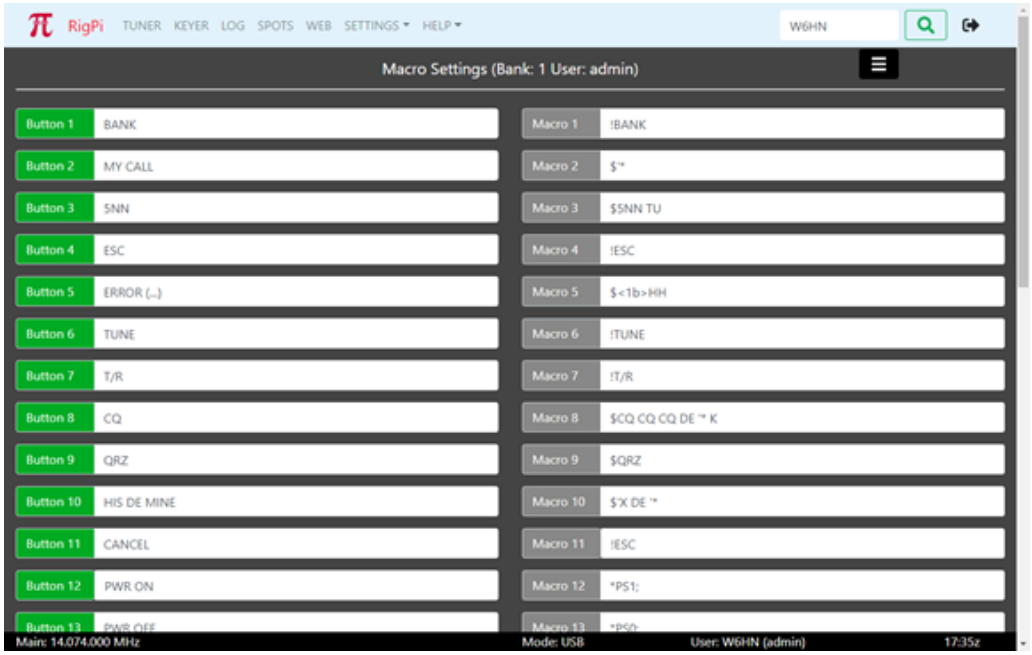
Macros



RSS provides 128 programmable macro keys in 4 banks of 32 each. The keys are available in the Tuner and CW Keyer windows. Each macro has a space to enter a button caption and a command. The total length of all macros is 2000 characters per bank per account. Macros can be used in a number of ways:

- CW messages
- Hamlib Commands
- Direct radio commands
- Special commands

Macro Save/Restore

Each bank of macros can be saved and restored. Use the "hamburger" icon button (upper right) to save the current macro bank to the downloads folder or to restore a saved macro bank. The downloads folder is determined by the device or computer you are using to connect to RigPi. If you are using a desktop PC to connect to RigPi, macro banks are sent to the downloads folder on the PC. Select the Restore button to display a file explorer window to find the macro bank file you want to restore.

Macro banks are downloaded as text (.txt) files. You can modify macros in the .txt file using any text editor. The edited macro text file can then be uploaded to replace the current set.

The last-used Macro Bank in the Tuner and Keyer windows are restored when you reopen either window.

CW Messages

CW Messages start with a $ character. The message can consist of ASCII printable characters, special control characters, or a combination of both. RigPi Keyer and External WinKeyer share the same control characters. The control characters are defined in the WinKeyer3 data sheet.

Click to see WinKeyer Data

For example, one WinKeyer3 control character, 1bH, is used to combine consecutive characters to create a prosign. The prosign BK is formed by the CW command $<1b>BK. This is a combined ASCII printable and control character CW message.

A printable ASCII message might be $5NN TU for the signal report plus "Thank You."

