KENWOOD

PC CONTROL COMMAND REFERENCE FOR THE TS-480HX/ SAT TRANSCEIVER

KENWOOD CORPORATION

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PC CONTROL COMMAND

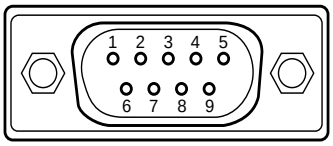
ABOUT THIS REFERENCE

All descriptions in this PC CONTROL COMMAND reference are for the users convenience only. **KENWOOD** will not support or warrantee this documentation in any way.

HARDWARE DESCRIPTION

The TS-480 transceiver uses a full-duplex, asynchronous, serial interface for communicating through the male 9-pin D-sub connector. Each data is constructed with 1 start bit, 8 data bits, and 1 stop bit (4800 bps must be configured as 2 stop bits). No parity is used. The pinout and the pin functions of the **COM** connector on the transceiver are shown below:

Front view



COM

COM Pin No.	COM Pin Name (Ref.: Computer)	Function (Ref.: Transceiver)	I/O
1	NC	—	—
2	RXD	Transmit data	Output
3	TXD	Receive data	Input
4	NC	—	—
5	GND	Signal ground	
6	NC	—	—
7	RTS	Receive enable	Input
8	CTS	Transmit enable	Output
9	NC	—	—

RXD: Transmit data is serial data transferred from the transceiver to the computer.

TXD: Receive data is serial data transferred from the computer to the transceiver.

GND: Signal ground pin

RTS: This signal is applied to the transceiver. It is used to inhibit transmit data from the transceiver when the computer is not ready to receive data. Transmit data is inhibited when the level is low.

CTS: This signal is applied from the transceiver. It is used to inhibit transmit data from the computer when the transceiver is not ready to receive data. Transmit data is stopped when the level is low.

CONTROL OPERATION

Most computers handle data in the form of “bits” and “bytes”. A bit is the smallest piece of information that a computer can handle. A byte is composed of eight bits. This is the most convenient form for most computer data. This data may be sent in the form of either serial or parallel data strings. The parallel method is faster but more complicated, while the serial method is slower and requires less complicated equipment. The serial form is, therefore, a less expensive alternative.

Serial data transmission uses time-division methods over a single line. Using a single line also offers the advantage of reducing the number of errors due to line noise.

Only 3 lines are required theoretically for control of the transceiver via the computer:

- Transmit data
- Receive data
- Ground

From a practical standpoint, it is also necessary to incorporate some means of controlling when this data transfer will occur. The computer and transceiver cannot be allowed to send data at the same time! The required control is achieved by using the RTS and CTS lines. To interface between the TS-480 transceiver and a PC, use a commercially available cable with a DB-9 female connector at each end. Each connector pin must be connected to the same pin number at the other end (a straight cable).

To control the transceiver from a PC, utilize the general purpose terminal program to send commands to the tranceiver. The transceiver responds the command accordingly.

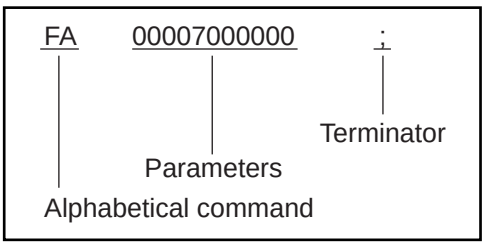
For example, the transceiver is placed into the transmit mode whenever the character string “TX;” is sent from the computer. The character string “TX;” is called a PC control command.

You can further develop or create a script of the commands using a macro function of the terminal program. Kenwood also provides the remote control program, ARCP-480 at our Web site. You can download the program for free and try it out on your PC. Access http://www.kenwood.com/i/products/info/amateur.html and follow the instructions.

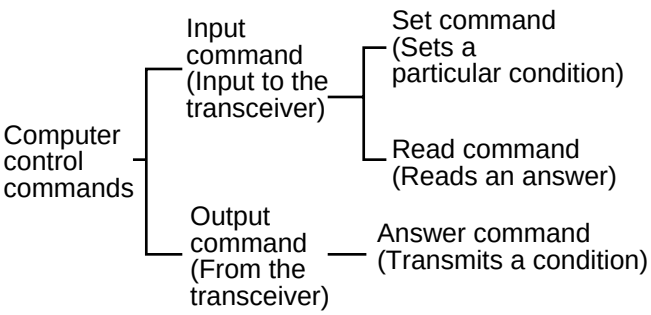
COMPUTER CONTROL COMMANDS

A computer control command is composed of an alphabetical command, various parameters, and the terminator that signals the end of the control command.

EXAMPLE: Command to set VFO A to 7 MHz



Commands can be classified as shown below:



For example, note the following in the case of the FA command (Frequency of VFO A):

- To set the frequency to 7 MHz, the following command is sent from the computer to the transceiver:

  "FA00007000000;" **(Set command)**

- To read the frequency of VFO A, the following command is sent from the computer to the transceiver:

  "FA;" **(Read command)**

- When the Read command above has been sent, the following command is returned to the computer:

  "FA00007000000;" **(Answer command)**

Note:

- *Do not use the control characters 00 to 1Fh since they are either ignored or cause a "?" answer.*
- *Program execution may be delayed while turning the **Tuning** control rapidly.*

■ Alphabetical Commands

A command consists of 2 alphabetical characters. You may use either lower or upper case characters. The commands available for this transceiver are listed in the PC Control Command Tables from page 3.

■ Parameters

Parameters are used to specify information necessary to implement the desired command. The parameters to be used for each command are predetermined. The number of digits assigned to each parameter is also predetermined. Refer to the Computer Control Commands and the PC Control Command Tables to configure the appropriate parameters.

When configuring parameters, be careful not to make the following mistakes.

(correct parameter: "IS+1000")

IS1000;	Not enough parameters specified (No direction given for the IF shift)
IS+100;	Not enough digits (Only three frequency digits given)
IS ␣ + ␣ 1000;	Unnecessary characters between parameters
IS+10000;	Too many digits (Five frequency digits given)

Note: *If a particular parameter is not applicable to this transceiver, the parameter digits should be filled using any character except the ASCII control codes (00 to 1Fh) and the terminator (;).*

■ Terminator

To signal the end of a command, it is necessary to use a semicolon (;). The digit where this special character must appear differs depending on the command used.

■ Error Messages

In addition to the Answer command, the transceiver can send the following error messages.

