

# ELECRAFT K3 PROGRAMMER'S REFERENCE

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## Command Set Overview

The K3 firmware provides a wide range of remote control commands. A brief description of each command appears in Table 1, and full details can be found in the Command Reference section. For the K2 command set, see the KIO2 Programmer's Reference; this document applies only to the K3.

**Table 1** K3 Control Commands. **Note:** (\*) = new command, not available on the Elecraft K2.

Name	Description	Name	Description	Name	Description
!, @ *	Direct DSP control	FW	Filter bandwidth and #	RA	RX attenuator on/off
AG *	AF gain	GT	AGC speed and on/off	RC	RIT/XIT offset clear
AI	Auto-info mode	ID	Radio identification	RD	RIT down
AN	Antenna selection	IF	General information	RG *	RF gain
BG	Bargraph level	K2	K2 command mode	RT	RIT on/off
BR *	Baud rate set	K3 *	K3 command mode	RU	RIT up
DB *	VFO B disp. read/write	KS	Keyer speed	RV *	Development use only
DL *	Development use only	KY	Keyboard CW	RX	Receive mode
DM *	Development use only	LD *	Development use only	SM	S-meter
DN	VFO (or menu) down	LK	VFO lock	SQ	Squelch level
DS	VFO A display read/write	MD	Operating mode	SWT/H *	Switch emulation
FA	VFO A frequency	MN *	Menu access	UP	VFO (or menu) up
FB	VFO B frequency	NB	Noise blanker mode	TQ	Transmit query
FN *	Func. encoder control	PA	RX preamp on/off	TT *	Text-to-Terminal
FR	Receive VFO selection	PC	Power output level	TX	Transmit mode (SSB)
FT	Transmit VFO selection	PS *	Power-on/off control	XT	XIT on/off

Some commands emulate front-panel controls, so they can be used to quickly write applications that have a K3 "look and feel." The **SWT/SWH** commands emulate switch TAP or HOLD. **MN** directly accesses menu functions. The **DS** command reads the VFO A display, including the decimal points, annunciators, and flash/no-flash state of each annunciator. **DB** reads the VFO B display, which is fully alphanumeric.

Most of the remaining commands directly read or modify radio *parameters*, such as the VFO A and B frequencies, operating mode, keyer speed, power level, and filter bandwidth.

There is often an overlap in command functionality between emulation and parametric commands. For example, you can select the *next* operating mode using **SW** to virtually "tap" the **MODE** switch, or you directly set a *specific* mode using **MD**. Another case involves the **BG** and **SM** commands. **BG** reads the bargraph level in either receive or transmit mode, so it can retrieve the S-meter level, RF output level, or ALC level, depending on the context. The **SM** command reads only the S-meter level.

### Using a Terminal Program

K3 commands are human readable (text), which means you can experiment with them using a terminal program. When setting up the terminal program, turn on *local echo* and *local line feed* so you can see what you've sent to the K3. Type commands using lower case so you can easily distinguish K3 responses, which will be in upper case. You can enter carriage returns before or after commands to create white space. The K3 doesn't provide any text editing support, so if you make a mistake, don't hit backspace--just type a semicolon (;) and start over.

## ***Command Format***

Commands sent from the computer to the K3 are considered either GETs or SETs. GET commands are used by the computer to get information from the K3; the K3 will then provide an appropriate response message (RSP). SET commands are sent by the computer to change the radio's configuration or initiate an event; in most cases they supply a data value. A SET can be followed by a GET to verify the new settings, or the *auto-info* mechanism can be used for confirmation that something has changed (see **AI** in the Meta-commands section).

SET commands use two characters, optional data fields, and are terminated with a semicolon [;]. Examples:

<b>KS020;</b>	Computer sets CW speed to 20 WPM (data = 020)
<b>MD1;</b>	Computer selects LSB mode (data = 1)

Nearly every SET command that supplies a data field has a corresponding GET command, which is just the two-letter command with no data. The data format of the response (RSP) message from the K3 is usually identical to the format of the SET data. Exceptions are noted in the command descriptions.

Characters sent to the K3 can use either upper or lower case. The K3 will always respond with upper case.

## ***Extended Commands***

Some commands have an alternate data format which provides enhanced functionality. These alternate formats are referred to as **extended** commands. For details, see **K2** and **K3** in the Meta-commands section.

