RLC-2 Manual Changes

This file contains the changes made to the RLC-2 manual between 1-16-96 and 1-26-96, between RLC2V410.PDF and RL2V410B.PDF.

Serial Port Interfacing

The RLC-2 has a serial terminal port for interfacing to any serial device, i.e. packet and serial terminal. This allows the user to monitor, control, and program all facets of the controller. The serial terminal carries highest priority for access and programming of the RLC-2.

RS-232 Signals and Interfacing

The RLC-2 output is the RS-232 standard, ±12V. The serial terminal port also contains the I/O pins for the software controlled resistors. (See the Software Resistor Section for interfacing programming information). The below table shows the connections needed to connect the RLC-2 serial port to a computer or modem.

Pin-Out Serial P6 Connector

RLC-2 Pin Number	DB-09 Computer	DB-25 Computer	DB-09 Modem	DB-25 Modem	Signal Definition
4	3	2	2	3	RS-232 Input
5	5	7	5	7	Ground
9	2	3	3	2	RS-232 Output

Pin-Out Software Resistors P6 Connector

Pin Number	Definition
1	Wiper Resistor #2
2	Low Side Resistor #2
3	Wiper Resistor #1
6	High Side Resistor #2
7	Low Side Resistor #1
8	High Side Resistor #1

Local Terminal Interfacing

When using a local ASCII terminal at the RLC-2's location, an ASCII terminal can be used to communicate with the programming features of the RLC-2. The terminal's communication parameters must be set to:

Baud (Default).... 9600, Start Bits.... 1, Stop Bits ....1, Parity .... N, Word Length 8

These parameters will allow communication with the RLC-2. For system operations, see the next section "Operation and Programming Over the Serial Port".

000: Connect one Port to another Port

This command allows you to connect one radio port to another radio port. It is also used to put a port into "repeater mode", by connecting that port to itself. "Connecting a port" means that the audio in and keying source from each port become the audio out and PTT source for the other port. Connecting a port to itself makes the audio that comes in your repeater's receiver go out your repeater's transmitter, making it into a repeater. If you connect two different ports together, they will hear the activity from the other port.

<000> *x y*

Parameters:

- X is the first port to connect
- Y is the second port to connect

Ports range from 1..5

1 - Port 1
2 - Port 2
3 - Port 3
4 - Autopatch Port
5 - Control Receiver Port

Defaults:

- Port 2,3 default as links, Port 1 defaults as a repeater

Error Codes:

E1 - Invalid port requested

(System wide errors are listed in front of the manual)

Example 1:

Connect Port 1 to Port 3

000 14 D or unkey

Voice response "1 3 Connect On"

Want port 1 as a repeater port

000 11 D or unkey

Response:

"X Y Connect On"

Error Codes:
E1 - Invalid audio routing source
E2 - Audio routing variable to big. Must range from 00..31
(System wide errors are listed in front of the manual)

Example 1:
I want all commands executed from Port 3 to be routed out both Port 3 and Port 1.

1) Look-up port 3's audio routing slot.
Slot 05 is port 3
2) Develop an audio routing variable that includes port 1,3
Audio Routing Variable = Port 1(1)+Port 2(0)+Port 3(4)+Autopatch(0)+Control(0)= 05
3) Execute Command 007

```
007 05 05 D or unkey
```

Response:
'Port' is 'Audio Routing Variable'

RR is the audio routing variable

DTMF Allowed Execution of the Command	Number that corresponds to the device
Port 1	+1
Port 2	+2
Port 3	+4
Autopatch	+8
Control Receiver	+16

(RR) Audio routing variable = (port1)+(port2)+(port3)+(autopatch)+(control rx)

This number ranges from 00..43. For numbers greater than 31, refer to Example 8-1 on special dynamic built audio routing variables.

