YAESU
The radio

FTDX1200 SERIES

CAT OPERATION

REFERENCE BOOK

YAESU MUSEN CO., LTD.

CAT (Computer Aided Transceiver) Operation

Overview

The CAT (Computer Aided Transceiver) System in the **FTDX1200** transceiver provides control of frequency, VFO, memory, and other settings such as dual-channel memories and diversity reception using an external personal computer. This allows multiple control operations to be fully automated with single mouse clicks, or keystroke operations on the computer keyboard.

Using the RS-232C Cable (Refer to figure 1)

The **FTDX1200** series has a built-in level converter, allowing direct connection from the rear-panel CAT jack to the serial port of your computer without the need of any external boxes.

You will need a serial cable for connection to the RS-232C (serial or COM port) connector on your computer. Purchase a standard serial cable (not the so-called "null modem" type), ensuring it has the correct gender and number of pins (some serial COM port connectors use a 9-pin rather than 25-pin configuration). If your computer uses a custom connector, you may have to construct the cable. In this case, refer to the technical documentation supplied with your computer for correct data connection.

Using the USB Cable with SCU-17 (Refer to figure 2)

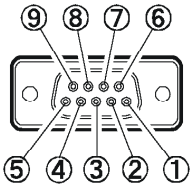
Install the virtual COM port driver on the personal computer before using the **SCU-17** USB interface unit. Please see the USB Driver (Virtual COM Port Driver) on the Yaesu Website for details refer to (http://www.yaesu.com/) in the **FTDX1200** product files section.

Note: Do not connect the USB cable and **SCU-17** to your personal computer until after the "virtual COM port driver" installation is completed, because an incorrect driver may be installed.

The **SCU-17** interface unit may be used for CAT control of the transceiver with a computer via a USB connection. You will need a USB cable to connect to the USB jack on your computer.

> YAESU MUSEN does not produce CAT System operating software due to the wide variety of personal computers and operating systems in use today. However, the information provided in this chapter explains the serial data structure and opcodes used by the CAT system. This information, along with the short programming examples, is intended to help you start writing programs on your own. As you become more familiar with CAT operation, you can customize programs for your operating needs and utilize the full operating potential of this system.

Connection



Pin No.	Pin Name	I/O	Function
①	N/A	—	—
②	SERIAL OUT	Output	Outputs the Serial Data from the transceiver to the computer.
③	SERIAL IN	Input	Inputs the Serial Data from the computer to the transceiver.
④	N/A	---	—
⑤	GND	---	Signal Ground
⑥	N/A	---	---
⑦	RTS	Input	When the computer is not ready to receive data, this port goes to "L" to inhibit the transmit data from the transceiver.
⑧	CTS	Output	When the transceiver is not ready to receive data, this port goes to "L" to inhibit the transmit data from the computer.
⑨	N/A	—	—

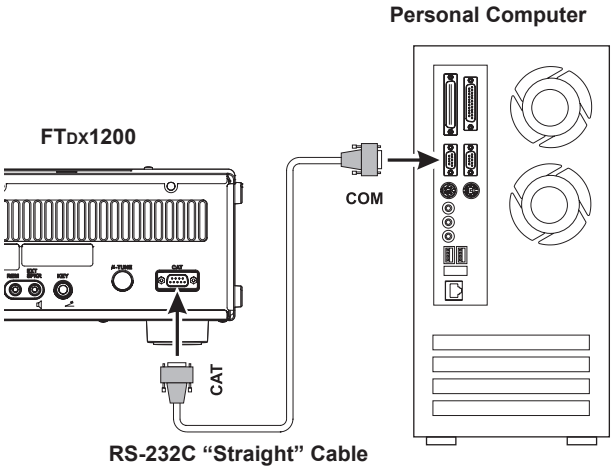


Figure 1

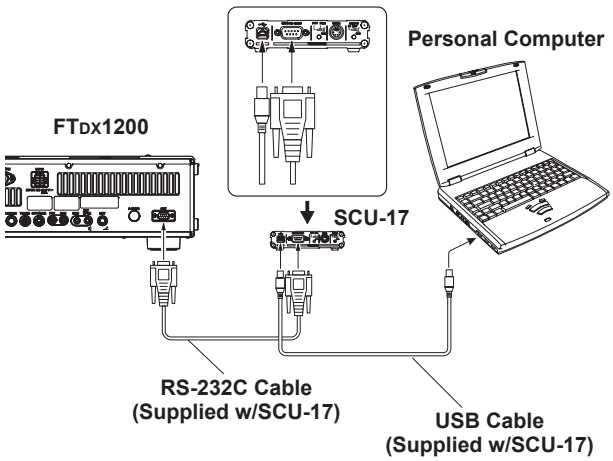


Figure 2

CONTROL COMMAND

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

Example: Set the VFO-A frequency to 14.250000 MHz.

FA	**14250000**	**;**
↑	↑	↑
Command	Parameter	Terminator

There are three commands for the **FTDX1200** as shown below:

Set command: Set a particular condition (to the **FTDX1200**)
Read command: Reads an answer (from the **FTDX1200**)
Answer command: Transmits a condition (from the **FTDX1200**)

For example, note the following case of the FA command (Set the VFO-A frequency):

- ❒ To set the VFO-A frequency to 14.250000 MHz, the following command is sent from the computer to the transceiver:
  "**FA14250000;**" (Set command)
- ❒ To read the VFO-A frequency, 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:
  "**FA14250000;**" (Answer command)

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" on the following pages.

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 "Control Command List" and the "Control Command Tables" to configure the appropriate parameters.

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

For example,
when the correct parameter is "**IS0+1000**" (IF SHIFT):

IS01000;
Not enough parameters specified (No direction (+) given for the IF shift)

IS0+100;
Not enough digits (Only three frequency digits given)

IS0_+_1000;
Unnecessary characters between parameters

IS0+10000;
Too many digits (Five frequency digits given)

Note: If a particular parameter is not applicable to the **FTDX1200**, 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.

COMMAND	Function	SET	READ	ANS.	AI
AB	VFO-A TO VFO-B	O	X	X	X
AC	ANTENNA TUNER CONTROL	O	O	O	O
AG	AF GAIN	O	O	O	O
AI	AUTO INFORMATION	O	O	O	X
AM	VFO-A TO MEMORY CHANNEL	O	X	X	X
AN	ANTENNA NUMBER	O	O	O	O
BA	VFO-B TO VFO-A	O	X	X	X
BC	AUTO NOTCH	O	O	O	O
BD	BAND DOWN	O	X	X	X
BI	BREAK-IN	O	O	O	O
BP	MANUAL NOTCH	O	O	O	O
BS	BAND SELECT	O	X	X	X
BU	BAND UP	O	X	X	X
BY	BUSY	X	O	O	O
CH	CHANNEL UP/DOWN	O	X	X	X
CN	CTCSS NUMBER	O	O	O	O
CO	CONTOUR	O	O	O	O
CS	CW SPOT	O	O	O	O
CT	CTCSS	O	O	O	O
DA	DIMMER	O	O	O	X
DN	DOWN	O	X	X	X
DT	DATE AND TIME	O	O	O	X
ED	ENCORDER DOWN	O	X	X	X
EK	ENT KEY	O	X	X	X
EM	ENCODE MEMORY	O	O	O	X
EN	ENCODE	O	X	X	X
EU	ENCORDER UP	O	X	X	X
EX	MENU	O	O	O	O
FA	FREQUENCY VFO-A	O	O	O	O
FB	FREQUENCY VFO-B	O	O	O	O
FR	FUNCTION RX	O	O	O	O
FS	FAST STEP	O	O	O	O
FT	FUNCTION TX	O	O	O	O
GT	AGC FUNCTION	O	O	O	O
ID	IDENTIFICATION	X	O	O	X
IF	INFORMATION	X	O	O	O
IS	IF-SHIFT	O	O	O	O
KM	KEYER MEMORY	O	O	O	X
KP	KEY PITCH	O	O	O	O
KR	KEYER	O	O	O	O
KS	KEY SPEED	O	O	O	O
KY	CW KEYING	O	X	X	X
LK	LOCK	O	O	O	O
LM	LOAD MESSEGE	O	O	O	X
MA	MEMORY CHANNEL TO VFO-A	O	X	X	X
MC	MEMORY CHANNEL	O	O	O	X
MD	MODE	O	O	O	O
MG	MIC GAIN	O	O	O	O
ML	MONITOR LEVEL	O	O	O	O
MR	MEMORY READ	X	O	O	X
MS	METER SW	O	O	O	O
MW	MEMORY WRITE	O	X	X	X
MX	MOX SET	O	O	O	O
NA	NARROW	O	O	O	O
NB	NOISE BLANKER	O	O	O	O
NL	NOISE BLANKER LEVEL	O	O	O	O
NR	NOISE REDUCTION	O	O	O	O
OI	OPPOSITE BAND NFORMATION	X	O	O	O
OS	OFFSET (Repeater Shift)	O	O	O	O
PA	PRE-AMP (IPO)	O	O	O	O

