7K Upgrade V2.03
from V2.02

Thank you for purchasing the latest *7K* upgrade!

Enclosed you will find:

- A replacement EPROM containing the new *7K* firmware.
- Update pages for the *7K Owner's Manual*, Version 1.16 (February 94) with the V2.02 updates already installed.

How To Proceed

If you have more than one copy of the manual, now is a good time to make a copy of the update pages. Or, call *S-COM* and order another copy of the update pages.

It is recommended that you study the update pages to become familiar with the new features. Then, update your manual following the *Manual Update Instructions.*

Turn the power off on the *7K* and replace the EPROM. Follow the instructions on page 2-1 of the manual to *Cold Reset* the controller.

Now, program the controller the same way you did for the previous version. Even with the new features, the programming commands that you used before will work fine. When you complete the upgrade, you will notice the following difference in the way the *7K* behaves:

- In *Phone Line Control Mode*, the *Monitor Repeater Receiver and Talk Out Tx1* command has changed to just *Talk Out Tx1*. The *Monitor Receiver* and *Talk Out* commands have been separated. See page 7-65 of the manual update.

Taking Advantage of the New Features

Now you can add some new programming to take advantage of the new features:

- If you would rather not copy command response messages in CW, you can program the new Command Response Messages. (See pages 4-45 and 4-46.)
- If you want to access the autopatch from receiver 2, receiver 3, or transmitter 2, read the section on Autopatch Multiple Port Access. (See page 7-66.)
- If you are concerned about security at your site, you can now disable the front panel display. (See page 5-6.)
- If you want to set the priority used to select audio from multiple receivers being routed to a transmitter, you can now set that. (See page 13-3.)

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970-663-6000 • Fax: 970-669-1585 • scomind@aol.com • http://www.rmsd.com/scom/

Of course, there is lots more in the update, but these will get you started!

Getting Help

If you have problems with the update or questions about new features, you can contact *S-COM* any of the following ways:

Tech Support Line: 303-841-4916
E-mail: wa1jhk@ix.netcom.com

or, ask your question on the *S-COM* e-mail discussion list!

We are here to help!

73,

Bob Schmid, WA9FBO
Dave Maciorowski, WA1JHK
Ted Cross, N0IAK

7K Upgrade V2.03 from V2.02

Updating your manual --

Perform the following steps to update your V1.16 manual that includes the V2.02 update:

Mark page 4-3: “See page A-48.”

Mark page 4-35: “See pages 4-45, 4-46.”

Mark page 4-38: “See pages 4-45, 4-46.”

Remove and discard pages 4-43 and 4-44.

Add new pages 4-43 through 4-46 to the end of Chapter 4.

Remove and discard pages 5-5 and 5-6.

Add new pages 5-5 and 5-6 to the end of Chapter 5.

Mark page 7-10: “See page 7-69.”

Mark page 7-45: “See page 7-65.”

Remove and discard pages 7-59 through 7-64.

Add new pages 7-59 through 7-70 to the end of Chapter 7.

Mark page 11-5: “See page 11-13.”

Add new pages 11-15 and 11-16 to the end of Chapter 11.

Remove and discard pages 13-1 through 13-6.

Add new pages 13-1 through 13-6.

Remove and discard pages 17-15 and 17-16.

Add new pages 17-15 through 17-18 to the end of Chapter 17.

Remove and discard pages 18-11 and 18-12.

Add new pages 18-11 and 18-12 to the end of Chapter 18.

Mark page A-18: “See page A-47.”

Mark page A-19: “See page A-49.”

Replace pages A-25 through A-56 with new pages A-25 through A-58.

Add the page you are reading just before Chapter 1.

Your manual has been updated.

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Run-Time Variables

Run-Time Variables (RTV) are 4-digit codes that you place into a message to be expanded at “run time”. Run time is the instant the message is actually transmitted by the controller. The message handler recognizes run-time variables because they always begin with 98.

When the message handler encounters an RTV, it forms the appropriate message and transmits it in place of the RTV code. The RTV can expand into many characters of speech. But, RTVs only count as 4 digits against your message storage limit of 50 2-digit codes. You could, for example, announce the time or date as part of an ID, autopatch termination, or other occasion. You may precede and/or follow the RTV with other messages, routing codes, and so on. RTVs may be placed in succession to form a single expression.

Message Run-Time Variables

Run-Time Variable	Meaning	Example
9810	hour & minute, 12-hr format CW	2 45 in CW
9811	AM/PM, CW	PM in CW
9812	hour & minute, 24-hr format, CW	14 45 in CW
9813	day-of-week, CW	WED in CW
9814	month, CW	1 in CW
9815	day-of-month, CW	1 in CW
9816	seconds, CW	27 in CW
9820	hour & minute, 12-hr format, male voice	two forty-five (male)
9821	AM/PM, male voice	PM (male)
9822	hour & minute, 12-hr format, female voice	two forty-five (female)
9823	AM/PM, female voice	PM (female)
9824	hour & minute, 24-hr format, male voice	14 hours, 45 minutes (male)
9825	same as 9824 without “hours” & “minutes”	fourteen forty-five (male)
9826	day-of-week, male voice	Wednesday (male)
9827	cardinal day-of-month, male voice	one (male)
9828	ordinal day-of-month, male voice	first (male)
9829	month, male voice	January (male)
9830	“good morning/good afternoon/good evening”, female voice	good afternoon (female)
9831	“morning/afternoon/evening”, male voice	afternoon (male)
9832	seconds, male voice	twenty-seven (male)
9896	Call Count, CW	105
9897	Call Count, male voice	one zero five (male)
9898	Software Version, CW	203
9899	Software Version, male voice	two point zero three(male)

A feature of the clock and calendar RTVs is that the current time and date are stored at the first RTV encountered in a message. If the time or date “rolls over” during the message transmission, it will not affect the time or date being sent.

RTV Notes

- 9820 and 9822, which are spoken 12-hour time RTVs, will say “o’clock” on the hour (xx:00). Midnight to 11:59 is AM. Note: these RTVs only speak the hour and minute. Use 9821 and 9823 to speak AM or PM.
- 9827 is used with the month outside the U.S., as in “One January.” 9828 is used with the month inside the U.S., as in “January First.”
- 9830 and 9831 switch from “afternoon” to “evening” at 6:00 PM.
- The real-time clock and calendar features leap-year correction including proper operation in the year 2000.
- 9816 and 9832, seconds in CW or speech, can be used to accurately set the

clock. (See *Chapter 8, Clock and Calendar*.)

Note: The speech run-time variables require that your controller be fitted with a speech synthesizer module.

Here are some ideas: To send the time and AM or PM in voice, enter:

```
(PW) 15 9820 9821 *
```

You would hear “two forty-five PM” or something similar.

To say “the time is ()”, enter:

```
(PW) 15 9960 0000 0500 0514 0253 9820 9821 *
```

9960 is the control character for synthesized speech. 0000 is a request to pause if the transmitter is not already on the air. You may also need an audio routing command (see page 4-3).

To say the software version, enter:

```
(PW) 15 9899 *
```

You can create similar commands to send “today is ()”, “the date is ()”, and so on. Dumping the autopatch could announce “call complete at ().” The ID could include “it is (Monday) (morning) on the W0XYZ repeater.”

Note: It is not necessary to place the control code 9900 in front of CW run-time variables or the control code 9960 in front of voiced run-time variables. The RTV automatically inserts these control codes into the message. However, you must enter control codes *after* the RTV if you have a different type of message following.

Synchronizing Messages and Commands

In the controller, the Message Handler processes messages from the Message Queue. The Command Executive processes commands and macros from the Execution Queue. These queues are processed independently but simultaneously. Messages and commands queued at the same time and expected to operate in sequence can have unexpected results. That is, unless you use the message control character to keep everything in synchronization.

Suppose you want to generate a DTMF page of "1234", then switch on logic output number 1. You might write a macro with the following commands:

```
(PW) 20 9000 (PW) 15 9950 01 02 03 04 *
(PW) 29 9000 (PW) 70 1 *
```

However, this command sequence will not have the expected results. The first command queues the DTMF page to the message queue for execution then immediately executes the command to turn on the logic output. The logic output will change before the DTMF command has completed.

To cause the second line of the macro to wait until after the first line has sent the DTMF page, you write this as two macros:

```
(PW) 20 9000 (PW) 15 9950 01 02 03 04 9999 9001 *
(PW) 20 9001 (PW) 70 1 *
```

"9999" in the macro 9000 is a *Message Control Character* that causes a macro to be executed when the Message Handler reaches that point in the message. The "9001" that follows the 9999 message control character is the name of the macro to execute. This sequence operates as expected because the DTMF page will complete before the command to turn on the logic output is executed.

Note: Macro names used with the 9999 *Message Control Character* must be 4 digits long. Add leading zeros if required.

This type of sequencing also has uses in *Autopatch* speed dial macros that dial a pager, then send a DTMF page as the message to be displayed on the dialed digital pager.

Select/Review/Play User Messages

Selects, changes, or reviews general purpose user-defined messages.

- Enter the password, followed by the 4-digit root number shown, followed by the desired message.
- Any message may have any combination of message types, including CW, beeps, page tones, speech, etc.
- The maximum size of any message is 50 bytes (50 2-digit codes).
- You must count the control character. Therefore, any message could have 46 CW characters, 23 synthesized speech words, etc.
- To delete a message, enter the password, the 4-digit root number, and the (*) (do not enter any message).

Command Form:

Command	Form
Select User Message #1	(PW) 31 70 (message) *
Select User Message #2	(PW) 31 71 (message) *
Select User Message #3	(PW) 31 72 (message) *
Select User Message #4	(PW) 31 73 (message) *
Review/Play User Message #1	(PW) 34 70 *
Review/Play User Message #2	(PW) 34 71 *
Review/Play User Message #3	(PW) 34 72 *
Review/Play User Message #4	(PW) 34 73 *

Acknowledgment: Sends OK

Errors:

Error	Meaning
? err 1	wrong number of digits entered
? err 2	illegal digit entered

Default Condition: No message.

Select/Review Command Response Messages

Selects, changes, or reviews command response messages that are sent when command responses are enabled.

- Enter the password, followed by the 4-digit root number shown, followed by the desired message.
- Any message may have any combination of message types, including CW, beeps, page tones, speech, etc.
- The maximum size of any message is 50 bytes (50 2-digit codes).
- You must count the control character. Therefore, any message could have 46 CW characters, 23 synthesized speech words, etc.
- To delete a message, enter the password, the 4-digit root number, and the (*) (do not enter any message).

Command Form:

Command	Form	Default
Select OK Command Response Message	(PW) 31 01 (message) *	OK in CW
Select Error 1 Command Response Message	(PW) 31 02 (message) *	?ERR1 in CW
Select Error 2 Command Response Message	(PW) 31 03 (message) *	?ERR2 in CW
Review OK Command Response Message	(PW) 34 01 *	none
Review Error 1 Command Response Message	(PW) 34 02 *	none
Review Error 1 Command Response Message	(PW) 34 03 *	none

Acknowledgment: Sends OK

Errors:

Error	Meaning
? err 1	wrong number of digits entered
? err 2	illegal digit entered

Default Condition: See default column of table.

Select/Review Programmable Messages

Selects, changes, or reviews programmable messages.

- Enter the password, followed by the 4-digit root number shown, followed by the desired message.
- Any message may have any combination of message types, including CW, beeps, page tones, speech, etc.
- The maximum size of any message is 50 bytes (50 2-digit codes).
- You must count the control character. Therefore, any message could have 46 CW characters, 23 synthesized speech words, etc.
- To delete a message, enter the password, the 4-digit root number, and the (*) (do not enter any message).

Command Form:

Command	Form	Default
Select Warm Reset Message	(PW) 31 00 (message) *	?RES in CW
Review Warm Reset Message	(PW) 34 00 *	none

Acknowledgment: Sends OK

Errors:

Error	Meaning
? err 1	wrong number of digits entered
? err 2	illegal digit entered

Default Condition: See default column of table.

Assign Control Operator Privilege Level to a Range of Commands

Changes the Control Operator Privilege on a range of commands.

- Enter the first and last root number of the command for which a privilege level change is desired, then enter a 0 or 1 for the privilege level.
- 0 = control command may be used by *either* the master or the control operator password.
- 1 = control command may be used *only* by the master password.

Command Form:

Command	Form	Data Digit
Assign Control Operator Privilege Level to a Range of Commands	(PW) 94 (first root number) (last root number) x*	0 = used by either password 1 = used by only master password

Acknowledgment: Sends OK

Errors:

Error	Meaning
? err 1	wrong number of digits entered
? err 2	illegal digit entered

Default Condition: All commands may be used by either password.

Example:

Assume that you want to reset all privilege level entries for use by both passwords, enter the following:

```
(PW) 94 00 99 0 *
```

Assume that you want to prevent control operators from changing passwords or a privilege level enter the following:

```
(PW) 94 92 94 1 *
```

Note: If you want to prevent a control operator from accessing a single root code use the *Assign Control Operator Privilege Level command (see page 5-4.)*

Enable/Disable Front Panel Display

Controls the Front Panel Display.

- By default the Front Panel Display is enabled.
- The Front Panel Display may be disabled to improve site security.
- The Power LED is always on.
- Enter one digit, 0 for OFF (disabled), 1 for ON (enabled).

Command Form:

Command	Form	Data Digit
Enable/Disable Front Panel Display	(PW) 63 99 x *	0 = OFF (disabled) 1 = ON (enabled)

Acknowledgment: Sends OK

Errors:

Error	Meaning
? err 1	wrong number of digits entered
? err 2	illegal digit entered

Default Condition: Front Panel Display is enabled.

Select (Review) Autopatch Error Messages

One of these messages is sent over the repeater transmitter when a telephone number cannot be dialed.

- The Off Message is sent when the Autopatch is off.
- The Busy Message is sent when the Busy Logic Input is active.
- The Reject Message is sent when the phone number entered by the user or programmed in a macro matches an entry in the Reject Table.
- The Error Message is sent when a phone number entered by the user or programmed in a macro does not match one of the enabled Call Types or Accept Table entries.
- The No-Redial-Number Message is sent when a redial command has been entered and there is no phone number in the redial buffer.
- If an autopatch message is not programmed, the default CW message will be sent only when Command Responses are enabled.

Command Form:

Command	Form	Default
Select Autopatch Off Message	(PW) 31 44 (message) *	OFF in CW
Select Autopatch Busy Message	(PW) 31 42 (message) *	BZ in CW
Select Autopatch Reject Message	(PW) 31 46 (message) *	?REJ in CW
Select Autopatch Error Message	(PW) 31 45 (message) *	?ERR in CW
Select Autopatch No-Redial-Number Message	(PW) 31 47 (message) *	CLR in CW
Review Autopatch Off Message	(PW) 34 44 *	none
Review Autopatch Busy Message	(PW) 34 42 *	none
Review Autopatch Reject Message	(PW) 34 46 *	none
Review Autopatch Error Message	(PW) 34 45 *	none
Review Autopatch No-Redial-Number Message	(PW) 34 47 *	none

Acknowledgment: Sends OK

Errors:

Error	Meaning
? err 1	wrong number of digits entered
? err 2	illegal digit entered

Default Condition: The default CW message is sent only if Command

Responses are enabled.

Select (Review) Autopatch Dump Message

This message is sent over the repeater transmitter when an autopatch or reverse patch is terminated.

- Lets the user know that an autopatch or reverse patch was successfully terminated.
- This message is not sent when *Phone Line Control Mode* call is terminated.

Command Form:

Command	Form	Default
Select Autopatch Dump Message	(PW) 31 43 (message) *	none
Review Autopatch Dump Message	(PW) 34 43 *	none

Acknowledgment: Sends OK

Errors:

Error	Meaning
? err 1	wrong number of digits entered
? err 2	illegal digit entered

Default Condition: No message.

Example:

To program the dump message to say “Call complete at (time) on (day) (date)”, e.g. “Call complete at 12:23 PM on Monday July 21st”, enter the following:

```
(PW) 31 43 9960 0067 0088 0039 9820
                9821 0358 9826 9829 9828 *
```

Select Pause (“B”) Digit Time

Programs the amount the Pause Digit in a phone number delays.

- When the user dials a telephone number or a macro is programmed to dial a telephone number, a pause digit (the DTMF character “B”) provides a programmable delay (see page 7-3 for use).
- Enter 1, 2, or 3 digits representing the desired time of the pause in tenths of seconds.
- The range of the time is 0.1 second to 10.0 seconds.

Command Form:

Command	Form	Data Digit
Select Pause (“B”) Digit Time	(PW) 49 96 xxx *	(001-100 in mmt – minutes and tenths) = (00.1-10.0) seconds

Acknowledgment: Sends OK

Errors:

Error	Meaning
? err 1	wrong number of digits entered
? err 2	illegal digit entered

Default Condition: 5 seconds.