Defaults:

Event #	Message Definition
000	Reset Message: Defaults to Internal Message 00
001	Port 1, Initial ID: Defaults to Internal Message 06
002	Port 1, Rotating ID 1: Defaults to Internal Message 07
003	Port 1, Rotating ID 2: Defaults to Internal Message 08
004	Port 1, Rotating ID 3: Defaults to Internal Message 09
005	Port 1, Forced ID: Defaults to Internal Message 10
016	Port 1 Courtesy Beep: Defaults to Preset beep 06
017	Port 2 Courtesy Beep: Defaults to Preset beep 07
018	Port 3 Courtesy Beep: Defaults to Preset beep 08
027	Port 1 Time-Out Message: Defaults to Internal Message 02
096	Autopatch Hang-up Message: Defaults to Internal Message 04
098	Reverse Autopatch Just Answered: Defaults to Internal Message 05
104	Autopatch Memory Dial Message: Defaults to Internal Message 11
105	Autopatch Direct Dial Message: Defaults to Internal Message 12

Example 8-1: Special Dynamic Audio Routing Variables

Special audio routing variables have been added to give more control of where messages are routed. When the user enters a routing variable from 00..31, the responses are routed to the calculated ports (See Command 064).

When the user enters the routing variable ranging from 32..43, the system will build a dynamic variable. This variable can change when different ports execute the same command causing the response to be routed to different ports. This allows more custom operation to take place on certain commands.

Where to Route Responses	Audio Routing Variable
Route to all Repeaters Connected to Port 1	32
Route to all Repeaters Connected to Port 2	33
Route to all Repeaters Connected to Port 3	34
Route to all Repeaters Connected to Port 4	35
Route to all Repeaters Connected to Port 5	36
Route to all Ports Connected to Port 1	37
Route to all Ports Connected to Port 2	38
Route to all Ports Connected to Port 3	39
Route to all Ports Connected to Port 4	40
Route to all Ports Connected to Port 5	41
Route to a Repeaters Connected to the port that sent the DTMF Command	42
Route to a Ports Connected to the port that sent the DTMF Command	43

A **Port** indicates links, repeaters, or remote bases.
A **Repeater** indicates the port must be tied to itself (See Command 000)

077: Read an Analog Low Value

This command allow the user to recall the analog low extreme readings. The user would normally not use this command for day-to-day operation. Because of the analog low reading special words (Words 713..716), the user would normally include these words for message readback. This command is mainly used for setting up the analog system.

<077> *x*

Parameters:
X is the analog inputs. This number must be between 1..4

Defaults:
Analog high/lows are cleared on reset

Error Codes:
E1 - Invalid analog line. This number must be between 1..4
(System wide errors are listed in front of the manual)

Example 1:
I want to check analog 4 low value

077 4 D or unkey

Response:
"<Analog Low Value>"

HF Remote Base Keypad

Keypad Definition

1 Remote in **receive only** mode or Select **HF Mode #**	**2** Remote in **receive and transmit on** mode	**3** **Receive and transmit off**. Cancels HF mode	**A** Bump **Up** Remote 20HZ
4 Bump **Down** Remote 100HZ	**5** **Recall Memory** Channel ## 00..99 or Select **VFO A**	**6** Bump **Up** Remote 100HZ	**B** Bump **Down** Remote 20HZ
7 Bump **Down** Remote 500 HZ or **Start Scan #**	**8** **Recall Frequency** of current VFO or **Select Offset**	**9** Bump **Up** Remote 500HZ	**C** Not Defined
D Frequency <Point> Key **.**	**0** **Program Memory** Channel ## or Select **VFO B**	**#** Force Execution Digit **Enter**	**D** Not Defined

Special Definitions:

HF Mode (See Keypad 1):

HF Mode Number	Definition
1	Selects USB Mode
2	Selects LSB Mode
3	Selects AM Mode
4	Selects FM Mode

Start Scan (See Keypad 7)

Scan Number Entered	Scan Mode Requested
1	Scan Down Slow (20HZ Steps)
3	Scan Up Slow (20HZ Steps)
4	Scan Down Medium (100HZ Steps)
6	Scan Up Medium (100HZ Steps)
7	Scan Down Fast (500HZ Steps)
9	Scan Up Fast (500HZ Steps)

HF Prefix:

The HF prefix is a single digit that is configured with Command 105. This digit is always the first digit entered when any HF mode is executed. The reason for the prefix digit is to keep single digit entries from accidentally being entered.