## ***Response Time***

The K3 will respond to most commands in less than 10 milliseconds. To cover exceptions, we recommend using a timeout of 100 ms. Some commands have additional timing requirements as explained later.

## ***Polling***

Since the K3 provides a full-duplex interface, the computer can poll the K3 for data at any time. However, we recommend that TX-mode polling not be used unless necessary. This will prevent any problems with serial I/O that might be caused if high RF voltages are present on the K3 chassis, such as might occur if grounding is inadequate.

## ***Busy Indication***

**Note:** This section will be updated to accurately reflect the K3's behavior.

Most SET commands cannot be safely handled when the K3 is in a *busy* state, including transmit, direct frequency entry prompting, and scanning. The K3 will respond with **?**; to disallowed commands at such times. The only SET commands that are allowed unconditionally during busy states are: **AI**, **K2**, **KS**, **KY**, **PC**, **RX**, and **SW**. In addition, **RC** (RIT clear) commands that occur during transmit will return **?**; but will still take effect, clearing the RIT/XIT offset when the K3 next returns to receive mode, however briefly. Finally, during CW message repeat intervals, **RC**, **RD**, and **RU** are all allowed (RIT clear/down/up). This is useful when listening for off-frequency callers between repeating CQ messages.

## Remote Control of Potentiometers

AF GAIN, SUB AF GAIN, RF GAIN, SUB RF GAIN, and MAIN/SUB SQUELCH (if applicable) are controlled by their potentiometers or by the computer, whichever was changed last.

### Meta-commands: *AI*, *K2* and *K3*

The **AI**, **K2**, and **K3** commands do not affect the transceiver's configuration. Instead, these *meta commands* change the way other commands behave. During program development, these commands can be left at their default values. As the program progresses, you may wish to use these commands to gain access to more advanced features.

Meta commands can be sent as often as you wish. You can even use them to *bracket* one or more selected commands if you don't want to permanently change the mode. For example: **K22; FW; K20;** selects command mode **K22** just for the benefit of the **FW** command, then returns to mode **K20**. (The extended **FW** response returns XFIL number and AFIL mode.)

**AI (Auto-info mode):** The **AI** meta-command controls how and when the K3 responds to commands:

*AI0, No Auto-info:* This is the default. No radio information will be automatically reported. (You can still request specific information using GET commands.)

*AI1, Auto-Info Mode 1:* The K3 sends an **IF** (info) response within 1 second when any frequency or mode-related event occurs, either manually (at the radio itself) or via computer commands. These events include: band change, mode change, VFO movement, RIT/XIT offset change or clear, and several additional switches (A/B, REV, A=B, SPLIT, CW REV, RIT, XIT). The **IF** responses are suppressed during VFO movement. Note: putting the K3 into auto-info mode 1 (by sending **AI1;**) causes an initial **IF** response.

*AI2, Auto-Info Mode 2:* The K3 sends an appropriate response (**FA**, **FB**, **IF**, **GT**, etc.) whenever any front-panel event occurs. This applies to all of the events mentioned for mode **AI1**, as well as all potentiometer changes except AF GAIN and RF GAIN, and all switch presses<sup>1</sup>. In some cases responses are grouped; e.g., pressing switches will report the present state of several parameters, including the one related to the new event.

*AI3, Combination:* This is similar to mode **AI2** and is provided only for compatibility with existing programs.

**K2 (K2 command mode):** The **K2** meta-command is applicable to both the K2 and K3; it is retained for the K3 to provide improved compatibility with K2 software applications. It modifies the data format of selected commands:

*K20, Normal mode:* This is the default. In this mode, command "extensions" are disabled, such as control of the audio filter by the **FW** command. This may simplify program development, and also provides greater compatibility with existing software.

*K21, Normal/rtty\_off:* Same as **K20**, except that the **MD** and **IF** commands report RTTY and RTTY-reverse modes as LSB and USB, respectively. This may be useful if your program doesn't support the K3's RTTY mode.

*K22, Extended mode:* Enables all command extensions. This is the mode we recommend for use with new application programs or programs that will be modified to function better with the K3.

*K23, Extended/rtty\_off:* Enables all extensions, but like mode **K21**, alters the nature of the **MD** and **IF** commands.

