

S-Com 7K Version 2.04 Release Notes
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Overview

This firmware version contains new functionality to better integrate the 7K Digital Audio Board (DAB) with the operation of the repeater controller. The details and extent of those features will be provided in that product's documentation.

In addition to DAB specific additions, additional controller enhancements were introduced and are presented in this document.

New Commands

Stop playback of current speech word

{PW} 16

Issuing this command will kill a spoken word currently in progress. It's intent is to provide a means of halting a long informational message.

Remove Command From Macro

{PW} 24 xxxx

Removes last command from Macro 'xxxx'.

Reports "OK" if successful, or "? LAST" if there is only one command in the macro

Modify ID Timers

{PW} 36 T F xxxx

T = '1' for Transmitter 1, or '2' for Transmitter 2

F = function code

- 0 Terminate ID timer activity. If ID is pending, it is cancelled.
- 1 Set ID timer to maximum. ID is NOT triggered.
- 2 Set ID timer to maximum. ID is immediately triggered.
- 3 Ensure Normal ID cycle. Start's ID timer if not already running, otherwise this command has no effect.
- 4 Ensure Final ID cycle. Start's ID timer if not already running, and sets the pending ID flag as though user activity had occurred. If timer was running, this command has no effect.
- 5 If ID timer is not running, set the ID timer to maximum and execute macro 'xxxx'

xxxx = Macro name for function 5

Example:

A friendly on the hour ID

```
{PW} 28 01 8001 99 99 06 59 ;enable on the hour ID's starting at 6:59am
{PW} 28 02 8002 99 99 21 01 ;disable on the hour ID's ending at 9:01pm

{PW} 20 8001 {PW} 28 00 4000 99 99 99 00 ;create hourly scheduler setpoint
{PW} 20 8002 {PW} 28 00 ;delete hourly scheduler setpoint

{PW} 20 4000 {PW} 36 5 4001 ;if ID timer is not running, call macro 4001
;and start the ID timer running
```

; Macro 4001 speaks "KA9FUR repeater" and if interrupted by user activity will revert to "KA9FUR" in CW

```
{PW} 20 4001 {PW} 15 9981 9961 000 0260 0001 0335 0149 0540 0401 0421 9902 54 59 0852 67 20 10 09 15 30 27
```

Message handler initial message delay

{PW} 49 90/91/92/93 xx

Timer's 90 through 93 now allow the user to determine the initial message delay value for individual message types.

In previous versions, these timer delay values were fixed at 1.0 seconds. The user can now specify a timer value of zero to 5.0 seconds with 100ms resolution.

Timer:

- 90 – CW pre-message delay associated with special message character '54'
- 91 – Beep pre-message delay associated with special message character '54'
- 92 – Paging pre-message delay that is always present
- 93 – Speech pre-message delay associated with special word '0000'

These timer delay's are utilized only at the beginning of a new message sequence, and with the exception of a paging sequence, the delay only occurs if the message begins with the special message character or word.

Examples:

```
{PW} 49 90 15 ;set CW initial delay to 1.5 seconds
{PW} 49 93 20 ;set speech initial delay to 2.0 seconds

;send CW message "KA9FUR" with an initial delay
{PW} 15 9900 54 59 0852 67 20 10 09 15 30 27

;send speech message "KA9FUR repeater" with an initial delay
{PW} 15 9960 0000 0260 0001 0335 0149 0540 0401 0421
```

IF-THEN-ELSE

{PW} 76 ff yyyy (zzzz)

'ff' is the feature to be tested

'yyyy' is the macro to be executed if the feature tests non-zero / true.

'zzzz' is the optional macro to be executed if the feature tests zero / false.

