This file contains most of the changes made to the manual between V1.78 and V1.79. Replacing the corresponding pages in the V1.78 manual with these pages will cover the important changes, but will mess up a few of the page numbers (so they don't match the table of contents and index). If it is important that all of the page numbers match up, please download the complete V1.79 manual.

RLC-4 4 Port Communications Controller
Software Version 1.79
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020: Program a Selected Timer

This command allows you to program the controller's timer system.

<020> xx t..t

Parameters:
- 020 is the default command name.
- 'xx' is the timer to be programmed (two digits)
- 't..t' is the value to be programmed into the timer, 0 to 9999, one to four digits

Message Start Delay Timer:
This timer controls how long the controller will wait before sending any tones in two situations. The first is when you enter a command and unkey; it controls how long it will be before the response to that command will be sent. If the delay is set too short, you might miss the first CW character or two while your HT finishes switching from transmitting to receiving. The second situation in which this timer might delay tones or voice messages is when they need to be sent out of a transmitter that is not keyed up at the time. The transmitter will be keyed for at least the length of this timer before the tone is started. If this timer is too short, the transmitter might not have time to come up to full power and the beginning of the tone might be missed. If the tone is being sent down a link system with multiple hops, more time might be needed so all of the link transmitters will have time to come up.
- This timer is programmed in 10mS increments from 0..9999.
- If a timer value of 0 is entered, the timer is disabled.

Timer Number	Definition	Defaults
00	Message Start Delay Timer, Transmitter 1	500mS (50)
01	Message Start Delay Timer, Transmitter 2	"
02	Message Start Delay Timer, Transmitter 3	"
03	Message Start Delay Timer, Transmitter 4	"

021: Recall a Timer Value

This command allows you to recall the duration of a timer as set with command 020. It also recalls the current value of the counter so you can tell how long it will be before the timer expires (the timers count down and expire when they reach zero).

<div align="center">
<021> xx
</div>

Parameters:
> - 021 is the default command name.
> - XX is the timer to recall (two digits, see command 020 for list of timers)

022: Start a Timer

This command makes the specified timer start running, so that it will expire later. If the timer is already running, this command will make it start over. The controller automatically starts and stops most timers, but you can override the controller's normal way of doing things with this command. You can also use this command to make the user timers start running (timers 64..68).

<022> xx	Start timer 'xx' for the duration set with command 020
<022> xx t..t	Start timer 'xx' for duration 't..t'

Parameters:
> - 022 is the default command name.
> - 'xx' is the timer to start (three digits, see command 020 for list of timers)
> - 't..t' is the duration the timer should run for *this time only*. This does not permanently change the length of the timer; that is what command 020 is for.

CW Response:
> ' **I** ' - CW character 'I' which is "Beep-Beep"

Notes:
- Some timers (such as the ID timers) are reset to their normal duration periodically by the firmware, so command 022 may be ineffective on those timers.
- If a timer's normal duration has been set to 0 with command 020, it will not run regardless of what you try to set it to with command 022.

023: Stop a Timer

This command allows you to stop a timer, so that it will not expire normally. The controller automatically stops most timers as needed, so the only time you should need to use this command is when you want to change the way the controller normally works. Most timers automatically stop when they expire.

<div align="center">

<023> xx

</div>

Parameters:
 - 023 is the default command name.
 - XX is the timer to stop (two digits, see command 020 for list of timers)

CW Response:
 ' **I** ' - CW character 'I' which is "Beep-Beep"

130: Block Command Execution From Port

This command allows you to block execution of a command or a range of commands by a port.
Before using it, please read the cautions on the previous page.

<130> ccc	Recall which ports are blocked from executing this command
<130> p ccc	Block execution for a single command
<130> p ccc ddd	Block execution for a range of commands

Parameters:
- 130 is the default command name.
- P is the port to block access by
- CCC is the first command number to block
- DDD is the last command number in the range of commands to block

CW Response:
P IS CCC or P IS CCC DDD

131: Allow Command Execution From Port

This command allows you to reverse the effects of Command 130 and allow the specified port to
execute a command or range of commands again. This command is not dangerous - it can not lock
you out of your own controller.