**K3 (K3 command mode):** The **K3** meta-command modifies the data format of selected commands:

*K30, Normal mode:* This is the default. In this mode, K3 command "extensions" are disabled.

*K31, K3 Extended Mode:* Enables K3 command extensions.

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<sup>1</sup> The only switch combination that causes an auto-info response is AGC OFF (**PRE/ATT** + **AGC**), and only if **AI** mode 2 or 3 is in effect, as well as **K2** mode 2 or mode 3.

## Command Reference

**Note:** Commands marked with an asterisk (\*) are new commands, not available on the Elecraft K2.

This section describes all K3 GET, SET and RSP (response) command formats. Unless otherwise noted, the GET format is just the two letters of the command followed by a semicolon. The format for SET and RSP data is identical unless noted. When K2 Command Mode 2 or 3 is in effect, certain commands have an **extended** format (see **Meta-commands**). Both the **basic** and **extended** formats are described in these cases.

### **! and @ \* (Direct Main/Auxiliary DSP control)**

**Note:** These commands are implemented, but full documentation is not yet available.

### **AG \* (AF Gain; GET/SET)**

SET/RSP format: **AGnnn**; where **nnn** is 000-255. Note: Manually rotating the AF GAIN pot on the K3 “captures” this parameter.

### **AI (Auto-Information; GET/SET)**

SET/RSP format: **AI $n$** ; where **n** is 0-3. See Meta-commands for details.

### **AN (Antenna Selection; GET/SET)**

SET/RSP format: **AN $n$** ; where **n** is 1 for antenna 1, and 2 for antenna 2.

### **BG (Bargraph Read; GET only)**

RSP format: **BG $nn$** ; where  $\langle nn \rangle$  is **00** (no bars) through **10** (bar 10) if the bargraph is in **DOT** mode, and **12** (no bars) through **22** (all 10 bars) if the bargraph is in **BAR** mode. Reads the S-meter level on receive. Reads the power output level or ALC level on transmit, depending on the **RF/ALC** selection. Also see **SM** command.

### **BR \* (Serial I/O Baud Rate; SET only)**

SET format: **BR $n$** ; where  $\langle n \rangle$  is 0 (4800 b), 1 (9600 b), 2 (19200 b), or 3 (38400 b). Note: The K3 firmware download utility automatically sets the K3 to 38400 baud for downloads, then restores the baud rate to the user’s selection (made using the K3’s **CONFIG:RS232** menu entry).

### **DB \* (VFO B Display Read/Write; GET/SET)**

GET format: **DB**; (no data). Returns text displayed on VFO B. If there are no decimal points or colons in the display, 7 characters are returned. Up to two decimal points OR two colons may be used, so up to 9 ASCII characters may be returned.

There are two SET formats with different functions:

**DB $nn$** ; where  $\langle nn \rangle$  is one of the available VFO B alternate display mode (00=normal, 01=time, 02=date, 03=supply voltage, 04=supply current, 05=PA heatsink temp, 06=front panel temp, 07=PLL1 voltage, 08=PLL2 voltage, 09=AFV [see Service Manual], 10=dBV [see Service Manual]).

**DB $n$** ; where  $\langle n \rangle$  is an ASCII character to send to VFO B, entering at the right end of the display and scrolling left as additional characters are entered. This can be used to create scrolling messages to alert the operator to something regarding the computer, send extended help text, insert a newsfeed, report a DX spot, etc.

### **DL \* (Reserved for K3 development use only)**

### **DM \* (Reserved for K3 development use only)**

### ***DN (Move VFO or Menu Entry/Parameter Down; SET only)***

**Basic SET format:** **DN;** (no data). Results in a fixed 10-Hz change in operating frequency or one unit scroll or parameter change in menu.

**Extended SET format:** **DNn;** where **n** is 1 (10 Hz), 2 (20 Hz), 3 (50 Hz), or 4 (1 kHz).

### ***DS (VFO A Display Read; GET only)***

GET format: **DS;** (no data). Returns everything needed to reproduce the contents of the VFO A display, as well as several annunciators common to both the K2 and K3. The format of the response message is: **DStttttttaf;** where <tttttt> is the LCD text and decimal point data, <a> is annunciator data, and <f> is annunciator flash data (not presently used in the K3). These fields are detailed below.

