do not share any common files.
- 2) The instances do not share computer resources like sound cards or serial ports.
- 3) The instances are set up with their .ini files to use different TCPIP port numbers.
- 4) The CPU provides enough RAM and speed resources to operate the multiple instances.

9.0 Registration:

The program is fully functional whether registered or not. Registration is for one specific call sign. The same registration key can be use for the base call sign and any –ssid (1-15) of the base call sign. The call sign specific 128 bit registration key is saved in plain text (not obscured or encrypted) in the .ini file and can be used on or ported to other computers without restriction. Registration can be done on-line (link provided in WINMOR TNC Help) to the Amateur Radio Safety Foundation Inc.

(<http://www.arsfi.org/winmor.aspx>).

To encourage registration the command **CODEC <TRUE>** will pop up a non modal register reminder form if a My Call sign does not match the current registration key.

10.0 Licensing:

The Amateur Radio Safety Foundation Inc. grants license rights to the end user for Amateur Radio applications only. No commercial use, sale or application of the WINMOR TNC program or the WINMOR Protocol is permitted. No use of the program with non Amateur or non MARS call signs is permitted. The WINMOR TNC source code is not released to the public domain. WINMOR TNC is copy righted by the Amateur Radio Safety Foundation Inc.

Appendix A: WINMOR Protocol State Diagrams