Example:

To set the pause digit to 2 seconds, enter the following:

```
(PW) 49 96 20 *
```

Note: See Page 7-3, for instructions on using the pause digit when dialing.

Landline Hookflash

Causes a Hookflash to occur on the phone line.

- A hookflash (also called a flash) is an indication to a phone system to perform an action, for example to pick up another call that is waiting or to conference another party during an outgoing call.
- Enter this command to cause a hookflash.
- This command has no effect when no autopatch or reverse patch has been made.

Command Form:

Command	Form
Landline Hookflash	(PW) 83 1 *

Acknowledgment: Sends OK

Errors:

Error	Meaning
? err 1	wrong number of digits entered
? err 2	illegal digit entered

Default Condition: None

Example:

Cause a hookflash on the phone line during an autopatch:

```
(PW) 83 1 *
```

Note: This command will have either no effect or will disconnect your call if your phone line is not equipped to respond to a hookflash.

Go Off-Hook

Causes the phone line to go off-hook.

- Enter this command to cause the phone line to go off-hook without dialing a phone number. This is like picking up a phone and getting dial tone.
- A second version of the command ignores the *Busy Logic Input*. This is like picking up an extension telephone while the telephone line is already in use.
- This command has no effect if an autopatch or reverse patch is in progress.

Command Form:

Command	Form
Go Off-Hook	(PW) 83 2 *
Go Off-Hook, Ignore Busy Logic Input	(PW) 83 3 *

Acknowledgment: Sends OK

Errors:

Error	Meaning
? err 1	wrong number of digits entered
? err 2	illegal digit entered

Default Condition: None

Example:

To go off-hook on the patch, enter the following:

```
(PW) 83 2 *
```

To go off-hook on the patch even if the *Busy Logic Input* signals that the line is busy, enter the following:

```
(PW) 83 3 *
```

Select Dialing Prefix

Defines a dialing sequence that will precede any outgoing call.

- A dialing prefix is automatically dialed by the autopatch when an outgoing call is made.
- The prefix can contain up to 16 codes that represent DTMF/rotary digits, pauses, or commands to switch from DTMF to rotary dialing and back.
- The prefix is not dialed when the Go Off-Hook command is entered.
- Delete the dialing prefix by entering the command with no prefix codes.

Command Form:

Command	Form	Data Digits
Select Dialing Prefix	(PW) 83 10 (prefix) *	see table below
Delete Dialing Prefix	(PW) 83 10 *	none

Acknowledgment: Sends OK

Code	Function	Code	Function
00	DTMF or rotary digit 0	11	DTMF digit B
01	DTMF or rotary digit 1	12	DTMF digit C
02	DTMF or rotary digit 2	13	DTMF digit D
03	DTMF or rotary digit 3	14	DTMF digit *
04	DTMF or rotary digit 4	15	DTMF digit #
05	DTMF or rotary digit 5	16	1-second pause
06	DTMF or rotary digit 6	17	2-second pause
07	DTMF or rotary digit 7	18	5-second pause
08	DTMF or rotary digit 8	19	10-second pause
09	DTMF or rotary digit 9	20	dial the following digits in rotary mode
10	DTMF digit A	21	dial the following digits in DTMF mode

Errors:

Error	Meaning
? err 1	wrong number of digits entered
? err 2	illegal digit entered

Default Condition: No dialing prefix is defined.

Example 1:

If you have your autopatch plugged into an extension on a PBX and need to dial 9 to get an outside line, enter the following:

```
(PW) 83 10 09 16 *       ; dial 9, 1-second pause
```

Example 2:

If you want outgoing calls from your autopatch to block your phone number from a Caller ID display unit, enter the following:

```
(PW) 83 10 14 06 07 16 * ; dial *67, 1-second pause
```

Example 3:

If you want to set up your autopatch to dial an outside line on a PBX by default, but still want to be able to dial other extensions on the PBX, you can set the default prefix in your *Autopatch Dump-Triggered Macro* (see page 7-10) by entering:

```
(PW) 83 10 09 16 *       ; dial 9, 1-second pause
```

This way your default *Dialing Prefix* is always reset after every call.

Then, create a macro that you dial before making a call to an extension on the PBX. Create a macro by entering:

```
(PW) 20 0001 (PW) 83 10 *  ; clear prefix
```

To make a call to an extension, enter:

```
1 * (APW) (extension number) *
```

For this example, assume your *Autopatch Password* is 10 and you are dialing an extension of 123, then you would enter:

```
1 * 10 123 *
```

When you dump the call, the *Autopatch Dump-Triggered Macro* will reset the *Dialing Prefix* to the default.

Enable/Disable ID Messages During Autopatch

Allows the Identifier to operate during an autopatch and reverse patch.

- Enter this command to allow the identifier to operate during an autopatch.
- Enter one digit, 0 for OFF (disabled), 1 for ON (enabled).
- By default, the identifier is disabled during an autopatch.
- This command has no effect if executed during an autopatch. This command will take effect on the next autopatch.

Command Form:

Command	Form	Data Digits
Enable/Disable ID During Autopatch	(PW) 63 09 x *	0 = OFF (disabled) 1 = ON (enabled)

Acknowledgment: Sends OK

Errors:

Error	Meaning
? err 1	wrong number of digits entered
? err 2	illegal digit entered

Default Condition: Disabled.

Example:

To enable the identifier during a patch, enter the following:

```
(PW) 63 09 1 *
```

To disable the identifier during a patch, enter the following:

```
(PW) 63 09 0 *
```

Require Dump Before Next Call

Requires that a phone call in progress be dumped before another call can be made.

- Enter this command to prevent another call from being made before the current call is dumped by the user or timeout timer.
- By default, another call can be made while one is in progress. The current call will automatically be dumped.
- Enter one digit, 0 for OFF (disabled), 1 for ON (enabled).
- This inhibits a user from dumping the patch with any command except the patch dump command.

Command Form:

Command	Form	Data Digits
Require Dump Before Next Call	(PW) 63 10 x *	0 = OFF (disabled) 1 = ON (enabled)

Acknowledgment: Sends OK

Errors:

Error	Meaning
? err 1	wrong number of digits entered
? err 2	illegal digit entered

Default Condition: Disabled, dump is not require before a new call.

Example:

To require that a current call is dumped before another call is made, enter the following:

```
(PW) 63 10 1 *
```

To allow another call to be made while a call is in progress, enter the following:

```
(PW) 63 10 0 *
```

Select Autopatch Call Types

Selects the types of calls permitted by the autopatch.

- Entering this command will dump any autopatch call in progress.
- If the call type being selected is different from the one currently selected, the autopatch redialer memory is cleared.
- Enter up to 8 digits from the *Autopatch Call Types Table* below.
- Entering no digits turns off the autopatch.
- Entering any digit from 0-8 will permit accepted numbers.

Command Form:

Command	Form	Data Digits
Select Autopatch Call Types	(PW) 60 x *	(0-8) Autopatch Call Types Table below

Data Digit	Autopatch Call Types	Explanation
none	no calls permitted	autopatch OFF (disabled)
0	accepted numbers only	accepted numbers only (see page 7-28)
1	0	operator
2	xxx-xxxx	7-digit local call
3	0-xxx-xxxx	7-digit operator-assisted/credit card call
4	1-xxx-xxxx	7-digit long distance call
5	0-xxx-xxx-xxxx	10-digit operator-assisted/credit card call
6	1-xxx-xxx-xxxx	10-digit long distance call
7	1-800-xxx-xxxx 1-888-xxx-xxxx	toll free call
8	xxx-xxx-xxxx	10-digit local call

Acknowledgment: Sends OK

Errors:

Error	Meaning
? err 1	wrong number of digits entered
? err 2	illegal digit entered

Default Condition: Autopatch is OFF (disabled), no calls permitted.

Examples:

To turn the autopatch OFF (disabled), enter the following:

```
(PW) 60 *
```

To permit only accepted numbers, operator calls, and 7-digit local calls, enter the following:

```
(PW) 60 0 1 2 *
```

In the above example, the 0 would not have to be entered, since the 1 or 2 already permits accepted numbers. To permit all 9 types of calls, enter the following:

```
(PW) 60 0 1 2 3 4 5 6 7 8 *
```

Select Control Mode Dump-Triggered Macro

Assigns a macro to be executed upon dumping the patch in Phone Line Control Mode.

- Enter the 4-digit macro name using leading zeroes if the macro name is less than 4 digits.
- To delete the assignment, enter the command with no macro name.

Command Form:

Command	Form
Select Control Mode Dump-Triggered Macro	(PW) 26 81 (macro name) *

Acknowledgment: Sends OK

Errors:

Error	Meaning
? err 1	wrong number of digits entered
? err 2	illegal digit entered

Default Condition: No macro assigned.

Note: The *Phone Line Control Mode Dump-Triggered Macro* will be executed if the patch "times out" while in *Phone Line Control Mode*.

Example:

This command makes the patch much more flexible. The dump macro can be used to change messages, logic outputs, or to send a message.

To assign macro 9001 to execute when the patch is dumped from *Phone Line Control Mode*, enter the following:

```
(PW) 26 81 9001 *
```

Select Reverse Patch Ring-Triggered Macro

Assigns a macro to be executed at the end of each ring on the phone line.

- This macro is repeated at each ring by the reverse patch program.
- Enter the 4-digit macro name using leading zeroes if the macro name is less than 4 digits.
- To delete the assignment, enter the command with no macro name.

Command Form:

Command	Form
Select Ring-Triggered Macro	(PW) 26 80 (macro name) *

Acknowledgment: Sends OK

Errors:

Error	Meaning
? err 1	wrong number of digits entered
? err 2	illegal digit entered

Default Condition: No macro assigned.

Example:

To assign macro 9001 to execute at each ring, enter the following:

```
(PW) 26 80 9001 *
```

Select Receiver-to-Autopatch-Triggered Macros

Allows the programmer to execute macros based on receiver-to-autopatch activity.

- Macros can be executed based on receiver-to-autopatch activity.
- Enter the password, the 4-digit root number, and the 4-digit name of the macro you wish to have executed at the transition, and the (*).
- If the macro name has fewer than 4 digits, enter leading zeros.
- If you wish to prevent a macro from being executed that was previously assigned, enter just the password, the 4-digit root number, and the (*).

Command Form:

Command	Form
Assign Macro to Any-Receiver-Active to Autopatch	(PW) 26 06 (macro name) *
Assign Macro to All-Receivers-Inactive to Autopatch	(PW) 26 07 (macro name) *

Acknowledgment: Sends OK

Errors:

Error	Meaning
? err 1	wrong number of digits entered
? err 2	illegal digit entered

Default Condition: No macros assigned.

Monitor/Talk Out Via Phone

Allows the control operator to monitor or join the repeater conversation.

- These features are accessible from the phone line when in *Phone Line Control Mode*.
- Multiple receivers can be selected simultaneously. Audio will be routed by priority. Select the priority using the *Select Audio Routing Priority* command described on page 13-3.
- Both transmitters can be selected simultaneously. Audio will be routed to both transmitters.
- Enter one digit, 0 for OFF (disabled), 1 for ON (enabled).

Command Form:

Command	Form	Data Digit
Monitor Receiver #1 (Rx1)	(PW) 63 23 x *	0 = OFF (disabled) 1 = ON (enabled)
Monitor Receiver #2 (Rx2)	(PW) 63 24 x *	0 = OFF (disabled) 1 = ON (enabled)
Monitor Receiver #3 (Rx3)	(PW) 63 25 x *	0 = OFF (disabled) 1 = ON (enabled)
Talk Out Transmitter #1 (Tx1)	(PW) 63 26 x *	0 = OFF (disabled) 1 = ON (enabled)
Talk Out Transmitter #2 (Tx2)	(PW) 63 27 x *	0 = OFF (disabled) 1 = ON (enabled)

Acknowledgment: Sends OK

Errors:

Error	Meaning
? err 1	wrong number of digits entered
? err 2	illegal digit entered

Default Condition: All paths are disabled.

Examples:
The telephone caller (control operator) retains the DTMF decoder when monitoring or talking out. The *Select Phone Line Off-Hook Timer* command controls the length of the session (see page 7-44). You may monitor one or more

receivers then enable and disable talk out on one or both transmitters during a conversation on the repeater.

Multiple Port Access

The Autopatch can be configured for access by multiple controller ports. These ports can be linked or operating separately. Because of the highly flexible nature of the *S-COM* command set, a number of commands must be entered to configure the Autopatch for access by multiple ports. If dynamic reconfiguration is required, several macros must be created that properly reconfigure the autopatch as paths are changed.

The default configuration of the Autopatch is the same as it was in firmware versions before V2.03:

- Autopatch commands can be entered from any port.
- Autopatch command response messages, eg. Access, Dump, Busy, Error, go only to transmitter #1.
- Audio to the phone line comes only from receiver #1.
- Audio from the phone line goes only to transmitter #1.

If this is your intended configuration, you don't need to make any of the configuration changes described in this section. Proceed to configure access for multiple ports.

In order to properly accept commands from multiple receivers and to route autopatch audio and response messages to both transmitters, several new commands have been defined:

- Additional link paths have been defined for all receivers and both transmitters. See the *Enable/Disable Path* command on page 13-2.
- Autopatch response messages, eg. Access, Dump, Busy, Error, are now routable to either or both transmitters. See *Select Autopatch Command Response Message Routing* on page 7-70.
- Autopatch access-triggered macros are now specific to each receiver. The original access-triggered macro is executed when a receiver-specific macro has not been defined. See *Select Autopatch Access-Triggered Macro* on page 7-69.

Autopatch Audio Routing

By default, the path from receiver #1 to the autopatch and the path from the autopatch to transmitter #1 are enabled. To change the audio paths, use the *Enable/Disable Path* command (see page 13-2).

For example, to allow audio from receivers #1 and #2 to be heard on the phone line, enable paths 8 and 9 by entering the following commands:

```
(PW)63 87 1 *  ; Rx1 to AP Enabled
(PW)63 88 1 *  ; Rx2 to AP Enabled
```

To allow phone line audio to be heard on transmitters #1 and #2, enable paths 10 and 11 by entering the following commands:

```
(PW)63 90 1 *  ; AP to Tx1 Enabled
(PW)63 91 1 *  ; AP to Tx2 Enabled
```

To allow audio from only receiver #2 to be heard on the phone line, disable path 8 and enable path 9 by entering the following commands:

```
(PW)63 87 0 *  ; Rx1 to AP Disabled
(PW)63 88 1 *  ; Rx2 to AP Enabled
```

To allow phone line audio to be heard only on transmitter #2, disable path 10 and enable path 11 by entering the following commands:

```
(PW)63 90 0 *  ; AP to Tx1 Disabled
(PW)63 91 1 *  ; AP to Tx2 Enabled
```

If your configuration never changes, you may enter the commands once to set up the routing that you require. If your configuration will change, you should create macros to enable and disable the appropriate paths (see examples later in this section).

Autopatch Command Response Message Routing

By default, when the autopatch is accessed, the Autopatch Dialing Message (see page 7-6) is routed to transmitter #1. When the autopatch is dumped, the Autopatch Dump Message (see page 7-52) is routed to transmitter #1. In a system that is configured to operate ports Rx1/Tx1 and Rx2/Tx2 separately, the autopatch message should go back to the port that originated the command. Otherwise, the users on the other port could become confused by an autopatch that appears to come up by itself. If ports Rx1/Tx1 and Rx2/Tx2 are linked, the autopatch messages should go out both ports. The *Select Autopatch Command Response Message Routing* command (see page 7-70) selects the routing of these messages.

For example, to route command responses to both transmitters, enter the following commands:

```
MPW 91 00 12 * ; Rx1 AP Resp Msgs to Tx1 and Tx2
MPW 91 01 12 * ; Rx2 AP Resp Msgs to Tx1 and Tx2
```

To route receiver #1 command responses to transmitter #1 and receiver #2 command responses to transmitter #2, enter the following commands:

```
MPW 91 00 1 * ; Rx1 AP Resp Msgs to Tx1
MPW 91 01 2 * ; Rx2 AP Resp Msgs to Tx2
```

Receiver-Specific Autopatch Access

In order to be able to set up the audio routing properly, receiver-specific access-triggered macros have been defined (see page 7-69). These macros are executed when the autopatch is accessed from a specific receiver. If a receiver-specific access-triggered macro is not defined, the original access-triggered macro, now the default, is executed (see page 7-10).

When the Rx1/Tx1 and Rx2/Tx2 ports are linked together and you don't intend to have the users be able to link and delink the ports, you can just configure the paths as defined in the section above.