Special CW keying characters that can be used in a RigPi Keyer or WinKeyer3 macro (prefaced by $):

Character	Result
'*	Your call sign (apostrophe + asterisk)
'X	DX call
<1b>AR	AR
<1b>AA	AA
<1b>BK	BK
<1b>BT	BT
<1b>CL	CL
<1b>KN	KN
<1b>SK	SK
<1b>AS	AS
<02>number	Set CW speed to 'number.' To set the speed to 30 wpm, the command is <02>30. Use a value of 0 to set the speed to the last used speed in a stacked speed macro. {<02>30}<02>20 sets the speed to 30 when a stacked speed macro starts and 20 when the second part of the stacked macro is sent. {<02>30}<02>0 sets the speed back to what it was before the macro was started.
!ESC	Stops a CW message that is being transmitted or stops the tune mode
!TUNE	Key down (tap Tune again, or use ESC or CANCEL macro to stop)

Hamlib Commands

RSS uses the Hamlib library to control radios and rotors. The library is documented online on the Hamlib developer's web site.

Click to see Hamlib Rigctl commands

The rigctld utility is used for radio commands while the rotctld is used for rotor commands. Preface rigctld and rotctld command with * (asterisk). For example, to create a macro to set the main VFO frequency to 14.222.220 MHz, use the macro *F 14222220. Note the space between the F and 1. Many commands return a value from the radio. For

example, the macro *f returns the current main frequency from the radio. Return values are shown in a modal alert box. If an invalid command is used in a macro and error message is displayed.

Direct Radio Commands

A special Hamlib rigctld command, w, is used to send commands to radios when there is no rigctld native command. For example, to set the squelch on an Elecraft KX3 to 50, use the command *0w SQ050. The w command is prefaced by an asterisk and the number 0 or 1. Some radio commands elicit a response, others don't. Use 0 for commands for which the radio doesn't respond and 1 if a response is expected. The command shown in the Macro screen shot sets the frequency of a Kenwood or Elecraft radio to 15 meters. *0w FA00021025000; Commands that return values from the radio show the resulting data in a modal dialog box. For example, *1w FA; returns the current main frequency from Kenwood and Elecraft radios. If an invalid command is used in a w custom command an error message is shown.

Some radios, such as Icom and many Yaesu radios, require the use of hex numbers in w commands. Use the notation \0xNN (NN=a valid hex number) for these radios. Return values will also be hex numbers and may not display in a meaningful way.

Stacking Macros

More than one macro can be inserted in a single macro slot. For example, you can add a mode macro to a frequency set macro. Hamlib and Direct Radio Commands (0w/1w) can be stacked and mixed.

To add a second or additional macros to an existing macro, simply add the command and any command prefixes. Using Hamlib commands to set frequency, mode and passband, use this format:

*F 14222220*M USB 3000

This macro sets the radio frequency to 14.222220 MHz, the Mode to USB and the passband to 30000 Hz. Here are some examples using Hamlib commands:

Command	What Happens	Note
*F 14055444*M CW 3000	Tune radio to 14.055.444 CW with a passband of 3000 Hz	Uses Hamlib commands
*S 1 VFOB*I 14058222	Set radio to split mode, transmit on 14058222	Uses Hamlib commands

Latching Macros

Many radio commands set a state such as on and off, or you may wish to program a button that toggles between two frequencies. RigPi Macros use a special format to determine the command for each state and the color used for a button that has been clicked.

{command1}command2+btn-color

The command in '{}' is the first command executed when the button is clicked. This starts a stacked command.