Error Message	Reason for Error
?;	• Command syntax was incorrect. • Command was not executed due to the current status of the transceiver (even though the command syntax was correct). ***Note:*** *Occasionally this message may not appear due to microprocessor transients in the transceiver.*
E;	A communication error occurred such as an overrun or framing error during a serial data transmission.
O;	Receive data was sent but processing was not completed.

PC CONTROL COMMAND TABLES

AC

Sets or reads the internal antenna tuner status.

	1	2	3	4	5	6	7	8	9	10
Set	A	C	P1	P2	P3	;				
Read	A	C	;							
Answer	A	C	P1	P2	P3	;				

Parameters:
P1
0: RX-AT THRU
1: RX-AT IN
P2
0: TX-AT THRU
1: TX-AT IN
P3
0: Stop tuning (Set)/ Tuning is stopped (Answer)
1: Start tuning (Set)/ Tuning is active (Answer)

AG

Sets or reads the AF gain.

	1	2	3	4	5	6	7	8	9	10
Set	A	G	P1	P2	P2	P2	;			
Read	A	G	P1	;						
Answer	A	G	P1	P2	P2	P2	;			

Parameters:
P1
0: Always 0 for the TS-480.
P2
000 (min.) ~ 255 (max.)

AI

Sets or reads the Auto Information (AI) function ON/ OFF.

	1	2	3	4	5	6	7	8	9	10
Set	A	I	P1	;						
Read	A	I	;							
Answer	A	I	P1	;						

Parameters:
P1
0: AI OFF
1: Only old AI format is ON
2: Only extended AI format is ON
3: Both formats are ON

When the extended AI format is selected, the transceiver automatically sends the parameters.
When the old AI is ON and the IF parameters change, the transceiver sends the IF command every 1.5 seconds.
When the transceiver is turned OFF, the AI parameter becomes 0.

AN

Selects the antenna connector ANT1/ ANT2.

	1	2	3	4	5	6	7	8	9	10
Set	A	N	P1	;						
Read	A	N	;							
Answer	A	N	P1	;						

Parameters:
P1
1: Selects ANT1
2: Selects ANT2

AS

Sets or reads the Auto Mode function parameters.

	1	2	3	4	5	6	7	8	9	10
Set	A	S	P1	P2	P2	P3	P3	P3	P3	P3
	11	12	13	14	15	16	17	18	19	20
	P3	P3	P3	P3	P3	P3	P4	;		
Read	A	S	P1	P2	P2	;				
Answer	A	S	P1	P2	P2	P3	P3	P3	P3	P3
	11	12	13	14	15	16	17	18	19	20
	P3	P3	P3	P3	P3	P3	P4	;		

Parameters:
P1
0: Always 0 for the TS-480.
P2
00 ~ 31: HF ~ 50 MHz band (32 points)
P3
Frequency in Hz (11-digit). Unused digit(s) must be 0.
P4
0: Reserved
1: LSB
2: USB
3: CW
4: FM
5: AM
6: FSK
7: CWR (CW Reverse)
8: Reserved
9: FSR (FSK Reverse)

PC CONTROL COMMAND

BC

Sets or reads the Beat Canceller function status.

	1	2	3	4	5	6	7	8	9	10
Set	B	C	P1	;						
Read	B	C	;							
Answer	B	C	P1	;						

Parameters:
P1
0: Beat Canceller OFF
1: Beat Canceller 1 (BC1) ON
2: Beat Canceller 2 (BC2) ON

BD

Moves down the frequency band.

	1	2	3	4	5	6	7	8	9	10
Set	B	D	;							
Read										
Answer										

Parameters:
None

BU

Moves up the frequency band.

	1	2	3	4	5	6	7	8	9	10
Set	B	U	;							
Read										
Answer										

Parameters:
None

BY

Reads the busy signal status.

	1	2	3	4	5	6	7	8	9	10
Set										
Read	B	Y	;							
Answer	B	Y	P1	P2	;					

Parameters:
P1
Transceiver status
0: Not busy
1: Busy
P2
Sub-receiver status (Not applicable for the TS-480)
0: Always 0 for TS-480.

CA

Sets and reads the CW Auto Zero-beat function status.

	1	2	3	4	5	6	7	8	9	10
Set	C	A	P1	;						
Read	C	A	;							
Answer	C	A	P1	;						

Parameters:
P1
0: Cancels CW Auto Zero-beat function/ Not active
1: Activates CW Auto Zero-beat function/ Active

CH

Move the current VFO frenquency 1 step up, using the MULTI control.

	1	2	3	4	5	6	7	8	9	10
Set	C	H	P1	;						
Read										
Answer										

Parameters:
P1
0: Move the MULTI control 1 step up
1: Move the MULTI control 1 step down

In VFO mode, CH command overrides the MHz Up/ Down mode of the TS-480 transceiver.

CN

Sets and reads the CTCSS tone number.

	1	2	3	4	5	6	7	8	9	10
Set	C	N	P1	P1	;					
Read	C	N	;							
Answer	C	N	P1	P1	;					

Parameters:
P1
00 ~ 41

Refer to page 33 of the TS-480 instruction manual for the CTCSS tone numbers and frequencies.

CT

Sets and reads the CTCSS function status.

	1	2	3	4	5	6	7	8	9	10
Set	C	T	P1	;						
Read	C	T	;							
Answer	C	T	P1	;						

Parameters:
P1
0: CTCSS function OFF
1: CTCSS function ON

DL

Sets and reads the Digital Noise Limiter (DNL) function status.

	1	2	3	4	5	6	7	8	9	10
Set	D	L	P1	P2	P2	;				
Read	D	L	;							
Answer	D	L	P1	P2	P2	;				

Parameters:
P1
0: DNL function OFF
1: DNL function ON
P2
00: DNL Level 1
01: DNL Level 2
02: DNL Level 3

DN

Emulates the microphone DWN key.

	1	2	3	4	5	6	7	8	9	10
Set	D	N	P1	P1	;					
Read										
Answer										

Parameters:
P1
00 ~ 99

If no P1 parameter is specified, the command is interpreted as 1 step down.
In Memory mode and Quick Memory mode, the command without a parameter is treated as a Memory channel down command. With parameters, it is treated as the frequency down command.

PC CONTROL COMMAND

EX	Sets or reads the Extension Menu.									
Set	1	2	3	4	5	6	7	8	9	10
	E	X	P1	P1	P1	P2	P2	P3	P4	P5
	11	12	13	14	15	16	17	18	19	20
	P5	;								
Read	1	2	3	4	5	6	7	8	9	10
	E	X	P1	P1	P1	P2	P2	P3	P4	;
Answer	1	2	3	4	5	6	7	8	9	10
	E	X	P1	P1	P1	P2	P2	P3	P4	P5
	11	12	13	14	15	16	17	18	19	20
	P5	;								

Parameters:

P1
- 000 ~ 060: Menu No.