When the ports are not linked, you need to define separate macros for receiver #1 and receiver #2. These macros will configure the audio routing for autopatch access from each port. To setup the routing for receiver #1, enter the following commands:

```
MPW 20 9000 MPW 63 87 1 *  ; Rx1 to AP Enabled
MPW 29 9000 MPW 63 90 1 *  ; AP to Tx1 Enabled
MPW 29 9000 MPW 63 88 0 *  ; Rx2 to AP Disabled
MPW 29 9000 MPW 63 91 0 *  ; AP to Tx2 Disabled
MPW 26 75 9000 *           ; Assign Rx1 Macro
```

To setup the routing for receiver #2, enter the following commands:

```
MPW 20 9001 MPW 63 88 1 *  ; Rx2 to AP Enabled
MPW 29 9001 MPW 63 91 1 *  ; AP to Tx2 Enabled
MPW 29 9001 MPW 63 87 0 *  ; Rx1 to AP Disabled
MPW 29 9001 MPW 63 90 0 *  ; AP to Tx1 Disabled
MPW 26 76 9001 *           ; Assign Rx2 Macro
```

Preventing Multiple Accesses

When Rx1/Tx1 and Rx2/Tx2 are not linked, it is important to prevent an autopatch in progress on one port from being interrupted by an access on the other port. The *Require Dump Before Next Call* command configures this option (see page 7-59). To prevent this access, enter the following command:

```
MPW 63 10 1 * ;Require Dump Before Next Call
```

Select Autopatch Receiver-Specific Access-Triggered Macros

Assigns macros to be executed upon accessing the autopatch from a specific receiver.

- Each receiver can be assigned its own access-triggered macro.
- If a macro is not assigned for a specific receiver, the default access-triggered macro is executed (see page 7-10).
- Enter the password, the 4-digit root number, and the 4-digit name of the macro you wish to have executed at the transition, and the (*).
- If the macro name has fewer than 4 digits, enter leading zeros.
- If you wish to prevent a macro from being executed that was previously assigned, enter just the password, the 4-digit root number, and the (*).

Command Form:

Command	Form
Assign Rx1 Autopatch Access-Triggered Macro	(PW) 26 75 (macro name) *
Assign Rx2 Autopatch Access-Triggered Macro	(PW) 26 76 (macro name) *
Assign Rx3 Autopatch Access-Triggered Macro	(PW) 26 77 (macro name) *

Acknowledgment: Sends OK

Errors:

Error	Meaning
? err 1	wrong number of digits entered
? err 2	illegal digit entered

Default Condition: No macros assigned.

Select Autopatch Command Response Message Routing

Allows programmer to specify where to route autopatch command response messages by receiver.

- Each receiver can be assigned its command response message routing when accessing the autopatch.
- This command affects the Dialing, Dump, Off, Busy, Reject, Error, and No-Redial-Number messages. (See pages 7-6, 7-51, and 7-52.)
- Enter the password, the 4-digit root number, and 1 or 2 digits representing the transmitters to play command responses messages, and the (*).

Command Form:

Command	Form	Data Digit
Select Rx1 Autopatch Command Response Message Routing	(PW) 91 00 x x *	1 = Tx1 2 = Tx2
Select Rx2 Autopatch Command Response Message Routing	(PW) 91 01 x x *	1 = Tx1 2 = Tx2
Select Rx3 Autopatch Command Response Message Routing	(PW) 91 02 x x *	1 = Tx1 2 = Tx2

Acknowledgment: Sends OK

Errors:

Error	Meaning
? err 1	wrong number of digits entered
? err 2	illegal digit entered

Default Condition: No macros assigned.

Select DTMF Decoder Access Mode

Selects one of six possible DTMF Decoder Access Modes for each receiver.

- Enter one digit, 0 through 5, from the table below.

Command Form:

Command	Form	Data Digit
Select Rx1-to-DTMF Decoder Access Mode	(PW) 57 06 x *	DTMF Decoder Access Mode Table (below)
Select Rx2-to-DTMF Decoder Access Mode	(PW) 57 07 x *	DTMF Decoder Access Mode Table (below)
Select Rx3-to-DTMF Decoder Access Mode	(PW) 57 08 x *	DTMF Decoder Access Mode Table (below)

Mode	DTMF Access	Explanation
0	No Access	Activity on the COR and PL inputs is ignored.
1	Carrier Access	Activity on the COR input will allow access to the DTMF decoder. Activity on the PL input is ignored.
2	PL Access	Activity on the PL input will allow access to the DTMF decoder. Activity on the COR input is ignored.
3	And-PL Access	Activity on both the COR and PL inputs simultaneously will allow access to the DTMF decoder.
4	Or-PL Access	Activity on either the COR or PL inputs will allow access to the DTMF decoder.
5	Anti-PL Access	Activity on the COR input simultaneously with no activity on the PL input will allow access to the DTMF decoder.

Acknowledgment: Sends OK

Errors:

Error	Meaning
? err 1	wrong number of digits entered
? err 2	illegal digit entered

Default Condition: DTMF Decoder Access is Mode 1 (Carrier Access) on all receivers.

Note: These commands only affect the DTMF Decoder access mode. They may be different from receiver access modes, if desired.

Warning: If you set the DTMF Decoder Access Mode on all receivers to Mode 0 (No Access) you will only be able to control the controller via the phone line!

Example:

To prevent DTMF commands from being decoded from Receiver 2, enter the following command to change the mode to Mode 0 (No Access):

```
(PW) 57 07 0 *
```

Assume that the DTMF decoder for Receiver 1 is in Mode 1 (Carrier Access), and that Mode 2 (PL Access) is desired. Enter the following command to change the mode on Receiver 1:

```
(PW) 57 06 2 *
```

A better mode for many repeater installations is Mode 3 (And-PL Access). This mode has better rejection of adjacent-channel interference than Mode 2 (PL Access), since noise falsing from unsquelched audio is eliminated. Enter the following command to change the mode on Receiver 1:

```
(PW) 57 06 3 *
```

Mode 4 (Or-PL Access) allows both Carrier Access and PL Access operation. Since PL is more easily detected, PL users will find increased range. Carrier Access users are unaffected. The squelch may be tightened to suppress band opening problems.

Mode 5 (Anti-PL) is used when the repeater is on the same channel with a PL-accessed repeater. Users of the second system are kept out of the Anti-PL system.

Select DTMF Digit-Decoded Macro

Assigns a macro to be triggered when a DTMF digit is decoded.

- Can be used to implement a DTMF cover tone.
- Enter the 4-digit macro name desired. Use leading zeros if needed.
- To delete a macro, enter the command with no macro name.

Command Form:

Command	Form
Select DTMF Digit-Decoded Macro	(PW) 26 49 (macro name) *

Acknowledgment: Sends OK

Errors:

Error	Meaning
? err 1	wrong number of digits entered
? err 2	illegal digit entered

Default Condition: None assigned.

Chapter 13

Links

The 7K controller supports a total of 3 receivers, 2 transmitters, and an autopatch. Any receiver may feed any transmitter or the autopatch by turning on or off the 11 possible paths. Paths are defined in the *Enable/Disable Path* command on page 13-2. The priority of the audio routed from each receiver to each transmitter or the autopatch can be selected (*see page 13-3*). The Access Mode of each receiver enabled to each transmitter can be selected (*see page 13-4*).

Enable/Disable Path

Enables or disables the various Paths 1 through 11.

- Path 1 connects Receiver 1 to Transmitter 1.
- Path 2 connects Receiver 2 to Transmitter 1.
- Path 3 connects Receiver 3 to Transmitter 1.
- Path 4 connects Receiver 1 to Transmitter 2.
- Path 5 connects Receiver 2 to Transmitter 2.
- Path 6 connects Receiver 3 to Transmitter 2.
- Path 7 connects Receiver 1 to Autopatch/Reverse Patch.
- Path 8 connects Receiver 2 to Autopatch/Reverse Patch.
- Path 9 connects Receiver 3 to Autopatch/Reverse Patch.
- Path 10 connects Autopatch/Reverse Patch to Transmitter 1.
- Path 11 connects Autopatch/Reverse Patch to Transmitter 2.
- Paths enabled during *Phone Line Control Mode* use the *Monitor/Talk Out Via Phone* command described on page 7-45.

Command Form:

Command	Form	Default
Enable/Disable Path 1 (Rx1 to Tx1)	(PW) 63 81 x *	ON (enabled)
Enable/Disable Path 2 (Rx2 to Tx1)	(PW) 63 82 x *	ON (enabled)
Enable/Disable Path 3 (Rx3 to Tx1)	(PW) 63 83 x *	ON (enabled)
Enable/Disable Path 4 (Rx1 to Tx2)	(PW) 63 84 x *	ON (enabled)
Enable/Disable Path 5 (Rx2 to Tx2)	(PW) 63 85 x *	ON (enabled)
Enable/Disable Path 6 (Rx3 to Tx2)	(PW) 63 86 x *	ON (enabled)
Enable/Disable Path 7 (Rx1 to AP)	(PW) 63 87 x *	ON (enabled)
Enable/Disable Path 8 (Rx2 to AP)	(PW) 63 88 x *	OFF (disabled)
Enable/Disable Path 9 (Rx3 to AP)	(PW) 63 89 x *	OFF (disabled)
Enable/Disable Path 10 (AP to Tx1)	(PW) 63 90 x *	ON (enabled)
Enable/Disable Path 11 (AP to Tx2)	(PW) 63 91 x *	OFF (disabled)

Data Digit:

Digit	Meaning
0	OFF (disabled)
1	ON (enabled)

Acknowledgment: Sends OK

Errors:

Error	Meaning
? err 1	wrong number of digits entered

? err 2	illegal digit entered

Select Audio Routing Priority

Selects the priority of audio routed to the transmitters or phone line.

- For routing to transmitters, audio is only routed when the receiver-to-transmitter path is enabled (*see previous page).*
- In the table, below, *AP* is the Autopatch/Reverse Patch. Audio is only routed when the receiver-to-autopatch path is enabled (*see previous page*) and an autopatch is in progress.
- In the table, below, *LL* is the landline operating in *Phone Line Control Mode*. Audio is only routed when the receiver-to-landline monitor path is enabled (*see page 7-45*) and phone line control mode is in progress.
- Enter the command to select the audio routing priority to modify; replace each 'x' with one digit, 1 through 3, representing receivers 1 through 3, in the order of priority from highest to lowest. All 3 receivers must be specified.

Command Form:

Command	Form	Data Digit
Select Rx-to-Tx1 Audio Routing Priority	(PW) 90 00 x x x *	1 = Rx1, 2 = Rx2, 3 = Rx3
Select Rx-to-Tx2 Audio Routing Priority	(PW) 90 01 x x x *	1 = Rx1, 2 = Rx2, 3 = Rx3
Select Rx-to-AP Audio Routing Priority	(PW) 90 02 x x x *	1 = Rx1, 2 = Rx2, 3 = Rx3
Select Rx-to-LL Audio Routing Priority	(PW) 90 03 x x x *	1 = Rx1, 2 = Rx2, 3 = Rx3

Acknowledgment: Sends OK

Errors:

Error	Meaning
? err 1	wrong number of digits entered
? err 2	illegal digit entered

Default Condition: Audio Routing Priority is Receiver 1, Receiver 2, then Receiver 3.

Example:

To specify a priority of Receiver 2, Receiver 1, then Receiver 3 to Transmitter 1, enter:

```
(PW) 90 00 2 1 3 *
```

Select Path Access Mode

Selects one of 7 possible Access Modes for each receiver-to-transmitter path.

- Enter the command to select the path to modify; replace the 'x' with one digit, 0 through 6, from Patch Access Mode table below.

Command Form:

Command	Form	Data Digit
Select Rx1-to-Tx1 Access Mode	(PW) 57 00 x *	Path Access Mode Table (below)
Select Rx2-to-Tx1 Access Mode	(PW) 57 01 x *	Path Access Mode Table (below)
Select Rx3-to-Tx1 Access Mode	(PW) 57 02 x *	Path Access Mode Table (below)
Select Rx1-to-Tx2 Access Mode	(PW) 57 03 x *	Path Access Mode Table (below)
Select Rx2-to-Tx2 Access Mode	(PW) 57 04 x *	Path Access Mode Table (below)
Select Rx3-to-Tx2 Access Mode	(PW) 57 05 x *	Path Access Mode Table (below)

Path Access Modes:

Mode	Access	Explanation
0	No Access	Activity on the COR and PL inputs is ignored.
1	Carrier Access (COR)	Activity on the COR input will enable the path. Activity on the PL input is ignored.
2	PL Access	Activity on the PL input will enable the path. Activity on the COR input is ignored.
3	COR-And-PL Access	Activity on both the COR and PL inputs simultaneously will enable the path.
4	COR-Or-PL Access	Activity on either the COR or PL inputs will enable the path.
5	COR–And-Anti-PL Access	Activity on the COR input simultaneously with no activity on the PL input will enable the path.
6	Always Access	Activity on the COR and PL inputs is ignored. The path is always enabled.

Acknowledgment: Sends OK

Errors:

Error	Meaning

? err 1	wrong number of digits entered
? err 2	illegal digit entered

Default Condition: Path Access is Mode 1 (Carrier Access) on all receivers to all transmitters.

Note: These commands only affect the path access modes. They may be different from DTMF Decoder access modes, if desired.

Examples:

To prevent audio from Receiver 2 from being routed to Transmitter 1, enter the following command to change the mode to Mode 0 (No Access):

```
(PW) 57 01 0 *
```

Assume that the path for Receiver 1 to Transmitter 1 is in Mode 1 (Carrier Access), and that Mode 2 (PL Access) is desired. Enter the following command to change the mode:

```
(PW) 57 00 2 *
```

A better mode for many repeater installations is Mode 3 (And-PL Access). This mode has better rejection of adjacent-channel interference than Mode 2 (PL Access), since noise falsing from unsquelched audio is eliminated. Enter the following command to change the mode on the path from Receiver 1 to Transmitter 1 to Mode 3 (And-PL Access):

```
(PW) 57 00 3 *
```

Mode 4 (Or-PL Access) allows either Carrier Access or PL Access operation. Since PL is more easily detected, PL users will find increased range. Carrier Access users are unaffected. The squelch may be tightened to suppress band-opening problems.

Mode 5 (Anti-PL) is used when the repeater is on the same channel with a PL-accessed repeater. Users of the second system are kept out of the Anti-PL system.

Mode 6 (Always Access) can be used to troubleshoot a receiver that may be generating a bad COR signal or to enable an audio source that does not generate a COR. To enable the path from Receiver 3 to Transmitter 1 without the presence of a COR or PL signal, enter the following:

```
(PW) 57 02 6 *
```

To disable this path, enter the following:

```
(PW) 57 02 0 *
```

Select Transmitter PTT-Triggered Macros

Allows the programmer to execute macros based on transmitter keying.

- Each transmitter has its own *PTT Inactive-to-Active Macro*, *PTT Active-to-Inactive Before Unkey Delay Macro*, and *PTT Active-to-Inactive Macro*.
- Enter the password, the 4-digit root number, and the 4-digit name of the macro you wish to have executed at the transition, and the (*).
- If the macro name has fewer than 4 digits, enter leading zeros.
- If you wish to prevent a macro from being executed that was previously assigned, enter just the password, the 4-digit root number, and the (*).

Command Form:

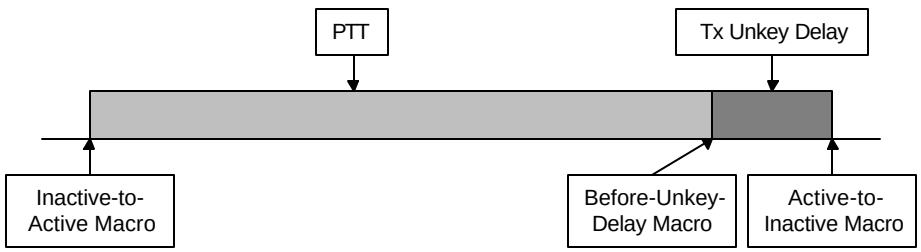
Command	Form
Assign Macro to Tx1 PTT Inactive-to-Active	(PW) 26 82 (macro name) *
Assign Macro to Tx1 PTT Active-to-Inactive Before Unkey Delay	(PW) 26 83 (macro name) *
Assign Macro to Tx1 PTT Active-to-Inactive	(PW) 26 84 (macro name) *
Assign Macro to Tx2 PTT Inactive-to-Active	(PW) 26 85 (macro name) *
Assign Macro to Tx2 PTT Active-to-Inactive Before Unkey Delay	(PW) 26 86 (macro name) *
Assign Macro to Tx2 PTT Active-to-Inactive	(PW) 26 87 (macro name) *

Acknowledgment: Sends OK

Errors:

Error	Meaning
? err 1	wrong number of digits entered
? err 2	illegal digit entered

Default Condition: No macros assigned.