Function 'ff'	Item Tested	Function 'ff'	Item Tested
00	7KDAB installed	33	Rx1 Anti-Kerchunk Timer
01	User Input 1	34	Rx1 Anti-Kerchunk Rearm Timer
02	User Input 2	35	Rx1 Timeout Penalty Timer
03	User Input 3	36	Rx1 Activity Timer
04	User Input 4	37	Tx2 ID Timer
05	User Input 5	38	Tx2 Unkey Delay Timer
06	User Input 6	39	Rx2 Activity Timer
07	User Output 1	40	Rx3 Activity Timer
08	User Output 2	41	Autopatch Redial Timer
09	User Output 3	42	Autopatch Timeout Message Timer
10	User Output 4	43	Autopatch Call Duration Timer
11	User Output 5	44	Landline Control Timer
12	User Output 6	45	Landline Ringout Message Timer
13	User Output 7	46	Landline Timeout Warning Timer
14	Rx1 COR	47	Landline inter-ring timer
15	Rx1 CTCSS	48	User Timer 1
16	Rx2 COR	49	User Timer 2
17	Rx2 CTCSS	50	User Timer 3
18	Rx3 COR	51	User Timer 4
19	Rx3 CTCSS	52	User Timer 5
20	PTT 1	53	User Timer 6
21	PTT 2	54	User Timer 7
22	Land Line Busy Input	55	User Timer 8
23	Land Line Ring Input	56	User Timer 9
24	Land Line Busy Output	57	User Timer 10
25	Tx1 ID Timer	58	User Switch 1 (cmd 63 92 x)
26	Tx1 Post Activity Timer	59	User Switch 2 (cmd 63 93 x)
27	Tx1 Drop Out Timer	60	User Switch 3 (cmd 63 94 x)
28	Tx1 Courtesy Timer	61	User Switch 4 (cmd 63 95 x)
29	Tx1 Unkey Delay Timer	62	User Switch 5 (cmd 63 96 x)
30	Rx1->Tx1 Timeout Timer	63	User Switch 6 (cmd 63 97 x)
31	Rx2->Tx1 Timeout Timer	64	User Switch 7 (cmd 63 98 x)
32	Rx3->Tx1 Timeout Timer		

Example:

```
{PW} 76 03 2001 2000 ;test user input 3, if input is active then execute macro 2001,
;otherwise execute macro 2000.
```

New Switches

{PW} 63 16 x Daylight Savings time correction. Defaults to 'off'.

If switch is turned on, one hour will be added to the Real Time Clock at 2:00am on the first Sunday in April, and one hour will be subtracted at 2:00am on the last Sunday in October.

{PW} 63 19 x Ignore Landline Busy Input. Defaults to 'off'.

If switch is turned on, the landline busy input will be ignored by the interconnect routines and becomes available for the user to utilize as a generic user input with the commands that are otherwise already available.

{PW} 63 33 x Enable "OK" Command Responses. Defaults to 'on'.

{PW} 63 34 x Enable "?ERR" Command Responses. Defaults to 'on'.

Note: Switch 02 still acts as a master enable/disable function for command responses.

{PW} 63 35 x Courtesy message can be queued during message playback, Defaults to 'off'

Turning this switch on will, for example, allow a courtesy message to play after the initial ID.

{PW} 63 92 x User Soft Switch 1

{PW} 63 93 x User Soft Switch 2

{PW} 63 94 x User Soft Switch 3

{PW} 63 95 x User Soft Switch 4

{PW} 63 96 x User Soft Switch 5

{PW} 63 97 x User Soft Switch 6

{PW} 63 98 x User Soft Switch 7

All user switches default off and survive power failure. The user can test switch conditions with new user command 76.

Changed Commands

CTCSS Encoder

{PW} 02 f (plus additional digits as required)

Function code 'f'	Description
0	CTCSS Encoder OFF
1	CTCSS Encoder ON continuously when transmitter is active
2	Tx1 coupled OFF delay. Turns on when Transmitter goes active, and turns off when delay timer expires.
3	Receiver for Tx1 coupled OFF delay. Turns on when any receiver with a path to Tx1 goes active, and turns off when delay timer expires.
4	Receiver for Tx1 coupled loss OFF delay. Turns on when any receiver with a path to Tx1 is active, and upon signal loss starts delay timer. When delay timer expires, encoder is turned off.
7	Zero's the dynamic timer value, forcing the encoder to immediately turn off.
8 'xxx'	Set's the default timer value to 'xx.x" seconds. Valid range is 0 to 12.7 seconds.
9 'x'	Associates user output 'x' with the CTCSS encode function. 0 disables feature, 1-6 associate a User output with this feature.