COMMAND	FUNCTION	SET	READ	ANS.	AI
PB	PLAY BACK	O	O	O	X
PC	POWER CONTROL	O	O	O	O
PL	SPEECH PROCESSOR LEVEL	O	O	O	O
PR	SPEECH PROCESSOR	O	O	O	O
PS	POWER SWITCH	O	O	O	X
QI	QMB STORE	O	X	X	X
QR	QMB RECALL	O	X	X	X
QS	QUICK SPLIT	O	X	X	X
RA	RF ATTENUATOR	O	O	O	O
RC	CLAR CLEAR	O	X	X	X
RD	CLAR DOWN	O	X	X	X
RF	ROOFING FILTER	O	O	O	O
RG	RF GAIN	O	O	O	O
RI	RADIO INFORMATION	X	O	O	O
RL	NOISE REDUCTION LEVEL	O	O	O	O
RM	READ METER	X	O	O	O
RO	ROTATOR	O	O	O	X
RS	RADIO STATUS	X	O	O	O
RT	CLAR	O	O	O	O
RU	CLAR UP	O	X	X	X
SC	SCAN	O	O	O	O
SD	SEMI BREAK-IN DELAY TIME	O	O	O	O
SF	SUB-DIAL FUNCTION	O	O	O	O
SH	WIDTH	O	O	O	O
SM	S METER	X	O	O	O
SQ	SQUELCH LEVEL	O	O	O	O
SV	SWAP VFO	O	X	X	X
TS	TXW	O	O	O	O
TX	TX SET	O	O	O	O
UL	UNLOCK	X	O	O	O
UP	UP	O	X	X	X
VD	VOX DELAY TIME	O	O	O	O
VF	uTUNE FILTER	O	O	O	O
VG	VOX GAIN	O	O	O	O
VM	[V/M] KEY FUNCTION	O	X	X	X
VS	VFO SELECT	O	O	O	O
VX	VOX	O	O	O	O
XT	TX CLAR	O	O	O	O
ZI	ZERO IN	O	X	X	X

AB	VFO-A TO VFO-B									
Set	1	2	3	4	5	6	7	8	9	10
	A	B	;							
Read	1	2	3	4	5	6	7	8	9	10
Answer	1	2	3	4	5	6	7	8	9	10

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

P1 0: Fixed
P2 0: Fixed
P3 0: Tuner "OFF"
1: Tuner "ON"
2: Tuning Start

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

P1 0: Fixed
P2 000 - 255

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

P1 0: Auto Information "OFF"
1: Auto Information "ON"

This parameter is set to "0" (OFF) automatically when the transceiver is turned "OFF".

AM	VFO-A TO MEMORY CHANNEL									
Set	1	2	3	4	5	6	7	8	9	10
	A	M	;							
Read	1	2	3	4	5	6	7	8	9	10
Answer	1	2	3	4	5	6	7	8	9	10

AN	ANTENNA NUMBER									
Set	1	2	3	4	5	6	7	8	9	10
	A	N	P1	P2	;					
Read	1	2	3	4	5	6	7	8	9	10
	A	N	P1	;						
Answer	1	2	3	4	5	6	7	8	9	10
	A	N	P1	P3	P4	;				

P1 0: Fixed
P2 1: ANT "1"
2: ANT "2"
P3 1: ANT "1"
2: ANT "2"
P4 0: Fixed

BA	VFO-B TO VFO-A									
Set	1	2	3	4	5	6	7	8	9	10
	B	A	;							
Read	1	2	3	4	5	6	7	8	9	10
Answer	1	2	3	4	5	6	7	8	9	10

BC	AUTO NOTCH									
Set	1	2	3	4	5	6	7	8	9	10
	B	C	P1	P2	;					
Read	1	2	3	4	5	6	7	8	9	10
	B	C	P1	;						
Answer	1	2	3	4	5	6	7	8	9	10
	B	C	P1	P2	;					

P1 0:Fixed
P2 0: Auto Notch "OFF"
1: Auto Notch "ON"

BD	BAND DOWN									
Set	1	2	3	4	5	6	7	8	9	10
	B	D	P1	;						
Read	1	2	3	4	5	6	7	8	9	10
Answer	1	2	3	4	5	6	7	8	9	10

P1 0: Fixed

BI	BREAK-IN									
Set	1	2	3	4	5	6	7	8	9	10
	B	I	P1	;						
Read	1	2	3	4	5	6	7	8	9	10
	B	I	;							
Answer	1	2	3	4	5	6	7	8	9	10
	B	I	P1	;						

P1 0: Break-in "OFF"
1: Break-in "ON"

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

P1 0:Fixed
P2 0: Manual NOTCH "ON/OFF"
1: Manual NOTCH LEVEL
P3 P2=0
000: OFF
001: ON
P2=1
001 - 400 (NOTCH Frequency : x 10 Hz)

BS	BAND SELECT									
Set	1	2	3	4	5	6	7	8	9	10
	B	S	P1	P1	;					
Read	1	2	3	4	5	6	7	8	9	10
Answer	1	2	3	4	5	6	7	8	9	10

P1 00: 1.8 MHz 06: 18 MHz
01: 3.5 MHz 07: 21 MHz
02: - - - - 08: 24.5 MHz
03: 7 MHz 09: 28 MHz
04: 10 MHz 10: 50 MHz
05: 14 MHz 11: GEN

BU	BAND UP									
Set	1	2	3	4	5	6	7	8	9	10
	B	U	P1	;						
Read	1	2	3	4	5	6	7	8	9	10
Answer	1	2	3	4	5	6	7	8	9	10

P1 0: Fixed

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

P1 0: RX BUSY "OFF"
1: RX BUSY "ON"
P2 0: Fixed

CH	CHANNEL UP/DOWN									
Set	1	2	3	4	5	6	7	8	9	10
	C	H	P1	;						
Read	1	2	3	4	5	6	7	8	9	10
Answer	1	2	3	4	5	6	7	8	9	10

P1 0: Memory Channel "UP"
1: Memory Channel "DOWN"

CN	CTCSS TONE FREQUENCY									
Set	1	2	3	4	5	6	7	8	9	10
	C	N	P1	P2	P2	;				
Read	1	2	3	4	5	6	7	8	9	10
	C	N	P1	;						
Answer	1	2	3	4	5	6	7	8	9	10
	C	N	P1	P2	P2	;				

P1 0: Fixed
P2 0 - 49: Tone Frequency Number (See Table 1)

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

P1 0:Fixed
P2 0: CONTOUR/APF "ON/OFF"
1: CONTOUR FREQ
2: APF FREQ
P3 P2=000: CONTOUR/APF "OFF"
01: CONTOUR "ON"
02: APF "ON"
P2=1
01 - 40 (CONTOUR Frequency: 100 ～ 4000Hz)
P2=2
00 - 50 (APF Frequency: −250 ～ 250Hz)

CS	CW SPOT									
Set	1	2	3	4	5	6	7	8	9	10
	C	S	P1	;						
Read	1	2	3	4	5	6	7	8	9	10
	C	S	;							
Answer	1	2	3	4	5	6	7	8	9	10
	C	S	P1	;						

P1 0: OFF
1: ON

CT	CTCSS										
Set	1	2	3	4	5	6	7	8	9	10	P1 0: Fixed P2 0: CTCSS "OFF" 1: CTCSS ENC/DEC "ON" 2: CTCSS ENC "ON"
	C	T	P1	P2	;						
Read	1	2	3	4	5	6	7	8	9	10	
	C	T	P1	;							
Answer	1	2	3	4	5	6	7	8	9	10	
	C	T	P1	P2	;						

TABLE 1

TABLE 1 (CTCSS TONE CHART)											
00	67.0 Hz	09	91.5 Hz	18	123.0 Hz	27	162.2 Hz	36	189.9 Hz	45	229.1 Hz
01	69.3 Hz	10	94.8 Hz	19	127.3 Hz	28	165.5 Hz	37	192.8 Hz	46	233.6 Hz
02	71.9 Hz	11	97.4 Hz	20	131.8 Hz	29	167.9 Hz	38	196.6 Hz	47	241.8 Hz
03	74.4 Hz	12	100.0 Hz	21	136.5 Hz	30	171.3 Hz	39	199.5 Hz	48	250.3 Hz
04	77.0 Hz	13	103.5 Hz	22	141.3 Hz	31	173.8 Hz	40	203.5 Hz	49	254.1 Hz
05	79.7 Hz	14	107.2 Hz	23	146.2 Hz	32	177.3 Hz	41	206.5 Hz	—	—
06	82.5 Hz	15	110.9 Hz	24	151.4 Hz	33	179.9 Hz	42	210.7 Hz	—	—
07	85.4 Hz	16	114.8 Hz	25	156.7 Hz	34	183.5 Hz	43	218.1 Hz	—	—
08	88.5 Hz	17	118.8 Hz	26	159.8 Hz	35	186.2 Hz	44	225.7 Hz	—	—