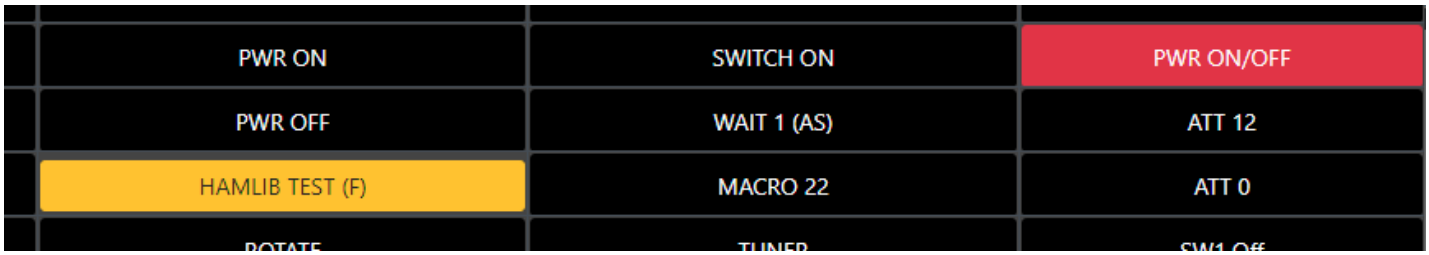
The color determines the color of the button when first clicked.

If you don't provide a color, "Info" is the default color.

Here are several samples of how to use a Latching Macro.

Button label	Command	Notes

PWR ON/OFF	{*PS1;}*PS0;+btn-danger	Button is red ('danger') when power is on.
HAMLIB TEST (F)	{*F 21025000}*F 28035000+btn-warning	Button is yellow ('warning') when frequency is set to 21.025.000



Web Commands

Macros can be created to open web sites in a new browser wwindow. Web commands start with the backslash character ("\"). The DX Call, band and mode can be embedded in the command. This is useful for opening QRZ.com to the DX Call, or opening DX Summit filtering on call, band and mode. You can create your own web commands for other sites.

Button label	Command	Notes
QRZ DX CALL	/https://qrz.com/db/<dxcall>	Look up 'dxcall' on QRZ
D XS BAND & MODE	/http://dxsummit.fi/#/?include= <band>&include_modes=<mode>	Look up all spots on DX Summit for the current band and mode
DXS DXCALL	/http://dxsummit.fi/#/?dx_calls=<dxcall>	Look up all spots on DX Summit for the current DX call

Function Key Shortcuts

Assign macros to F-keys for quick access from your keyboard. Use a prefix of Fn: to assign F-key n. F1-F12 can be used. For example,

F1:$5NN TU

assigns F1 to a CW macro that sends 5NN TU.

System Commands

System command macros are disabled by default since they can be a serious security risk. If you aren't careful, you can issue commands that will damage important RSS files. If you wish to experiment, uncomment the exec line in programs/systemExec.php. Be careful! **Do NOT enable this function for security reasons if your RSS is accessible from the Internet.**

Preface system commands with #. For example, to program a macro to reboot RSS, use the command #sudo reboot.

Other Special Commands

Special '!' commands that can be sent using a macro key include the following:

Command	What Happens
!BANK	Changes Macro Bank to the next higher bank. Starts over after bank 4. Current bank is shown by selected Macro Band button.

Command	What Happens
!T/R	Toggles Transmit/Receive
!ROTATE	Turn your station rotor to the DX bearing
!RTR STOP	Stop rotor immediately
!PTTON	Turns on RigPi Keyer and Audio board PTT. A radio does not have to be connected. If using this to control an external power switch, turn off hardware PTT in Advanced Radio settings>H/W PTT.
!PTTOFF	Turns off RigPi Keyer and Audio board PTT. A radio does not have to be connected. If using this to control an external power switch, turn off hardware PTT in Advanced Radio settings>H/W PTT.
!SWn	The the !SWn command, macros can control on and off to up to 8 external devices through a special cable (see below). (Use !SW0 to reset all 8 lines.)
!TUNER	Engage internal tuner in radio.
!TUNETO	A dialog allows you to set a frequency, mode and bandwidth.

Switching External Devices

Using the !SWn macro RigPi can control up to 8 external devices that can be turned on or off with 5-volt signals. For example, !SW1 can be used to turn on and off device 1. The macro latches the current value, so successive taps turn the device on and off. Use !SW0 to reset all eight outputs.