Example 1:

PTT-triggered macros provide a way to generate messages, control logic outputs, start timers, etc., for functions that need to be synchronized to a transmitter's operation. The Inactive-to-Active macro is executed when the transmitter is keyed. The Active-to-Inactive macro is executed when the transmitter is unkeyed. The Active-to-Inactive Before Unkey Delay macro is executed a programmable amount of time before the transmitter is actually unkeyed.

As an example, let's say that you have a CTCSS encoder on your repeater transmitter and your repeater users program their radios to only open their receivers when a CTCSS tone is present. If the CTCSS tone is always present on your transmitter, then, when the transmitter unkeys, a squelch burst is heard in your users' receivers. To prevent the squelch burst, you could disable the CTCSS tone on your transmitter a small amount of time before the transmitter is unkeyed so that the users' receivers would close before the squelch burst could occur.

To control a CTCSS encoder, you would write two macros and assign them to the Inactive-to-Active and Active-to-Inactive Before Unkey Delay-triggered macros to enable and disable the CTCSS encoder using a Logic Output.

To create a macro that turns on Logic Output 7 to enable the CTCSS encoder, enter the following:

```
(PW) 20 9107 (PW) 70 7 *
```

To create a macro that turns off Logic Output 7 to disable the CTCSS encoder, enter the following:

```
(PW) 20 9108 (PW) 71 7 *
```

To assign these macros to the PTT-triggered events, enter the following:

```
(PW) 26 82 9107 *
(PW) 26 83 9108 *
```

To adjust the amount of time that the transmitter stays keyed after the tone encoder is disabled, set the Transmitter Minimum Unkey Delay (see page 17-15). For example, to set the Tx1 Minimum Unkey Delay to 0.4 seconds, enter the following:

```
(PW) 49 98 4 *
```

Note: an alternate way to control a CTCSS tone on Transmitter 1 is to use the controller's dedicated CTCSS audio gate (see page 10-2). When enabled, this audio gate opens to pass audio when Transmitter 1 is keyed and closes at the beginning of the Tx1 Minimum Unkey Delay. You would use the Select Tx1 Minimum Unkey Delay command as in the example above to adjust the amount of time the transmitter stays keyed after the CTCSS encoder is disabled. This method does not require the use of PTT-triggered macros.

Example 2:

The PTT-triggered macros can be used with the User Timers to control external equipment that should operate for a time after a transmitter is unkeyed. See page 20-7 for an example of controlling a fan.

Select Transmitter Minimum Unkey Delay

Programs the minimum amount of time for a transmitter to unkey.

- A Transmitter 1 Minimum Unkey Delay can be programmed from 0 to 655.3 seconds.
- A Transmitter 2 Minimum Unkey Delay can be programmed from 0 to 655.3 seconds.
- Enter the timeout value as 1, 2, 3, or 4 digits, leading zeroes are not required.
- A programmed Minimum Unkey Delay will not be present unless it is enabled using the *Enable/Disable Transmitter Minimum Unkey Delay* command (see page 17-11).

Command Form:

Command	Form	Data Digit
Select Tx1 Minimum Unkey Delay	(PW) 49 98 xxxx *	from table below
Select Tx2 Minimum Unkey Delay	(PW) 49 99 xxxx *	from table below

Data Digit	Explanation
xxxx = 0000-6553	seconds in 0.1 second increments from 0.0 to 655.3 seconds as 1, 2, 3, or 4 digits

Acknowledgment: Sends OK

Errors:

Error	Meaning
? err 1	wrong number of digits entered
? err 2	invalid timer or seconds parameter

Default Condition: None.

Example:

To set the Transmitter 1 Minimum Unkey Delay to 0.4 second, enter the command:

```
(PW) 49 98 4 *
```

To set the Transmitter 2 Minimum Unkey Delay to 5.0 seconds, enter the command:

```
(PW) 49 99 50 *
```

Select Receiver-to-Transmitter-Triggered Macros

Allows the programmer to execute macros based on receiver-to-transmitter activity.

- Macros can be executed based on receiver-to-transmitter activity.
- Enter the password, the 4-digit root number, and the 4-digit name of the macro you wish to have executed at the transition, and the (*).
- If the macro name has fewer than 4 digits, enter leading zeros.
- If you wish to prevent a macro from being executed that was previously assigned, enter just the password, the 4-digit root number, and the (*).

Command Form:

Command	Form
Assign Macro to Any-Receiver-Active to Tx1	(PW) 26 11 (macro name) *
Assign Macro to All-Receivers-Inactive to Tx1	(PW) 26 09 (macro name) *
Assign Macro to Any-Receiver-Active to Tx2	(PW) 26 73 (macro name) *
Assign Macro to All-Receivers-Inactive to Tx2	(PW) 26 74 (macro name) *

Acknowledgment: Sends OK

Errors:

Error	Meaning
? err 1	wrong number of digits entered
? err 2	illegal digit entered

Default Condition: No macros assigned.

Select (Review) Courtesy Messages

Program unique Courtesy Messages for each receiver.

- Enter the password, the 4-digit root number, the desired message, and a (*).
- Any message may be any combination of message types including CW, beeps, page tones, speech, etc.
- The maximum size of any message is 50 bytes (50 2-digit codes).
- You must count the control character. Therefore, any message could have 46 CW characters, 23 synthesized speech words, and so on.
- To delete a message, enter the password, the 4-digit root number, and the (*). Do not enter any message.

Command Form:

Command	Form
Select Courtesy Message for Rx1	(PW) 31 10 (message) *
Select Courtesy Message for Rx2	(PW) 31 11 (message) *
Select Courtesy Message for Rx3	(PW) 31 12 (message) *
Review Courtesy Message for Rx1	(PW) 34 10 *
Review Courtesy Message for Rx2	(PW) 34 11 *
Review Courtesy Message for Rx3	(PW) 34 12 *

Acknowledgment: Sends OK

Errors:

Error	Meaning
? err 1	wrong number of digits entered
? err 2	illegal digit entered

Default Condition:

Command	Default Condition
Select Courtesy Message for Rx1	60mS 440 Hz beep (9910 74 09)
Select Courtesy Message for Rx2	60mS 660 Hz beep (9910 74 16)
Select Courtesy Message for Rx3	60mS 880 Hz beep (9910 74 21)

Example:

Suppose we want to change the courtesy message for Receiver 1 to a burst of 2 beeps. We want the two beeps to be 25 and 21, we want them to be 40mS in duration, and we want no gap between them.

Looking up this information in the *Beep Character Set Tables* beginning on page A-5, we find: 55 turns the automatic beep gap OFF; 73 changes the beep duration to 40mS; and, the control character for a beep message is 9910. Therefore, the complete command to change the courtesy message is:

```
(PW) 31 10 9910 55 73 25 21 *
```

Select Repeater Action-Triggered Macros

Allows the programmer to execute macros based on repeater activity.

- Macros can be executed based on receiver activity, receiver inactivity and when a courtesy message is sent.
- Enter the password, the 4-digit root number, and the 4-digit name of the macro you wish to have executed at the transition, and the (*).
- If the macro name has fewer than 4 digits, enter leading zeros.
- If you wish to prevent a macro from being executed that was previously assigned, enter just the password, the 4-digit root number, and the (*).

Command Form:

Command	Form
Assign Macro to Any-Receiver-Active	(PW) 26 11 (macro name) *
Assign Macro to All-Receivers-Inactive	(PW) 26 09 (macro name) *
Assign Macro to Courtesy Message	(PW) 26 10 (macro name) *
Assign Macro to Dropout Message	(PW) 26 08 (macro name) *
Assign Macro to Repeater Timeout	(PW) 26 18 (macro name) *
Assign Macro to Return-From-Repeater-Timeout	(PW) 26 19 (macro name) *

Acknowledgment: Sends OK

Errors:

Error	Meaning
? err 1	wrong number of digits entered
? err 2	illegal digit entered

Default Condition: No macros assigned.

Select Anti-Kerchunk No Hangtime Mode

Allows the programmer to modify the operation of the Anti-Kerchunker.

- By default and when disabled, the Anti-Kerchunker does not key the transmitter during the Key-Up Delay.
- By enabling the No Hangtime Mode, the transmitter is keyed during the Key-Up Delay.
- Enter one digit, 0 for OFF (disabled), 1 for ON (enabled).

Command Form:

Command	Form	Data Digit
Select Anti-Kerchunk No Hangtime Mode	(PW) 63 30 x *	0 = OFF (disabled) 1 = ON (enabled)

Acknowledgment: Sends OK

Errors:

Error	Meaning
? err 1	wrong number of digits entered
? err 2	illegal digit entered

Default Condition: Disabled.

Command Quick Reference

Page	Command Name	Form and Data Digit	Default	User
4-1	**Messages**			
4-10	Enable/Disable CW	(PW) 63 01 x * 0 = OFF (disabled) 1 = ON (enabled)	ON enabled	
4-11	Select Frequency of CW	(PW) 06 00 (tone code) * *See Tone Code Table on page A-20.*	1500 Hz	
4-12	Send Next CW Message Slowly	(PW) 11 *	normal rate	
4-13	Select Normal CW Speed	(PW) 12 x * 0 = 5 WPM 5 = 17 WPM 1 = 7 WPM 6 = 20 WPM 2 = 10 WPM 7 = 24 WPM 3 = 13 WPM 8 = 30 WPM 4 = 15 WPM 9 = 40 WPM	20 WPM	
4-13	Select Slow CW Speed	(PW) 13 x * 0 = 5 WPM 5 = 17 WPM 1 = 7 WPM 6 = 20 WPM 2 = 10 WPM 7 = 24 WPM 3 = 13 WPM 8 = 30 WPM 4 = 15 WPM 9 = 40 WPM	15 WPM	
4-18	Select Frequency of Beep 48	(PW) 06 01 (tone code) * *See Tone Code Table on page A-20.*	500 Hz	
4-18	Select Frequency of Beep 49	(PW) 06 02 (tone code) * *See Tone Code Table on page A-20.*	750 Hz	
4-18	Select Frequency of Beep 50	(PW) 06 03 (tone code) * *See Tone Code Table on page A-20.*	1000 Hz	
4-18	Select Frequency of Beep 51	(PW) 06 04 (tone code) * *See Tone Code Table on page A-20.*	1250 Hz	
4-18	Select Frequency of Beep 52	(PW) 06 05 (tone code) * *See Tone Code Table on page A-20.*	1500 Hz	
4-18	Select Frequency of Beep 53	(PW) 06 06 (tone code) * *See Tone Code Table on page A-20.*	1750 Hz	
4-35	Select Courtesy Message	(PW) 31 10 (message) *	60 mS 440 Hz beep (74 09)	
4-35	Select Dropout Message	(PW) 31 13 (message) *	none	
4-35	Select Pre-Timeout Message	(PW) 31 16 (message) *	TO in CW	
4-35	Select Post-Timeout Message	(PW) 31 19 (message) *	TO in CW	
4-35	Select Initial ID Message for Tx1	(PW) 31 30 (message) *	ID in CW	
4-35	Select Initial ID Message for Tx2	(PW) 31 33 (message) *	9983 ID in CW	
4-35	Select Normal ID Message for Tx1	(PW) 31 31 (message) *	ID in CW	

Command Quick Reference

Page	Command Name	Form and Data Digit	Default	User
4-35	Select Normal ID Message for Tx2	(PW) 31 34 (message) *	9983 ID in CW	
4-35	Select Autopatch Dialing Message	(PW) 31 40 (message) *	AS in CW	
4-35	Select Autopatch Timeout Warning Message	(PW) 31 41 (message) *	AR in CW	
4-35	Select Phone Line Answer Message	(PW) 31 50 (message) *	3 beeps (74 09 21 33)	
4-35	Select Reverse Patch Ringout Message	(PW) 31 51 (message) *	55 in CW	
4-38	Review Courtesy Message	(PW) 34 10 (message) *	none	
4-38	Review Dropout Message	(PW) 34 13 (message) *	none	
4-38	Review Pre-Timeout Message	(PW) 34 16 (message) *	none	
4-38	Review Post-Timeout Message	(PW) 34 19 (message) *	none	
4-38	Review Initial ID Message for Tx1	(PW) 34 30 (message) *	none	
4-38	Review Initial ID Message for Tx2	(PW) 34 33 (message) *	9983 ID in CW	
4-38	Review Normal ID Message for Tx1	(PW) 34 31 (message) *	none	
4-38	Review Normal ID Message for Tx2	(PW) 34 34 (message) *	9983 ID in CW	
4-38	Review Autopatch Dialing Message	(PW) 34 40 (message) *	AS in CW	
4-38	Review Autopatch Timeout Warning Message	(PW) 34 41 (message) *	none	
4-38	Review Phone Line Answer Message	(PW) 34 50 (message) *	none	
4-38	Review Reverse Patch Ringout Message	(PW) 34 51 (message) *	none	
4-39	Send Message	(PW) 15 (message) *	none	
4-44	Select User Messages	(PW) 31 xx (message) * xx = 70, 71, 72, or 73	none	
4-44	Review User Messages	(PW) 34 xx * xx = 70, 71, 72, or 73	none	
4-45	Select OK Command Response Message	(PW) 31 01 (message) *	OK in CW	
4-45	Review OK Command Response Message	(PW) 34 01 *	none	
4-45	Select Keystroke Error Command Response Message	(PW) 31 02 (message) *	?ERR1 in CW	
4-45	Review Keystroke Error Command Response Message	(PW) 34 02 *	none	
4-45	Select Data Error Command Response Message	(PW) 31 03 (message) *	?ERR2 in CW	
4-45	Review Data Error Command Response Message	(PW) 34 03 *	none	
4-46	Select Warm Reset Message	(PW) 31 00 (message) *	?RES in CW	
4-46	Review Warm Reset Message	(PW) 34 00 *	none	

Command Quick Reference

Page	Command Name	Form and Data Digit	Default	User
5-1	**Security**			
5-2	Assign Control Operator Password	(PW) 92 (new control operator PW) *	no password	
5-3	Assign Master Password	(PW) 93 (new master PW) *	99	
5-4	Assign Control Operator Privilege Level	(PW) 94 (root number, x) * 0 = master and control operator 1 = master only	all commands accessible	
5-5	Assign Control Operator Privilege Level to a Range of Commands	(PW) 94 (first root number, last root number, x) * 0 = master and control operator 1 = master only	all commands accessible	
5-6	Enable/Disable Front Panel Display	(PW) 63 99 x * 0 = OFF (disabled) 1 = ON (enabled)	ON enabled	
6-1	**Macros**			
6-5	Create New Macro	(PW) 20 (macro name, command) *	no macros	
6-7	Append to Macro	(PW) 29 (macro name, command) *	none	
6-9	List Macro in CW	(PW) 33 (macro name) *	none	
6-17	List Macro in Speech	(PW) 35 (macro name) *	none	
6-10	Erase Macro	(PW) 21 (macro name) *	none	
6-11	Erase All Macros	(PW) 22 00 *	none	
6-12	Rename Macro	(PW) 27 (old, new) *	none	
6-14	Pause	(PW) 98 xxx * (1-255) seconds	none	
6-15	Select Power ON-Triggered Macro	(PW) 26 00 (macro name) *	none	
7-3	**Autopatch Setup and Configuration**			
7-5	Select Autopatch Dialing Mode	(PW) 61 x * 1 = 10 PPS rotary 2 = 20 PPS rotary 3 = 5 PPS DTMF	10 PPS rotary	
7-6	Select Autopatch Dialing Message	(PW) 31 40 (message) *	AS in CW	
7-6	Review Autopatch Dialing Message	(PW) 34 40 *	AS in CW	
7-7	Enable/Disable Autopatch Dialing Mixed-Mode	(PW) 63 04 x * 0 = OFF (disabled) 1 = ON (enabled)	OFF disabled	
7-8	Enable/Disable Pound Down (# Dump)	(PW) 63 05 x * 0 = OFF (disabled) 1 = ON (enabled)	OFF disabled	
7-9	Dump Autopatch Using A Code	(PW) 83 *	none	
7-10	Select Autopatch Access-Triggered Macro, Default	(PW) 26 12 (macro name) *	none	

