Appendix

Device Specific Commands

DEVICE SPECIFIC COMMANDS - Station Controller

Get Station Controller Status

Command   STATE
Example   //STATE
            Will return the state of the station controller
Return payload format
UPDATE,1,SC1,RY,DI,Vin,Vout,current,Fwd,Rev,Max,Sense,RefVoltage,AN1,AN2,temp

1	Device address 1
SC1	Device type SC1 (Station Controller 1)
RY	Relay state 10101 (Relay 1…Relay 5)
DI	Digital inputs 1 and 2
Vin	DC power relay voltage input
Vout	DC power relay voltage output
Current	DC current flowing through the DC power relay
Fwd	Forward RF power
Rev	Reflected RF power
Max	Max voltage from directional coupler
Sense	Directional coupler sense voltage
RefV	Reference voltage to be calibrated out of the RF power measurements
AN1,2	User analog voltage input 0-30VDC each
Temp	Temperature in degrees F from the digital temperature probe

Example
     UPDATE,1,SC1,11111,00,13.8,13.7,14,55,0,2.5,2.0,0.14,13.8,6.0,68

Turn on / off Relays

Command   RYx,y
Example   //RY1,1
            Will turn relays on or off where x is the relay number 1…5 and
            y is the state (1=on, 0=off)
            <u>Relay number (x)</u>
            Relay 1 – DC power control
            Relay 2 – AC power control
            Relay 3 – User relay 1
            Relay 4 – User relay 2
            Relay 5 – User relay 3
            <u>Relay state (y)</u>
            1 or "on" – Relay on
            0 or "off" – Relay off
            P – Pulse relay for 250 ms.
            T – Toggle state

DEVICE SPECIFIC COMMANDS - RadioRouter

RX mixer channel control

Command   MIX,<mask>

Example   //MIX,10X00000

Will turn on port 1, and turn off ports 2,4,5,6,7,8

Regardless of the current state port 3 will be unchanged

Argument definition

<mask> is a string of 8 characters that turn each mixer channel 1…8 on or off.

1 = port on

0 = port off

X = do not change the current state of the channel

Master receiver audio mixer volume

Command   VOL, <value>

Example   //VOL,100

Argument definition

<value> is a number between 0 and 255 which will set the master volume.

0 = off and 255 is maximum volume.

The default is typically 100 which is close to mid scale. Individual channel volume is set with the radio's volume control.

Transmitter selection

Command   TXn   (TX1, TX2, TX3, TX4)

Example   //TX1

Argument definition: none.

Sets the focus of the transmitter board to transmitter 1 or 2 when using one transmitter board or between 1, 2, 3, or 4 when using two transmitter boards.

Speaker control

Command   SPEAKER,<value>

Example   //SPEAKER,ON

Definition   Enable / disable speaker output.

<value> can be one of the following strings

ON or 1 = speaker enabled

OFF or 0 = speaker disabled

DEVICE SPECIFIC COMMANDS - RadioRouter

Operating Mode Selection

Command   MODE,<value>

Example   //MODE,1

                        Sets operating mode of the RadioRouter.

Argument definition

                        <value> is one of the following options

                        1 = Mode 1. Control head or PC virtual control head control (default)

                        2 = Mode 2. OTRSP SO2R compatible mode.

Notes on Mode Usage

Mode 1 – StationStack Control Head or Control Head Software

   This is typically used with a PC virtual control head program or a hardware control head using the StationStack Control Protocol where the packets are either fully addressed (/A) type or direct (//) type. For example a direct command to turn on Rx port 1 would be //MIX,1XXXXXXX

Mode 2 – OTRSP Logging Computer Program

   This is used when the RadioRouter is being controlled from a contesting program such as WinTest or WriteLog using the Open Two Radio Switching Protocol (OTRSP). This format does not use any packet framing characters, like /A01:…. The OTRSP commands are sent in "raw" form. A command payload of TX1 to select transmitter 1 is simply sent as "TX1" from the logging program.