P2
- 00: Always 00 for the TS-480

P3
- 0: Always 0 for the TS-480

P4
- 0: Always 0 for the TS-480

P5
- A string of characters (Variable length)
- Normally 1-digit for the TS-480.
- Menu No. 32, 35 and 48 ~ 52 use 2-digit parameters.

Command example:
- Display brightness
- EX00000000; (Display illumination OFF).
- EX00000003; (Display brightness level 3).

Menu No.	Function	EX command parameter P5										
		0	1	2	3	4	5	6	7	8	9	Over
000	Display brightness	OFF	1	2	3	4						
001	Key illumination	OFF	ON									
002	Auto Mode operation	OFF	ON									
003	Tuning control adjustment rate	250	500	1000								(Hz)
004	Tuning with Tuning control in FM mode	OFF	ON									
005	Rounds off VFO frequencies changed by using the MULTI control	OFF	ON									
006	9 kHz frequency step size for the MULTI control in AM mode on the AM broadcast band	OFF	ON									
007	Tunable (ON) or fixed (OFF) memory channel frequencies	OFF	ON									
008	Program scan partially slowed	OFF	ON									
009	Slow down frequency range for the Program scan	100	200	300	400	500						(Hz)
010	Program scan hold	OFF	ON									
011	Scan resume method	to	co									
012	Beep output level	OFF	1	2	3	4	5	6	7	8	9	
013	TX sidetone volume	OFF	1	2	3	4	5	6	7	8	9	
014	VGS-1 message playback volume	OFF	1	2	3	4	5	6	7	8	9	
015	VGS-1 announcement volume	OFF	1	2	3	4	5	6	7			
016	VGS-1 announcement speed	OFF	1	2	3	4						
017	Use CW IF filter for SSB reception	OFF	ON									
018	DSP RX equalizer	OFF	Hb1	Hb2	FP	bb1	bb2	c	U			
019	DSP TX equalizer	OFF	Hb1	Hb2	FP	bb1	bb2	c	U			
020	DSP TX filter bandwidth for SSB or AM	2.0	2.4									
021	Fine transmission power tuning	OFF	ON									
022	Time-out timer	OFF	3	5	10	20	30					(minutes)
023	Transverter frequency display	OFF	ON									
024	Output power adjustment for Transverter	OFF	ON									
025	TX hold when AT completes the tuning	OFF	ON									
026	In-line AT while receiving	OFF	ON									
027	Control method for the external AT	At1	At2									
028	Linear amplifier control delay for HF band	OFF	1	2	3							
029	Linear amplifier control delay for 50 MHz band	OFF	1	2	3							
030	Constant recording	OFF	ON									
031	Repeat the playback	OFF	ON									
032	Interval time for repeating the playback	0	1	2	3	4	5	6	7	8	9	~ 60 (in steps of 1 s)
033	Keying priority over playback	OFF	ON									
034	CW RX pitch/ TX sidetone frequency	400	450	500	550	600	650	700	750	800	850	~ 1000 (in steps of 50)
035	CW keying dot, dash weight ratio	AUTO	2.5	2.6	2.7	2.8	2.9	3.0	3.1	3.2	3.3	~ 4.0 (in steps of 0.1)
036	Reverse CW keying auto weight ratio	OFF	ON									
037	Bug key function	OFF	ON									

PC CONTROL COMMAND

Menu No.	Function	EX command parameter P5										
		0	1	2	3	4	5	6	7	8	9	Over
038	Swap dot and dash paddle position	OFF	ON									
039	Auto CW TX in SSB mode	OFF	ON									
040	Frequency correction for changing SSB to CW	OFF	ON									
041	FSK shift	170	200	425	850							(Hz)
042	FSK keying polarity	OFF	ON									
043	FSK tone frequency	1275	2125									(Hz)
044	Mic gain for FM	1	2	3								
045	Filter bandwidth for Data communications	OFF	ON									
046	AF input level for Data communications	0	1	2	3	4	5	6	7	8	9	
047	AF output level for Data communications	0	1	2	3	4	5	6	7	8	9	
048	Remote Control panel PF key	00 ~ 99 (2-digit) Refer to page 64 of the TS-480 instruction manual for the numbers and functions.										
049	Microphone PF1 key											
050	Microphone PF2 key											
051	Microphone PF3 key											
052	Microphone PF4 key											
053	Split frequency transfer in master/ slave operation	OFF	ON									
054	Permit to write the transferred Split frequencies to the target VFOs	OFF	ON									
055	TX inhibit	OFF	ON									
056	COM port communication speed	4800	9600	19200	38400	57600	115200					(bps)
057	DTS polarity	OFF	ON									
058	Busy lockout (TX)	OFF	ON									
059	APO (Auto Power Off) function	OFF	60	120	180							(minutes)
060	Transmit with the audio input on the DATA terminal	OFF	ON									

FA

Reads and sets the VFO A frequency.

	1	2	3	4	5	6	7	8	9	10
Set	F	A	P1	P1	P1	P1	P1	P1	P1	P1
	11	12	13	14	15	16	17	18	19	20
	P1	P1	P1	;						
Read	1	2	3	4	5	6	7	8	9	10
	F	A	;							
Answer	1	2	3	4	5	6	7	8	9	10
	F	A	P1	P1	P1	P1	P1	P1	P1	P1
	11	12	13	14	15	16	17	18	19	20
	P1	P1	P1	;						

Parameters:
P1
Specify the frequency in Hz (11-digit).
For example, 00014195000 for 14.195 MHz. The blank digits must be 0.

FB

Reads and sets the VFO B frequency.

	1	2	3	4	5	6	7	8	9	10
Set	F	B	P1	P1	P1	P1	P1	P1	P1	P1
	11	12	13	14	15	16	17	18	19	20
	P1	P1	P1	;						
Read	1	2	3	4	5	6	7	8	9	10
	F	B	;							
Answer	1	2	3	4	5	6	7	8	9	10
	F	B	P1	P1	P1	P1	P1	P1	P1	P1
	11	12	13	14	15	16	17	18	19	20
	P1	P1	P1	;						

Parameters:
P1
Specify the frequency in Hz (11-digit).
For example, 00014195000 for 14.195 MHz. The blank digits must be 0.

FR

Selects or reads the VFO or M.CH mode of the receiver.