**TEXT and decimal point data:** This field contains 8 bytes, with values from 0x30 to 0xFF (hexadecimal). The first of the eight bytes is the left-most displayed character. Bit 7 (MSB) of each byte is used to indicate whether the decimal point to the *left* of each character is on (1) or off (0)<sup>2</sup>. The remaining 7 bits (b6-b0) contain an ASCII character that corresponds to the displayed character.

Some ASCII characters cannot be shown on a 7-segment display (e.g., 'X', 'M'). The K3 uses these characters as placeholders for special characters that *can* be displayed, in some cases lower-case versions of letters to enhance display readability. For this reason, the characters returned by the DS command must sometimes be converted to other characters by the software application. Table 2 shows all of these conversions. The table assumes that the decimal-point flag (bit 7) has been cleared from the text-field characters.

**Table 2** DS response character conversions (bit 7 cleared).

<b>DS chr.</b>	<b>Convert to</b>	<b>DS chr.</b>	<b>Convert to</b>	<b>DS chr.</b>	<b>Convert to</b>
<	L	M	N	X	C-bar
>	dash	Q	O	Z	C
@	space (blank)	V	U	[	R-bar
K	H	W	I		

**Annunciator data:** This field is a single byte whose value is between 0x80 and 0xFF. Bit 7 is always 1. The other 7 bits indicate the on/off states of 8 annunciators. Only 7 bits are needed because the VFO A state is always the opposite of VFO B state. The bits are defined as follows:

B7: Always 1	B3: 1=ATT on
B6: 1=NB on	B2: 0=VFO A selected (always 0 for K3)
B5: 1=ANT2 selected	B1: 1=RIT on
B4: 1=PREAMP on	B0: 1=XIT on

**Annunciator flash data:** This field is a single byte whose value is between 0x80 and 0xFF. Bit 7 is always 1. The other 7 bits indicate the flash/non-flashed states of the 8 annunciators, providing useful status information (such as whether the transceiver is operating in SPLIT mode). The bits are defined as follows:

B7: Always 1	B3: 1=ATT flashing (not used)
B6: 1=NB flashing (K3: NB level warning)	B2: 1=not used
B5: 1=ANT2 flashing (not used)	B1: 1=RIT flashing (not used)
B4: 1=PRE flashing (not used)	B0: 1=XIT flashing (not used)

<sup>2</sup> Decimal point flash status can be obtained directly; use **LK** for VFO lock, **IF** for scan on/off, and **GT** for AGC on/off.

### ***FA and FB (VFO A/B Frequency; GET/SET)***

SET/RSP format: **FAxxxxxxxxxx**; or **FBxxxxxxxxxx**; where **xxxxxxxxxx** is the frequency in Hz. Example: **FA00014060000**; sets VFO A to 14060 kHz. The first two digits (00-99 GHz) are ignored. The Hz digit is ignored if the K3 is not in FINE mode (1-Hz tuning; use **SWT49**). If the specified frequency is in a different amateur band than the present one, the K3 will change to the new band, and will automatically report the new values of parameters that may have changed<sup>3</sup>. If the specified frequency is over 30 MHz and is within a valid transverter band (as specified by the operator using the K3's **XVTR** menu entries), the K3 will switch to that transverter band. If the specified frequency is outside the range of 500 kHz-30 MHz and 48-54 MHz, the K3 will switch to the amateur band closest to the requested one, and the last-used VFO A and VFO B values for that band will be retrieved.

### ***FN \* (Function Encoder control; GET/SET)***

**Note:** This command has not yet been fully specified. It will allow read/set of the four multifunction controls.

### ***FR (RX VFO Assignment [K2 only] and SPLIT Cancel; GET/SET)***

SET/RSP format: **FRn**; where **n** is ignored in the K3 case because VFO A is always active for receive mode (the K3 cannot presently emulate the K2's VFO A/B behavior). Any **FR SET** cancels SPLIT mode.

### ***FT (TX VFO Assignment and optional SPLIT Enable; GET/SET)***

SET/RSP format: **FTn**; where **n** specifies the transmit-mode VFO assignment: 0 for VFO A, 1 for VFO B. If B (1) is selected for transmit, the K3 will enter SPLIT mode. Use **FR0**; to cancel SPLIT.

### ***FW (Filter Bandwidth and Number; GET/SET)***      **Note:** To be updated for the K3

**Basic SET format**<sup>4</sup>: **FWxxxx**; where **xxxx** is 0-9999 but is ignored. The next available crystal filter is selected.