Setting the Mode Manually with the Reset and Mode buttons

The mode can also be set at boot time with the "Reset" and "Mode" buttons found on the CPU or Tx boards. When the RadioRouter powers up, it will flash the Status LED a few times indicating that power has been applied and it is going through its boot process. After about 5 seconds, the RadioRouter is booted and ready to be used. At this point the Status LED goes to a solid green indicating the normal "on condition".

To set the mode manually with these buttons, hold the Mode button down, then press the Reset button briefly, still holding the Mode button. After the Status LED initially flashes, a few seconds later the Status LED will then blink once. If you want to boot in mode 1, you have two seconds to let go of the Mode button at that point. If you want to boot in mode 2, continue holding down the Mode button. After the Status LED blinks twice, let go of the mode button. In a few seconds, the Status LED will send either the number 1 (. - - - -) or the number two (. . - - -) in CW indicating which mode was selected. Timing is critical. If you bounce you finger on one of the buttons or hold it down too long, you may set the wrong mode. Repeat the process to set it to the mode you want. Every time the mode is set, it will be stored in flash memory and when the device is re-booted, it will come up in the mode that was last set.

DEVICE SPECIFIC COMMANDS - RadioRouter

Headphone output control

Command   PHONES,<value>

Example   //PHONES,ON

Definition   Enable / disable headphone output.

              <value> can be one of the following strings

              ON or 1 = headphones enabled

              OFF or 0 = headphones disabled

OTRSP Compatible Commands

This is an open standard protocol used to control hardware devices in an SO2R contest station. OTRSP is the Open Two Radio Switching Protocol. The RadioRouter supports the most common basic OTRSP commands that are used on popular logging programs including WinTest, W1MM and WriteLog.

Supported OTRSP commands

RX1   Listen to radio 1

RX1S   Listen to radio 1

RX2   Listen to radio 2

RX2S   Listen to radio 2

RX1R   Listen to both 1 & 2

RX2R   Listen to both 1 & 2

?RX   Returns the mode set

TX1   Set tx focus to radio 1

TX2   Set tx focus to radio 2

?TX   Returns radio with focus

?NAME   Sets the name of the device to TEXT (up to 32 chars)

?FW   Returns the firmware version

Command   PHONES,<value>

Example   //PHONES,ON

Definition   Enable / disable headphone output.

              <value> can be one of the following strings

              ON or 1 = headphones enabled

              OFF or 0 = headphones disabled

DEVICE SPECIFIC COMMANDS - Control Head

Control Head Commands

These are commands that the master controlling device will respond to. The control head can be a physical control head or a virtual control head implemented in software on a PC. In either case, they should behave the same way.

Command	LCD,<row>,<column>,<string>
Example	//LCD,2,5,W1AW
Definition	The RadioRouter assumes an LCD of at least 2 rows and 20 columns. This command displays the text string W1AW <string> on row 2 starting at character position 5.
	The LCD command also responds to a special command CLS in the format //LCD,CLS
	The CLS argument will clear the LCD display screen

Command	LED,<led_mask>
Example	//LED, 1100XXGGRRYY
Definition	This command will set the state of the control head LEDs. The RadioRouter assumes 12 LED are available.

The <led_mask> is a 12 character string that represents the state of each LED from #1 to #12. Each character can be one of the following values.

Character	Meaning	What is displayed
1	On	Green
0 <zero>	Off	Off
G	On	Green
O <letter O>	Off	Off
R	Red	Not used
Y	Yellow	Not used
X	No change	What ever the previous state was

Examples

LED,111100001111	Turn on LEDs 1-4 and 9-12, turn off 5-8
LED,GGGRRRYYYOOO	Set LED 1-3 Green, 4-6 Red, 7-9 Yellow, 10-12 off
LED,XXXXGXXXXXXX	Set LED 5 on, don't touch the others.