	1	2	3	4	5	6	7	8	9	10
Set	F	R	P1	;						
Read	1	2	3	4	5	6	7	8	9	10
	F	R	;							
Answer	1	2	3	4	5	6	7	8	9	10
	F	R	P1	;						

Parameters:
P1
0: VFO A
1: VFO B
2: M.CH

When P1=2, the FT command becomes invalid.

FS

Selects or reads the Fine Tuning function status.

	1	2	3	4	5	6	7	8	9	10
Set	F	S	P1	;						
Read	1	2	3	4	5	6	7	8	9	10
	F	S	;							
Answer	1	2	3	4	5	6	7	8	9	10
	F	S	P1	;						

Parameters:
P1
0: Fine Tuning function OFF
1: Fine Tuning function ON

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FT

Selects or reads the VFO or M.CH mode of the transmitter.

	1	2	3	4	5	6	7	8	9	10
Set	F	T	P1	;						
Read	F	T	;							
Answer	F	T	P1	;						

Parameters:
P1
0: VFO A
1: VFO B
2: M.CH

When P1=2 is selected for the FR command, the FT command becomes invalid.

FW

Selects or reads the DSP filtering bandwidth.

	1	2	3	4	5	6	7	8	9	10
Set	F	W	P1	P1	P1	P1	;			
Read	F	W	;							
Answer	F	W	P1	P1	P1	P1	;			

Parameters:
P1
0000 ~ 9999 (in Hz)
CW: 0050, 0080, 0100, 0150, 0200, 0300, 0400, 0500, 0600, 1000, 2000
FSK: 0250, 0500, 1000, 1500
SSB/FM/AM: 0000=Normal, 0001=NAR, 0002=NAR2

Use the SL or SH command to change the slope tune filter frequencies.

GT

Selects or reads the AGC constant status.

	1	2	3	4	5	6	7	8	9	10
Set	G	T	P1	P1	P1	;				
Read	G	T	;							
Answer	G	T	P1	P1	P1	;				

Parameters:
P1
000: OFF
001: Fast
002: Slow

The GT command cannot be used in FM mode. The transceiver responds with 3 spaces when the GT command is used in FM mode.

ID

Reads the transceiver ID number.

	1	2	3	4	5	6	7	8	9	10
Set										
Read	I	D	;							
Answer	I	D	P1	P1	P1	;				

Parameters:
P1
020: TS-480

IF

Retrieves the transceiver status.

Set	1	2	3	4	5	6	7	8	9	10
Read	1	2	3	4	5	6	7	8	9	10
	I	F	;							
Answer	1	2	3	4	5	6	7	8	9	10
	I	F	P1	P1	P1	P1	P1	P1	P1	P1
	11	12	13	14	15	16	17	18	19	20
	P1	P1	P1	P2	P2	P2	P2	P2	P3	P3
	21	22	23	24	25	26	27	28	29	30
	P3	P3	P3	P4	P5	P6	P7	P7	P8	P9
	31	32	33	34	35	36	37	38	39	40
	P10	P11	P12	P13	P14	P14	P15	;		

Parameters:
P1
Specify the frequency in Hz (11-digit).
The blank digits must be “0”.
P2
5 spaces for the TS-480.
P3
RIT/ XIT frequency ±9990 in Hz
P4
0: RIT OFF, 1: RIT ON
P5
0: XIT OFF, 1: XIT ON
P6:
Always 0 for the TS-480 (Memory channel bank number).
P7:
Memory channel number (00 ~ 99).
P8
0: RX, 1: TX
P9
Operating mode. Refer to the MD commands for details.
P10
See FR and FT commands.
P11
Scan status. Refer to the SC command.
P12
0: Simplex operation, 1: Split operation
P13
0: OFF, 1: TONE, 2: CTCSS
P14
Tone number (00 ~ 42). Refer to the TN and CN command.
P15
A space character for the TS-480.

IS

Sets and reads the IF SHIFT function status.

Set	1	2	3	4	5	6	7	8	9	10
	I	S	P1	P2	P2	P2	P2	;		
Read	1	2	3	4	5	6	7	8	9	10
	I	S	;							
Answer	1	2	3	4	5	6	7	8	9	10
	I	S	P1	P2	P2	P2	P2	;		

Parameters:
P1
+ or “ ” (a space): Plus shift
–: Minus shift
P2
0000 ~ 1100

KS

Sets and reads the CW electric keyer’s keying speed.

Set	1	2	3	4	5	6	7	8	9	10
	K	S	P1	P1	P1	;				
Read	1	2	3	4	5	6	7	8	9	10
	K	S	;							
Answer	1	2	3	4	5	6	7	8	9	10
	K	S	P1	P1	P1	;				

Parameters:
P1
010 (min.) ~ 060 (max.) [in WPM]

KY

Converts the characters into Morse code.

	1	2	3	4	5	6	7	8	9	10
Set	K	Y	P1	P2	P2	P2	P2	P2	P2	P2
	11	12	13	14	15	16	17	18	19	20
	P2	P2	P2	P2	P2	P2	P2	P2	P2	P2
	21	22	23	24	25	26	27	28	29	30
	P2	P2	P2	P2	P2	P2	P2	;		
Read	1	2	3	4	5	6	7	8	9	10
	K	Y	;							
Answer	1	2	3	4	5	6	7	8	9	10
	K	Y	P1	;						

Parameters:
P1
0: Character buffer is available
1: Character buffer is not available
(Answer command only. A space must be used for the Set command.)
P2
Enter characters and numbers.
Available characters are:
ABCDEFGHIJKLMNOPQRSTUVWXYZ " " (space)
0123456789
" ' ( ) * + , – . / : = ?
Special characters:
The following ASCII characters can be used in place of the special CW codes.
BT=[, AR=_, AS=<, HH=#, SK=>, KN=], BK=\, SN=%

The fixed 24-byte length is used for the P2 parameter.
" " (space) character must be used for the unused characters.
These space characters will not be converted.
If all P2 parameter characters are spaces, the transceiver stops sending the message.

LK

Sets and reads the key lock function status.

	1	2	3	4	5	6	7	8	9	10
Set	L	K	P1	P2	;					
Read	1	2	3	4	5	6	7	8	9	10
	L	K	;							
Answer	1	2	3	4	5	6	7	8	9	10
	L	K	P1	P2	;					

Parameters:
P1
0: Frequency lock function OFF
1: Frequency lock function ON
P2
0: Tuning control lock function OFF
1: Tuning control lock function ON

LM

Sets and reads the VGS-1 or electric keyer recording status.