Command Quick Reference

Page	Command Name	Form and Data Digit	Default	User
7-10	Select Autopatch Dump-Triggered Macro	(PW) 26 13 (macro name) *	none	
7-11	Enable/Disable Full-Duplex Mode	(PW) 63 07 x * 0 = OFF (disabled) 1 = ON (enabled)	OFF disabled	
7-12	Enable/Disable Autopatch Privacy	(PW) 63 06 x * 0 = OFF (disabled) 1 = ON (enabled)	OFF disabled	
7-13	Enable/Disable Repeater-to-Phone DTMF Mute	(PW) 63 08 x * 0 = OFF (disabled) 1 = ON (enabled)	OFF disabled	
7-51	Select Landline Busy Message	(PW) 31 42 (message) *	BZ in CW	
7-51	Select Autopatch Off Message	(PW) 31 44 (message) *	OFF in CW	
7-51	Select Autopatch Error Message (Invalid phone number)	(PW) 31 45 (message) *	?ERR in CW	
7-51	Select Autopatch Reject Message (Match in Reject Table)	(PW) 31 46 (message) *	?REJ in CW	
7-51	Select Autopatch No-Redial-Number Message	(PW) 31 47 (message) *	CLR in CW	
7-51	Review Autopatch Error Message	(PW) 34 45 *	?ERR in CW	
7-51	Review Autopatch No-Redial-Number Message	(PW) 34 47 *	CLR in CW	
7-51	Review Autopatch Off Message	(PW) 34 44 *	OFF in CW	
7-51	Review Autopatch Reject Message	(PW) 34 46 *	?REJ in CW	
7-51	Review Landline Busy Message	(PW) 34 42 *	BZ in CW	
7-52	Select Autopatch Dump Message	(PW) 31 43 (message) *	none	
7-52	Review Autopatch Dump Message	(PW) 34 43 *	none	
7-53	Autopatch Pause (“B”) Digit Time (Note: does **not** affect the pause in an Autopatch Dialing Prefix.)	(PW) 49 96 xxx * (001-100)=0.1-10.0 seconds 010 = 1.0 seconds 020 = 2.0 seconds 100 = 10.0 seconds	5.0 seconds	
7-54	Landline Hookflash	(PW) 83 1 *	none	
7-55	Autopatch Go Off-Hook	(PW) 83 2 *	none	
7-55	Autopatch Go Off-Hook, Ignore Busy Logic Input	(PW) 83 3 *	none	
7-56	Select Autopatch Dialing Prefix	(PW) 83 10 (prefix) * Up to 16-digits. 00=0, 01=1, 02=2, 03=3, 04=4, 05=5, 06=6, 07=7, 08=8, 09=9, 10=A, 11=B, 12=C, 13=D, 14=*, 15=#, 16=1-Second Pause, 17=2-Second Pause, 18=5-Second Pause, 19 = 10-Second Pause, 20=Rotary, 21=DTMF	none	

Command Quick Reference

Page	Command Name	Form and Data Digit	Default	User
7-56	Delete Autopatch Dialing Prefix	(PW) 83 10 *	none	
7-58	Enable/Disable ID During Autopatch	(PW) 63 09 x * 0 = OFF (disabled) 1 = ON (enabled)	OFF disabled	
7-59	Require Dump Before Next Call	(PW) 63 10 x * 0 = OFF (not required) 1 = ON (required)	OFF not required	
7-64	Assign Macro to Any-Rx-Active to AP	(PW) 26 06 (macro name) *	none	
7-64	Assign Macro to All-Rx-Inactive to AP	(PW) 26 07 (macro name) *	none	
7-14	**Autopatch Timeout Timer**			
7-15	Select Autopatch Timeout Timer	(PW) 65 xxx * (000-546) = 0.0-54.6 minutes 000 = infinity 001 = 0.1 minute 030 = 3.0 minutes 546 = 54.6 minutes ... etc.	3.0 minutes	
7-16	Reset Autopatch Timeout Timer	(PW) 81 *	none	
7-17	Select Autopatch Timeout Warning Message	(PW) 31 41 (message) *	AR in CW	
7-17	Review Autopatch Timeout Warning Message	(PW) 34 41 *	none	
7-18	**Autopatch Access and Passwords**			
7-19	Access Autopatch With Password	(AP access pswd) (phone number) *	PW is 10	
7-20	Access Autopatch Without Password	(phone number) *	OFF (disabled)	
7-22	Change Autopatch Access Password	(PW) 23 (new AP access password) *	PW is 10	
7-23	Enable/Disable Autopatch Access Without Password	(PW) 63 11 x * 0 = OFF (disabled) 1 = ON (enabled)	OFF disabled	
7-24	**Autopatch Call Types**			
7-60	Select Autopatch Call Types	(PW) 60 x * none = OFF (disabled) 0 = accepted numbers only 1 = operator (0) 2 = xxx-xxxx 3 = 0-xxx-xxxx 4 = 1-xxx-xxxx 5 = 0-xxx-xxx-xxxx 6 = 1-xxx-xxx-xxxx 7 = 1-800-xxx-xxxx, 1-888-xxx-xxxx 8 = xxx-xxx-xxxx	OFF disabled	

Command Quick Reference

Page	Command Name	Form and Data Digit	Default	User
7-27	**Autopatch Restrictions**			
7-28	Clear All Accepted Numbers From Table	(PW) 68 *	table empty	
7-28	Enter Accepted Number Into Table	(PW) 68 (phone number) *	table empty	
7-30	Clear All Rejected Numbers From Table	(PW) 67 *	table empty	
7-30	Enter Rejected Number Into Table	(PW) 67 (phone number) *	table empty	
7-32	**Autopatch Redialer**			
7-33	Redial Last Number	(PW) 84 *	memory cleared	
7-34	Clear Autopatch Redialer	(PW) 85 *	memory cleared	
7-35	**Autopatch Call Counter**			
7-36	Clear Autopatch Call Counter	(PW) 69 *	counter 000	
7-37	Send Autopatch Call Count in CW	(PW) 86 *	counter 000	
A-44	Send Autopatch Call Count in Speech	(PW) 15 9897 *	counter 000	
7-38	**Phone Line Control Mode**			
7-41	Select Phone Line Answer Mode, Do Not Answer	(PW) 64 0 *	*(see next command)*	
7-41	Select Phone Line Answer Mode	(PW) 64 x yy zz * x = *mode* (1-4) (*See page 7-38*) y = *ring-in delay* (00-99) rings z = *ringout limit* (00-99) rings	mode 3, ring-in delay 2, ringout limit 1	
7-42	Select Phone Line Answer Message	(PW) 31 50 (message) *	3 beeps (74 09 21 33)	
7-42	Review Phone Line Answer Message	(PW) 34 50 *	none	
7-43	Select Phone Line Answer Macro	(PW) 26 16 (macro name) *	none	
7-44	Select Phone Line Off-Hook Timer	(PW) 79 xxx * (000-546)=0.1-54.6 minutes 000 = infinity 001 = 0.1 minute 030 = 3.0 minutes 546 = 54.6 minutes ... etc.	none	
7-62	Select Control Mode Dump-Triggered Macro	(PW) 26 81 (macro name) *	none	

Command Quick Reference

Page	Command Name	Form and Data Digit	Default	User
7-65	Monitor Repeater Receiver (Rx1)	(PW) 63 23 x * 0 = OFF (disabled) 1 = ON (enabled)	OFF disabled	
7-65	Monitor Repeater Receiver (Rx2)	(PW) 63 24 x * 0 = OFF (disabled) 1 = ON (enabled)	OFF disabled	
7-65	Monitor Repeater Receiver (Rx3)	(PW) 63 25 x * 0 = OFF (disabled) 1 = ON (enabled)	OFF disabled	
7-65	Talk Out Tx1	(PW) 63 26 x * 0 = OFF (disabled) 1 = ON (enabled)	OFF disabled	
7-65	Talk Out Tx2	(PW) 63 27 x * 0 = OFF (disabled) 1 = ON (enabled)	OFF disabled	
7-46	**Reverse Patch**			
7-47	Trigger Reverse Patch	(PW) 87 *	none	
7-48	Answer Reverse Patch	(PW) 88 *	none	
7-49	Select Reverse Patch Ringout Message	(PW) 31 51 (message) *	55 in CW	
7-49	Review Reverse Patch Ringout Message	(PW) 34 51 *	none	
7-63	Select Ring-Triggered Macro	(PW) 26 80 (macro name) * Note: executes on each ring.	none	
7-66	**Autopatch Multiple Port Access**			
7-69	Select Autopatch Access-Triggered Macro from Rx1	(PW) 26 75 (macro name) *	none	
7-69	Select Autopatch Access-Triggered Macro from Rx2	(PW) 26 76 (macro name) *	none	
7-69	Select Autopatch Access-Triggered Macro from Rx3	(PW) 26 77 (macro name) *	none	
7-70	Select Rx1 Autopatch Command Response Message Routing	(PW) 91 00 x x * 1 = Tx1, 2 = Tx2	1 (Tx1)	
7-70	Select Rx2 Autopatch Command Response Message Routing	(PW) 91 01 x x * 1 = Tx1, 2 = Tx2	1 (Tx1)	
7-70	Select Rx3 Autopatch Command Response Message Routing	(PW) 91 02 x x * 1 = Tx1, 2 = Tx2	1 (Tx1)	
8-1	**Clock and Calendar**			
8-2	Set Clock and Calendar	(PW) 25 (year, month, day-of-month, day-of-week, hour, minute) * year = 00-99 month = 01-12 (Jan is 01) day-of-month = 01-31 day-of-week = 0-6 (Sun is 0) hour = 00-23 minute = 00-59	00:00:00, Wed, Jan 1, 1992	

Command Quick Reference

Page	Command Name	Form and Data Digit	Default	User
8-4	Adjust Daylight Savings Time	(PW) 48 x * 0 = *fall back* (subtract 1 from hours) 1 = *spring ahead* (add 1 to hours) 2 = *fall back* (subtract 1 from hours, inhibited for 61 minutes.)	none	
8-6	Reset Clock Seconds	(PW) 48 3 *	none	
8-7	Add Clock Seconds	(PW) 48 4 (seconds) * seconds = 01-30	none	
8-7	Subtract Clock Seconds	(PW) 48 5 (seconds) * seconds = 01-30	none	
8-7	Subtract Clock Seconds, Inhibited for 2 Minutes	(PW) 48 6 (seconds) * seconds = 01-30 (Inhibited for 2 minutes)	none	
9-1	**Scheduler**			
9-2	Create Setpoint	(PW) 28 (setpoint, macro, month, day, hour, minute) * setpoint = 00-99, 2 digits macro = 4 digits month = 01-12 or 99, 2 digits day = 01-75 or 99, 2 digits *(See Day Code Table page A-46.)* hour = 00-23 or 99, 2 digits minute = 00-59 or 99, 2 digits (Note: 99 is the *wild card*)	no setpoints	
9-2	Delete One Setpoint	(PW) 28 (setpoint) * setpoint = 00-99, 2 digits	none	
9-7	Delete Range of Setpoints	(PW) 28 (first setpoint) (last setpoint) * setpoint = 00-99, 2 digits	none	
9-8	Enable/Disable Scheduler	(PW) 63 15 x * 0 = OFF (disabled) 1 = ON (enabled)	ON enabled	
10-1	**CTCSS Functions**			
10-2	Enable/Disable CTCSS Encoder	(PW) 02 x * 0 = disabled 5 = 5 seconds 1 = continuous 6 = 6 seconds 2 = 2 seconds 7 = 7 seconds 3 = 3 seconds 8 = 8 seconds 4 = 4 seconds 9 = 9 seconds	0 disabled	
10-3	Select Frequency of CTCSS	(PW) 03 xx * (00-63) *See TS-32 Programming, page 10-5.*	all outputs open	
11-1	**DTMF Decoder**			
11-2	Enable/Disable Command Response Messages	(PW) 63 02 x * 0 = OFF (disabled) 1 = ON (enabled)	ON enabled	

Command Quick Reference

Page	Command Name	Form and Data Digit	Default	User
11-3	Select DTMF Priority/Scan	(PW) 89 (Rx1, Rx2, Rx3, PH) * 0 = no access to DTMF decoder 1 = Priority 1 (highest priority) 2 = Priority 2 3 = Priority 3 4 = Priority 4 5 = Scan this device	Priorities: Rx1 = 3 Rx2 = 4 Rx3 = 1 PH = 2	
11-13	Select Rx1-to-DTMF Decoder Access Mode	(PW) 57 06 x * 0 = no access 1 = carrier access 2 = PL access 3 = And-PL access 4 = Or-PL access 5 = Anti-PL access	1 carrier access	
11-13	Select Rx2-to-DTMF Decoder Access Mode	(PW) 57 07 x * Same as above	1 carrier access	
11-13	Select Rx3-to-DTMF Decoder Access Mode	(PW) 57 08 x * Same as above	1 carrier access	
11-7	Select DTMF Decoder Interdigit Timer	(PW) 82 xx * (01-99) = 0.1-9.9 seconds 01 = 0.1 seconds 05 = 0.5 seconds 10 = 1.0 seconds 99 = 9.9 seconds ... etc.	5.0 seconds	
11-8	Select DTMF Decoder Mute Delay	(PW) 96 x * (0-9) = 0.0-0.9 seconds 0 = 0 seconds 1 = 0.1 seconds 2 = 0.2 seconds ... etc.	0.5 seconds	
11-9	Enable/Disable Rx1-Tx1 DTMF Mute	(PW) 63 50 x * 0 = OFF (disabled) 1 = ON (enabled)	ON enabled	
11-9	Enable/Disable Rx2-Tx1 DTMF Mute	(PW) 63 51 x * 0 = OFF (disabled) 1 = ON (enabled)	ON enabled	
11-9	Enable/Disable Rx3-Tx1 DTMF Mute	(PW) 63 52 x * 0 = OFF (disabled) 1 = ON (enabled)	ON enabled	
11-9	Enable/Disable Rx1-Tx2 DTMF Mute	(PW) 63 53 x * 0 = OFF (disabled) 1 = ON (enabled)	ON enabled	
11-9	Enable/Disable Rx2-Tx2 DTMF Mute	(PW) 63 54 x * 0 = OFF (disabled) 1 = ON (enabled)	ON enabled	
11-9	Enable/Disable Rx3-Tx2 DTMF Mute	(PW) 63 55 x * 0 = OFF (disabled) 1 = ON (enabled)	ON enabled	

Command Quick Reference

Page	Command Name	Form and Data Digit	Default	User
11-10	Enable/Disable DTMF Long Tones	(PW) 63 68 x * 0 = OFF (disabled) 1 = ON (enabled)	OFF disabled	
11-11	Assign Macro to Long Tone Zero	(PW) 26 50 (macro name) *	none	
11-11	Assign Macro to Long Tone One	(PW) 26 51 (macro name) *	none	
11-11	Assign Macro to Long Tone Two	(PW) 26 52 (macro name) *	none	
11-11	Assign Macro to Long Tone Three	(PW) 26 53 (macro name) *	none	
11-11	Assign Macro to Long Tone Four	(PW) 26 54 (macro name) *	none	
11-11	Assign Macro to Long Tone Five	(PW) 26 55 (macro name) *	none	
11-11	Assign Macro to Long Tone Six	(PW) 26 56 (macro name) *	none	
11-11	Assign Macro to Long Tone Seven	(PW) 26 57 (macro name) *	none	
11-11	Assign Macro to Long Tone Eight	(PW) 26 58 (macro name) *	none	
11-11	Assign Macro to Long Tone Nine	(PW) 26 59 (macro name) *	none	
11-11	Assign Macro to Long Tone A	(PW) 26 60 (macro name) *	none	
11-11	Assign Macro to Long Tone B	(PW) 26 61 (macro name) *	none	
11-11	Assign Macro to Long Tone C	(PW) 26 62 (macro name) *	none	
11-11	Assign Macro to Long Tone D	(PW) 26 63 (macro name) *	none	
11-11	Assign Macro to Long Tone Star (*)	(PW) 26 64 (macro name) *	none	
11-11	Assign Macro to Long Tone Pound (#)	(PW) 26 65 (macro name) *	none	
11-15	Assign Macro to DTMF Digit Decoded	(PW) 26 49 (macro name) *	none	
12-1	**Identifier**			
12-9	Select Initial ID Message for Tx1	(PW) 31 30 (message) *	ID in CW	
12-9	Select Initial ID Message for Tx2	(PW) 31 33 (message) *	9983 ID in CW	
12-9	Select Normal ID Message for Tx1	(PW) 31 31 (message) *	ID in CW	
12-9	Select Normal ID Message for Tx2	(PW) 31 34 (message) *	9983 ID in CW	
12-9	Select Impolite ID Message for Tx1	(PW) 31 32 (message) *	none	
12-9	Select Impolite ID Message for Tx2	(PW) 31 35 (message) *	none	
12-9	Review Initial ID Message for Tx1	(PW) 34 30 *	none	
12-9	Review Initial ID Message for Tx2	(PW) 34 33 *	none	
12-9	Review Normal ID Message for Tx1	(PW) 34 31 *	none	
12-9	Review Normal ID Message for Tx2	(PW) 34 34 *	none	
12-9	Review Impolite ID Message for Tx1	(PW) 34 32 *	none	
12-9	Review Impolite ID Message for Tx2	(PW) 34 35 *	none	
12-4	Select Impolite ID Macro for Tx1	(PW) 26 05 (macro name) *	none	
12-4	Select Impolite ID Macro for Tx2	(PW) 26 48 (macro name) *	none	
12-4	Select Initial ID Macro for Tx1	(PW) 26 03 (macro name) *	none	
12-4	Select Initial ID Macro for Tx2	(PW) 26 46 (macro name) *	none	
12-4	Select Polite ID Macro for Tx1	(PW) 26 04 (macro name) *	none	