DA	DIMMER										
Set	1	2	3	4	5	6	7	8	9	10	P1 00 : Fixed P2 01 - 02: LED Indicators Brightness Level P3 00 - 15: TFT Display Brightness Level
	D	A	P1	P1	P2	P2	P3	P3	;		
Read	1	2	3	4	5	6	7	8	9	10	
	D	A	;								
Answer	1	2	3	4	5	6	7	8	9	10	
	D	A	P1	P1	P2	P2	P3	P3	;		

DT	DATE AND TIME										
Set	1	2	3	4	5	6	7	8	9	10	P1 01 : Fixed P2 hhmmss (24 hour time system)
	D	T	P1	P2	P2	P2	P2	P2	P2	;	
Read	1	2	3	4	5	6	7	8	9	10	
	D	T	P1	;							
Answer	1	2	3	4	5	6	7	8	9	10	
	D	T	P1	P2	P2	P2	P2	P2	P2	;	

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

ED	ENCORDER DOWN										
Set	1	2	3	4	5	6	7	8	9	10	P1 0: MAIN ENCORDER 1: SUB ENCORDER 4: MIC/SPEED ENCORDER 5: PROC/CAR ENCORDER 6: NOTCH ENCORDER 7: CONT ENCORDER P2 01-99: Steps
	E	D	P1	P2	P2	;					
Read	1	2	3	4	5	6	7	8	9	10	
Answer	1	2	3	4	5	6	7	8	9	10	

EK	ENT KEY									
Set	1	2	3	4	5	6	7	8	9	10
	E	K	;							
Read	1	2	3	4	5	6	7	8	9	10
Answer	1	2	3	4	5	6	7	8	9	10

EM	ENCODE MEMORY										
Set	1	2	3	4	5	6	7	~	54	55	P1 0: RTTY 1: PSK P2: 1 - 5 : Memory Channel P3: Message Characters (up to 50 characters) ※:requires FFT-1 (option)
	E	M	P1	P2	P3	P3	P3	~	P3	;	
Read	1	2	3	4	5	6	7	8	9	10	
	E	M	P1	P2	;						
Answer	1	2	3	4	5	6	7	~	54	55	
	E	M	P1	P2	P3	P3	P3	~	P3	;	

EN	ENCODE									
Set	1	2	3	4	5	6	7	8	9	10
	E	N	P1	P2	;					
Read	1	2	3	4	5	6	7	8	9	10
Answer	1	2	3	4	5	6	7	8	9	10

P1 0: RTTY
1: PSK
P2: 1: Message Memory “1” Playback
2: Message Memory “2” Playback
3: Message Memory “3” Playback
4: Message Memory “4” Playback
5: Message Memory “5” Playback ※:requires FFT-1 (option)

EU	ENCORDER UP									
Set	1	2	3	4	5	6	7	8	9	10
	E	U	P1	P2	P2	;				
Read	1	2	3	4	5	6	7	8	9	10
Answer	1	2	3	4	5	6	7	8	9	10

P1 0: MAIN ENCORDER
1: SUB ENCORDER
4: MIC ENCORDER
5: PROC ENCORDER
6: NOTCH ENCORDER
7: CONT ENCORDER
P2 01-99: Steps

EX	MENU									
Set	1	2	3	4	5	6	7	8	n-1	n
	E	X	P1	P1	P1	P2	P2	~	P2	;
Read	1	2	3	4	5	6	7	8	9	10
	E	X	P1	P1	P1	;				
Answer	1	2	3	4	5	6	7	8	n-1	n
	E	X	P1	P1	P1	P2	P2	~	P2	;

P1 : 001-196 (MENU Number)
P2 : Parameter (See Table 2 to Table 4)

TABLE 2

P1	FUNCTION	P2	DIGITS
001	AGC FAST-DELAY	20 ~ 4000 msec (P2= 0020 ~ 4000, 20 msec/step)	4
002	AGC MID DELAY	20 ~ 4000 msec (P2= 0020 ~ 4000, 20 msec/step)	4
003	AGC SLOW DELAY	20 ~ 4000 msec (P2= 0020 ~ 4000, 20 msec/step)	4
004	AGC AGC SLOPE	0: NORMAL 1: SLOPE	1
005	DISPLAY MY CALL	Max 12 characters	MAX 12
006	DISPLAY MY CALL TIME	0 ~ 5 sec	1
007	DISPLAY VFO COLOR	0: BLUE 1: SKY BLUE 2: GREEN 3: PURPLE 4: RED 5: ORANGE 6: GRAY 7: BLACK	1
008	DISPLAY TFT LAYOUT	0: TYPE 1 1: TYPE 2	1
009	DISPLAY DIMMER LED	1 ~ 2 (P2 = 01 ~ 02)	2
010	DISPLAY DIMMER TFT	00 ~ 15	2
011	DISPLAY BAR DISPLAY SELECT	0: CLAR 1: CW TUNE 2: uTUNE	1
012	DISPLAY METER TYPE SELECT	0: ANALOG 1: BAR GRAPH	1
013	DISPLAY BAR MTR PEAK HOLD	0: OFF 1: 0.5 sec 2: 1.0 sec 3: 2.0 sec	1
014	DISPLAY ROTATOR START UP	0: 0° 1: 90° 2: 180° 3: 270°	1
015	DISPLAY ROTATOR OFFSET ADJ	-30° ~ 00° (P2 = 30 ~ 00, 2° step)	2
016	DVS RX OUT LEVEL	0 ~ 100 (P2 = 000 ~ 100)	3
017	DVS TX OUT LEVEL	0 ~ 100 (P2 = 000 ~ 100)	3
018	KEYER F KEYER TYPE	0: OFF 1: BUG 2: ELEKEY 3: ACS	1
019	KEYER F CW KEYER	0: NORNAL 1: REVERSE	1
020	KEYER R KEYER TYPE	0: OFF 1: BUG 2: ELEKEY 3: ACS	1
021	KEYER F CW KEYER	0: NORNAL 1: REVERSE	1
022	KEYER ELEKEY TYPE	0: ELEKEY-A 1: ELEKEY-B	1
023	KEYER CW WEIGHT	25 (1:2.5) ~ 45 (1:4.5)	2
024	KEYER BEACON TIME	OFF / 1 ~ 690 sec (P2 = 000 ~ 255, 000: OFF)	3
025	KEYER NUMBER STYLE	0: 1290 1: AUNO 2: AUNT 3: A2NO 4: A2NT 5: 12NO 6: 12NT	1
026	KEYER CONTEST NUMBER	0000 ~ 9999	4
027	KEYER CW MEMORY 1	0: TEXT 1: MESSAGE	1
028	KEYER CW MEMORY 2	0: TEXT 1: MESSAGE	1
029	KEYER CW MEMORY 3	0: TEXT 1: MESSAGE	1
030	KEYER CW MEMORY 4	0: TEXT 1: MESSAGE	1
031	KEYER CW MEMORY 5	0: TEXT 1: MESSAGE	1
032	GENERAL ANT SELECT	0: BAND 1: STACK	1
033	GENERAL ANT2 SETTING	0: TRX 1: R2/1	1
034	GENERAL NB LEVEL	0 ~ 100 (P2 = 000 ~ 100)	3
035	GENERAL BEEP LEVEL	0 ~ 100 (P2 = 000 ~ 100)	3
036	GENERAL MONITOR LEVEL	0 ~ 100 (P2 = 000 ~ 100)	3
037	GENERAL MOX	0: DISABLE 1: ENABLE	1
038	GENERAL RF/SQL VR	0: RF 1: SQL	1
039	GENERAL CAT RATE	0: 4800 bps 1: 9600 bps 2: 19200 bps 3: 38400 bps	1
040	GENERAL CAT TIME OUT TIMER	0: 10 msec 1: 100 msec 2: 1000 msec 3: 3000 msec	1
041	GENERAL CAT RTS	0: DISABLE 1: ENABLE	1
042	GENERAL MEM GROUP	0: DISABLE 1: ENABLE	1
043	GENERAL QUICK SPLIT FREQ	–20 kHz ~ +00 (or –00) ~ +20 kHz (P2= -20 ~ +00 or -00 ~ +20)	3
044	GENERAL TXW DIAL SELECT	0: VFO-A 1: VFO-B	1
045	GENERAL TX TIME OUT TIMER	0 (OFF) ~ 30 min (P2= 00 ~ 30)	2
046	GENERAL µTUNE DIAL STEP	0: DIAL STEP-2 1: DIAL STEP-1	1
047	GENERAL MIC SCAN	0: DISABLE 1: ENABLE	1
048	GENERAL MIC SCAN RESUME	0 PAUSE 1: TIME	1
049	GENERAL FREQ ADJ	–25 ~ +00 (or –00) ~ +25 (P2= -25 ~ +00 or -00 ~ +25)	3
050	MODE-AM AM LCUT FREQ	00: OFF 01: 100 Hz ~ 19: 1000 Hz (50 Hz steps)	2
051	MODE-AM AM LCUT SLOPE	0: 6 dB/oct 1: 18 dB/oct	1
052	MODE-AM AM HCUT FREQ	00: OFF 01: 700 Hz ~ 67: 4000 Hz (50 Hz steps)	2
053	MODE-AM AM HCUT SLOPE	0: 6 dB/oct 1: 18 dB/oct	1
054	MODE-AM AM MIC GAIN	MCVR/FIX(0 ~ 100) (P2 = 1000: MCVR, 0000 ~ 0100: FIX(0 ~ 100))	4
055	MODE-AM AM MIC SEL	0: FRONT 1: DATA	1
056	MODE-CW CW PITCH	00: 300 Hz 01: 310 Hz ~ 74: 1040 Hz 75: 1050 Hz (10 Hz steps)	2
057	MODE-CW CW LCUT FREQ	00: OFF 01: 100 Hz ~ 19: 1000 Hz (50 Hz steps)	2

