

The Autopatch

Configuring the Autopatch:

Because any of the eight radio ports can be used as the autopatch port, you must tell the controller which radio port the autopatch is hooked up to. This is done with command C110. C110 also allows you to specify whether or not you want the autopatch to read back in the synthesized voice the number it is about to dial. If you select to have the number read back, you can choose whether it should read it back "politely" (so it can be interrupted by kerchunking) or "impolitely" (so it always reads back the whole number).

Autopatch Up Commands:

There are three different commands that can be used to access the autopatch. All of them connect the port that the command was entered from to the autopatch port (as specified with command C110). Because of this, none of them can be executed from the serial port or by the scheduler (how do you connect an autopatch to a scheduler?). They are:

- **Manual Off Hook:** C111. This command connects the radio port to the phone line without dialing any numbers. You can dial phone numbers without DTMF regeneration by executing this command, waiting for dial tone, and entering the number on your DTMF pad. Since the tones are not captured and regenerated but go out directly onto the phone line, there is no long distance checking, etc.
- **Normal Forward Dial:** C112. This command is the one you would usually make available to users. Three digit numbers will access autodial slots, 4 through 11 digit numbers will be checked against the dialing tables (explained later), then regenerated over the phone line. If you have specified pre-dial digits (such as a '9' to get out of a local PBX) with command C115, they will be dialed first.
- **Special Forward Dial:** C113. This command is similar to the normal forward dial but it bypasses the dialing table checks. It is the most convenient way to bypass all of the long distance checking. It will dial any predial digits that you have programmed with C115.

Using '' for the Autopatch Up Command:*

You can use the '*' digit to execute any of the above autopatch commands, even if '*' is your EOF digit. This will allow you to use the patch by simply keying up, pressing '*', then the phone number you wish to dial. See command C164 for more information.

Hanging Up:

No matter which command was used to bring up the autopatch, command C114 will hang it up. If you want to have more than one hang up command, just make several different macros call C114. You can rename command 114 to * by entering C010*114#*.

Connected Ports:

Any ports that are connected to or monitoring the port you make the autopatch call from will also be included in the autopatch call. For example, if you have connected repeaters and someone wants to make a call from one of them, you can bring the patch up for them from the other one.

Predial Digits:

Autopatches that are on a PBX often have to dial a '9' or some other combination of digits to reach the outside world. The RLC-3 has the ability to dial these digits for you. You can tell it what digits to dial and how long of delays to use before and after these "predial digits" with command C115. These digits will be dialed before every number that is dialed with the forward dial commands. You can chose whether or not they should be dialed before each autodial number. This allows you to dial numbers that do not require the predial digits by putting them in an autodial slot.

The Autodialer:

There are 1000 autodial slots that can each hold up to an eighteen digit phone number. They are numbered 000 through 999. They can be accessed by executing either of the forward dial commands with the number of the autodial slot you want to dial. They can be programmed with command C124. You can find out what number is in an autodial slot with command C125. You can select whether or not the predial digits (set with command C115) get sent before the autodial number with command C126. This is useful for those using a PBX because it allows them to have some autodial slots go to internal numbers and some to dial the predial digits to get to the outside world. Command C127 allows you to enable or disable the use of an autodial slot. This allows you to keep an autodial number from being dialed without erasing the slot and having to re-program it later.

Limiting Call Length:

The time out timer for the autopatch port limits the total length of the call. If the timer expires, it will execute the autopatch port's time out macro (see appendix D) and hang the autopatch up. If you would like a message to be spoken when this happens, put the commands to speak that message in the time out macro. If you do not want the autopatch to time out, set the timer length to 9999 with command C020. You will probably want to erase the contents of the the time out clear macro for the autopatch port with command C055.

You will be warned before the patch times out. Thirty seconds before timeout, three beeps will be sent out of the radio port and down the phone line (so both sides of the conversation know it). Two beeps are sent twenty seconds before, and one ten seconds before. The CW characters 'S', 'T', and 'E' are used for these warning beeps.