**Basic RSP format**: **FWxxxx**; where **xxxx** is the approximate bandwidth in Hz if the mode is CW. If the mode is SSB or RTTY, **xxxx** is 0000 ("narrow") when the CW filter is selected, and 2500 ("wide") if OP1 is selected.

**Extended SET format**: **FWxxxxn**; where **xxxx** is ignored, and **n** is 1-4 for selecting FL1-FL4.

**Extended RSP format**: **FWxxxxnm**; where **xxxx** is the bandwidth in Hz, **n** is the filter number, and **m** is the audio filter mode (0-2). Example: a response of **FW040031**; indicates a 400-Hz bandwidth crystal filter, filter FL3; and an audio filter mode of 1 (AF1). The range of KAF2 modes is 0-2, where 0 is OFF (2.5 kHz LPF only), 1 is AF1 (first stage of CW band-pass filter) and 2 is AF2 (second stage of CW band-pass filter).

**Note:** the audio filter mode can only be changed by using the **AFIL** switch or the equivalent **SW** switch emulation command.

### ***GT (AGC Time Constant; GET/SET)***

**Basic SET/RSP format**: **GTnnn**; where **n** is 002 for fast AGC and 004 for slow AGC.

**Extended SET/RSP format**: **GTnnnx**; where **n** is defined as above, and **x** is 0 (AGC off) or 1 (AGC on).

### ***ID (Transceiver Identifier; GET only)***

RSP format: **IDnnn**; where **nnn** is 017. This command is provided only for compatibility with existing software, which may use **ID** in order to distinguish between transceivers. New or modified software should send the **K2** command to the transceiver; if a **K2n**; response is received, the computer must be connected to a K3.

### ***IF (Transceiver Information; GET only)***

RSP format: **IF[f]\*\*\*\*\*+yyyyrx\*00tmvspb01\***; where the fields are defined as follows:

[f]      operating frequency, excluding any RIT/XIT offset (11 digits; see **FA** command)  
\*      represents a space (BLANK, or ASCII 0x20)

<sup>3</sup> The parameters sent on band change include **IF** (includes new mode), **FA**, **FB**, **FR**, **FT**, **PA**, **RA**, **AN**, **GT**, **FW**, and **NB**.

<sup>4</sup> The K3's limited support for the basic **FW** command is provided only for compatibility with existing application software. New or modified software should use the **extended** version of the command.

+ either "+" or "-" (sign of RIT/XIT offset)  
 yyyy RIT/XIT offset in Hz (range is -9990 to +9990 Hz when computer-controlled)  
 r 1 if RIT is on, 0 if off  
 x 1 if XIT is on, 0 if off  
 t 1 if the K3 is in transmit mode, 0 if receive  
 m operating mode (see **MD** command)  
 v receive-mode VFO selection, 0 for VFO A, 1 for VFO B  
 s 1 if scan is in progress, 0 otherwise  
 p 1 if the transceiver is in split mode, 0 otherwise  
 b **basic** RSP format: always 0  
    **extended** RSP format: 1 if the present IF response is due to a K3 band change and 0 otherwise

The fixed-value fields (space, 0, and 1) are provided for syntactic compatibility with existing software.

### ***K2 (K2 Command Mode; GET/SET)***

SET/RSP format: **K2n**; where **n** is 0-3. Also applies to the K3; see Meta-commands for details.

### ***K3 \* (K3 Command Mode; GET/SET)***

SET/RSP format: **K3n**; where **n** is 0-1. If **n** is 1, K3-specific extensions to existing commands are enabled. Not needed for new commands that are unique to the K3.

### ***KS (Keyer Speed; GET/SET)***

SET/RSP format: **KSnnn**; where **nnn** is 008-050 (8-50 WPM).

### ***KY (CW or CW-to-DATA Keying from Text; GET/SET)***

SET format: **KY\*[text]**; where **\*** is a BLANK (ASCII hex 0x20) and **[text]** is 0 to 24 characters.

**Basic** RSP format: **KYn**; where **n** is 0 (CW text buffer not full) or 1 (buffer full).

**Extended** RSP format: **KYn**; where **n** is 0 (buffer < 75% full), 1 (buffer > 75% full), or 2 (buffer completely empty AND transmit of previous string is complete).