Command Quick Reference

Page	Command Name	Form and Data Digit	Default	User
12-4	Select Polite ID Macro for Tx2	(PW) 26 47 (macro name) *	none	
12-5	Select ID Message Interval for Tx1 and Tx2	(PW) 51 xxx * (005-300) = 0.5-30.0 minutes 005 = 0.5 minutes 060 = 6.0 minute 099 = 9.9 minutes 300 = 30.0 minutes ... etc.	3.0 minutes	
12-13	Select ID Pending Interval for Tx1 and Tx2	(PW) 49 97 xxxx * (0300-1800) = 30.0-180.0 seconds 0300 = 30.0 seconds 0600 = 60.0 seconds 1200 = 120.0 seconds 1800 = 180.0 seconds ... etc.	30.0 seconds	
12-6	Reset Initial ID Message to Normal ID Message for Tx1	(PW) 54 *	none	
12-7	Send Initial ID Message for Tx1	(PW) 55 *	none	
12-11	Select Initial ID Tail Message for Tx1	(PW) 50 0 xx * xx = tail number 0-15 and 98 0 = (none) 9 = WARN 1 = FEST 10 = RACES 2 = DUES 11 = TGIF 3 = MEET 12 = /R 4 = NET 13 = LINK 5 = HI 14 = RMT (remote) 6 = WX 15 = BAT 7 = ALERT 98 = programmable 8 = WATCH (none) = no msg	none	
12-11	Select Normal ID Tail Message for Tx1	(PW) 50 1 xx * xx = tail number 0-15 and 98 0 = (none) 9 = WARN 1 = FEST 10 = RACES 2 = DUES 11 = TGIF 3 = MEET 12 = /R 4 = NET 13 = LINK 5 = HI 14 = RMT (remote) 6 = WX 15 = BAT 7 = ALERT 98 = programmable 8 = WATCH (none) = no msg	none	
12-11	Review Initial ID Tail Message for Tx1	(PW) 50 0 99 *	none	
12-11	Review Normal ID Tail Message for Tx1	(PW) 50 1 99 *	none	
12-10	Select Initial ID Programmable Tail Message for Tx1	(PW) 31 28 (message) *	none	
12-10	Select Normal ID Programmable Tail Message for Tx1	(PW) 31 29 (message) *	none	

Command Quick Reference

Page	Command Name	Form and Data Digit	Default	User
12-10	Review Initial ID Programmable Tail Message for Tx1	(PW) 34 28 *	none	
12-10	Review Normal ID Programmable Tail Message for Tx1	(PW) 34 29 *	none	
12-12	Enable/Disable ID During Autopatch	(PW) 63 09 x * 0 = OFF (disabled) 1 = ON (enabled)	OFF disabled	
13-1	**Links**			
13-2	Enable/Disable Path 1 (Rx1 to Tx1)	(PW) 63 81 x * 0 = OFF (disabled 1 = ON (enabled)	ON enabled	
13-2	Enable/Disable Path 2 (Rx2 to Tx1)	(PW) 63 82 x * 0 = OFF (disabled 1 = ON (enabled)	ON enabled	
13-2	Enable/Disable Path 3 (Rx3 to Tx1)	(PW) 63 83 x * 0 = OFF (disabled 1 = ON (enabled)	ON enabled	
13-2	Enable/Disable Path 4 (Rx1 to Tx2)	(PW) 63 84 x * 0 = OFF (disabled 1 = ON (enabled)	ON enabled	
13-2	Enable/Disable Path 5 (Rx2 to Tx2)	(PW) 63 85 x * 0 = OFF (disabled 1 = ON (enabled)	ON enabled	
13-2	Enable/Disable Path 6 (Rx3 to Tx2)	(PW) 63 86 x * 0 = OFF (disabled 1 = ON (enabled)	ON enabled	
13-2	Enable/Disable Path 7 (Rx1 to AP)	(PW) 63 87 x * 0 = OFF (disabled 1 = ON (enabled)	ON enabled	
13-2	Enable/Disable Path 8 (Rx2 to AP)	(PW) 63 88 x * 0 = OFF (disabled 1 = ON (enabled)	OFF disabled	
13-2	Enable/Disable Path 9 (Rx3 to AP)	(PW) 63 89 x * 0 = OFF (disabled 1 = ON (enabled)	OFF disabled	
13-2	Enable/Disable Path 10 (AP to Tx1)	(PW) 63 90 x * 0 = OFF (disabled 1 = ON (enabled)	ON enabled	
13-2	Enable/Disable Path 11 (AP to Tx2)	(PW) 63 91 x * 0 = OFF (disabled 1 = ON (enabled)	OFF disabled	
13-3	Select Receiver-to-Tx1 Audio Routing Priority	(PW) 90 00 x x x * x = 1, 2, 3 1 = Rx1, 2 = Rx2, 3 = Rx3	Routing Priorities: Rx1, Rx2, Rx3	

Command Quick Reference

Page	Command Name	Form and Data Digit	Default	User
13-3	Select Receiver-to-Tx2 Audio Routing Priority	(PW) 90 01 x x x * x = 1, 2, 3 1 = Rx1, 2 = Rx2, 3 = Rx3	Routing Priorities: Rx1, Rx2, Rx3	
13-3	Select Receiver-to-Autopatch Audio Routing Priority	(PW) 90 02 x x x * x = 1, 2, 3 1 = Rx1, 2 = Rx2, 3 = Rx3	Routing Priorities: Rx1, Rx2, Rx3	
13-3	Select Receiver-to-Phone Line Monitor Audio Routing Priority	(PW) 90 03 x x x * x = 1, 2, 3 1 = Rx1, 2 = Rx2, 3 = Rx3	Routing Priorities: Rx1, Rx2, Rx3	
13-4	Select Rx1-to-Tx1 Access Mode (Path 1)	(PW) 57 00 x * 0 = no access 1 = carrier access 2 = PL access 3 = And-PL access 4 = Or-PL access 5 = Anti-PL access 6 = Always access	1 carrier access	
13-4	Select Rx2-to-Tx1 Access Mode (Path 2)	(PW) 57 01 x * Same as above	1 carrier access	
13-4	Select Rx3-to-Tx1 Access Mode (Path 3)	(PW) 57 02 x * Same as above	1 carrier access	
13-4	Select Rx1-to-Tx2 Access Mode (Path 4)	(PW) 57 03 x * Same as above	1 carrier access	
13-4	Select Rx2-to-Tx2 Access Mode (Path 5)	(PW) 57 04 x * Same as above	1 carrier access	
13-4	Select Rx3-to-Tx2 Access Mode (Path 6)	(PW) 57 05 x * Same as above	1 carrier access	
14-1	**Logic Inputs**			
14-2	Assign Macro to Logic Input 1 Hi-to-Lo	(PW) 26 20 (macro name) *	none	
14-2	Assign Macro to Logic Input 1 Lo-to-Hi	(PW) 26 21 (macro name) *	none	
14-2	Assign Macro to Logic Input 2 Hi-to-Lo	(PW) 26 22 (macro name) *	none	
14-2	Assign Macro to Logic Input 2 Lo-to-Hi	(PW) 26 23 (macro name) *	none	
14-2	Assign Macro to Logic Input 3 Hi-to-Lo	(PW) 26 24 (macro name) *	none	
14-2	Assign Macro to Logic Input 3 Lo-to-Hi	(PW) 26 25 (macro name) *	none	
14-2	Assign Macro to Logic Input 4 Hi-to-Lo	(PW) 26 26 (macro name) *	none	
14-2	Assign Macro to Logic Input 4 Lo-to-Hi	(PW) 26 27 (macro name) *	none	
14-2	Assign Macro to Logic Input 5 Hi-to-Lo	(PW) 26 28 (macro name) *	none	
14-2	Assign Macro to Logic Input 5 Lo-to-Hi	(PW) 26 29 (macro name) *	none	
14-2	Assign Macro to Logic Input 6 Hi-to-Lo	(PW) 26 30 (macro name) *	none	

Command Quick Reference

Page	Command Name	Form and Data Digit	Default	User
14-2	Assign Macro to Logic Input 6 Lo-to-Hi	(PW) 26 31 (macro name) *	none	
14-2	Assign Macro to Phone Line Busy Input Hi-to-Lo	(PW) 26 32 (macro name) *	none	
14-2	Assign Macro to Phone Line Busy Input Lo-to-Hi	(PW) 26 33 (macro name) *	none	
14-2	Assign Macro to COR Input 1 Hi-to-Lo	(PW) 26 34 (macro name) *	none	
14-2	Assign Macro to COR Input 1 Lo-to-Hi	(PW) 26 35 (macro name) *	none	
14-2	Assign Macro to COR Input 2 Hi-to-Lo	(PW) 26 36 (macro name) *	none	
14-2	Assign Macro to COR Input 2 Lo-to-Hi	(PW) 26 37 (macro name) *	none	
14-2	Assign Macro to COR Input 3 Hi-to-Lo	(PW) 26 38 (macro name) *	none	
14-2	Assign Macro to COR Input 3 Lo-to-Hi	(PW) 26 39 (macro name) *	none	
14-3	Assign Macro to PL Input 1 Hi-to-Lo	(PW) 26 40 (macro name) *	none	
14-3	Assign Macro to PL Input 1 Lo-to-Hi	(PW) 26 41 (macro name) *	none	
14-3	Assign Macro to PL Input 2 Hi-to-Lo	(PW) 26 42 (macro name) *	none	
14-3	Assign Macro to PL Input 2 Lo-to-Hi	(PW) 26 43 (macro name) *	none	
14-3	Assign Macro to PL Input 3 Hi-to-Lo	(PW) 26 44 (macro name) *	none	
14-3	Assign Macro to PL Input 3 Lo-to-Hi	(PW) 26 45 (macro name) *	none	
15-1	**Logic Outputs**			
15-2	Select Logic Outputs Latched OFF	(PW) 71 (list of outputs 1-7) *	all OFF disabled	
15-2	Select Logic Outputs Latched ON	(PW) 70 (list of outputs 1-7) *	all OFF disabled	
15-2	Select Logic Outputs Momentary OFF	(PW) 73 (list of outputs 1-7) *	all OFF disabled	
15-2	Select Logic Outputs Momentary ON	(PW) 72 (list of outputs 1-7) *	all OFF disabled	
16-1	**Receiver Functions**			
16-2	Select Rx1 Start-of-Activity Macro	(PW) 26 67 (macro name) *	none	
16-2	Select Rx1 Post-Activity Macro	(PW) 26 68 (macro name) *	none	
16-2	Select Rx2 Start-of-Activity Macro	(PW) 26 69 (macro name) *	none	
16-2	Select Rx2 Post-Activity Macro	(PW) 26 70 (macro name) *	none	
16-2	Select Rx3 Start-of-Activity Macro	(PW) 26 71 (macro name) *	none	
16-2	Select Rx3 Post-Activity Macro	(PW) 26 72 (macro name) *	none	
16-2	Select Rx1 Post-Activity Timer	(PW) 99 00 xx * (00-99) = 0.0-9.9 minutes.	1.0 minute	
16-2	Select Rx2 Post-Activity Timer	(PW) 99 01 xx * (00-99) = 0.0-9.9 minutes.	1.0 minute	
16-2	Select Rx3 Post-Activity Timer	(PW) 99 02 xx * (00-99) = 0.0-9.9 minutes.	1.0 minute	
16-4	Select COR Pulse-Triggered Macro	(PW) 26 17 (macro name) *	none	

Command Quick Reference

Page	Command Name	Form and Data Digit	Default	User
16-4	Select COR Pulse Parameters	(PW) 47 0 x yyyy zzzz * x = *pulse count* (0-9) = 0-9 pulses 0 = 0 pulses 1 = 1 pulse 5 = 5 pulses ... etc. y = *minimum duration* (0001-9999) = 0.01-99.99 seconds 0001 = 0.01 seconds 0010 = 0.10 seconds 0100 = 1.00 seconds 1000 = 10.00 seconds 9999 = 99.99 seconds ... etc. z = *window time* Same as minimum duration	3 pulses, 0.5 second minimum duration, 5.0 second window time	
16-6	Enable/Disable End-of-Transmission Command Execution for Rx1	(PW) 63 57 x * 0 = OFF (disabled) 1 = ON (enabled)	OFF disabled (*) required to terminate commands	
16-6	Enable/Disable End-of-Transmission Command Execution for Rx2	(PW) 63 58 x * 0 = OFF (disabled) 1 = ON (enabled)	OFF disabled (*) required to terminate commands	
16-6	Enable/Disable End-of-Transmission Command Execution for Rx3	(PW) 63 59 x * 0 = OFF (disabled) 1 = ON (enabled)	OFF disabled (*) required to terminate commands	
16-8	Enable/Disable From-Start-of-Transmission Timer for Rx1	(PW) 63 64 x * 0 = OFF (disabled) 1 = ON (enabled)	OFF disabled	
16-8	Enable/Disable From-Start-of-Transmission Timer for Rx2	(PW) 63 65 x * 0 = OFF (disabled) 1 = ON (enabled)	OFF disabled	
16-8	Enable/Disable From-Start-of-Transmission Timer for Rx3	(PW) 63 66 x * 0 = OFF (disabled) 1 = ON (enabled)	OFF disabled	

Command Quick Reference

Page	Command Name	Form and Data Digit	Default	User
17-1	**Transmitter Functions**			
17-3	Select Courtesy Delay	(PW) 32 xx * (00-50) = 0.0-5.0 seconds 00 = 0.0 seconds 05 = 0.5 seconds 10 = 1.0 seconds 50 = 5.0 seconds ... etc.	0.0 seconds	
17-4	Select Dropout Delay	(PW) 30 xx * (00-50) = 0.0-5.0 seconds 00 = 0.0 seconds 05 = 0.5 seconds 10 = 1.0 seconds 50 = 5.0 seconds ... etc.	3.0 seconds	
17-5	Select Transmitter Timeout Timer	(PW) 40 xxx * (001-546) = 0.1-54.6 minutes 000 = infinity 001 = 0.1 minute 030 = 3.0 minutes 546 = 54.6 minutes ... etc.	3.0 minutes	
17-7	Reset Transmitter Timeout Timer	(PW) 10 *	none	
17-8	Enable/Disable Transmitter 1	(PW) 63 00 x * 0 = OFF (disabled) 1 = ON (enabled)	ON enabled	
17-8	Enable/Disable Transmitter 2	(PW) 63 22 x * 0 = OFF (disabled) 1 = ON (enabled)	ON enabled	
17-9	Key Transmitter (Timed)	(PW) 00 x yyy * x = *transmitter* 1 = Tx1 2 = Tx2 y = *duration* 000 = *cancel tx key* (001-546) = 0.1-54.6 minutes 001 = 0.1 minute 010 = 1.0 minute 100 = 10.0 minutes 546 = 54.6 minutes ... etc.	Tx1 and Tx2 not requested to key	
17-10	Key Transmitter 1 (Untimed)	(PW) 63 41 x * 0 = cancel tx key 1 = key tx	0 cancel tx key	
17-10	Key Transmitter 2 (Untimed)	(PW) 63 42 x * 0 = cancel tx key 1 = key tx	0 cancel tx key	
17-11	Enable/Disable Tx1 Minimum Unkey Delay	(PW) 63 31 x * 0 = OFF (disabled) 1 = ON (enabled)	ON enabled	