If you want to reset the patch time out timer during a call, use command C022 to reset the time out timer for the autopatch port (timer 094..101 depending on which port you are using). Using port 4 as the autopatch port as an example, the command would be: C022*097. You could make macro 500 extend the patch timer using the code *3 (or just 3) with the following commands:

```
C053*50003018*      ; send CW 'T' as a beep-beep response
C050*500038*       ; be silent for rest of macro
C050*500022097*    ; reset timer 097
C010*5003*         ; rename macro 500 to '3', can also enter '*3'
```

How the Dialing Tables Work:

The dialing tables are used to control which long distance numbers can be dialed with C112 and which cannot. They do not affect autodial numbers or numbers dialed with C113. If you attempt to dial a number with C112 that is not allowed you will get an error 13 (you can disable or change this error message by editing macro 213 - see Appendix D). By default all numbers are blocked. Before a number is dialed using C112, it must pass the following tests:

- C All digits in the phone number must be decimal digits. *, #, A, B, C, and D are not allowed; if you need to dial these digits, put them in as predial digits, use an autodial slot or use C113.
- C The phone number must be at least 5 digits long. If it is one or two digits, it will be treated as an autodial request. If you need to dial numbers less than 5 digits long, use autodial slots or C113.
- C If the number matches one of the entries in the nuisance number table, it is blocked.
- C If the number matches one of the entries in the allowed number table, it is accepted, otherwise it is blocked.

If the number passes all of the above tests and is accepted, it will be read back (if you turn number readback on with C110) and then dialed.

Both the allowed numbers table and the nuisance number table store each type of number in a separate "slot". Each slot affects only one length of number; allowing all seven digit numbers will not affect six or eight digit numbers for example. You should keep track of what you put in each slot as you program them, so that you can easily change them later.

The allowed numbers table has 500 slots, numbered 000..499. Each slot can hold one type of

number that you want to allow. For example, you might want to program slot 0 to allow seven digit numbers that begin with the prefix 482, such as 482-7515 and slot 1 to allow eleven digit numbers that begin with 1800. To do this, you could enter C119*000482* (where C119 is the name of the command that programs the allowed numbers table, 0 is the slot to store this type of number in, and 482 is the number we want to allow, ignoring the last four digits). If you instead wanted to allow all seven digit numbers, not just 482 numbers, we could enter C119*000###* instead. The # symbol is a wildcard digit that represents any decimal digit. To allow 1800 numbers (using slot 1 so we don't mess up the seven digit numbers we allowed in slot 0), we would enter C119*0011800###*.

The nuisance number table allows you to block numbers that would otherwise be allowed. It has 100 slots, numbered 000..099. You may not need to use the nuisance number table. It is usually used to block prank calls. For example, we allowed all seven digit numbers in the allow table example above. If someone was calling our fax number (482-7547) with the autopatch as a prank, we could block that number by entering C121*0004827547*. Note that the nuisance number table is independent from the allowed number table; slot 000 in one table does not interfere with slot 000 in the other table. The nuisance number table requires that you enter all of the digits of the phone number; it does not ignore the last four digits like the allowed number table does. The nuisance number table accepts wildcards. Even if we had allowed all seven digit numbers in the allow table as in the examples above, we could block seven digit numbers beginning with 554 by entering C121*1554####*.

You can check the operation of the dialing tables at any time by either trying to dial a number with the forward dial command, or just *pretending* to dial it with command C123. This command will tell you whether a number would be blocked by the dialing table or would be dialed, without actually using the autopatch. C123 will work even if you don't have an autopatch.

Command Description: C110

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.

Description	Command	Response
Config Patch	C110*X Y	

Format:

- C110 is the default command name.
- X is the radio port that the autopatch is hooked to (1..8)
Enter 9 to specify that no ports are autopatches
- Y is the readback style, described below:
 - 0 - do not read the numbers back before dialing them
 - 1 - read them back
 - 2 - read them back but stop and dial the number if the receiver is kerchunked
Must be kerchunked before, during or shortly after number readback to dial.
 - 3 - read them back but stop and do not dial if the receiver is kerchunked
Will dial if not kerchunked.

Notes:

- You can adjust messages and the length of the delays before and after the phone number is read back by editing macros 408..411, after you execute this command to set them up.
- If you change the autopatch port with this command, you will need to set up the reverse patch again with C133.

Advanced Command Description: C111 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. Command C114 can be used to hang up the patch.

Description	Command	Response
Manual O.H.	C111*	

Format:

- C111 is the default command name.