The following keyboard characters are mapped to CW "prosigns":

( KN            + AR            = BT            % AS            \* SK

In addition to the prosigns, three special characters can be inserted anywhere in the **KY** command text:

< puts the K3 into CW TEST mode, until a '>' character is received  
 > returns the K3 to CW OPERATE mode  
 @ immediately terminates any keyboard-CW transmit that was in progress (TBD)

### ***LD \* (Reserved for K3 Development use only)***

### ***LK (VFO Lock; GET/SET)***

SET/RSP format: **LKn**; where **n** is 0 (VFO unlocked) or 1 (locked).

### ***MD (Operating Mode; GET/SET)***

SET/RSP format: **MDn**; where **n** is 1 (LSB), 2 (USB), 3 (CW), 4 (FM), 5 (AM), 6 (RTTY), 7 (CW-REV), or 9 (RTTY-REV). In K2 command modes 1 and 3 (**K21** and **K23**), the RSP message converts modes 6 and 7 (RTTY and RTTY-REV) to modes 1 and 2 (LSB and USB). This may be useful with existing software applications that don't handle the K2's or K3's RTTY modes correctly.

**NOTE: This command doesn't yet distinguish between the K3's 4 data modes (DATA A, AFSK A, FSK D, PSK D).**

**MN \* (Menu Selection; SET Only)**

SET format: **MNnnn**; where **nnn** is shown in Table 3. MN commands can be sent in any order to scroll through a desired set of entries. To exit the menu, send "MN255;". To change the parameter, use "UP;" and "DN;". There's no need to specify MAIN vs. CONFIG; this is determined by the K3 when the menu entry is selected. Also, MAIN and CONFIG are not flashed at the K3 when menu items are accessed remotely. **NOTE:** Use MN072 to turn on TECH MD (and turn it back off after remote menu access is complete). Otherwise MN will skip tech mode menu entries.

**Table 3** MN command values for menu entry selection. **<nnn>** is permanently associated with the indicated menu function, remaining constant even if entries are added or moved later. Unused values (--) may be assigned to future entries. **<md>** is the data mode pertaining to a menu entry: CW, SB (LSB/USB), DT (DATA), AM, or FM. **<pwr>** is LP (QRP), HP (QRO), or MW (0 to 2 mW, using the KXV3 transverter I/O jacks).

Entry	<nnn>	Entry	<nnn>	Entry	<nnn>	Entry	<nnn>
ALARM	000	DATE MD	030	--	060	XVx RF	090
IAMBIC	001	DDS FRQ	031	AGC-F	061	XVx IF	091
LCD ADJ	002	LIN OUT	032	REF CAL	062	XVx PWR	092
LCD BRT	003	KIO3	033	SQ MAIN	063	XVx OFS	093
LED BRT	004	--	034	SQ SUB	064	XVx ADR	094
MSG RPT	005	--	035	SMTR OF	065	AF GAIN	095
PADDLE	006	KDVR3	036	SMTR SC	066	--	096
RPT OFS	007	AGC-S	037	SMTR PK	067	SPLR+PH	097
RX EQ	008	FLx BW	038	SPLT SV	068	VFO B->A	098
TX EQ	009	FLx FRQ	039	SPKRS	069	AGC PLS	099
VOX GN	010	FLx GN	040	SW TEST	070	--	100
ANTIVOX	011	FLx ON	041	SW TONE	071	--	101
WEIGHT	012	FLTX <md>	042	TECH MD	072	--	102
2 TONE	013	FP TEMP	043	TIME	073	PTT KEY	103
AFV TIM	014	FSK POL	044	AGC THR	074	VFO CRS	104
--	015	--	045	--	075	AFX MD	105
--	016	KBPF3	046	--	076		106
AGC SLP	017	--	047	TTY LTR	077		107
--	018	KNB3	048	TX ALC	078		108
--	019	KRC2 AC	049	TXGN <pwr>	079		109
AGC HLD	020	KRX3	050	--	080		110
--	021	KXV3	051	--	081		111
--	022	LCD TST	052	--	082		112
KAT3	023	MIC SEL	053	VCO MD	083		113
BAT MIN	024	NB SAVE	054	VFO CTS	084		114
--	025	KPA3	055	VFO FST	085		115
SER NUM	026	PA TEMP	056	VFO IND	086		116
TXG VCE	027	RS232	057	VFO OFS	087		117
FW REVS	028	--	058	WMTR <pwr>	088		118
DATE	029	--	059	XVx ON	089	<b>exit menu</b>	255

### ***NB (Noise Blanker Mode; GET/SET)***

SET format: **NBn**; where **n** is 0 (blanker **OFF**) or 1 (blanker **ON**).