<131> ccc	Recall which ports are blocked from executing this command
<131> p ccc	Allow execution for a single command
<131> p ccc ddd	Allow execution for a range of commands

Parameters:
- 131 is the default command name.
- P is the port to allow access by
- CCC is the first command number to allow
- DDD is the last command number in the range of commands to allow

CW Response:
P IS CCC or P IS CCC DDD

076: Recall Stop Access Conditions

This command allows you to recall the conditions that will stop access on a port. See Command 075 for descriptions of the conditions.

<076> p

Parameters:
- 076 is the default command name.
- P is the port for which to recall the stop access conditions (1..4)

077: Isolate a Port from the Rest of the System

This command breaks the audio and PTT links between the specified port and all other ports in the system until the preaccess timer (which it starts) runs out. It temporarily overrides but does not change the crosspoint connections you may have set with Commands 000 and 001. It is useful for isolating a port while you enter local control commands without the tones going down any connected links. It is usually automatically called from the preaccess macro of a port configured as a repeater. This macro is usually named '*', the local control key.

<077> p

Parameters:
- 077 is the default command name.
- P is the port for which to allow access (1..4)

049: Set Link Access Tone Frequency

This command allows the user to set the tone frequency that will be heard when the preaccess code is entered on a link. The default is a 1064Hz tone. It is not possible to send dial tone, because the RLC-4 can only send one tone frequency at a time.

<049> p xxxx

Parameters:
049 is the default command name
P is the port number to set the tone frequencies for
XXXX is the tone frequency in Hertz.

110: Configure the Autopatch

This command sets which port the autopatch interface is hooked to and allows you to choose whether and how the number is read back before it is dialed.

<110> 0 0	Disable the autopatch
<110> 1 0	Enable autopatch, no number readback
<110> 1 1	Enable autopatch, with number readback

Parameters:
- 110 is the default command name.
- This command automatically turns on timed execution and makes '#' be the force-execution digit for the autopatch port, to make entering commands from the reverse patch easier (see command 133). These changes can be reversed/modified with command 078.

111: Manual Off Hook

This command connects the port from which the command is executed to the autopatch without dialing any numbers. Touch tones from your radio can be used to dial numbers without DTMF regeneration. This is usually used only for testing, because it doesn't regenerate your DTMF digits, it doesn't allow you to block long distance numbers, and it usually causes an error message when you dial a number. The error message may be generated because the controller can't tell whether you are entering a command (such as to hang up the patch) or dialing a number, so it treats the number as a (usually invalid) command; you can just ignore the error message. Command 114 can be used to hang up the patch.

<111>

Parameters:
- 111 is the default command name.

133: Set up Reverse Patch

This command allows you to set up the reverse autopatch. You must set up the forward patch functions with Command 110 before you use this command. If you want to change how the reverse patch works, just execute this command again with the new information.

<133> 0	Disable reverse autopatch
<133> 1 xx y..y	Configure for over-air ringing
<133> 2 xx	Configure for control mode with no password
<133> 2 xx n..n	Configure for control mode with password n..n

Parameters:
- 133 is the default command name.
- There are three reverse patch "modes".
    Mode 0 disables the reverse patch. Forward patch will still work normally.

    Mode 1 is the ring over air mode
        XX - Number of rings the controller waits before ringing over the air.
        Y..Y - What ports the ringing will be routed to

    Mode 2 is the control mode
        XX - Number of rings the controller waits before answering the phone.
        N..N - Access code required when in mode 2 access

Note about Ring Detection:
This command automatically enables the keyup delay filter (see the description for the keyup delay timers in Chapter 4 for more information) for the autopatch port (port 4). This helps prevent transients on the phone line from fooling the controller into thinking the phone is ringing when it is not. If the phone line going to the controller rings in very short bursts, you may have to disable or shorten the keyup delay timer after executing this command to get the controller to answer.