Example: I am in HF mode and need to start the scan function for fast up scanning
Enter: 1 79 '#' or unkey Response: 'Scan 9'

Example: I am in HF mode and need to enter a frequency
Enter: 1 29*600 '#' or unkey Response: '2 9 point 6 0 0 0 0'

Example: I am in HF mode and need to recall memory 15
Enter: 1 515 '#' or unkey Response: 'Look-up 15'

In all these example the format for data entry was:
<HF Prefix> <Command> <Addition Data if Needed> <# or unkey>

HF Frequency Entry:

The frequency is entered immediately following the HF prefix. There is no command to tell the controller to take frequency, simply no command means frequency. The controller will take frequency input from 1 mhz (1D00000) up to 999.99999 mhz (999D99999).

Typical HF remote base session:

HF Prefix is '1'

1)	106 D or unkey	; Enable HF remote mode
2)	1 29*68 # or unkey	; Move the HF remote to 29.680 mhz, VFO 'A'
3)	1 0 # or unkey	; Select VFO 'B'
4)	1 29*58 # or unkey	; Move the HF remote to 29.580 mhz, VFO 'B'
5)	1 5 # or unkey	; Select VFO 'A'
6)	1 8 1 # or unkey	; Select Split (Repeater Mode)
7)	1 2 # or unkey	; Go into transmit and receive mode
.		
.		
.		
	1 3 # or unkey	; Cancel HF mode after communications are complete

109: Command Line Control of the HF Routines

This command has the same function as Command 106 except you do not need to be in HF mode to access the HF commands. This command allows macros and scheduler events to access, set-up and function the remotes features. The format of this command is the same as Command 106.

<109> *x y..y*

Parameters:
X is the HF prefix
Y..Y are the functions that can be accessed using Command 106

Defaults:
There are no defaults for this command

Notes:
C Refer to Command 106 for the keystroke definitions.
C The 'point' key (*) in Command 106 is redefined to the 'pound' (#) key. This change is needed so the 'point' in the frequency will not interfere with other controller functions.

Error Codes:
(System wide errors are listed in front of the manual)

Example 1:
I want to set the remotes frequency to 14.250. My HF prefix is '1'

109 1 14#250 D or unkey

Response:
Refer to Command 106

151: Record a Small DVR Slot 01..35

This command allows the user to record a small DVR message track. The messages can be either 2 lengths. Slots 01..25 are 1 second slots, and slots 26..35 are 5 second slots. This results in a total recording time of 75 seconds.

<151> *ss* **OR** <151> *ss ee*

Parameters:

SS is the small DVR slot. This number ranges from 01..35

or...

SS is the beginning slot, EE is the ending slot. These numbers range from 01..35

Defaults:

All message slots are empty.

Notes:

C When executing this command, the DVR begins recording upon drop of receiver access or when the DTMF tone goes away. The easiest recording style is to force execution of this command with the 'D' then begin talking. To finish the recording press another DTMF digit or unkey. The DVR will backup and delete the DTMF burst to format a nice sounding message.

C To make a message longer than the set length, connect a range of messages together that will be long enough for you message. If you chain messages 01..04 to make a 4 second message, then message slots 02,03,04 are also used. If you play any of the message slots that are used for a longer message, you will only get part of the message. Always begin playing chained messages beginning with the first slot of the message.

Error Codes:

E1- Invalid message slot. This number must be between 01..35
E2 - Invalid DVR selected. See Command 153 for selecting the small DVR
(System wide errors are listed in front of the manual)

Example 1:

I want to record message slot 34 with my initial ID.

151 34 D then begin to talk then a D or unkey

Response:

"Recorded message played back"

245: Remotely Reset the Controller

This command remotely resets the RLC-2 controller. This will not change any of the system variables, only provide a reset function.

<245>

Parameters:
There are no parameters for this command

Defaults:
There are no defaults for this command

Error Codes:
(System wide errors are listed in front of the manual)

Example 1:
I need to reset my controller to clear a condition

245 D or unkey

Response:
"Controller Ready"