**Basic** RSP format: **NBn**; where **n** is 0 if the blanker is **OFF**, and 1 if the blanker is in **NB1** or **NB2** modes.

**Extended** RSP format: **NBnm**; where **n** is as above, and **m** is presently 0 (reserved for future use).

### ***PA (Receive Preamp Control; GET/SET)***

SET/RSP format: **PAn**; where **n** is 0 (preamp OFF) or 1 (preamp ON). Note: the preamp and attenuator can be turned on simultaneously under computer control to provide four different RF gain levels. See the **RA** command.

### ***PC (Power Output Level; GET/SET)***

**Basic** SET/RSP format: **PCnnn**; where **nnn** is 000-012 or 000-120 watts depending on the POWER range.

**Extended** SET format: **PCnnnx**; where **nnn** is 000-120 (0.1-watt units) or 000-120 (1-watt units) and **x** is a range selector: **0** selects the low power range, **1** selects the high-power range.

**Extended** RSP format: **PCnnnx**; where **nnn** is power, and **x** is 0 (low power range) or 1 (high power range).

Notes: 1. High power range applies only to K3/100, and only if the KPA3 menu entry is set to PA NOR. 2. A lower power limit may be in effect on transverter bands (menu entries **XVTR1-9**). 3. Use **MN** and **DS** commands to turn PA on/off in menu.

### ***PS (Transceiver Power Status; GET/SET)***

SET/RSP format: **PSn**; where **n = 1** indicates transceiver on. Note: **PS0** turns the transceiver off, but this removes power, so **PS1 cannot** be used to turn it on. To turn power on, the K3's POWER\_ON line (aux I/O jack) must be pulled low by an external device, or it can be turned on manually using the power switch.

### ***RA (Receive Attenuator Control; GET/SET)***

SET/RSP format: **RAnn**; where **nn** is 00 (attenuator OFF) or 01 (attenuator ON). Also see PA command.

### ***RC (RIT or FINE RIT Clear; SET only)***

SET format: **RC**; (no data). If FINE RIT mode is enabled, sets FINE RIT offset to zero. Otherwise, sets RIT/XIT offset to zero, even if RIT and XIT are both turned off (the change will be reflected if RIT or XIT is turned on).

### ***RD (RIT Offset Down 10 Hz, or FINE RIT Offset Down One Unit; SET only)***

SET format: **RD**; (no data). If FINE RIT mode is enabled, moves the FINE RIT offset down by one unit (range is -15 to +15)<sup>5</sup>. Otherwise, moves the RIT/XIT offset down 10 Hz, even if RIT and XIT are both turned off (the change will be reflected if RIT or XIT is turned on). The RIT/XIT offset range under computer control is -9.99 to +9.99 kHz.

### ***RG \* (RF Gain; GET/SET)***

SET/RSP format: **RGnnn**; where **nnn** is 000-250. Note: Manually rotating the RF GAIN pot on the K3 "captures" this parameter.

### ***RT (RIT Control; GET/SET)***

SET/RSP format: **RTn**; where **n** is 0 (RIT OFF) or 1 (RIT ON).

### ***RU (RIT Offset Up 10 Hz, or FINE RIT Offset Up One Unit; SET only)***

Same format as the **RD** command.

### ***RV \* (Reserved for K3 Development use only)***

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<sup>5</sup> Applies only when a narrow filter (FL2-4) is selected; no change in FINE RIT offset will occur if FL1 is selected.

### ***RX (Receive Mode; SET only)***

SET format: **RX**; (no data). Used to terminate transmit and release PTT *only* when transmit was initiated using the TX command. Applies only to SSB and RTTY mode. RX/TX status read is available in the **IF** response.

### ***SM (S-meter Read; GET only)***

Basic RSP format: **SMnnnn**; where **nnnn** is 0000-0015. S9=6; S9+20=9; S9+40=12; S9+60=15.