TABLE 3

P1	FUNCTION	P2	DIGITS
058	MODE-CW CW LCUT SLOPE	0: 6 dB/oct 1: 18 dB/oct	1
059	MODE-CW CW HCUT FREQ	00: OFF 01: 700 Hz ~ 67: 4000 Hz (50 Hz steps)	2
060	MODE-CW CW HCUT SLOPE	0: 6 dB/oct 1: 18 dB/oct	1
061	MODE-CW CW AUTO MODE	0: OFF 1: 50 MHz 2: ON	1
062	MODE-CW CW BFO	0: USB 1: LSB 2: AUTO	1
063	MODE-CW CW BK-IN	0: SEMI BREAK-IN 1: FULL BREAK-IN	1
064	MODE-CW CW BK-IN DELAY	30 ~ 3000 msec (P2 = 0030 ~ 3000, 10 msec/step)	4
065	MODE-CW CW WAVE SHAPE	0: 1 msec 1: 2 msec 2: 4 msec 3: 6 msec	1
066	MODE-CW CW FREQ DISPLAY	0: DIRECT FREQ 1: PITCH OFFSET	1
067	MODE-CW PC KEYING	0: OFF 1: ON	1
068	MODE-CW QSK	0: 15 msec 1: 20 msec 2: 25 mesc 3: 30 msec	1
069	MODE-DATA DATA MODE	0: PSK 1: OTHER	1
070	MODE-DATA PSK TONE	0: 1000 Hz 1: 1500 Hz 2: 2000 Hz	1
071	MODE-DATA OTHER DISP (SSB)	-3000 Hz ~ 0 ~ +3000 Hz (P2 = -3000 ~ -0000 or +0000 ~ +3000, 10 Hz steps)	5
072	MODE-DATA OTHER SHIFT (SSB)	-3000 Hz ~ 0 ~ +3000 Hz (P2 = -3000 ~ -0000 or +0000 ~ +3000, 10 Hz steps)	5
073	MODE-DATA DATA LCUT FREQ	00: OFF 01: 100 Hz ~ 19: 1000 Hz (50 Hz steps)	2
074	MODE-DATA DATA LCUT SLOPE	0: 6 dB/oct 1: 18 dB/oct	1
075	MODE-DATA DATA HCUT FREQ	00: OFF 01: 700 Hz ~ 67: 4000 Hz (50 Hz steps)	2
076	MODE-DATA DATA HCUT SLOPE	0: 6 dB/oct 1: 18 dB/oct	1
077	MODE-DATA DATA MIC GAIN	MCVR/FIX (0 ~ 100) (P2 = 1000: MCVR, 0000 ~ 0100: FIX(0 ~ 100))	4
078	MODE-DATA DATA OUT LEVEL	0 ~ 100 (P2 = 000 ~ 100)	3
079	MODE-DATA DATA VOX GAIN	0 ~ 100 (P2 = 000 ~ 100)	3
080	MODE-DATA DATA VOX DELAY	30 ~ 300 ~ 3000 msec (P2 = 0030 ~ 3000, 10 msec/step)	4
081	MODE-FM FM LCUT FREQ	00: OFF 01: 100 Hz ~ 19: 1000 Hz (50 Hz steps)	2
082	MODE-FM FM LCUT SLOPE	0: 6 dB/oct 1: 18 dB/oct	1
083	MODE-FM FM HCUT FREQ	00: OFF 01: 700 Hz ~ 67: 4000 Hz (50 Hz steps)	2
084	MODE-FM FM HCUT SLOPE	0: 6 dB/oct 1: 18 dB/oct	1
085	MODE-FM FM MIC GAIN	MCVR/FIX (0 ~ 100) (P2 = 1000: MCVR, 0000 ~ 0100: FIX(0 ~ 100))	4
086	MODE-FM FM MIC SEL	0: FRONT 1: DATA	1
087	MODE-FM RPT SHIFT(28MHz)	0 ~ 1000 kHz (P2 = 0000 ~ 1000, 10 kHz/step)	4
088	MODE-FM RPT SHIFT(50MHz)	0 ~ 4000 kHz (P2 = 0000 ~ 4000, 10 kHz/step)	4
089	MODE-FM TONE FREQ	00: 67.0 Hz ~ 49: 254.1 Hz	2
090	MODE-RTY RTTY LCUT FREQ	00: OFF 01: 100 Hz ~ 19: 1000Hz (50 Hz steps)	2
091	MODE-RTY RTTY LCUT SLOPE	0: 6 dB/oct 1: 18 dB/oct	1
092	MODE-RTY RTTY HCUT FREQ	00: OFF 01: 700 Hz ~ 67: 4000 Hz (50 Hz steps)	2
093	MODE-RTY RTTY HCUT SLOPE	0: 6 dB/oct 1: 18 dB/oct	1
094	MODE-RTY RTTY POLARITY-R	0: NOR 1: REV	1
095	MODE-RTY RTTY POLARITY-T	0: NOR 1: REV	1
096	MODE-RTY RTTY OUT LEVEL	000 ~ 100	3
097	MODE-RTY RTTY SHIFT	1: 170 Hz 1: 200 Hz 2: 425 Hz 3: 850 Hz	1
098	MODE-RTY RTTY MARK FREQ	1: 1275 Hz 2: 2125 Hz	1
099	MODE-SSB SSB LCUT FREQ	00: OFF 01: 100 Hz ~ 19: 1000 Hz (50 Hz steps)	2
100	MODE-SSB SSB LCUT SLOPE	0: 6 dB/oct 1: 18 dB/oct	1
101	MODE-SSB SSB HCUT FREQ	00: OFF 01: 700 Hz ~ 67: 4000 Hz (50 Hz steps)	2
102	MODE-SSB SSB HCUT SLOPE	0: 6 dB/oct 1: 18 dB/oct	1
103	MODE-SSB SSB MIC SEL	0: FRONT 1: DATA	1
104	MODE-SSB SSB TX BPF	0: 50 ~ 3000 1: 100 ~ 2900 2: 200 ~ 2800 3: 300 ~ 2700 4: 400 ~ 2600 (Hz) 5: 3000WB	1
105	MODE-SSB LSB RX CARRIER	-200 Hz ~ 0 ~ +200 Hz (10Hz steps) (P2= -200 ~ -000 or +000 ~ +200)	4
106	MODE-SSB USB RX CARRIER	-200 Hz ~ 0 ~ +200 Hz (10Hz steps) (P2= -200 ~ -000 or +000 ~ +200)	4
107	RX DSP APF WIDTH	0: NARROW 1: MEDIUM 2: WIDE	1
108	RX DSP CONTOUR LEVEL	–40 ~ 0 ~ +20 (P2 = –40 ~ -00 or +00 ~ +20)	3
109	RX DSP CONTOUR WIDTH	01 ~ 11	2
110	RX DSP DNR LEVEL	01 ~ 15	2
111	RX DSP IF NOTCH WIDTH	0: NARROW 1: WIDE	1
112	RX DSP HF CW SHAPE	0: SOFT 1: SHARP	1
113	RX DSP HF CW SLOPE	0: STEEP 1: MEDIUM 2: GENTLE	1
114	RX DSP 6M CW SHAPE	0: SOFT 1: SHARP	1
115	RX DSP 6M CW SLOPE	0: STEEP 1: MEDIUM 2: GENTLE	1
116	RX DSP HF PSK SHAPE	0: SOFT 1: SHARP	1
117	RX DSP HF PSK SLOPE	0: STEEP 1: MEDIUM 2: GENTLE	1
118	RX DSP HF FSK SHAPE	0: SOFT 1: SHARP	1
119	RX DSP HF FSK SLOPE	0: STEEP 1: MEDIUM 2: GENTLE	1
120	RX DSP HF SSB SHAPE	0: SOFT 1: SHARP	1
121	RX DSP HF SSB SLOPE	0: STEEP 1: MEDIUM 2: GENTLE	1
122	RX DSP 6M SSB SHAPE	0: SOFT 1: SHARP	1
123	RX DSP 6M SSB SLOPE	0: STEEP 1: MEDIUM 2: GENTLE	1
124	SCOPE SCPE MODE	0: CENTER 1: FIX	1
125	SCOPE SCPE SPEED	0: FAST 1: SLOW	1
126	SCOPE SCPE AUTO TIME	0: OFF 1: 3 sec 2: 5 sec 3: 10 sec 4: 30 sec 5: 60 sec	1
127	SCOPE START DIAL SPEED	0: 0.5 k/sec 1: 1 kHz/sec 2: 2 kHz/sec 3: 4 kHz/sec 4: 8 kHz/sec 5: 16 kHz/sec	1
128	SCOPE SPAN FREQ	02: 20 kHz 03: 50 kHz 04: 100 kHz 05: 200 kHz 06: 500 kHz 07: 1000 kHz	2
129	SCOPE FIX 1.8MHz	1.800 MHz ~ 1.999 MHz (P2 = 01800 ~ 01999, 1 kHz steps)	5
130	SCOPE FIX 1.8MHz SPAN	02: 20 kHz 03: 50 kHz 04: 100 kHz 05: 200 kHz 06: 500 kHz 07: 1000 kHz	2
131	SCOPE FIX 3.5MHz	3.500 MHz ~ 3.999 MHz (P2 = 03500 ~ 03999, 1 kHz steps)	5
132	SCOPE FIX 3.5MHzSPAN	02: 20 kHz 03: 50 kHz 04: 100 kHz 05: 200 kHz 06: 500 kHz 07: 1000 kHz	2
133	SCOPE FIX 5.0MHz	5.250 MHz ~ 5.499 MHz (P2 = 05250 ~ 05499, 1 kHz steps)	5
134	SCOPE FIX 5.0MHz SPAN	02: 20 kHz 03: 50 kHz 04: 100 kHz 05: 200 kHz 06: 500 kHz 07: 1000 kHz	2
135	SCOPE FIX 7.0MHz	7.000 MHz ~ 7.299 MHz (P2 = 07000 ~ 07299, 1 kHz steps)	5
136	SCOPE FIX 7.0MHz SPAN	02: 20 kHz 03: 50 kHz 04: 100 kHz 05: 200 kHz 06: 500 kHz 07: 1000 kHz	2
137	SCOPE FIX 10MHz	10.100 MHz ~ 10.149 MHz (P2 = 10100 ~ 10149, 1 kHz steps)	5
138	SCOPE FIX 10MHz SPAN	02: 20 kHz 03: 50 kHz 04: 100 kHz 05: 200 kHz 06: 500 kHz 07: 1000 kHz	2
139	SCOPE FIX 14MHz	14.000 MHz ~ 14.349 MHz (P2 = 14000 ~ 14349, 1 kHz steps)	5
140	SCOPE FIX 14MHz SPAN	02: 20 kHz 03: 50 kHz 04: 100 kHz 05: 200 kHz 06: 500 kHz 07: 1000 kHz	2
141	SCOPE FIX 18MHz	18.000 MHz ~ 18.199 MHz (P2 = 18000 ~ 18199, 1 kHz steps)	5
142	SCOPE FIX 18MHzSPAN	02: 20 kHz 03: 50 kHz 04: 100 kHz 05: 200 kHz 06: 500 kHz 07: 1000 kHz	2
143	SCOPE FIX 21MHz	21.000 MHz ~ 21.449 MHz (P2 = 21000 ~ 21449, 1 kHz steps)	5
144	SCOPE FIX 21MHz SPAN	02: 20 kHz 03: 50 kHz 04: 100 kHz 05: 200 kHz 06: 500 kHz 07: 1000 kHz	2
145	SCOPE FIX 24MHz	24.800 MHz ~ 24.989 MHz (P2 = 24800 ~ 24989, 1 kHz steps)	5
146	SCOPE FIX 24MHz SPAN	02: 20 kHz 03: 50 kHz 04: 100 kHz 05: 200 kHz 06: 500 kHz 07: 1000 kHz	2
147	SCOPE FIX 28MHz	28.000 MHz ~ 29.699 MHz (P2 = 28000 ~ 29699, 1 kHz steps)	5