Command Description: C112

Normal Forward Dial

This is the normal autopatch up command you would make available to your users if you want an open autopatch. If the number you enter is 3 digits or less, it dials that autodial number. If it is longer, it checks it against the dialing tables described at the beginning of this autopatch section and if it passes, dials that number.. Command C114 can be used to hang up the patch.

Description	Command	Response
Autodial Slot	C112*XXX	
Dial Number	C112*Y..Y	

Format:

- C112 is the default command name.
- XXX is the autodial slot number (1..3 digits)
- Y..Y is the phone number you want to dial

Notes:

- If you want to get rid of the '*' between the command name and the phone number, look into command C080.
- The longest number that can be dialed with the command is eleven digits, because that is the longest number that can be specified in the allowed number table. If you need to dial longer numbers, use command C113.

Advanced Command Description: C113

Forward Dial with no Long Distance Checking

This is the autopatch up command you would use if you wanted to dial a number without worrying about whether or not it is allowed by the dialing tables. You would not normally make this command available to the average user, because it would allow them to dial any number, including long distance numbers.

Description	Command	Response
Autodial Slot	C113*XXX	
Dial Number	C113*Y..Y	

Format:

- C113 is the default command name.
- XXX is the autodial slot number
- Y..Y is the phone number you want to dial

Notes:

- C If you want to get rid of the '*' between the command name and the phone number, look into command C080.
- C You can call this from a macro to dial numbers too long to fit in an autodial slot. For example: C053*500113012345678901234567890* will program macro 500 to bring up the patch and dial the number 012345678901234567890.

Command Description: C114

Hang up the Autopatch

This is the command to use to hang up the autopatch, no matter which of the three autopatch up commands you used to take it off-hook.

Description	Command	Response
Hang Up	C114*	

Format:

- C114 is the default command name.

Note:

C The autopatch is also hung up whenever the controller is reset.

Advanced Command Description: C115

Set the Predial Digits and Timing

When either of the forward dial commands are used, several things must take place before the number is actually dialed:

- If number readback is turned on, speak the number.
- Take the phone line off-hook. This is the same as you picking up your phone at home.
- Since the controller can not listen to see if it gets dial tone from the phone line, it just delays for a little bit and assumes that dial tone is there. We will call this delay the "initial delay".
- If you must dial '9' or some other digits to get out of a local switchboard or PBX, those digits should be dialed here. We will call those "predial digits". You can also use these predial digits to dial special codes to turn on or off call waiting, caller ID, and other special features that your phone company may offer. They can be omitted if you are not on a PBX.
- After dialing the predial digits, you may need to delay again while the PBX hooks you up to an outside telephone line. We will call this delay the "after-predial delay". This delay can be set to zero if you are not using predial digits.
- Now we can dial the actual number.

This command lets you set the initial delay, predial digits (if any), and after-predial delay.

Description	Command	Response
Setup Predial	C115*III AAA D..D	

Format:

- C115 is the default command name.
- III is the length of the initial delay in 10mS increments (000..250)
- AAA the length of the after-predial delay in 10mS increments (000..250)
- D..D are the predial digits. They can be omitted. The maximum number of predial digits is 10. Any of the 16 DTMF digits can be used.

Defaults:

- Initial delay = 100 (1 second)
- After-predial delay = 100 (1 second)
- Predial digits = none

Advanced Command Description: C116 Recall the Predial Digits and Timing

This command allows you to recall the settings that were programmed with C115.

Description	Command	Response
Recall Predial	C116*	

Format:

- C116 is the default command name.

***Command Description: C117..C118
Not Currently Used***

Advanced Command Description: C119

Set Allowed Numbers Table Slot

This command allows you to set one of the slots in the allowed numbers table. For a description of this table and how to use it, see the explanation of the dialing tables before command C110.

Description	Command	Response
Set Allowed	C119*SSS N..N	

Format:

- C119 is the default command name.
- SSS is the slot number (000..499)
- N..N is the area code/prefix (do not include the last four digits of the phone number). The '#' digit is a wildcard that matches any digit.

Advanced Command Description: C120 Recall Allowed Numbers Table Slot

This command allows you to recall the contents of one of the slots in the allowed numbers table. For a description of this table and how to use it, see the explanation of the dialing tables before command C110.