If **K31** is in effect: **nnnn** is 0000-0021. S9=9; S9+20=13; S9+40=17; S9+60=21.

Returns 0000 in transmit mode. This command is only provided for compatibility with existing software. New applications should use the **BG** command, which can be used in RX or TX mode.

### ***SQ (Squelch Level; GET/SET)***

SET/RSP format: **SQnnn**; where **nnn** is 000-250. For compatibility with existing software, the **SQ** parameter uses different units than the K3's **SLCH** (squelch level) menu entry. However, the resolution of the squelch setting is still the same, i.e. it is limited to bargraph levels. To set the equivalent of **SLCH OFF, 1, 2, 3, ...**, use **SQ000, SQ025, SQ050, SQ075, ...**

### ***SWT/SWH \* (Switch Emulation; SET only)***

SET format: **SWTnn**; (TAP functions) or **SWHnn**; (HOLD functions). **nn** is determined from Table 4. **Note:** K2 switch emulations and its SW command format are not presently supported by the K3.

**Table 4** SW command values for switch emulation. Numeric keypad digits (0-9) are shown in parentheses.

<b>TAP</b>	<b>HOLD</b>	<b>&lt;nn&gt;</b>	<b>TAP</b>	<b>HOLD</b>	<b>&lt;nn&gt;</b>	<b>TAP</b>	<b>HOLD</b>	<b>&lt;nn&gt;</b>
BAND-	VOX	09	FREQ Ent	SCAN	41	CWT (0)	TEXT Dec	40
BAND+	QSK	10	FINE	COARSE	49	AFX, <-	DATA Md	43
MODE-	ALT	17	RATE	LOCK	50	V->M	AF REC	15
MODE+	TEST	18	SUB	n/a	48	M->V	AF PLAY	23
MENU	CONFIG	14	A/B (1)	BSET	11	M1	M1-RPT	21
XMIT	TUNE	16	REV (2)	n/a	12	M2	M2-RPT	31
RX ANT	n/a	25	A->B (3)	SPLIT	13	M3	M3-RPT	35
DISP	METER	08	PRE (4)	ATT	24	M4	M4-RPT	39
ATU Tune	ATU	19	AGC (5)	OFF	27	REC	MSG Bank	37
ANT	ANT Name	26	XFIL (6)	DUAL PB	29	RIT	PF1	45
SHIFT/LO	NORM	58	NB (7)	LEVEL	33	XIT	PF2	47
WIDTH/HI	I/II	59	NR (8)	ADJ	34	CLR	n/a	53
SPD/MIC	DELAY	57	NTCH (9)	MANUAL	32			
CMP/PWR	MON	56	SPOT, ‘.’	PITCH	42			

### ***UP (Move VFO or Menu Entry/Parameter Up; SET only)***

See DN.

### ***TQ (Transmit Query; GET only)***

RSP format: **TQ0** (receive mode) or **TQ1** (transmit mode). This is the preferred way to check RX/TX status since it requires far fewer bytes than an **IF** response.

### ***TT \* (Text to Terminal; SET only)***

SET format: **TTn**; . where **n** is 1 to enable all decoded text to be forwarded to the PC (ASCII). **n=0** disables this. When the application has to send a SET command of another type, it can do without interrupting the TT stream. If it has to send a GET command, it must either suspend the text stream temporarily by sending TT0, or parse the

response stream to look for the desired return data. (Returned strings are never interspersed with text data, so this can easily be done.)

***TX (Transmit Mode; SET only)***

SET format: **TX;** (no data). Used to initiate transmit in all modes (same as activating PTT or using the XMIT switch on the K3). Use the **RX** command to cancel **TX**. RX/TX status read is available in the **IF** response.

***XT (XIT Control; GET/SET)***

SET/RSP format: **XTn;** where **n** is 0 (XIT OFF) or 1 (XIT ON).

## **Change History** [Applicable MCU revision shown in brackets]

- A2, 10-23-07 [1.30]: Added various functions to **MN** command.
- A3, 11-13-07 [1.36]: Changes to **KS**, **NB**, **SM**, **DS**, and **FR**. **K2** and **K3** meta-commands further explained.
- A4, 11-17-07 [1.38]: **RG** command implemented. **PC** ranges now 0-12 and 0-120 W.  
**PS** description changed. **FA/FB** now ignore 1-Hz digit if K3 isn't in FINE mode.