TABLE 4

P1	FUNCTION	P2	DIGITS
148	SCOPE FIX 28MHz SPAN	02: 20 kHz 03: 50 kHz 04: 100 kHz 05: 200 kHz 06: 500 kHz 07: 1000 kHz	2
149	SCOPE FIX 50MHz	50.000 MHz ~ 53.999 MHz (P2 = 50000 ~ 53999, 1 kHz steps)	5
150	SCOPE FIX 50MHzSPAN	02: 20 kHz 03: 50 kHz 04: 100 kHz 05: 200 kHz 06: 500 kHz 07: 1000 kHz	2
151	TUNING CW DIAL STEP	0: 1 Hz 1: 5 Hz 2: 10 Hz	1
152	TUNING DATA DIAL STEP	0: 1 Hz 1: 5 Hz 2: 10 Hz	1
153	TUNING AM/FM DIAL STEP	0: 10 Hz 1: 100 Hz	1
154	TUNING RTTY DIAL STEP	0: 1 Hz 1: 5 Hz 2: 10 Hz	1
155	TUNING SSB DIAL STEP	0: 1 Hz 1: 5 Hz 2: 10 Hz	1
156	TUNING AM CH STEP	0: 2.5 kHz 1: 5 kHz 2: 9 kHz 3: 10 kHz 4: 12.5 kHz	1
157	TUNING FM CH STEP	0: 5 kHz 1: 6.25 kHz 2: 10 kHz 3: 12.5 kHz 4: 20 kHz 5: 25 kHz	1
158	TUNING 1MHz/100kHz SELECT	0: 1 MHz 1: 100 kHz	1
159	TX AUDIO PRMTRC EQ1 FREQ	00 : OFF 01: 100 02: 200 03: 300 04: 400 05: 500 06: 600 07: 700 Hz	2
160	TX AUDIO PRMTRC EQ1 LEVEL	-20 ~ 0 ~ +10 (P2 = -20 ~ -00 or +00 ~ +10)	3
161	TX AUDIO PRMTRC EQ1 BWTH	01 ~ 10	2
162	TX AUDIO PRMTRC EQ2 FREQ	00: OFF 01: 700 02: 800 03: 900 04: 1000 05: 1100 06: 1200 07: 1300 08: 1400 09: 1500 Hz	2
163	TX AUDIO PRMTRC EQ2 LEVEL	-20 ~ 0 ~ +10 (P2 = -20 ~ -00 or +00 ~ +10)	3
164	TX AUDIO PRMTRC EQ2 BWTH	01 ~ 10	2
165	TX AUDIO PRMTRC EQ3 FREQ	00 : OFF 01: 1500 02: 1600 03: 1700 04: 1800 05: 1900 06: 2000 ~ 18: 3200 Hz	2
166	TX AUDIO PRMTRC EQ3 LEVEL	-20 ~ 0 ~ +10 (P2 = -20 ~ -00 or +00 ~ +10)	3
167	TX AUDIO PRMTRC EQ3 BWTH	01 ~ 10	2
168	TX AUDIO P-PRMTRC EQ1 FREQ	00 : OFF 01: 100 02: 200 03: 300 04: 400 05: 500 06: 600 07: 700 Hz	2
169	TX AUDIO P-PRMTRC EQ1 LEVEL	-20 ~ 0 ~ +10 (P2 = -20 ~ -00 or +00 ~ +10)	3
170	TX AUDIO P-PRMTRC EQ1 BWTH	01 ~ 10	2
171	TX AUDIO P-PRMTRC EQ2 FREQ	00: OFF 01: 700 02: 800 03: 900 04: 1000 05: 11000 06: 1200 07: 1300 08: 1400 09: 1500 Hz	2
172	TX AUDIO P-PRMTRC EQ2 LEVEL	-20 ~ 0 ~ +10 (P2 = -20 ~ -00 or +00 ~ +10)	3
173	TX AUDIO P-PRMTRC EQ2 BWTH	01 ~ 10	2
174	TX AUDIO P-PRMTRC EQ3 FREQ	00:OFF 01: 1500 02: 1600 03: 1700 04: 1800 05: 1900 06: 2000 ~ 18: 3200 Hz	2
175	TX AUDIO P-PRMTRC EQ3 LEVEL	-20 ~ 0 ~ +10 (P2 = -20 ~ -00 or +00 ~ +10)	3
176	TX AUDIO P-PRMTRC EQ3 BWTH	01 ~ 10	2
177	TX GNRL TX MAX POWER	005 ~ 100	3
178	TX GNRL EXT AMP TUNING PWR	0: 10 1: 20 2: 50 3: 100	1
179	TX GNRL TUNER SELECT	0: INTERNAL 1: EXTERNAL	1
180	TX GNRL VOX SELECT	0: MIC 1: DATA	1
181	TX GNRL VOX GAIN	000 ~ 100	3
182	TX GNRL VOX DELAY	30 ~ 300 ~ 3000 msec (P2 = 0030 ~ 3000, 10 msec/step)	4
183	TX GNRL ANTI VOX GAIN	000 ~ 100	3
184	TX GNRL EMERGENCY FREQ TX	0: DISABLE 1: ENABLE	1
185	AF SCOPE FFT DISPLAY MODE	0: SPECTRUM 1: WATER FALL	1
186	AF SCOPE FFT ATT	0: 0 dB 1: 10 dB 2: 20 dB	1
187	DEC CW CW DECODE BW	0: 25 Hz 1: 50 Hz 2: 100 Hz 3: 250Hz	1
188	E/D RTTY RX USOS	0: DISABLE 1: ENABLE	1
189	E/D RTTY TX USOS	0: DISABLE 1: ENABLE	1
190	E/D RTTY RX NEW LINE CODE	0: CR, LF, CR+L 1: CR+LF	1
191	E/D RTTY TX AUTO CR+LF	0: DISABLE 1: ENABLE	1
192	E/D RTTY TX DIDDLE	0: OFF 1: BLANK 2: LTRS	1
193	E/D RTTY BAUDOT CODE	0: CCIT 1: US	1
194	E/D PSK PSK MODE	0: BPSK 1: QPSK	1
195	E/D PSK DECODE AFC RANGE	0: ±8 Hz 1: ±15 Hz 2: ±30 Hz	1
196	E/D PSK QPSK POLARITY REV	0: RX-N, TX-N 1: RX-R, TX-N 2: RX-N, TX-R 3: RX-R, TX-R	1