This function requires a special USB cable:

FTDI C232HM (C232HM-EDHSL-0). This cable has 10 wires that can be used for interfacing to other devices. The FTDI cable can be purchased from Mouser Electronics.

Wire	Signal
Red	VCC
Orange	BIT/PIN 0
Yellow	BIT/PIN 1
Green	BIT/PIN 2
Brown	BIT/PIN 3
Grey	BIT/PIN 4
Purple	BIT/PIN 5
White	BIT/PIN 6
Blue	BIT/PIN 7
Black	GND

IC-7610/IC-7300 Macros (tnx KK5VG)

Macro	***HEX COMMANDS***
IC-7610 ON	*1w \0xFE\0xFE\0x98\0xE0\0x18\0x01\0xFD
IC-7610 OFF	*1w \0xFE\0xFE\0x98\0xE0\0x18\0x00\0xFD
NOISE REDUCTION ON	*1w \0xFE\0xFE\0x98\0xE0\0x16\0x40\0x01\0xFD
NOISE REDUCTION OFF	*1w \0xFE\0xFE\0x98\0xE0\0x16\0x40\0x00\0xFD
NOISE REDUCTION LEVEL 2	*1w \0xFE\0xFE\0x98\0xE0\0x14\0x06\0x40\0xFD
NOISE REDUCTION LEVEL 6	*1w \0xFE\0xFE\0x98\0xE0\0x14\0x06\0x1\0x10\0xFD
ROTOR	
ROTOR STOP	
NOTCH ON	*1w \0xFE\0xFE\0x98\0xE0\0x016\0x41\0x01\0xFD
NOTCH OFF	*1w \0xFE\0xFE\0x98\0xE0\0x016\0x41\0x00\0xFD
COMPRESSION ON	*1w \0xFE\0xFE\0x98\0xE0\0x016\0x44\0x01\0xFD
COMPRESSION OFF	*1w \0xFE\0xFE\0x98\0xE0\0x016\0x44\0x00\0xFD
PREAMP OFF	*1w \0xFE\0xFE\0x98\0xE0\0x016\0x02\0x00\0xFD
PREAMP 10	*1w \0xFE\0xFE\0x98\0xE0\0x016\0x02\0x01\0xFD
PREAMP 20	*1w \0xFE\0xFE\0x98\0xE0\0x016\0x02\0x02\0xFD
CHANGE MAIN / SUB	*1w \0xFE\0xFE\0x98\0xE0\0x07\0xB0\0xFD
ATTENUATOR OFF	*1w \0xFE\0xFE\0x98\0xE0\0x11\0x00\0xFD
ATTENUATOR 6 DB	*1w \0xFE\0xFE\0x98\0xE0\0x11\0x06\0xFD
ATTENUATOR 12 DB	*1w \0xFE\0xFE\0x98\0xE0\0x11\0x12\0xFD
ATTENUATOR 18 DB	*1w \0xFE\0xFE\0x98\0xE0\0x11\0x18\0xFD
VFO	*1w \0xFE\0xFE\0x98\0xE0\0x07\0xFD
MEMORY	*1w \0xFE\0xFE\0x98\0xE0\0x08\0xFD
ANTENNA 1	*1w \0xFE\0xFE\0x98\0xE0\0x12\0x0000\0xFD
ANTENNA 2	*1w \0xFE\0xFE\0x98\0xE0\0x12\0x0001\0xFD
RF -30%******************	*1w \0xFE\0xFE\0x98\0xE0\0x14\0x02\0x2\0x20\0xFD (???)
RF -50%******************	*1w \0xFE\0xFE\0x98\0xE0\0x14\0x02\0x1\0x90\0xFD (???)
RF 100%******************	*1w \0xFE\0xFE\0x98\0xE0\0x14\0x02\0x2\0x55\0xFD (???)
14.300 Mhz	*F 14300000
50.525 Mhz	*F 50525000
MONITOR ON	*1w \0xFE\0xFE\0x98\0xE0\0x16\0x45\0X01\0xFD
MONITOR OFF	*1w \0xFE\0xFE\0x98\0xE0\0x16\0x45\0X00\0xFD
RESET	
NOISE BLANKER ON	*1w \0xFE\0xFE\0x98\0xE0\0x16\0x22\0x01\0xFD
NOISE BLANKER OFF	*1w \0xFE\0xFE\0x98\0xE0\0x16\0x22\0x00\0xFD