	1	2	3	4	5	6	7	8	9	10
Set	L	M	P1	P2	;					
Read	1	2	3	4	5	6	7	8	9	10
	L	M	;							
Answer	1	2	3	4	5	6	7	8	9	10
	L	M	P1	P2	P3	P3	P3	;		

Parameters:
P1
1 ~ 3: CH (Recording Channel) number
P2
0: Stop recording (Set command only)
0: Recording function is inactive
1: Ready for recording
2: Start recording (Busy status while recording)
P3
000 ~ 060: Remaining recording time in seconds (Voice mode)
000 ~ 100: Recorded message capacity as a percentage (CW)

MC

Recalls or reads the Memory channel.

	1	2	3	4	5	6	7	8	9	10
Set	M	C	P1	P2	P2	;				
Read	1	2	3	4	5	6	7	8	9	10
	M	C	;							
Answer	1	2	3	4	5	6	7	8	9	10
	M	C	P1	P2	P2	;				

Parameters:
P1
0: Always 0 for the TS-480 (Memory bank number).
P2
00 ~ 99: Channel number

MD

Recalls or reads the operating mode status.

	1	2	3	4	5	6	7	8	9	10
Set	M	D	P1	;						
Read	1	2	3	4	5	6	7	8	9	10
	M	D	;							
Answer	1	2	3	4	5	6	7	8	9	10
	M	D	P1	;						

Parameters:
P1
0: No mode (Not used for the TS-480)
1: LSB
2: USB
3: CW
4: FM
5: AM
6: FSK
7: CWR (CW Reverse)
8: Tune (Not used for the TS-480)
9: FSR (FSK Reverse)

MF

Sets or reads Menu A or B.

	1	2	3	4	5	6	7	8	9	10
Set	M	F	P1	;						
Read	M	F	;							
Answer	M	F	P1	;						

Parameters:
P1
0: Menu A
1: Menu B

MG

Sets or reads the Microphone gain status.

	1	2	3	4	5	6	7	8	9	10
Set	M	G	P1	P1	P1	;				
Read	M	G	;							
Answer	M	G	P1	P1	P1	;				

Parameters:
P1
000 (min.) ~ 100 (max.)

ML

Sets or reads the TX Monitor function output level.

	1	2	3	4	5	6	7	8	9	10
Set	M	L	P1	P1	P1	;				
Read	M	L	;							
Answer	M	L	P1	P1	P1	;				

Parameters:
P1
000: TX Monitor function OFF
001 (min.) ~ 009 (max.)

MR

Reads the Memory channel data.

	1	2	3	4	5	6	7	8	9	10
Set										
Read	M	R	P1	P2	P3	P3	;			
Answer	M	R	P1	P2	P3	P3	P4	P4	P4	P4
	11	12	13	14	15	16	17	18	19	20
	P4	P4	P4	P4	P4	P4	P4	P5	P6	P7
	21	22	23	24	25	26	27	28	29	30
	P8	P8	P9	P9	P10	P10	P10	P11	P12	P13
	31	32	33	34	35	36	37	38	39	40
	P13	P13	P13	P13	P13	P13	P13	P13	P14	P14
	41	42	43	44	45	46	47	48	49	50
	P15	P16	P16	P16	P16	P16	P16	P16	P16	;

Parameters:
P1
0: RX frequency, 1: TX frequency
P2
Always 0 for the TS-480.
P3
00 ~ 99: Memory channel number
P4
Frequency in Hz (11-digit).
P5
Mode. Refer to the MD command.
P6
Lockout status. 0: Lockout OFF, 1: Lockout ON.
P7
0: OFF, 1: TONE, 2: CTCSS
P8
Tone Number. Refer to page 35.
P9
CTCSS tone number. Refer to the CN command.
P10
Always 000 for the TS-480.
P11
Always 0 for the TS-480.
P12
Always 0 for the TS-480.
P13
Always 000000000 for the TS-480.
P14
Step size. Refer to the ST command.
P15
Always 0 for the TS-480.
P16
Memory name. A maximum of 8 characters.

Memory channel 90 ~ 99:
P1=0 (start frequency), P1=1 (end frequency)

PC CONTROL COMMAND

MW

Store the data to the Memory channel.

	1	2	3	4	5	6	7	8	9	10
Set	M	W	P1	P2	P3	P3	P4	P4	P4	P4
	11	12	13	14	15	16	17	18	19	20
	P4	P4	P4	P4	P4	P4	P4	P5	P6	P7
	21	22	23	24	25	26	27	28	29	30
	P8	P8	P9	P9	P10	P10	P10	P11	P12	P13
	31	32	33	34	35	36	37	38	39	40
	P13	P13	P13	P13	P13	P13	P13	P13	P14	P14
	41	42	43	44	45	46	47	48	49	50
	P15	P16	P16	P16	P16	P16	P16	P16	P16	;
Read	1	2	3	4	5	6	7	8	9	10
Answer	1	2	3	4	5	6	7	8	9	10

Parameters:
P1
0: RX frequency, 1: TX frequency
P2
Always 0 for the TS-480.
P3
00 ~ 99: Memory channel number
P4
Frequency in Hz (11-digit).
P5
Mode. Refer to the MD command.
P6
Lockout status. 0: Lockout OFF, 1: Lockout ON
P7
0: OFF, 1: TONE, 2: CTCSS
P8
Tone Number. Refero to the TN command.
P9
CTCSS tone number. Refer to the CN command.
P10
Always 000 for the TS-480.
P11
Always 0 for the TS-480.
P12
Always 0 for the TS-480.
P13
Always 000000000 for the TS-480.
P14
Step size. Refer to the ST command.
P15
Always 0 for the TS-480.
P16
Memory name. A maximum of 8 characters.

Memory channel 90 ~ 99:
P1=0 (start frequency), P1=1 (end frequency)

NB

Set or reads the Noise Blanker (NB) function status.

	1	2	3	4	5	6	7	8	9	10
Set	N	B	P1	;						
Read	N	B	;							
Answer	N	B	P1	;						

Parameters:
P1
0: Noise Blanker (NB) function OFF
1: Noise Blanker (NB) function ON

NL

Set or reads the NB (Noise Blanker) level.

	1	2	3	4	5	6	7	8	9	10
Set	N	L	P1	P1	P1	;				
Read	N	L	;							
Answer	N	L	P1	P1	P1	;				

Parameters:
P1
001 (min.) ~ 010 (max.)

000 is treated as 001.
010 ~ 999 are treated as 010.

NR

Sets or reads the Noise Reduction (NR) function status.