FA	FREQUENCY VFO-A										
Set	1	2	3	4	5	6	7	8	9	10	P1 0030000 - 56000000 (Hz)
	F	A	P1	P1	P1	P1	P1	P1	P1	P1	
	11	12	13	14	15	16	17	18	19	20	
	;										
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	
	;										

FB	FREQUENCY VFO-B										
Set	1	2	3	4	5	6	7	8	9	10	P1 0030000 - 56000000 (Hz)
	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	;							

FR	FUNCTION RX										
Set	1	2	3	4	5	6	7	8	9	10	P1 0: VFO-A Band Receiver: “RX”, VFO-B Band Receiver: “OFF” 1: VFO-A Band Receiver: “Mute”, VFO-B Band Receiver: “OFF” 4: VFO-A Band Receiver: “OFF”, VFO-B Band Receiver: “RX” 5: VFO-A Band Receiver: “OFF”, VFO-B Band Receiver: “Mute”
	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	;							

FS	FAST STEP									
Set	1	2	3	4	5	6	7	8	9	10
	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	;						

P1 0: VFO-A FAST Key "OFF" 1: VFO-A FAST Key "ON"
2: VFO-B FAST Key "OFF" 3: VFO-B FAST Key "ON"
4: VFO-A FAST Key "OFF", VFO-B FAST Key "OFF"
5: VFO-A FAST Key "ON", VFO-B FAST Key "OFF"
6: VFO-A FAST Key "OFF", VFO-B FAST Key "ON"
7: VFO-A FAST Key "ON", VFO-B FAST Key "ON"

FT	FUNCTION TX									
Set	1	2	3	4	5	6	7	8	9	10
	F	T	P1	;						
Read	1	2	3	4	5	6	7	8	9	10
	F	T	;							
Answer	1	2	3	4	5	6	7	8	9	10
	F	T	P2	;						

P1 0: VFO-A Band: TX/RX (Toggle)
1: VFO-B Band: TX/RX (Toggle)
2: VFO-A Band Transmitter: TX
3: VFO-B Band Transmitter: TX
P2 0: VFO-A Band Transmitter: TX
1: VFO-B Band Transmitter: TX

GT	AGC FUNCTION									
Set	1	2	3	4	5	6	7	8	9	10
	G	T	P1	P2	;					
Read	1	2	3	4	5	6	7	8	9	10
	G	T	P1	;						
Answer	1	2	3	4	5	6	7	8	9	10
	G	T	P1	P3	;					

P1 0: Fixed
P2 0: AGC "OFF"
1: AGC "FAST"
2: AGC "MID"
3: AGC "SLOW"
4: AGC "AUTO"
P3 0: AGC "OFF"
1: AGC "FAST"
2: AGC "MID"
3: AGC "SLOW"
4: AGC "AUTO-FAST"
5: AGC "AUTO-MID"
6: AGC "AUTO-SLOW"

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

P1 0582 :FTDX1200 (optional FFT-1 is installed)
0583 :FTDX1200 (optional FFT-1 is not installed)

IF	INFORMATION									
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	P2	P2	P2	P2	P2
	11	12	13	14	15	16	17	18	19	20
	P2	P2	P2	P3	P3	P3	P3	P3	P4	P5
	21	22	23	24	25	26	27	28	29	30
	P6	P7	P8	P9	P9	P10	;			

P1 000-117 (Memory Channel) P2 VFO-A Frequency (Hz)
P3 Clarifier Direction +: Plus Shift, –: Minus Shift
Clarifier Offset: 0000 - 9999 (Hz)
P4 0: RX CLAR "OFF" 1: RX CLAR "ON"
P5 0: TX CLAR "OFF" 1: TX CLAR "ON"
P6 MODE 1: LSB 2: USB 3: CW 4: FM 5: AM 6: RTTY-LSB
7: CW-R 8: DATA-LSB 9: RTTY-USB A: ----
B: FM-N C: DATA-USB
P7 0: VFO 1: Memory 2: Memory Tune 3: Quick Memory Bank (QMB) 4: QMB-MT
P8 0: CTCSS "OFF" 1: CTCSS ENC/DEC 2: CTCSS ENC
P9 00: (Fixed)
P10 0: Simplex 1: Plus Shift 2: Minus Shift

IS	IF-SHIFT									
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	P1	;						
Answer	1	2	3	4	5	6	7	8	9	10
	I	S	P1	-/+	P2	P2	P2	P2	;	

P1 0:Fixed
P2: –1000 ~ +1000 Hz (20 Hz steps)

KM	KEYER MEMORY									
Set	1	2	3	4	5	6	7	~	n-1	n
	K	M	P1	P2	P2	P2	P2	~	P2	;
Read	1	2	3	4	5	6	7	8	9	10
	K	M	P1	;						
Answer	1	2	3	4	5	6	7	~	n-1	n
	K	M	P1	P2	P2	P2	P2	~	P2	;

P1 1 - 5 : Keyer Memory Channel Number
P2: Message Characters (up to 50 characters)

KP	KEY PITCH									
Set	1	2	3	4	5	6	7	8	9	10
	K	P	P1	P1	;					
Read	1	2	3	4	5	6	7	8	9	10
	K	P	;							
Answer	1	2	3	4	5	6	7	8	9	10
	K	P	P1	P1	;					

P1 00: 300 Hz - 75: 1050 Hz (10Hz steps)

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

P1 0: KEYER "OFF"
1: KEYER "ON"

KS	KEY 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	;				

P1 004 - 060 (WPM)

KY	CW KEYING									
Set	1	2	3	4	5	6	7	8	9	10
	K	Y	P1	;						
Read	1	2	3	4	5	6	7	8	9	10
Answer	1	2	3	4	5	6	7	8	9	10

P1 1: Keyer Memory "1" Playback
2: Keyer Memory "2" Playback
3: Keyer Memory "3" Playback
4: Keyer Memory "4" Playback
5: Keyer Memory "5" Playback
6: Message Keyer "1" Playback
7: Message Keyer "2" Playback
8: Message Keyer "3" Playback
9: Message Keyer "4" Playback
A: Message Keyer "5" Playback

LK	LOCK									
Set	1	2	3	4	5	6	7	8	9	10
	L	K	P1	;						
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	;						

P1 0: VFO-A DIAL Lock "OFF"
1: VFO-A DIAL Lock "ON"
2: VFO-B DIAL Lock "OFF"
3: VFO-B DIAL Lock "ON"
4: VFO-A DIAL Lock "OFF", VFO-B DIAL Lock "OFF"
5: VFO-A DIAL Lock "ON", VFO-B DIAL Lock "OFF"
6: VFO-A DIAL Lock "OFF", VFO-B DIAL Lock "ON"
7: VFO-A DIAL Lock "ON", VFO-B DIAL Lock "ON"

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

P1 0: Fixed P2 0: DVS (Recording Stop)
1: DVS (CH "1" Recording Start/Stop)
2: DVS (CH "2" Recording Start/Stop)
3: DVS (CH "3" Recording Start/Stop)
4: DVS (CH "4" Recording Start/Stop)
5: DVS (CH "5" Recording Start/Stop)
※:requires DVS-6 (option)

MA	MEMORY CHANNEL TO VFO-A									
Set	1	2	3	4	5	6	7	8	9	10
	M	A	;							
Read	1	2	3	4	5	6	7	8	9	10
Answer	1	2	3	4	5	6	7	8	9	10

MC	MEMORY CHANNEL									
Set	1	2	3	4	5	6	7	8	9	10
	M	C	P1	P1	P1	;				
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	P1	P1	;				

P1 000 - 117: Memory Channel Number
000 - 099: Regular Memory Channel
100: P-1L
101: P-1U
~
116: P-9L
117: P-9U