Command Quick Reference

Page	Command Name	Form and Data Digit	Default	User
17-11	Enable/Disable Tx2 Minimum Unkey Delay	(PW) 63 32 x * 0 = OFF (disabled) 1 = ON (enabled)	OFF disabled	
17-16	Select Tx1 Minimum Unkey Delay	(PW) 49 98 xxxx * (00-6553) = 0-655.3 second 0000 = 0.0 second 0001 = 0.1 second 0010 = 1.0 second 6553 = 655.3 seconds ... etc.	0.1 second when enabled	
17-16	Select Tx2 Minimum Unkey Delay	(PW) 49 99 xxxx * (0000-6553) = 0-655.3 seconds 0000 = 0.0 second 0001 = 0.1 second 0010 = 1.0 second 0100 = 10.0 seconds 6553 = 655.3 seconds ... etc.	0.1 second when enabled	
17-13	Assign Macro to Tx1 PTT Inactive-to-Active	(PW) 26 82 (macro name) *	none	
17-13	Assign Macro to Tx1 PTT Active-to-Inactive Before Unkey Delay	(PW) 26 83 (macro name) *	none	
17-13	Assign Macro to Tx1 PTT Active-to-Inactive After Unkey Delay	(PW) 26 84 (macro name) *	none	
17-13	Assign Macro to Tx2 PTT Inactive-to-Active	(PW) 26 85 (macro name) *	none	
17-13	Assign Macro to Tx2 PTT Active-to-Inactive Before Unkey Delay	(PW) 26 86 (macro name) *	none	
17-13	Assign Macro to Tx2 PTT Active-to-Inactive After Unkey Delay	(PW) 26 87 (macro name) *	none	
17-17	Assign Macro to Any-Rx-Active to Tx1	(PW) 26 11 (macro name) *	none	
17-17	Assign Macro to All-Rx-Inactive to Tx1	(PW) 26 09 (macro name) *	none	
17-17	Assign Macro to Any-Rx-Active to Tx2	(PW) 26 73 (macro name) *	none	
17-17	Assign Macro to All-Rx-Inactive to Tx2	(PW) 26 74 (macro name) *	none	
18-1	**Repeater Functions**			
18-2	Select Repeater Access Mode (Path 1)	(PW) 57 00 x * 0 = no access 1 = carrier access 2 = PL access 3 = And-PL access 4 = Or-PL access 5 = Anti-PL access 6 = Always access	1 carrier access	
18-4	Select Repeater Start-of-Activity Macro	(PW) 26 14 (macro name) *	none	
18-4	Select Repeater Post-Activity Macro	(PW) 26 15 (macro name) *	none	

Command Quick Reference

Page	Command Name	Form and Data Digit	Default	User
18-4	Select Repeater Activity Counter/Timer	(PW) 45 x yy * x = *event counter* 0-9 0 = each time 1 = every other time ... etc. y = *duration* (00-99) = 0.0-9.9 minutes	0 event count, 1.0 minute duration	
18-6	Select Anti-Kerchunk Key-Up Delay	(PW) 80 xx * (00-99) = 0.0-9.9 seconds	0 seconds (disabled)	
18-6	Select Anti-Kerchunk Re-Arm Delay	(PW) 99 10 xx * (00-99) = 0.0-9.9 minutes	0 minutes	
18-12	Select Anti-Kerchunk No Hangtime Mode	(PW) 63 30 x * 0 = OFF (disabled) 1 = ON (enabled)	OFF disabled	
18-9	Select Courtesy Message for Rx1	(PW) 31 10 (message) *	60 mS 440 Hz beep (9910 74 09)	
18-9	Select Courtesy Message for Rx2	(PW) 31 11 (message) *	60 mS 660 Hz beep (9910 74 16)	
18-9	Select Courtesy Message for Rx3	(PW) 31 12 (message) *	60 mS 880 Hz beep (9910 74 21)	
18-9	Review Courtesy Message for Rx1	(PW) 34 10 *	none	
18-9	Review Courtesy Message for Rx2	(PW) 34 11 *	none	
18-9	Review Courtesy Message for Rx3	(PW) 34 12 *	none	
18-11	Assign Macro to Any-Rx-Active to Tx1	(PW) 26 11 (macro name) *	none	
18-11	Assign Macro to All-Rx-Inactive to Tx1	(PW) 26 09 (macro name) *	none	
18-11	Assign Macro to Courtesy Message	(PW) 26 10 (macro name) *	none	
18-11	Assign Macro to Dropout Message	(PW) 26 08 (macro name) *	none	
18-11	Assign Macro to Repeater Timeout	(PW) 26 18 (macro name) *	none	
18-11	Assign Macro to Return-From-Repeater-Timeout	(PW) 26 19 (macro name) *	none	
19-1	**Base Station Functions**			
19-2	Enable/Disable Star/Pound Talkout	(PW) 63 13 x * 0 = OFF (disabled) 1 = ON (enabled)	OFF disabled	
19-4	Select Talkout Transmitter Mode	(PW) 63 14 x * 0 = Repeater Mode 1 = Base Station Mode	0, Repeater Mode	
19-5	Enable/Disable Command Execution on Interdigit Timer for Rx1	(PW) 63 60 x * 0 = OFF (disabled) 1 = ON (enabled)	OFF disabled	

Command Quick Reference

Page	Command Name	Form and Data Digit	Default	User
19-5	Enable/Disable Command Execution on Interdigit Timer for Rx2	(PW) 63 61 x * 0 = OFF (disabled) 1 = ON (enabled)	OFF disabled	
19-5	Enable/Disable Command Execution on Interdigit Timer for Rx3	(PW) 63 62 x * 0 = OFF (disabled) 1 = ON (enabled)	OFF disabled	
19-5	Enable/Disable Command Execution on Interdigit Timer for Phone Line	(PW) 63 63 x * 0 = OFF (disabled) 1 = ON (enabled)	OFF disabled	
20-1	**User Timers**			
20-2	Set Timer Timeout	(PW) 49 xx 03 yyyy * xx = *timer number*, 00-09 yyyy = *timeout* (0001-6553) = 0.1-655.3 seconds	1.0 second	
20-3	Assign Timer Event Macro	(PW) 49 xx 02 (macro name)* xx = *timer number*, 00-09	none	
20-3	Unassign Timer Event Macro	(PW) 49 xx 02 * xx = *timer number*, 00-09	none	
20-4	Stop Timer	(PW) 49 xx 00 * xx = *timer number*, 00-09	none	
20-5	Start/Restart Timer (Retriggerable)	(PW) 49 xx 01 * xx = *timer number*, 00-09	none	
20-6	Start Timer (One-Shot)	(PW) 49 xx 04 * xx = *timer number*, 00-09	none	
21-1	**Remote Base**			
21-5	**Remote Base Configuration**			
21-4	Assign Remote Base Password	(PW) 39 02 (new password)*	98	
21-5	Select Remote Base Access-Triggered Macro	(PW) 26 91 (macro name) * Note: invoked by *Access Remote Base* command.	none	
21-6	Select Remote Base Dump-Triggered Macro	(PW) 26 90 (macro name) * Note: invoked by *Dump Remote Base* command.	none	
21-6	Select Remote Base Off Message	(PW) 31 60 (message) *	OFF in CW	
21-6	Review Remote Base Off Message	(PW) 34 60 *	OFF in CW	
21-7	Reset RBI-1	(PW) 39 91 *	none	
21-8	Enable/Disable Remote Base -- Control Operator	(PW) 63 71 x * 0 = OFF (disabled) 1 = ON (enabled) Note: used by the Control Operator to enable/disable the remote base. Note: Remote Base enabled when (En71 AND (En72 OR En73)) = TRUE.	OFF disabled	

Command Quick Reference

Page	Command Name	Form and Data Digit	Default	User
21-8	Enable/Disable Remote Base -- Scheduler	(PW) 63 72 x * 0 = OFF (disabled) 1 = ON (enabled) Note: used by the Scheduler to enable/disable the remote base. Note: Remote Base enabled when (En71 AND (En72 OR En73)) = TRUE.	ON enabled	
21-8	Enable/Disable Remote Base -- Control Operator Override Scheduler Disable	(PW) 63 73 x * 0 = OFF (disabled) 1 = ON (enabled) Note: used by the Control Operator to override a scheduler disable of the remote base. Note: Remote Base enabled when (En71 AND (En72 OR En73)) = TRUE.	OFF disabled	
21-10	**Remote Base User Commands**			
21-12	Access Remote Base	(RBPW) 1 *		
21-13	Dump Remote Base	(RBPW) 0 *		
21-14	Speak Radio Configuration	(RBPW) 19 x * 0 = Frequency and Offset 1 = CTCSS Frequency 2 = Both 3 = Abbreviated Freq and Offset 4 = Abbreviated CTCSS Frequency 5 = Abbreviated Both	0	
21-16	Select Memory Channel and Band	(RBPW) 40 (band, channel) * *band* = 1 = 144 2 = 222 4 = 440 8 = 1200 *channel* = 1 thru maximum supported	none	
21-16	Macro: Select Memory Channel and Band	(RBPW) 20 (band, channel) * *band* = 1 = 144 2 = 222 4 = 440 8 = 1200 *channel* = 1 thru maximum supported	none	

Command Quick Reference

Page	Command Name	Form and Data Digit	Default	User
21-17	Select VFO Frequency and Offset	(RBPW) 41 (frequency, offset) * *frequency* 140.000 thru 149.995, 6-digits 220.000 thru 229.995, 6-digits 420.000 thru 449.995, 6-digits 1240.000 thru 1299.995, 7-digits The 1kHz digit can be only 0 or 5. *offset* 1 = Minus 2 = Simplex 3 = Plus 0 = On 1200, Minus 20. On 420-440, special offset depending on radio.	none	
21-17	Macro: Select VFO Frequency and Offset	(RBPW) 21 (frequency, offset) * *frequency* = 140.000 thru 149.995, 6-digits 220.000 thru 229.995, 6-digits 420.000 thru 449.995, 6-digits 1240.000 thru 1299.995, 7-digits The 1kHz digit can be only 0 or 5. *offset* = 1 = Minus 2 = Simplex 3 = Plus 0 = On 1200, Minus 20. On 420-440, special offset depending on radio.	none	
21-19	Select Transmitter Offset	(RBPW) 42 (offset) * offset: 1 = Minus 2 = Simplex 3 = Plus 0 = On 1200, Minus 20. On 420-440, special offset depending on radio.	none	
21-19	Macro: Select Transmitter Offset	(RBPW) 22 (offset) * *offset* = 1 = Minus 2 = Simplex 3 = Plus 0 = On 1200, Minus 20. On 420-440, special offset depending on radio.	none	
21-20	Enable/Disable Transmitter	(RBPW) 45 x * 1 = Enable 0 = Disable	disabled	
21-20	Macro: Enable/Disable Transmitter	(RBPW) 25 x * 1 = Enable 0 = Disable	disabled	

Command Quick Reference

Page	Command Name	Form and Data Digit	Default	User
21-21	Enable/Disable Receiver	(RBPW) 44 x * 1 = Enable 0 = Disable	enabled	
21-21	Macro: Enable/Disable Receiver	(RBPW) 24 x * 1 = Enable 0 = Disable	enabled	
21-22	Enable/Disable Radio Power	(RBPW) 46 x * 1 = Enable 0 = Disable	enabled	
21-22	Macro: Enable/Disable Radio Power	(RBPW) 26 x * 1 = Enable 0 = Disable	enabled	
21-23	Select Transmitter Power Output	(RBPW) 43 x * 1 = Low 2 = Medium 3 = High	none	
21-23	Macro: Select Transmitter Power Output	(RBPW) 23 x * 1 = Low 2 = Medium 3 = High	none	
21-24	Select Frequency of CTCSS	(RBPW) 47 (tone code) * See Page 10-5 for frequencies of 67.0 through 203.5. Above 203.5, use: 33 = 210.7 24 = 218.1 35 = 225.7 36 = 233.6 37 = 241.8 38 = 250.3	none	
21-24	Macro: Select Frequency of CTCSS	(RBPW) 27 (tone code) * See Page 10-5 for frequencies of 67.0 through 203.5. Above 203.5, use: 33 = 210.7 24 = 218.1 35 = 225.7 36 = 233.6 37 = 241.8 38 = 250.3	none	
21-25	Enable/Disable CTCSS Encoder	(RBPW) 48 x * 1 = Enable 0 = Disable	disabled	
21-25	Macro: Enable/Disable CTCSS Encoder	(RBPW) 28 x * 1 = Enable 0 = Disable	disabled	
21-26	Enable/Disable CTCSS Decoder	(RBPW) 49 x * 1 = Enable 0 = Disable	disabled	

Command Quick Reference

Page	Command Name	Form and Data Digit	Default	User
21-26	Macro: Enable/Disable CTCSS Decoder	(RBPW) 29 x * 1 = Enable 0 = Disable	disabled	
21-27	Send Current Settings	(RBPW) 39 *	none	
21-28	**Remote Base User Function Outputs**			
21-29	Select *RBI-1* Number of User Function Outputs in Group	(PW) 39 90 (number in group) *	8	
21-30	Select Individual RBI-1 User Function Outputs Latched ON	(RBPW) 11 (list of outputs 1-8) *	none	
21-30	Select Individual RBI-1 User Function Outputs Latched OFF	(RBPW) 12 (list of outputs 1-8) *	none	
21-31	Enter RBI-1 User Function Output Group	(RBPW) 10 (decimal number) * The decimal number can be set to 0 through the maximum set in the *Select Number of User Function Outputs* command. The following ranges are available by number of outputs: 0 = none available 1 = 0 or 1 2 = 0 thru 3 3 = 0 thru 7 4 = 0 thru 15 5 = 0 thru 31 6 = 0 thru 63 7 = 0 thru 127 8 = 0 thru 255	none	

Message Run-Time Variables

Run-Time Variable	Meaning	Example
9810	hour & minute, 12-hr format CW	2 45 in CW
9811	AM/PM, CW	PM in CW
9812	hour & minute, 24-hr format, CW	14 45 in CW
9813	day-of-week, CW	WED in CW
9814	month, CW	1 in CW
9815	day-of-month, CW	1 in CW
9816	seconds, CW	27 in CW
9820	hour & minute, 12-hr format, male voice	two forty-five (male)
9821	AM/PM, male voice	PM (male)
9822	hour & minute, 12-hr format, female voice	two forty-five (female)
9823	AM/PM, female voice	PM (female)
9824	hour & minute, 24-hr format, male voice	14 hours, 45 minutes (male)
9825	same as 9824 without “hours” & “minutes”	fourteen forty-five (male)
9826	day-of-week, male voice	Wednesday (male)
9827	cardinal day-of-month, male voice	one (male)
9828	ordinal day-of-month, male voice	first (male)
9829	month, male voice	January (male)
9830	“good morning/good afternoon/good evening”, female voice	good afternoon (female)
9831	“morning/afternoon/evening”, male voice	afternoon (male)
9832	seconds, male voice	twenty-seven (male)
9896	Call Count, CW	105 in CW
9897	Call Count, male voice	one zero five (male)
9898	Software Version, CW	203 in CW
9899	Software Version, male voice	two point zero three (male)

Message Control Characters

Control Character	Definition
9900	CW characters follow
9910	beep characters follow
9920	single-tone page follows
9930	two-tone page follows
9940	5/6-tone page follows
9950	DTMF characters follow
9960	synthesized speech characters follow
9981	route this message to transmitter #1 mixed with other audio
9982	route this message to transmitter #1 not mixed with other audio
9983	route this message to transmitter #2 mixed with other audio
9984	route this message to transmitter #2 not mixed with other audio
9985	route this message to phone line mixed with Rx audio
9986	route this message to phone line not mixed with Rx audio
9987	do not route remaining message audio to transmitter #1
9988	do not route remaining message audio to transmitter #2
9989	do not route remaining message audio to phone line
9990	save current routing settings
9991	restore saved routing settings
9999 xxxx	execute macro xxxx after prior message audio has been sent

Scheduler Day Code Table

Day Code	Explanation	Day Code	Explanation
01-31	calendar day-of-month	54	2nd Saturday of month
32	weekdays (Mon-Fri)	55	3rd Sunday of month
33	weekends (Sat-Sun)	56	3rd Monday of month
34	Sundays	57	3rd Tuesday of month
35	Mondays	58	3rd Wednesday of month
36	Tuesdays	59	3rd Thursday of month
37	Wednesdays	60	3rd Friday of month
38	Thursdays	61	3rd Saturday of month
39	Fridays	62	4th Sunday of month
40	Saturdays	63	4th Monday of month
41	1st Sunday of month	64	4th Tuesday of month
42	1st Monday of month	65	4th Wednesday of month
43	1st Tuesday of month	66	4th Thursday of month
44	1st Wednesday of month	67	4th Friday of month
45	1st Thursday of month	68	4th Saturday of month
46	1st Friday of month	69	5th Sunday of month
47	1st Saturday of month	70	5th Monday of month
48	2nd Sunday of month	71	5th Tuesday of month
49	2nd Monday of month	72	5th Wednesday of month
50	2nd Tuesday of month	73	5th Thursday of month
51	2nd Wednesday of month	74	5th Friday of month
52	2nd Thursday of month	75	5th Saturday of month
53	2nd Friday of month	99	every day (*wild card*)