Examples:

Encode during user transmissions and hold the encoder active for an additional 200ms after receiver squelch closes to allow for mobile flutter. Use this example for making your repeater more compatible with an on air linking method, such as IRLP, that relies on the CTCSS encoder following user activity.

```
{PW} 02 8 2 ;set timer value to 200ms  
{PW} 02 9 3 ;(optional) associate user output 3 with CTCSS encode function  
{PW} 02 4 ;set mode 4 to cause CTCSS to be encoded during all user transmissions
```

Function '7' could be used to disable the CTCSS encoder after a courtesy message is sent.

```
{PW} 02 8 127 ;set timer to maximum value  
{PW} 02 4 ;select mode 4  
{PW} 20 1234 {PW} 02 7 ;create macro 1234 with cmd 02 function 7  
{PW} 31 10 9910 74 09 9999 1234 ;60ms, 440Hz beep followed by macro 1234
```

Set Transmitter Timeout Timers

{PW} 40 r xxx

The new 'r', receiver, parameter allows the user to independently set different transmit timeout timer values based on the active receiver(s). Valid values are 1, 2, or 3.

The valid range for 'xxx' remains the same. A value of '0' (zero) disables the timeout timer for a given receiver.

The timeout logic was changed such that each receiver now has its own timeout timer. Once ANY timer is started, it is not reset until the courtesy message event occurs.

Command 10 will reset ALL timeout timers simultaneously.

Select DTMF Priority/Scan

{PW} 89 ...

This command was changed to cause the DTMF decoder immediately re-prioritize the DTMF inputs rather than waiting for a high priority device to release it.

Review Initial and Normal Tail ID's

{PW} 50 0/1 99

This command now only sends the tail ID message rather than causing the full ID to be sent. The change was necessary due to some code restructuring related to how these messages are stored internally.

Set DTMF Mute Delay

{PW} 96 t xx

The DTMF muting logic has been changed to utilize two separate mute delay timers. One timer applies only to the first DTMF digit, the other timer applies to all subsequent digits. Setting the mute time for the first digit relatively short or to zero, and the mute timer for all subsequent digits substantially longer will provide better performance in situations where decoder falsing has been a problem.

When a "*" or "#" command terminator is received, the 1st digit delay timer value will be loaded into the mute timer, thus un-muting the audio more quickly upon command completion.

A 't' (timer) value of zero (0) allows the first digit delay timer to be set, and a value of one (1) allows the delay timer for all subsequent digits to be set.

The timer value 'xx' is set in 100ms units and can range from zero to 2.5 seconds.

On a cold reset, both timers default to 500ms.

Example:

```
{PW} 96 0 3 ;set 1st digit delay timer to 300ms  
{PW} 96 1 25 ;set subsequent digit delay timer to 2.5 seconds
```

New Message Types

Four new message types were added to support interruptible speech and Morse messages.

9901 - CW Primary
9902 - CW Secondary
9911 - Beep Primary
9912 - Beep Secondary
9961 - Speech Primary
9962 - Speech Secondary

Primary messages will cease playback if a receiver with its path enabled to a transmitter associated with the message playback is active at the time the playback commences, or any time during message playback.

Secondary messages will only play in circumstances when a primary message would not.

Examples:

This message would speak "KA9FUR Repeater" but if a receiver went active would revert to "KA9FUR" in CW.

```
{PW} 15 9981 9961 0260 0001 0335 0149 0540 0401 0421 9902 59 0852 67 20 10 09 15 30 27
```

The following set's the courtesy tone as mixed on Tx1 as a secondary beep message such that any activity on the repeater will cause the courtesy message to be discarded. When the new switch "35" is enabled, courtesy messages will be queued when the repeater is initially activated and an ID is sent. If the resulting courtesy message is not sent as a "primary" message, then the courtesy message would be sent immediately after the initial ID even if there was user activity present.

```
{PW} 31 10 9981 9911 76 55 57 0459 12 57 0512 04 ;set courtesy message
```

Operational Changes

Added area codes 877 and 866 to the toll free table.

Command 30 and 80 will now accept 1 or 2 digit timer values.

Command 32, transmitter drop out delay, will now accept 1, 2, or 3 digit timer values of up to 12.7 seconds.

Commands 40, 65, and 79 will now accept a single zero rather than requiring 3 zeros.

A new courtesy message will not be placed in the global message queue if there is still a courtesy message pending in the queue. Note that this change only applies to the courtesy message ({PW} 31 10...) and that the courtesy event macro will still be triggered without regard as to whether the courtesy message has been sent or not.

The speech board timeout timer is now 10 seconds rather than the 25 seconds in previous versions (even though it was documented as being 5 seconds it was really 25 seconds).

The number of permissible macros has been increased to 340.

Most of the default CW messages were modified to include the special initial delay character '54' at the beginning of the message such that an initial delay is present for normal controller responses.

Bugs Fixed

Special Messages 9860 through 9895 will no longer cause the controller to crash.