Note on Mode 2:
After XX rings, the controller will answer the phone and give you about 9 seconds to enter the access code N..N; if you do not, it will hang up on you. If you enter the code N..N correctly the controller will let you enter commands by DTMF just as you would from a radio port. Since you can't unkey to tell the controller to execute the commands, you will have to either use timed execution or change your force-execution digit for the autopatch from 'D' to '*' or '#' (see command 078). Note that you will have to have to rename any commands you wish to execute from the telephone to not contain the digits 'A', 'B', 'C' or 'D', as those digits can't be entered from most telephones.

After entering the access code, you can talk out a radio port or just monitor it by executing

134: Reverse Patch Logon

You do not need to know about this command - it is for the controller's internal use when using reverse patch mode 2 (control mode), so you can quit reading now if you want.   When the controller answers the phone in mode 2, the only commands you can execute are the pre-access macros for the autopatch port, because the controller turns preaccess on when you set up the patch. When you specify the reverse patch access code with Command 133, it renames one of the pre-access macros for that port to the access code and programs that macro to call this command when executed. This command allows you to access all of the commands until the patch is hung up, resets the patch time out timer, and stops the pre-access timer, among other things. If you are accessing the reverse patch in mode 2 and the time out timer is about to expire, you can execute this command to keep the patch from timing out.

<134>

Parameters:
> - 134 is the default command name.

135: Answer Reverse Patch

This command is used to answer a reverse patch call that is ringing out over the air (Autopatch needs to be configured as mode 1 - see Command 133). It will only work when the reverse patch is ringing - it is not a substitute for the manual off-hook command. The patch is hung up the same way as for forward patch, with Command 114.

<135>

Parameters:
> - 135 is the default command name.

Notes:
- The controller will send a beep-beep (CW 'I') out both the radio and the autopatch when this command is executed successfully.
- If you try to execute this command and the reverse autopatch has not been ringing, you will get an autopatch error (See System wide errors at the front of the manual).

Chapter 20: Event Triggers

The controller does a lot of things totally under the control of the built-in firmware which you as the user can't change, such as turning on a PTT when a receiver goes active and hanging up the phone when it times out. Other things are done by calling macros (see Chapter 8), such as sending ID's and courtesy beeps. By changing how those macros are programmed, you can change what the courtesy beeps and ID's do. Event triggers give you even more flexibility. They allow you to execute any of the built in commands or any of the macros whenever certain things happen. All you have to do is use command 045 to tell the controller what command you want it to do when each event occurs. If you only want it to happen some of the time, you can just disable the event trigger with command 047. If you tell the event trigger to execute a macro, you may need to program the macro to do something (see Chapter 8). You should keep track of what command you assign each event trigger to execute, as you may need to know later. You can also recall that information with command 046.

If you want to execute more than one command from an event trigger, make the event trigger call a macro, then program the macro to execute each of the commands in turn. That way the event trigger calls only a single macro and the macro takes care of calling multiple other commands.

045: Set/Recall Event Trigger

This command allows the user to assign a macro or command call when an event occurs in order to get response or action to occur. These are useful for alarming, and interrogating events that occur.

<045> eee	Recall event trigger 'eee'
<045> eee ccc	Set event trigger 'eee' to execute command 'ccc'

Defaults:
> - All events are enabled and most are set to call command 046 (the exceptions are noted in the event trigger listing later in this chapter)

Notes:
> - When this command is used to set an event trigger, it automatically enables the event trigger.

046: Default Event Trigger Action

This command is very unusual. It should only be called from an event trigger, never directly or as part of a macro. In other words, the only use for this command is as the parameter 'ccc' in command 045. Whenever this command is executed, it looks to see which event trigger called it, and does something different for each one.   The controller uses this method to reset timers, send messages and do a lot of other things that need to work "out of the box," but which you might want to override and make do something different. To change what one of the event triggers does, use command 045 to make that event trigger call a macro rather than this command. Then program the macro to do something different than this command did for that event trigger. The things that this command will do when called from each event trigger may be noted in the event trigger listing later in this chapter.