MD	OPERATING MODE									
Set	1	2	3	4	5	6	7	8	9	10
	M	D	P1	P2	;					
Read	1	2	3	4	5	6	7	8	9	10
	M	D	P1	;						
Answer	1	2	3	4	5	6	7	8	9	10
	M	D	P1	P2	;					

P1 0: Fixed
P2 MODE 1: LSB 2: USB 3: CW 4: FM 5: AM 6: RTTY-LSB
7: CW-R 8: DATA-LSB 9: RTTY-USB A: ----
B: FM-N C: DATA-USB

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

P1 000 - 100

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

P1 0: MONI "ON/OFF"
1: MONI Level
P2 P1=0
000: MONI "OFF"
001: MONI "ON"
P1=1
001 - 100

MR	MEMORY CHANNEL READ									
Set	1	2	3	4	5	6	7	8	9	10
Read	1	2	3	4	5	6	7	8	9	10
	M	R	P1	P1	P1	;				
Answer	1	2	3	4	5	6	7	8	9	10
	M	R	P1	P1	P1	P2	P2	P2	P2	P2
	11	12	13	14	15	16	17	18	19	20
	P2	P2	P2	P3	P3	P3	P3	P3	P4	P5
	21	22	23	24	25	26	27	28	29	30
	P6	P7	P8	P9	P9	P10	;			

P1 Memory Channel Number(001 ～ 117) P2 Memory Channel Frequency (Hz)
P3 Clarifier Direction +: Plus Shift, −: Minus Shift
Clarifier Offset: 0000 - 9999 (Hz)
P4 0: RX CLAR "OFF" 1: RX CLAR "ON"
P5 0: TX CLAR "OFF" 1: TX CLAR "ON"
P6 MODE 1: LSB 2: USB 3: CW 4: FM 5: AM 6: RTTY-LSB
7: CW-R 8: DATA-LSB 9: RTTY-USB A: ----
B: FM-N C: DATA-USB
P7 0: VFO 1: Memory
P8 0: CTCSS "OFF" 1: CTCSS ENC/DEC 2: CTCSS ENC
P9 00: (Fixed)
P10 0: Simplex 1: Plus Shift 2: Minus Shift

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

P1 0: COMP
1: ALC
3: SWR
4: ID
5: VDD

MW	MEMORY CHANNEL WRITE									
Set	1	2	3	4	5	6	7	8	9	10
	M	W	P1	P1	P1	P2	P2	P2	P2	P2
	11	12	13	14	15	16	17	18	19	20
	P2	P2	P2	P3	P3	P3	P3	P3	P4	P5
	21	22	23	24	25	26	27	28	29	30
	P6	P7	P8	P9	P9	P10	;			
Read	1	2	3	4	5	6	7	8	9	10
Answer	1	2	3	4	5	6	7	8	9	10

P1 Memory Channel Number(001 ～ 117) P2 Memory Channel Frequency (Hz)
P3 Clarifier Direction +: Plus Shift, −: Minus Shift
Clarifier Offset: 0000 - 9999 (Hz)
P4 0: RX CLAR "OFF" 1: RX CLAR "ON"
P5 0: TX CLAR "OFF" 1: TX CLAR "ON"
P6 MODE 1: LSB 2: USB 3: CW 4: FM 5: AM 6: RTTY-LSB
7: CW-R 8: DATA-LSB 9: RTTY-USB A: ----
B: FM-N C: DATA-USB
P7 0: (Fixed)
P8 0: CTCSS "OFF" 1: CTCSS ENC/DEC 2: CTCSS ENC
P9 00: (Fixed)
P10 0: Simplex 1: Plus Shift 2: Minus Shift

MX	MOX SET									
Set	1	2	3	4	5	6	7	8	9	10
	M	X	P1	;						
Read	1	2	3	4	5	6	7	8	9	10
	M	X	;							
Answer	1	2	3	4	5	6	7	8	9	10
	M	X	P1	;						

P1 0: MOX "OFF"
1: MOX "ON"

NA	NARROW									
Set	1	2	3	4	5	6	7	8	9	10
	M	A	P1	P2	;					
Read	1	2	3	4	5	6	7	8	9	10
	N	A	P1	;						
Answer	1	2	3	4	5	6	7	8	9	10
	N	A	P1	P2	;					

P1 0: Fixed
P2 0: OFF
1: ON

NB	NOISE BLANKER STATUS									
Set	1	2	3	4	5	6	7	8	9	10
	N	B	P1	P2	;					
Read	1	2	3	4	5	6	7	8	9	10
	N	B	P1	;						
Answer	1	2	3	4	5	6	7	8	9	10
	N	B	P1	P2	;					

P1 0: Fixed
P2 0: Noise Blanker "OFF"
1: Noise Blanker "ON"
2: Noise Blanker (Wide) "ON"

NL	NOISE BLANKER LEVEL									
Set	1	2	3	4	5	6	7	8	9	10
	N	L	P1	P2	P2	P2	;			
Read	1	2	3	4	5	6	7	8	9	10
	N	L	P1	;						
Answer	1	2	3	4	5	6	7	8	9	10
	N	L	P1	P2	P2	P2	;			

P1 0: Fixed
P2 000 - 100

NR	NOISE REDUCTION									
Set	1	2	3	4	5	6	7	8	9	10
	N	R	P1	P2	;					
Read	1	2	3	4	5	6	7	8	9	10
	N	R	P1	;						
Answer	1	2	3	4	5	6	7	8	9	10
	N	R	P1	P2	;					

P1 0: Fixed
P2 0: Noise Reduction “OFF”
1: Noise Reduction “ON”

OI	OPPOSITE BAND INFORMATION									
Set	1	2	3	4	5	6	7	8	9	10
Read	1	2	3	4	5	6	7	8	9	10
	O	I	;							
Answer	1	2	3	4	5	6	7	8	9	10
	O	I	P1	P1	P1	P2	P2	P2	P2	P2
	11	12	13	14	15	16	17	18	19	20
	P2	P2	P2	P3	P3	P3	P3	P3	P4	P5
	21	22	23	24	25	26	27	28	29	30
	P6	P7	P8	P9	P9	P10	;			

P1 Current Memory Channel(001 ～ 117) P2 VFO-B Frequency (Hz)
P3 Clarifier Direction +: Plus Shift, –: Minus Shift
Clarifier Offset: 0000 - 9999 (Hz)
P4 0: RX CLAR “OFF” 1: RX CLAR “ON”
P5 0: TX CLAR “OFF” 1: TX CLAR “ON”
P6 MODE 1: LSB 2: USB 3: CW 4: FM 5: AM 6: RTTY-LSB
7: CW-R 8: DATA-LSB 9: RTTY-USB A: ----
B: FM-N C: DATA-USB
P7 0: VFO 1: Memory
P8 0: CTCSS “OFF” 1: CTCSS ENC/DEC 2: CTCSS ENC
P9 00: (Fixed)
P10 0: Simplex 1: Plus Shift 2: Minus Shift

OS	OFFSET (REPEATER SHIFT)									
Set	1	2	3	4	5	6	7	8	9	10
	O	S	P1	P2	;					
Read	1	2	3	4	5	6	7	8	9	10
	O	S	P1	;						
Answer	1	2	3	4	5	6	7	8	9	10
	O	S	P1	P2	;					

P1 0: Fixed
P2 0: Simplex
1: Plus Shift
2: Minus Shift
※: This command can be activated only with an FM mode.

PA	PRE-AMP (IPO)									
Set	1	2	3	4	5	6	7	8	9	10
	P	A	P1	P2	;					
Read	1	2	3	4	5	6	7	8	9	10
	P	A	P1	;						
Answer	1	2	3	4	5	6	7	8	9	10
	P	A	P1	P2	;					

P1 0:Fixed
P2 0: IPO
1: AMP 1
2: AMP 2

PB	PLAY BACK									
Set	1	2	3	4	5	6	7	8	9	10
	P	B	P1	P2	;					
Read	1	2	3	4	5	6	7	8	9	10
	P	B	P1	;						
Answer	1	2	3	4	5	6	7	8	9	10
	P	B	P1	P2	;					

P1 0: Fixed P2 0: DVS (Playback Stop)
1: DVS (CH “1” Playback Start/Stop)
2: DVS (CH “2” Playback Start/Stop)
3: DVS (CH “3” Playback Start/Stop)
4: DVS (CH “4” Playback Start/Stop)
5: DVS (CH “5” Playback Start/Stop)
※:requires DVS-6 (option)

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

P1 005 -100

PL	SPEECH PROCESSOR LEVEL									
Set	1	2	3	4	5	6	7	8	9	10
	P	L	P1	P1	P1	;				
Read	1	2	3	4	5	6	7	8	9	10
	P	L	;							
Answer	1	2	3	4	5	6	7	8	9	10
	P	L	P1	P1	P1	;				

P1 000 - 100

PR	SPEECH PROCESSOR									
Set	1	2	3	4	5	6	7	8	9	10
	P	R	P1	P2	;					
Read	1	2	3	4	5	6	7	8	9	10
	P	R	P1	;						
Answer	1	2	3	4	5	6	7	8	9	10
	P	R	P1	P2	;					

P1 0: Speech Processor
1: Parametric Microphone Equalizer
P2 1: “OFF”
2: “ON”

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

P1 0: POWER "OFF"
1: POWER "ON"

This command requires dummy data be initially sent. Then after one second and before two seconds the command is sent.