Note, trailing X's can be left off and the control head will assume they are X.
Example

LED,XX1	is the same as LED,XX1XXXXXXXXX

GPIO-2 STATION CONTROLLER – SUPPORTED COMMANDS

Relay control

Command   RY,<mask>

Example   //RY,10X00000

Will turn on relay 1, and turn off relays 2,4,5,6,7,8

Regardless of the current state relay 3 will be unchanged

Argument definition

<mask> is a string of 8 characters that turn each realy 1…8 on or off.

1 = relay on

0 = relay off

X = do not change the current state of the relay

Individual realy

Command   RYn,<state>

Example   //RY3,1

Argument definition

Where n is a value of 1..8 mapped to relays 1..8

<state> is one of the values 0, 1, T, P.

0 = relay off

1 = relay on

T = toggle state (flip on to off and off to on)

P = pulse. Assuming the relay is normally off, the relay is set off then pulsed on for 250 ms. then set to the off state.

Get the state of the GPIO board

Command   STATE

Example   //STATE

Argument definition: none.

Returns the current state of the GPIO board in the format:

//STATE,11111111,0000,13.8,13.8,13.8,13.8

In this example…

11111111 represents the state of the relays #1 .. #8

0000 represents the state of the digital inputs #1 .. #4

13.8, 13.8, 13.8, 13.8 represents the values of the A to D inputs #1 .. #4

State will also send the following additional commands to the master control unit or program:

//LED,10101010	See //LED command for details
//LCD,1,1,TEXT	See //LCD command for details
//LCD,2,1,TEXT	See //LCD command for details
//TAGLINE,TEXT	See //TAGLINE command for details

LED command

This command is send from the GPIO board back to the master controlling device.

The master can be a PC program, iphone, or hardware control head.

This command updates the state of the LEDs on the master control panel or control head.

Command   LED,<mask>

Example   //LED,10GYYRX00000

            The mask maps to LED's #1 .. #12

            <mask> is a string of 12 characters that turn each LED on and off

            1 or G = Turn LED on with a green color

            0 (zero) = Turn LED off

            R = Turn LED on with a red color

            Y = Turn LED on with a yellow color

            X = do not change the current state of the LED

LCD command

This command sends a text string to the master control program or control head to set characters to be displayed on the LCD screen.

Command   LCD,line,col,text

Example   //LCD,1,5,Hello

Argument definition

            line is the line 1 or 2 where the text will appear

            col is the column where the text will start typically between 1 and 16

            text is the text string that will be written on "line" starting in column "col"

            Trailing spaces are truncated.

            Any text written past the end of the display are lost

Tagline

Command   TAGLINE

Example   //TAGLINE,W1AW

Tagline places the text string on the control panel's tagline usually near the top of the display.

This is provided for users to annotate a title to the control panel to personalize the display.

Typically used for callsigns, names, or the purpose of the control head such as

"Antenna Controller"

GPIO-2 STATION CONTROLLER – SUPPORTED COMMANDS

Autoupdate

Command   AUTOUPDATE,<value>

Example   //AUTOUPDATE,ON

This command turns the autoupdate mode on and off. When on, the autoupdate will send the GPIO board state at a regular interval defined by the INTERVAL command.

> The values are
>
> 1 or ON = turn on autoupdate
>
> 0 or OFF = turn off autoupdate

Interval

This command determines the interval at which the GPIO board update is sent to the master controller.

Command   INTERVAL,<value>

Example   //INTERVAL,30

> The interval is a number representing approximate number of seconds between updates.

Invert digital inputs

Command   INVERTN,value

Example   //INVERT2,ON

This command will invert the state of a digital input so when it is represented to the master controller a high logic input (+5v) is represented as an off state (RED) as opposed to the normal condition where a logic 1 (+5v) is high and therefore GREEN.

Other useful commands

//PING   Used to pin the GPIO board to make sure it is alive.   Ping will return the device address as well.

//ROLLCALL Same as ping but with a delayed response based on the device address to allow multiple devices to respond on the network.

//SETADDR,x Set the devices network address to x

//ECHO,x   Return the exact string x

//HELP   Display the help screen

//STATIS   Human readable system status.