DUAL WATCH ON	*1w \0xFE\0xFE\0x98\0xE0\0x7\0xC1\0xFD
DUAL WATCH OFF	*1w \0xFE\0xFE\0x98\0xE0\0x7\0xC0\0xFD
PBT IN +150	*1w \0xFE\0xFE\0x98\0xE0\0x14\0x08\0x01\0x55\0xFD
PBT OUT -150	*1w \0xFE\0xFE\0x98\0xE0\0x14\0x08\0x1\0x00\0xFD
PBT IN .0	*1w \0xFE\0xFE\0x98\0xE0\0x14\0x07\0x01\0x30\0xFD
PBT OUT .0	*1w \0xFE\0xFE\0x98\0xE0\0x14\0x08\0x01\0x30\0xFD
COMPRESSION LEVEL 3	*1w \0xFE\0xFE\0x98\0xE0\0x14\0x0E\0X00\0x0270\0xFD
COMPRESSION LEVEL 5	*1w \0xFE\0xFE\0x98\0xE0\0x14\0x0E\0X01\0x0220\0xFD
COMPRESSION LEVEL 7	*1w \0xFE\0xFE\0x98\0xE0\0x14\0x0E\0X01\0x0265\0xFD
COMPRESSION LEVEL 10	*1w \0xFE\0xFE\0x98\0xE0\0x14\0x0E\0X02\0x055\0xFD
RF POWER 8W	*1w \0xFE\0xFE\0x98\0xE0\0x14\0x0A\0x00\0x21\0xFD
RF POWER 25W	*1w \0xFE\0xFE\0x98\0xE0\0x14\0x0A\0x00\0x65\0xFD
RF POWER 50W	*1w \0xFE\0xFE\0x98\0xE0\0x14\0x0A\0x01\0x30\0xFD
RF POWER 75W	*1w \0xFE\0xFE\0x98\0xE0\0x14\0x0A\0x01\0x93\0xFD
RF POWER 100W	*1w \0xFE\0xFE\0x98\0xE0\0x14\0x0A\0x02\0x55\0xFD
MIC GAIN 25%	*1w \0xFE\0xFE\0x98\0xE0\0x14\0x0B\0x00\0x0165\0xFD
MIC GAIN 50%	*1w \0xFE\0xFE\0x98\0xE0\0x14\0x0B\0x01\0x0230\0xFD
MIC GAIN 75%	*1w \0xFE\0xFE\0x98\0xE0\0x14\0x0B\0x01\0x0193\0xFD
MIC GAIN 100%	*1w \0xFE\0xFE\0x98\0xE0\0x14\0x0B\0x02\0x0055\0xFD
AGC SLOW	*1w \0xFE\0xFE\0x98\0xE0\0x16\0x12\0x03\0xFD
AGC MID	*1w \0xFE\0xFE\0x98\0xE0\0x16\0x12\0x02\0xFD
AGC FAST	*1w \0xFE\0xFE\0x98\0xE0\0x16\0x12\0x01\0xFD
MANUAL NOTCH - ON	*1w \0xFE\0xFE\0x98\0xE0\0x16\0x48\0x01\0xFD
MANUAL NOTCH - OFF	*1w \0xFE\0xFE\0x98\0xE0\0x16\0x48\0x00\0xFD
MANUAL NOTCH WIDTH - WID	*1w \0xFE\0xFE\0x98\0xE0\0x16\0x57\0x00\0xFD
MANUAL NOTCH WIDTH - MID	*1w \0xFE\0xFE\0x98\0xE0\0x16\0x57\0x01\0xFD
MANUAL NOTCH WIDTH - NAR	*1w \0xFE\0xFE\0x98\0xE0\0x16\0x57\0x02\0xFD