<046>	Do the default action for the event trigger this was called from

047: Enable/Disable Event Trigger

This command can be used to enable or disable one of the event triggers. If an event trigger is disabled, it will not do anything. When it is re-enabled, it will do whatever command it was previously set to do.

<047> eee 1	Enable event trigger 'eee'
<047> eee 0	Disable event trigger 'eee'

Event Table: Default settings are shown in parenthesis.

000 - Reset Message
001 - Port 1 Initial ID   (Macro 151)
002 - Port 2 Initial ID   (Macro 152)
003 - Port 3 Initial ID   (Macro 153)
004 - Port 4 Initial ID   (Macro 154)
005 - Port 1 Pending ID   (Macro 155)
006 - Port 2 Pending ID   (Macro 156)
007 - Port 3 Pending ID   (Macro 157)
008 - Port 4 Pending ID   (Macro 158)
009 - Port 1 Courtesy Beep (Macro 159)
010 - Port 2 Courtesy Beep (Macro 160)
011 - Port 3 Courtesy Beep (Macro 161)
012 - Port 4 Courtesy Beep (Macro 162)
013 - COR Active Port 1
014 - COR Active Port 2
015 - COR Active Port 3
016 - COR Active Port 4
017 - COR Inactive Port 1
018 - COR Inactive Port 2
019 - COR Inactive Port 3
020 - COR Inactive Port 4
021 - PL Active Port 1
022 - PL Active Port 2
023 - PL Active Port 3
024 - PL Active Port 4
025 - PL Inactive Port 1
026 - PL Inactive Port 2
027 - PL Inactive Port 3
028 - PL Inactive Port 4
029 - Port Active Port 1
030 - Port Active Port 2
031 - Port Active Port 3
032 - Port Active Port 4
033 - Port Inactive Port 1
034 - Port Inactive Port 2
035 - Port Inactive Port 3
036 - Port Inactive Port 4
037 - Any Connected RX Active 1
038 - Any Connected RX Active 2
039 - Any Connected RX Active 3
040 - Any Connected RX Active 4
041 - All Connected RX Inactive 1
042 - All Connected RX Inactive 2
043 - All Connected RX Inactive 3
044 - All Connected RX Inactive 4

045 - Error Code 00
046 - Error Code 01
047 - Error Code 02
048 - Error Code 03
049 - Error Code 04
050 - Error Code 05
051 - Error Code 06
052 - Error Code 07
053 - Error Code 08
054 - Error Code 09
055 - Error Code 10
056 - Error Code 11
057 - Error Code 12
058 - Error Code 13
059 - Input 1 Low
060 - Input 2 Low
061 - Input 3 Low
062 - Input 1 High
063 - Input 2 High
064 - Input 3 High
065 - Analog 1 Low Alarm
066 - Analog 2 Low Alarm
067 - Analog 3 Low Alarm
068 - Analog 4 Low Alarm
069 - Analog 1 High Alarm
070 - Analog 2 High Alarm
071 - Analog 3 High Alarm
072 - Analog 4 High Alarm
073 - Analog 1 Alarm to Normal
074 - Analog 2 Alarm to Normal
075 - Analog 3 Alarm to Normal
076 - Analog 4 Alarm to Normal
077 - Time Out Port 1
078 - Time Out Port 2
079 - Time Out Port 3
080 - Time Out Port 4
081 - Time Out Clear Port 4
082 - Time Out Clear Port 2
083 - Time Out Clear Port 3
084 - Time Out Clear Port 4
085 - User Timer #0
086 - User Timer #1
087 - User Timer #2
088 - User Timer #3
089 - User Timer #4

090 - DTMF Cover Tone

091 - Before Patch Off Hook

092 - After Patch On Hook

093 - Reverse Patch Answered

094 - Reverse Patch Password OK

095 - Command Entered From Reverse
      Patch

096 - 30 Seconds Until Patch Timeout

097 - 20 Seconds Until Patch Timeout

098 - 10 Seconds Until Patch Timeout

099 - Patch Time Out

100 - Patch Dialing Cover Tone