Root Numbers (Commands) by Number

Page	Number	Description
17-9	00	Key Transmitter (Timed)
10-2	02	Enable/Disable CTCSS Encoder
10-3	03	Select Frequency of CTCSS
4-11 4-18	06	Select Frequency of CW/Beep
17-7	10	Reset Transmitter Timeout Timer
4-12	11	Send Next CW Message Slowly
4-13	12	Select Normal CW Speed
4-13	13	Select Slow CW Speed
4-39	15	Send Message
6-5	20	Create New Macro
6-10	21	Erase Macro
6-11	22	Erase All Macros
7-22	23	Change Autopatch Access Password
8-2	25	Set Clock and Calendar
A-50	26	Set Event-Triggered Macro *(See table page A-50.)*
6-12	27	Rename Macro
9-2	28	Create Scheduler Setpoint
6-7	29	Append to Macro
17-4	30	Select Transmitter Dropout Delay
A-52	31	Select Message *(See table page A-52.)*
17-3	32	Select Transmitter Courtesy Delay
6-9	33	List Macro in CW
A-52	34	Review Message *(See table page A-52.)*
6-17	35	List Macro in Speech
21-4	39 02	Assign Remote Base Password
21-29	39 90	Select *RBI-1* Number of User Function Outputs in Group
21-7	39 91	Reset *RBI-1*
17-5	40	Select Transmitter Timeout Timer
18-4	45	Select Repeater Activity Counter/Timer
16-4	47	Select COR Pulse Parameters
8-4	48	Adjust Daylight Savings Time
20-1 A-53	49	User Timers Set xxx.x Seconds Timers *(See table page A-53.)*
12-11	50	Select ID Tail Message
12-5	51	Select ID Message Interval
12-6	54	Reset Initial ID Message to Normal ID Message for Tx1
12-7	55	Send Initial ID Message for Tx1
A-53	57	Select Access Mode *(See table page A-53.)*

Root Numbers (Commands) by Number

7-60	60	Select Autopatch Call Types
7-5	61	Select Autopatch Dialing Mode
A-54	63	Enable/Disable Software Switches *(See page A-54.)*
7-41	64	Select Phone Line Answer Mode
7-15	65	Select Autopatch Timeout Timer
7-30	67	Enter/Clear Autopatch Reject Number Table
7-28	68	Enter/Clear Autopatch Accepted Number Table
7-36	69	Clear Autopatch Call Counter
15-2	70	Select Logic Outputs Latched ON
15-2	71	Select Logic Outputs Latched OFF
15-2	72	Select Logic Outputs Momentary ON
15-2	73	Select Logic Outputs Momentary OFF
7-44	79	Select Phone Line Off-Hook Timer
18-6	80	Select Repeater Anti-Kerchunk Key-Up Delay
7-16	81	Reset Autopatch Timeout Timer
11-7	82	Select DTMF Decoder Interdigit Timer
7-9	83	Dump Autopatch Using A Code
7-54	83 1	Landline Hookflash
7-55	83 2	Autopatch Go Off-Hook
7-55	83 3	Autopatch Go Off-Hook, Ignore Busy Logic Input
7-56	83 10	Select/Delete Autopatch Dialing Prefix
7-33	84	Autopatch Redial Last Number
7-34	85	Clear Autopatch Redialer
7-37	86	Send Autopatch Call Count in CW
7-47	87	Trigger Reverse Patch
7-48	88	Answer Reverse Patch
11-3	89	Select DTMF Priority/Scan
13-3	90	Select Audio Routing Priorities
7-70	91	Select Autopatch Command Response Message Routing
5-2	92	Assign Control Operator Password
5-3	93	Assign Master Password
5-4	94	Assign Control Operator Privilege level
11-8	96	Select DTMF Decoder Mute Delay
6-14	98	Pause Command Execution
A-55	99	Select xx.x Minute Timers *(See table page A-55.)*

Event Macros by Number

Assign with (PW) 26 (number) (macro) *
Erase with (PW) 26 (number) *

Page	Number	Description
6-15	00	Power-On Reset Macro
12-4	03	Initial ID Macro for Tx1
12-4	04	Normal ID Macro for Tx1
12-4	05	Impolite ID Macro for Tx1
7-64	06	Any-Receiver-Active-to-Autopatch-Triggered Macro
7-64	07	All-Receivers-Inactive-to-Autopatch-Triggered Macro
18-11	08	Dropout Message-Triggered Macro
18-11	09	All-Receivers-Inactive-to-Tx1-Triggered Macro
18-11	10	Courtesy Message-Triggered Macro
18-11	11	Any-Receiver-Active-to-Tx1-Triggered Macro
7-10	12	Autopatch Access-Triggered Macro
7-10	13	Autopatch Dump-Triggered Macro
18-4	14	Repeater Start-of-Activity Macro
18-4	15	Repeater Post-Activity Macro
7-43	16	Phone Line Answer Macro
16-4	17	COR Pulse-Triggered Macro
18-11	18	Repeater Timeout Macro
18-11	19	Repeater Return-From-Timeout Macro
14-2	20	Logic Input 1 Hi-to-Lo Macro
14-2	21	Logic Input 1 Lo-to-Hi Macro
14-2	22	Logic Input 2 Hi-to-Lo Macro
14-2	23	Logic Input 2 Lo-to-Hi Macro
14-2	24	Logic Input 3 Hi-to-Lo Macro
14-2	25	Logic Input 3 Lo-to-Hi Macro
14-2	26	Logic Input 4 Hi-to-Lo Macro
14-2	27	Logic Input 4 Lo-to-Hi Macro
14-2	28	Logic Input 5 Hi-to-Lo Macro
14-2	29	Logic Input 5 Lo-to-Hi Macro
14-2	30	Logic Input 6 Hi-to-Lo Macro
14-2	31	Logic Input 6 Lo-to-Hi Macro
14-2	32	Phone Line Busy Input Hi-to-Lo Macro
14-2	33	Phone Line Busy Input Lo-to-Hi Macro
14-2	34	COR Input 1 Hi-to-Lo Macro
14-2	35	COR Input 1 Lo-to-Hi Macro
14-2	36	COR Input 2 Hi-to-Lo Macro
14-2	37	COR Input 2 Lo-to-Hi Macro
14-2	38	COR Input 3 Hi-to-Lo Macro

Event Macros by Number

Assign with (PW) 26 (number) (macro) *
Erase with (PW) 26 (number) *

14-2	39	COR Input 3 Lo-to-Hi Macro
14-2	40	PL Input 1 Hi-to-Lo Macro
14-2	41	PL Input 1 Lo-to-Hi Macro
14-2	42	PL Input 2 Hi-to-Lo Macro
14-2	43	PL Input 2 Lo-to-Hi Macro
14-2	44	PL Input 3 Hi-to-Lo Macro
14-2	45	PL Input 3 Lo-to-Hi Macro
12-4	46	Initial ID Macro for Tx2
12-4	47	Normal ID Macro for Tx2
12-4	48	Impolite ID Macro for Tx2
11-15	49	DTMF Digit Decoded-Triggered Macro
11-11	50	Long-Tone Zero Macro
11-11	51	Long-Tone One Macro
11-11	52	Long-Tone Two Macro
11-11	53	Long-Tone Three Macro
11-11	54	Long-Tone Four Macro
11-11	55	Long-Tone Five Macro
11-11	56	Long-Tone Six Macro
11-11	57	Long-Tone Seven Macro
11-11	58	Long-Tone Eight Macro
11-11	59	Long-Tone Nine Macro
11-11	60	Long-Tone A Macro
11-11	61	Long-Tone B Macro
11-11	62	Long-Tone C Macro
11-11	63	Long-Tone D Macro
11-11	64	Long-Tone Star (*) Macro
11-11	65	Long-Tone Pound (#) Macro
16-2	67	Rx1Start-of-Activity Macro
16-2	68	Rx1 Post-Activity Macro
16-2	69	Rx2 Start-of-Activity Macro
16-2	70	Rx2 Post-Activity Macro
16-2	71	Rx3 Start-of-Activity Macro
16-2	72	Rx3 Post-Activity Macro
17-17	73	Any-Receiver-Active-to-Tx2-Triggered Macro
17-17	74	All-Receivers-Inactive-to-Tx2-Triggered Macro
7-69	75	Autopatch Access-From-Rx1-Triggered Macro
7-69	76	Autopatch Access-From-Rx2-Triggered Macro
7-69	77	Autopatch Access-From-Rx3-Triggered Macro
7-63	80	Phone Line Incoming Ring-Triggered Macro

Event Macros by Number

Assign with (PW) 26 (number) (macro) *
Erase with (PW) 26 (number) *

7-62	81	Control Line Dump Macro
17-13	82	Tx1 Inactive-to-Active Macro
17-13	83	Tx1 Active-to-Inactive Before Unkey Delay Macro
17-13	84	Tx1 Active-to-Inactive Macro
17-13	85	Tx2 Inactive-to-Active Macro
17-13	86	Tx2 Active-to-Inactive Before Unkey Delay Macro
17-13	87	Tx2 Active-to-Inactive Macro
21-5	90	Remote Base Access-Triggered Macro
21-5	91	Remote Base Dump-Triggered Macro

Messages by Number

Program with (PW) 31 (number) (message) *
Review with (PW) 34 (number) *

Page	Number	Description	Default
4-46	00	Warm Reset Message	?RES in CW
4-45	01	OK Command Response Message	OK in CW
4-45	02	Error 1 Command Response Message	?ERR1 in CW
4-45	03	Error 2 Command Response Message	?ERR2 in CW
18-9	10	Courtesy Message for Rx1	60 mS 440 Hz (74 09)
18-9	11	Courtesy Message for Rx2	60 mS 660 Hz (74 16)
18-9	12	Courtesy Message for Rx3	60 mS 880 Hz (74 21)
4-35	13	Dropout Message	none
4-35	16	Pre-Timeout Message	TO in CW
4-35	19	Post-Timeout Message	TO in CW
12-10	28	Initial ID Programmable Tail Message for Tx1	none
12-10	29	Normal ID Programmable Tail Message for Tx1	none
12-9	30	Initial ID Message for Tx1	ID in CW
12-9	31	Normal ID Message for Tx1	ID in CW
12-9	32	Impolite ID Message for Tx1	none
12-9	33	Initial ID Message for Tx2	9983 ID in CW
12-9	34	Normal ID Message for Tx2	9983 ID in CW
12-9	35	Impolite ID Message for Tx2	none
7-6	40	Autopatch Dialing Message	AS in CW
7-17	41	Autopatch Timeout Warning Message	AR in CW
7-51	42	Landline Busy Message	BZ in CW
7-51	43	Autopatch Dump Message	none
7-51	44	Autopatch Off Message	OFF in CW
7-51	45	Autopatch Error Message (Invalid phone number)	?ERR in CW
7-51	46	Autopatch Reject Message (Match in Reject Table)	?REJ in CW
7-51	47	Autopatch No-Redial-Number Message	CLR in CW
7-42	50	Phone Line Answer Message	3 beeps (74 09 21 33)
7-49	51	Reverse Patch Ringout Message	55 in CW
21-6	60	Remote Base Off Message	OFF in CW
4-44	70	User Message 1	none
4-44	71	User Message 2	none
4-44	72	User Message 3	none
4-44	73	User Message 4	none

Tenth-Second Timers by Number

User Timers: (PW) 49 (number) (function) (value) *
Other Timers: (PW) 49 (number) (value) *

Page	Number	Description
20-1	00-09	User Timers
7-53	96	Autopatch Pause (“B”) Digit Time
12-13	97	Select ID Pending Interval for Tx1 and Tx2
17-16	98	Select Tx1 Unkey Delay
17-16	99	Select Tx2 Unkey Delay

Path Access Mode by Number

(PW) 57 (number) (mode) *

Page	Number	Description
13-5	00	Rx1-to-Tx1 Access Mode (Path1)
13-5	01	Rx2-to-Tx1 Access Mode (Path2)
13-5	02	Rx3-to-Tx1 Access Mode (Path3)
13-5	03	Rx1-to-Tx2 Access Mode (Path4)
13-5	04	Rx2-to-Tx2 Access Mode (Path5)
13-5	05	Rx3-to-Tx2 Access Mode (Path6)
13-5	06	Rx1-to-DTMF Decoder Access Mode
13-5	07	Rx2-to-DTMF Decoder Access Mode
13-5	08	Rx3-to-DTMF Decoder Access Mode

Software Switches by Number

(PW) 63 (number) (enable/disable) *

Page	Number	Description
17-8	00	Enable/Disable Transmitter 1
4-10	01	Enable/Disable CW
11-2	02	Enable/Disable Command Responses
7-7	04	Enable/Disable Autopatch Dialing Mixed-Mode
7-8	05	Enable/Disable Autopatch Pound Down (# Dump)
7-12	06	Enable/Disable Autopatch Privacy
7-11	07	Enable/Disable Autopatch Full-Duplex Mode
7-13	08	Enable/Disable Autopatch Repeater-to-Phone DTMF Mute
7-58	09	Enable/Disable ID During Autopatch
7-59	10	Require Autopatch Dump Before Next Call
7-23	11	Enable/Disable Autopatch Access Without Password
19-2	13	Enable/Disable Base Station Star/Pound Talkout
19-4	14	Select Base Station Talkout Transmitter Mode
9-8	15	Enable/Disable Scheduler
17-8	22	Enable/Disable Transmitter 2
7-45	23	Monitor Repeater Receiver (Rx1)
7-45	26	Monitor Repeater Receiver (Rx1) and Talk Out Tx1
17-11	31	Enable/Disable Tx1 Minimum Unkey Delay
17-11	32	Enable/Disable Tx2 Minimum Unkey Delay
17-10	41	Key Transmitter 1 (Untimed)
17-10	42	Key Transmitter 2 (Untimed)
11-9	50	Enable/Disable Rx1-Tx1 DTMF Mute
11-9	51	Enable/Disable Rx2-Tx1 DTMF Mute
11-9	52	Enable/Disable Rx3-Tx1 DTMF Mute
11-9	53	Enable/Disable Rx1-Tx2 DTMF Mute
11-9	54	Enable/Disable Rx2-Tx2 DTMF Mute
11-9	55	Enable/Disable Rx3-Tx2 DTMF Mute
16-6	57	Enable/Disable End-of-Transmission Command Execution for Rx1
16-6	58	Enable/Disable End-of-Transmission Command Execution for Rx2
16-6	59	Enable/Disable End-of-Transmission Command Execution for Rx3
19-5	60	Enable/Disable Command Execution on Interdigit Timer for Rx1
19-5	61	Enable/Disable Command Execution on Interdigit Timer for Rx2
19-5	62	Enable/Disable Command Execution on Interdigit Timer for Rx3
19-5	63	Enable/Disable Command Execution on Interdigit Timer for Phone Line
16-8	64	Enable/Disable From-Start-of-Transmission Timer for Rx1
16-8	65	Enable/Disable From-Start-of-Transmission Timer for Rx2
16-8	66	Enable/Disable From-Start-of-Transmission Timer for Rx3

Software Switches by Number

(PW) 63 (number) (enable/disable) *

21-8	70	Enable/Disable Remote Base -- Control Operator
21-8	71	Enable/Disable Remote Base -- Scheduler
21-8	72	Enable/Disable Remote Base -- Control Op Scheduler Override
13-2	81	Enable/Disable Path 1 (Rx1 to Tx1)
13-2	82	Enable/Disable Path 2 (Rx2 to Tx1)
13-2	83	Enable/Disable Path 3 (Rx3 to Tx1)
13-2	84	Enable/Disable Path 4 (Rx1 to Tx2)
13-2	85	Enable/Disable Path 5 (Rx2 to Tx2)
13-2	86	Enable/Disable Path 6 (Rx3 to Tx2)
13-2	87	Enable/Disable Path 7 (Rx1 to LL)
13-2	88	Enable/Disable Path 8 (Rx2 to LL)
13-2	89	Enable/Disable Path 9 (Rx3 to LL)
13-2	90	Enable/Disable Path 10 (LL to Tx1)
13-2	91	Enable/Disable Path 11 (LL to Tx2)
5-6	99	Enable/Disable Front Panel

Tenth-Minute Timers by Number

(PW) 99 (number) (value) *

Page	Number	Description
16-2	00	Rx1 Post-Activity Timer
16-2	01	Rx2 Post-Activity Timer
16-2	02	Rx3 Post-Activity Timer
18-6	10	Repeater Anti-Kerchunk Re-Arm Delay