MACRO	***HAMLIB COMMANDS***
IC-7610 ON	*PS1;
IC-7610 OFF	*PS0;
NOISE REDUCTION ON	*U NR 1

NOISE REDUCTION OFF	*U NR 0
NOISE REDUCTION LEVEL 2	*L NR .2
NOISE REDUCTION LEVEL 6	*L NR .6
ROTOR	!ROTATE
ROTOR STOP	!RTR STOP
NOTCH ON	*U ANF 1
NOTCH OFF	*U ANF 0
COMPRESSION ON	*U COMP 1
COMPRESSION OFF	*U COMP 0
PREAMP OFF	*L PREAMP 0
PREAMP 10	*L PREAMP 10
PREAMP 20	*L PREAMP 20
CHANGE MAIN / SUB	
ATTENUATOR OFF	*L ATT 0
ATTENUATOR 6 DB	*L ATT 6
ATTENUATOR 12 DB	*L ATT 12
ATTENUATOR 18 DB	*L ATT 18
VFO	*V VFO
MEMORY	*V MEM
ANTENNA 1	*A 0
ANTENNA 2	*A 1
RF -30%	*L RF .26
RF -50%	*L RF .51
RF 100%	*L RF 1.0
14.300 Mhz	*F 14300000*M USB 2500
50.525 Mhz	*F 50525000*M USB 2500
MONITOR ON	*U MON 1
MONITOR OFF	*U MON 0
RESET	
RESET IS A LIST OF COMMANDS (IN ONE MACRO) THAT CLOSE THE COMMANDS THAT I MIGHT HAVE OPENED.	*U COMP 0*U NR 0*V VFO*ANF 0*L RF 1.0*U MON 0*A 1*L PREAMP 0*L ATT 0*Y 1*U NB 0*U DUAL_WATCH 0*L PBT_IN .50*L PBT_OUT .50*L MICGAIN .51*U MN 0*L RFPOWER 1.0*L AGC 5
NOISE BLANKER ON	*U NB 1
NOISE BLANKER OFF	*U NB 0
DUAL WATCH ON	*U DUAL_WATCH 1
DUAL WATCH OFF	*U DUAL_WATCH 0

PBT IN +150	*L PBT_IN .60
PBT OUT -150	*L PBT_OUT .60
PBT IN .0	*L PBT_IN .50
PBT OUT .0	*L PBT_OUT .50
COMPRESSION LEVEL 3	*L COMP .3
COMPRESSION LEVEL 5	*L COMP .5
COMPRESSION LEVEL 7	*L COMP .7
COMPRESSION LEVEL 10	*L COMP 1.0
RF POWER 8W	*L RFPOWER .08
RF POWER 25W	*L RFPOWER .26
RF POWER 50W	*L RFPOWER .51
RF POWER 75W	*L RFPOWER .76
RF POWER 100W	*L RFPOWER 1.0
MIC GAIN 25%	*L MICGAIN .26
MIC GAIN 50%	*L MICGAIN .51
MIC GAIN 75%	*L MICGAIN .76
MIC GAIN 100%	*L MICGAIN 1.0
AGC SLOW	*L AGC 3
AGC MID	*L AGC 5
AGC FAST	*L AGC 2
MANUAL NOTCH - ON	*U MN 1
MANUAL NOTCH - OFF	*U MN 0
MANUAL NOTCH WIDTH - WID	
MANUAL NOTCH WIDTH - MID	
MANUAL NOTCH WIDTH - NAR	