	1	2	3	4	5	6	7	8	9	10
Set	N	R	P1	;						
Read	N	R	;							
Answer	N	R	P1	;						

Parameters:
P1
0: Noise Reduction (NR) OFF
1: Noise Reduction 1 (NR1) ON
2: Noise Reduction 2 (NR2) ON

OP

Reads the IF filter availability.

	1	2	3	4	5	6	7	8	9	10
Set										
Read	O	P	;							
Answer	O	P	P1	P2	P3	;				

Parameters:
P1
0: YF-107SN (1.8 kHz) is not installed.
1: YK-107SN (1.8 kHz) is installed.
P2
0: YF-107C (500 Hz) is not installed.
1: YF-107C (500 Hz) is installed.
P3
0: YF-107CN (270 Hz) is not installed.
1: YF-107CN (270 Hz) is installed.

PA

Sets or reads the pre-amplifier function status.

	1	2	3	4	5	6	7	8	9	10
Set	P	A	P1	;						
Read	P	A	;							
Answer	P	A	P1	P2	;					

Parameters:
P1
0: Pre-amplifier OFF
1: Pre-amplifier ON
P2 (Answer only)
0: Always 0 for the TS-480

PB

Sets or reads the VGS-1 or electric keyer playback status.

	1	2	3	4	5	6	7	8	9	10
Set	P	B	P1	;						
Read	P	B	;							
Answer	P	B	P2	P3	P4	;				

Parameters:
P1
0: Stop playing back a message.
1: Playback CH1
2: Playback CH2
3: Playback CH3
P2 ~ P4
Playback queing buffer status.
0: Inactive
1: Playback CH1
2: Playback CH2
3: Playback CH3

PC

Sets or reads the output power.

	1	2	3	4	5	6	7	8	9	10
Set	P	C	P1	P1	P1	;				
Read	P	C	;							
Answer	P	C	P1	P1	P1	;				

Parameters:
TS-480HX
P1
005 ~ 200 (in steps of 1) for SSB/ CW/ FM/ FSK mode
005 ~ 050 (in steps of 1) for AM mode
TS-480SAT
P1
005 ~ 100 (in steps of 1) for SSB/ CW/ FM/ FSK mode
005 ~ 025 (in steps of 1) for AM mode

PL

Sets and reads the Speech Processor input/ output level.

	1	2	3	4	5	6	7	8	9	10
Set	P	L	P1	P1	P1	P2	P2	P2	;	
Read	P	L	;							
Answer	P	L	P1	P1	P1	P2	P2	P2	;	

Parameters:
P1
Input level:
000 (min.) ~ 100 (max.)
P2
Output level:
000 (min.) ~ 100 (max.)

PR

Sets or reads the Speech Processor function ON/ OFF.

	1	2	3	4	5	6	7	8	9	10
Set	P	R	P1	;						
Read	P	R	;							
Answer	P	R	P1	;						

Parameters:
P1
0: Speech Processor OFF
1: Speech Processor ON

PS

Sets or reads the Power ON/ OFF status.

	1	2	3	4	5	6	7	8	9	10
Set	P	S	P1	;						
Read	P	S	;							
Answer	P	S	P1	;						

Parameters:
P1
0: Power OFF (The transceiver's CPU is in active mode.)
1: Power ON
9: Power OFF (The transceiver's CPU is in sleep mode.)

When the transceiver is turned OFF and P1=9, a dummy data must be sent to the TS-480 to wake up the CPU. For example, send a string of "; ; ; PS1;" to turn the transceiver ON. If you use a hyper terminal program that comes with Windows to control the transceiver, disable the flow control in the program.

QI

Store the settings in the Quick Memory.

	1	2	3	4	5	6	7	8	9	10
Set	Q	I	;							
Read										
Answer										

Parameters:
None

QR

Sets or reads the Quick Memory channel data.

	1	2	3	4	5	6	7	8	9	10
Set	Q	R	P1	P2	;					
Read	Q	R	;							
Answer	Q	R	P1	P2	;					

Parameters:
P1
0: Quick Memory OFF
1: Quick Memory ON
P2
0 ~ 9: Quick Memory channel number

RA

Sets or reads the Attenuator function status.

	1	2	3	4	5	6	7	8	9	10
Set	R	A	P1	P1	;					
Read	R	A	;							
Answer	R	A	P1	P1	P2	P2	;			

Parameters:
P1
00: ATT OFF
01: ATT ON
P2
00: Always 00 for the TS-480.

RC

Clears the RIT offset frequency.

	1	2	3	4	5	6	7	8	9	10
Set	R	C	;							
Read										
Answer										

Parameters:
None

RD

Moves the RIT offset frequency down.
Speeds up the scan speed in Scan mode.

	1	2	3	4	5	6	7	8	9	10
Set	R	D	P1	P1	P1	P1	P1	;		
Read	R	D	;							
Answer	R	D	P2	;						

Parameters:
P1
00000 ~ 99999 (the offset frequency in Hz)
P2
1 ~ 9: Scan speed
When Scan is OFF:
If no parameter is specified, the frequency goes down 1 step.
When Scan is ON:
RD; to read the current scan speed.
RDnnnnn; (nnnnn = Any number) to increase the scan speed by 1 step.

RG

Sets or read the RF gain status.

	1	2	3	4	5	6	7	8	9	10
Set	R	G	P1	P1	P1	;				
Read	R	G	;							
Answer	R	G	P1	P1	P1	;				

Parameters:
P1
000 (min.) ~ 100 (max.)

RL

Sets or reads the Noise Reduction level.

	1	2	3	4	5	6	7	8	9	10
Set	R	L	P1	P1	;					
Read	R	L	;							
Answer	R	L	P1	P1	;					

Parameters:
P1
When the NR1 is ON: 00 = AUTO, 01 ~ 09
When the NR2 is ON: 00 (2 ms) ~ 09 (20 ms) in steps of 2 ms

RM

Sets or reads the Meter function.

	1	2	3	4	5	6	7	8	9	10
Set	R	M	P1	;						
Read	R	M	;							
Answer	R	M	P1	P2	P2	P2	P2	;		

Parameters:
P1
Selects the meter scale
0: Unselected (Not available for the TS-480)
1: SWR
2: COMP
3: ALC
P2
Meter value in dots: 0000 ~ 0010

PC CONTROL COMMAND

RS

Reads the transceiver status.

	1	2	3	4	5	6	7	8	9	10
Set										
Read	R	S	;							
Answer	R	S	P1	;						

Parameters:
P1
0: Normal
1: The transceiver is busy configuring the various settings, such as M.SCR mode, Menu mode, or direct frequency entry mode.