Description	Command	Response
Recall Allowed	C120*SSS	

Format:

- C120 is the default command name.
- SSS is the slot number (000..499)

Advanced Command Description: C121 Set Nuisance Numbers Table Slot

This command allows you to set one of the slots in the nuisance number table. For a description of this table and how to use it, see the explanation of the dialing tables before command C110.

Description	Command	Response
Set Nuisance	C121*SSS N..N	

Format:

- C121 is the default command name.
- SSS is the slot number (000..099)
- N..N is the whole number to be blocked (do include the last four digits of the phone number). The '#' digit is a wildcard that matches any digit.

Advanced Command Description: C122 Recall Nuisance Numbers Table Slot

This command allows you to recall the contents of one of the slots in the nuisance number table. For a description of this table and how to use it, see the explanation of the dialing tables before command C110.

Description	Command	Response
Recall Nuisanc	C122*SSS	

Format:

- C122 is the default command name.
- SSS is the slot number (000..099)

Advanced Command Description: C123 Test Dialing Tables

This command allows you to test the dialing tables. It takes the telephone number you enter and tests it in the exact same way the normal forward dial command (C112) does, but instead of dialing the number, it just tells you whether or not the number is rejected by the dialing tables. This comes in very handy when setting up the dialing tables, because you don't have to actually dial and hang up numbers to see if they are blocked or not. This command also works from the serial port, allowing you to check the dialing table from a terminal or computer. You do not have to have an autopatch installed to use this command.

Description	Command	Response
Test Tables	C123*N..N	

Format:

- C123 is the default command name.
- N..N is the number you wish to test with the dialing tables

Command Description: C124

Set Autodial Slot

This command allows you to set one of the autodial slots. For a description of the autodial slots and how to use them, see the autopatch section before command C110.

Description	Command	Response
Set Autodial	C124*SSS N..N	

Notes:

- You will probably want to program autodial slot 911 to dial 911 or whatever your local emergency number is.
- You can clear the data out of a slot by entering C124*SSS*
- You can disable a slot without erasing it with command C127.

Format:

- C124 is the default command name.
- SSS is the slot number (000..999)
- N..N is the whole number to be dialed (up to 18 digits), not including any pre-dial digits (they must be set with C115 - you can keep them from being sent for an autodial slot with C126).

Command Description: C125 Recall Autodial Slot

This command allows you to recall the contents of one of the autodial slots.

Description	Command	Response
Recall Autodial	C125*SSS	

Format:

- C125 is the default command name.
- SSS is the slot number (000..999)

Advanced Command Description: C126 ***Set Whether to Send Predial Digits for Autodial Slot***

You can ignore this command if you are not using any predial digits. This command allows you to control whether or not the predial digits will be sent before an autodial number. The default is to send them. By telling the controller not to send them, you can dial extensions on the PBX you are on (numbers that don't need the predial digits) with an autodial slot. The initial delay and after-predial delay (see command C115) are sent in either case.

Description	Command	Response
Send Predial?	C126*SSS X	

Format:

- C126 is the default command name.
- SSS is the slot number (000..999)
- X is 1 to send the predial digits, 0 to not send them.

Advanced Command Description: C127

Enable/Disable an Autodial Slot

This command allows you to disable an autodial slot without erasing its contents so you can enable it later without having to re-enter the number.

Description	Command	Response
En/Disable Slt	C127*SSS X	

Format:

- C127 is the default command name.
- SSS is the slot number (000..999)
- X is 1 to enable the slot, 0 to disable it

Command Description: C128, C129

Set and Recall Half-Duplex Mode for a Selected Port

These commands allow you to program and recall whether the specified port will be treated as a half or full duplex port. The default is full duplex. Currently the setting is only used for the autopatch. In full-duplex mode, audio from the phone is sent regardless of whether the port that is using the patch is keyed or not. In half-duplex mode, the phone audio is muted whenever the radio port is keyed. This setting may also be used for other things later.

Description	Command	Response
Set Half-Duplex	C128* X Y	ON/OFF
Recall	C129*	All Half-Dup Ports

Parameters:

- C128 is the default command name.
- X is the requested port (1..8)
- Y is the Half-Duplex on/off setting
 - 1 ==> make the selected port half duplex
 - 0 ==> make the selected port full duplex

Default:

- half duplex

The recall command lists all of the ports that are in half-duplex mode. If the port number is not listed, it is in full-duplex mode.