RT

Sets or reads the RIT function status.

	1	2	3	4	5	6	7	8	9	10
Set	R	T	P1	;						
Read	R	T	;							
Answer	R	T	P1	;						

Parameters:
P1
0: RIT function OFF
1: RIT function ON

RU

Moves the RIT offset frequency up.
Slows down the scan speed in Scan mode.

	1	2	3	4	5	6	7	8	9	10
Set	R	U	P1	P1	P1	P1	P1	;		
Read	R	U	;							
Answer	R	U	P2	;						

Parameters:
P1
00000 ~ 99999 (the offset frequency in Hz)
P2
1 ~ 9: Scan speed
When Scan is OFF:
If no parameter is specified, the frequency increases by 1 step up.
When Scan is ON:
RU; to read the current scan speed.
RUnnnnn; (nnnnn = Any number) to decrease the scan speed by 1 step.

RX

Sets the receiver function status.

	1	2	3	4	5	6	7	8	9	10
Set	R	X	;							
Read										
Answer	R	X	P1	;						

Parameters:
P1
0: Always 0 for the TS-480

SC

Sets or reads the SCAN function status.

	1	2	3	4	5	6	7	8	9	10
Set	S	C	P1	;						
Read	S	C	;							
Answer	S	C	P2	P3	;					

Parameters:
P1/ P2
0: Scan OFF
1: Scan ON
4: Tone Scan ON
5: CTCSS Scan ON
P3
0: Normal Scan
1: Program Scan (Slow down)

When P1=1 parameter is sent, the transceiver performs either Program Scan or VFO Scan depending on the VFO mode. In Memory Recall mode, it performs either Group Scan or All-Channel Scan depending on the transceiver status.

SD

Sets or reads the CW Break-in time delay.

	1	2	3	4	5	6	7	8	9	10
Set	S	D	P1	P1	P1	P1	;			
Read	S	D	;							
Answer	S	D	P1	P1	P1	P1	;			

Parameters:
P1
0000 ~ 1000 ms (in steps of 50 ms)
0000 is FBK (Full Break-in)

SH

Sets or reads the DSP filter settings.

	1	2	3	4	5	6	7	8	9	10
Set	S	H	P1	P1	;					
Read	S	H	;							
Answer	S	H	P1	P1	;					

Parameters:
P1
00 ~ 13
SSB/ FM (Hz)
00: 1000, 01: 1200, 02: 1400, 03: 1600, 04: 1800, 05: 2000, 06: 2200, 07: 2400, 08: 2600, 09: 2800, 10: 3000, 11: 3400 12: 4000, 13: 5000
AM (Hz)
00: 2500, 01: 3000, 02: 4000, 03: 5000

When Menu No. 45 is ON, specify the center frequency for the filter.
00: 1000 Hz, 01: 1500 Hz, 02: 2210 Hz

SL

Sets or reads the DSP filter settings.

	1	2	3	4	5	6	7	8	9	10
Set	S	L	P1	P1	;					
Read	S	L	;							
Answer	S	L	P1	P1	;					

Parameters:
P1
00 ~ 11
SSB/ FM (Hz)
00: 0, 01: 50, 02: 100, 03: 200, 04: 300, 05: 400, 06: 500 07: 600, 08: 700, 09: 800, 10: 900, 11: 1000
AM (Hz)
00: 0, 01: 100, 02: 200, 03: 500

When Menu No. 45 is ON, specify the filter bandwidth.
00: 50, 01: 100, 02: 250, 03: 500, 04: 1000, 05: 1500, 06: 2400 (Hz)

SM

Reads the S-meter status.

	1	2	3	4	5	6	7	8	9	10
Set										
Read	S	M	P1	;						
Answer	S	M	P1	P2	P2	P2	P2	;		

Parameters:
P1
0: Always 0 for the TS-480.
P2
Meter readings
0000 ~ 0020

SQ

Sets and reads the squelch level.

	1	2	3	4	5	6	7	8	9	10
Set	S	Q	P1	P2	P2	P2	;			
Read	S	Q	P1	;						
Answer	S	Q	P1	P2	P2	P2	;			

Parameters:
P1
0: Always 0 for the TS-480.
P2
Squelch level
000 ~ 255

PC CONTROL COMMAND

SR

Resets the transceiver.

	1	2	3	4	5	6	7	8	9	10
Set	S	R	P1	;						
Read										
Answer										

Parameters:
P1
1: VFO reset
2: Full reset

SS

Sets or reads the Program Scan pause frequency.

	1	2	3	4	5	6	7	8	9	10
Set	S	S	P1	P2	P3	P3	P3	P3	P3	P3
	11	12	13	14	15	16	17	18	19	20
	P3	P3	P3	P3	P3	;				
Read	S	S	P1	P2	;					
Answer	S	S	P1	P2	P3	P3	P3	P3	P3	P3
	11	12	13	14	15	16	17	18	19	20
	P3	P3	P3	P3	P3	;				

Parameters:
P1
0 ~ 9: Memory Channel number for the Program Scan
(0: Memory Channel 90 ~ 9: Memory channel 99)
P2
0 ~ 4: Slow down frequency (5 locations)
P3
Slow down frequency (11-digit)

If the specified P1 Memory channel is empty, the command becomes invalid.
The P2 parameter must be specified sequencially from 0. If the previous parameter is not specified, the parameter cannot be accepted.
The slow down frequency parameter must be within the frequency range of each Memory channel.

ST

Sets or reads the MULTI control frequency steps.

	1	2	3	4	5	6	7	8	9	10
Set	S	T	P1	P1	;					
Read	S	T	;							
Answer	S	T	P1	P1	;					

Parameters:
P1
SSB/ CW/ FSK mode: 00 ~ 04
00: 0.5 kHz, 01: 1 kHz, 02: 2.5 kHz, 03: 5 kHz, 04: 10 kHz
AM/ FM mode: 00 ~ 09
00: 5 kHz, 01: 6.25 kHz, 02: 10 kHz, 03: 12.5 kHz,
04: 15 kHz, 05: 20 kHz, 06: 25 kHz, 07: 30 kHz,
08: 50 kHz, 09: 100 kHz

SU

Sets or reads the Program Scan (VGROUP)/ Memory Group (MGROUP) selection status.

	1	2	3	4	5	6	7	8	9	10
Set	S	U	P1	P2	P3	P4	P5	P6	P7	P8
	11	12	13	14	15	16	17	18	19	20
	P9	P10	P11	;						
Read	S	U	P1	;						
Answer	S	U	P1	P2	P3	P4	P5	P6	P7	P8
	11	12	13	14	15	16	17	18	19	20
	P9	P10	P11	;						

Parameters:
P1
0: Program Scan Group (VGROUP)
1: Memory Group (MGROUP)
P2
Group 0. 0: Unselected, 1 ~ 9: Selected
P3
Group 1. 0: Unselected, 1 ~ 9: Selected
P4
Group 2. 0: Unselected, 1 ~ 9: Selected
P5
Group 3. 0: Unselected, 1 ~ 9: Selected
P6
Group 4. 0: Unselected, 1 ~ 9: Selected
P7
Group 5. 0: Unselected, 1 ~ 9: Selected
P8
Group 6. 0: Unselected, 1 ~ 9: Selected
P9
Group 7. 0: Unselected, 1 ~ 9: Selected
P10
Group 8. 0: Unselected, 1 ~ 9: Selected
P11
Group 9. 0: Unselected, 1 ~ 9: Selected

SV

Execute the Memory Transfer function.

	1	2	3	4	5	6	7	8	9	10
Set	S	V	;							
Read										
Answer										

Parameters:
No parameter

TN

Sets or reads the Tone frequency number.

	1	2	3	4	5	6	7	8	9	10
Set	T	N	P1	P1	;					
Read	T	N	;							
Answer	T	N	P1	P1	;					

Parameters:
P1
00 ~ 42

Refer to page 32 of the TS-480 instruction manual for the Tone numbers and frequencies.

TO

Sets or reads the Tone function ON/ OFF.

	1	2	3	4	5	6	7	8	9	10
Set	T	O	P1	;						
Read	T	O	;							
Answer	T	O	P1	;						

Parameters:
P1
0: Tone function OFF
1: Tone function ON

TS

Sets or reads the TF-SET function status.

	1	2	3	4	5	6	7	8	9	10
Set	T	S	P1	;						
Read	T	S	;							
Answer	T	S	P1	;						

Parameters:
P1
0: TF-SET function OFF
1: TF-SET function ON

TX

Sets the transceiver in TX mode.

	1	2	3	4	5	6	7	8	9	10
Set	T	X	P1	;						
Read										
Answer	T	X	P2	;						

Parameters:
P1
0: Normal (SEND) transmission using MIC input
1: DTS transmission using ANI input
2: TX Tune transmission
If no P1 parameter is specified, P1=0 is used.

P2
Always 0 for the TS-480.

TY

Sets or reads the microprocessor fimware type.

	1	2	3	4	5	6	7	8	9	10
Set										
Read	T	Y	;							
Answer	T	Y	P1	P1	P2	;				

Parameters:
P1
Reserved
P2
0: TS-480HX (200 W)
1: TS-480SAT (100 W + AT)
2: Japanese 50 W type
3: Japanese 20 W type

UL

Detects the PLL unlock status.

	1	2	3	4	5	6	7	8	9	10
Set										
Read										
Answer	U	L	P1	;						

Parameters:
P1
0: Lock
1: Unlock

UP

Emulates the microphone UP key.

	1	2	3	4	5	6	7	8	9	10
Set	U	P	P1	P1	;					
Read										
Answer										

Parameters:
P1
00 ~ 99

If no P1 parameter is specified, the command is interpreted as 1 step up.
In Memory mode and Quick Memory mode, commands without parameters are treated as Memory channel up commands. With parameters, they are treated as frequency up commands.

VD

Sets or reads the VOX delay time.

	1	2	3	4	5	6	7	8	9	10
Set	V	D	P1	P1	P1	P1	;			
Read	V	D	;							
Answer	V	D	P1	P1	P1	P1	;			

Parameters:
P1
0000 ~ 3000 ms (in steps of 150)

VG

Sets or reads the VOX GAIN.

	1	2	3	4	5	6	7	8	9	10
Set	V	G	P1	P1	P1	;				
Read	V	G	;							
Answer	V	G	P1	P1	P1	;				

Parameters:
P1
000 ~ 009

VR

Emulates the VOICE1 or VOICE2 key.

	1	2	3	4	5	6	7	8	9	10
Set	V	R	P1	;						
Read										
Answer										

Parameters:
P1
0: Normal
1: VOICE1
2: VOICE2
3: Disable the Voice Guide function

After P1=3 is sent to the transceiver, P1=1 and 2 cannot be used. To use the P1=1 and 2 parameters, first send P1=0 to reset the status. When the transceiver is turned OFF, it resets to P1=0.

VV

Equalizes VFO A and VFO B settings.

	1	2	3	4	5	6	7	8	9	10
Set	V	V	;							
Read										
Answer										

Parameters:
None

VX

Sets or reads the VOX function status.

	1	2	3	4	5	6	7	8	9	10
Set	V	X	P1	;						
Read	V	X	;							
Answer	V	X	P1	;						

Parameters:
P1
0: VOX function OFF
1: VOX function ON

XI

Reads the transmission frequency, mode and MULTI control frequency step size.

	1	2	3	4	5	6	7	8	9	10
Set										
Read	X	T	;							
Answer	X	T	P1	P1	P1	P1	P1	P1	P1	P1
	11	12	13	14	15	16	17	18	19	20
	P1	P1	P1	P2	P3	P3	;			

Parameters:
P1
The frequency in Hz (11-digit). For example, 00014195000 for 14.195 MHz.
P2
Transmission mode. Refer to the MD command parameters.
P3
MULTI control frequency step size. Refer to the ST command parameters.

XO

Sets and reads the offset direction and frequency for the transverter mode.

Set

1	2	3	4	5	6	7	8	9	10
X	O	P1	P2	P2	P2	P2	P2	P2	P2
11	12	13	14	15	16	17	18	19	20
P2	P2	P2	P2	;					

Read

1	2	3	4	5	6	7	8	9	10
X	O	;							

Answer

1	2	3	4	5	6	7	8	9	10
X	O	P1	P2	P2	P2	P2	P2	P2	P2
11	12	13	14	15	16	17	18	19	20
P2	P2	P2	P2	;					

Parameters:

P1
Offset direction.
0: Plus diretion
1: Minus direction

P2
Offset frequency (11-digit). For example, 00094000000 for 94.000 MHz. The blank digits must be 0.

XT

Sets or reads the XIT function status.

Set

1	2	3	4	5	6	7	8	9	10
X	T	P1	;						

Read

1	2	3	4	5	6	7	8	9	10
X	T	;							

Answer

1	2	3	4	5	6	7	8	9	10
X	T	P1	;						

Parameters:

P1
0: XIT function OFF
1: XIT function ON

KENWOOD