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

QR	QMB RECALL									
Set	1	2	3	4	5	6	7	8	9	10
	Q	R	;							
Read	1	2	3	4	5	6	7	8	9	10
Answer	1	2	3	4	5	6	7	8	9	10

QS	QUICK SPLIT									
Set	1	2	3	4	5	6	7	8	9	10
	Q	S	;							
Read	1	2	3	4	5	6	7	8	9	10
Answer	1	2	3	4	5	6	7	8	9	10

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

P1 0:Fixed
P2 0: OFF
1: 6 dB
2: 12 dB
3: 18 dB

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

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

P1 0000 - 9999 (Hz)

RF	ROOFING FILTER									
Set	1	2	3	4	5	6	7	8	9	10
	R	F	P1	P2	;					
Read	1	2	3	4	5	6	7	8	9	10
	R	F	P1	;						
Answer	1	2	3	4	5	6	7	8	9	10
	R	F	P1	P3	;					

P1 0: Fixed
P2 0: AUTO
1: 15 kHz
2: 6 kHz
3: 3 kHz
P3 1: 15 kHz
2: 6 kHz
3: 3 kHz
4: AUTO - 15 kHz
5: AUTO - 6 kHz
6: AUTO - 3 kHz

RG	RF GAIN									
Set	1	2	3	4	5	6	7	8	9	10
	R	G	P1	P2	P2	P2	;			
Read	1	2	3	4	5	6	7	8	9	10
	R	G	P1	;						
Answer	1	2	3	4	5	6	7	8	9	10
	R	G	P1	P2	P2	P2	;			

P1 0: Fixed
P2 000 - 255

RI	RADIO INFORMATION									
Set	1	2	3	4	5	6	7	8	9	10
Read	1	2	3	4	5	6	7	8	9	10
	R	I	P1	;						
Answer	1	2	3	4	5	6	7	8	9	10
	R	I	P1	P2	;					

P1 0: Hi-SWR
1: MIC-EQ
3: REC
4: PLAY
5: VFO-A TX
6: VFO-B TX
7: VFO-A RX
8: VFO-B-RX
9: μ-tune

P2 0: OFF
1: ON

RL	NOISE REDUCTION LEVEL									
Set	1	2	3	4	5	6	7	8	9	10
	R	L	P1	P2	P2	;				
Read	1	2	3	4	5	6	7	8	9	10
	R	L	P1	;						
Answer	1	2	3	4	5	6	7	8	9	10
	R	L	P1	P2	P2	;				

P1 0: Fixed
P2 01 - 15

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

P1 0: Depends on the front panel METER
1: S
2: Depends on the front panel METER (COMP / ALC / PO / SWR / ID / VDD)
3: COMP
4: ALC
5: PO
6: SWR
7: ID
8: VDD

P2 0 - 255

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

P1 0: OFF (Rotation stop)
1: Counter Clockwise (Rotation start)
2: Clockwise (Rotation start)
3: SPEED 1 % DOWN
4: SPEED 1 % UP

P2 DIRECTION (0 - 450)
P3 SPEED (0 - 100 %)

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

P1 0: NORMAL MODE
1: MENU MODE

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

P1 0: RX Clarifier “OFF”
1: RX Clarifier “ON”

RU	RX CLARIFIER PLUS OFFSET									
Set	1	2	3	4	5	6	7	8	9	10
	R	U	P1	P1	P1	P1	;			
Read	1	2	3	4	5	6	7	8	9	10
Answer	1	2	3	4	5	6	7	8	9	10

P1 0000 - 9999 (Hz)

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

P1 0: Scan “OFF”
1: Scan “ON” (UP ward)
2: Scan “ON” (DOWN ward)

SD	CW BREAK-IN DELAY TIME									
Set	1	2	3	4	5	6	7	8	9	10
	S	D	P1	P1	P1	P1	;			
Read	1	2	3	4	5	6	7	8	9	10
	S	D	;							
Answer	1	2	3	4	5	6	7	8	9	10
	S	D	P1	P1	P1	P1	;			

P1 0030 - 3000 msec

SF	SUB-DIAL FUNCTION										
Set	1	2	3	4	5	6	7	8	9	10	P1 1: MHz 2: GRP 3: MCH 4: DIAL-B 5: CLAR 6: ---- 7: uTUNE
	S	F	P1	;							
Read	1	2	3	4	5	6	7	8	9	10	
	S	F	;								
Answer	1	2	3	4	5	6	7	8	9	10	
	S	F	P1	;							

SH	WIDTH										
Set	1	2	3	4	5	6	7	8	9	10	P1 0: Fixed P2 00 (See Table 5)
	S	H	P1	P2	P2	;					
Read	1	2	3	4	5	6	7	8	9	10	
	S	H	P1	;							
Answer	1	2	3	4	5	6	7	8	9	10	
	S	H	P1	P2	P2	;					

TABLE 5

COMMAND	BANDWIDTH					
P2	SSB (Narrow)	SSB (Wide)	CW (Narrow)	CW (Wide)	RTTY/PSK (Narrow)	RTTY/PSK (Wide)
00 (Default)	1500 Hz	2400 Hz	500 Hz	2400 Hz	500 Hz	2400 Hz
01	200 Hz	—	50 Hz	—	50 Hz	—
02	400 Hz	—	100 Hz	—	100 Hz	—
03	600 Hz	—	150 Hz	—	150 Hz	—
04	850 Hz	—	200 Hz	—	200 Hz	—
05	1100 Hz	—	250 Hz	—	250 Hz	—
06	1350 Hz	—	300 Hz	—	300 Hz	—
07	1500 Hz	—	350 Hz	—	350 Hz	—
08	1650 Hz	—	400 Hz	—	400 Hz	—
09	1800 Hz	1800 Hz	450 Hz	—	450 Hz	—
10	—	1950 Hz	500 Hz	500 Hz	500 Hz	500 Hz
11	—	2100 Hz	—	800 Hz	—	800 Hz
12	—	2200 Hz	—	1200 Hz	—	1200 Hz
13	—	2300 Hz	—	1400 Hz	—	1400 Hz
14	—	2400 Hz	—	1700 Hz	—	1700 Hz
15	—	2500 Hz	—	2000 Hz	—	2000 Hz
16	—	2600 Hz	—	2400 Hz	—	2400 Hz
17	—	2700 Hz	—	—	—	—
18	—	2800 Hz	—	—	—	—
19	—	2900 Hz	—	—	—	—
20	—	3000 Hz	—	—	—	—
21	—	3200 Hz	—	—	—	—
22	—	3400 Hz	—	—	—	—
23	—	3600 Hz	—	—	—	—
24	—	3800 Hz	—	—	—	—
25	—	4000 Hz	—	—	—	—

SM	S-METER READING										
Set	1	2	3	4	5	6	7	8	9	10	P1 0: Fixed P2 000 - 255
Read	1	2	3	4	5	6	7	8	9	10	
	S	M	P1	;							
Answer	1	2	3	4	5	6	7	8	9	10	
	S	M	P1	P2	P2	P2	;				

SQ	SQUELCLH LEVEL										
Set	1	2	3	4	5	6	7	8	9	10	P1 0: Fixed P2 000 - 255
	S	Q	P1	P2	P2	P2	;				
Read	1	2	3	4	5	6	7	8	9	10	
	S	Q	P1	;							
Answer	1	2	3	4	5	6	7	8	9	10	
	S	Q	P1	P2	P2	P2	;				

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

TS	TXW										
Set	1	2	3	4	5	6	7	8	9	10	P1 0: TXW "OFF" 1: TXW "ON"
	T	S	P1	;							
Read	1	2	3	4	5	6	7	8	9	10	
	T	S	;								
Answer	1	2	3	4	5	6	7	8	9	10	
	T	S	P1	;							

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

P1 0: RADIO TX "OFF" CAT TX "OFF"
1: RADIO TX "OFF" CAT TX "ON"
2: RADIO TX "ON" CAT TX "OFF" (Answer)

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

P1 0: PLL "Lock"
1: PLL "Unlock"

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

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

P1 0030 - 3000 msec (10 msec multiples)

VF	VRF FILTER									
Set	1	2	3	4	5	6	7	8	9	10
	V	F	P1	P2	P3	P4	;			
Read	1	2	3	4	5	6	7	8	9	10
	V	F	P1;							
Answer	1	2	3	4	5	6	7	8	9	10
	V	F	P1	P2	P5	P5	P5	P6	;	

P1 0: Fixed
P2 0: OFF
1: ON
2: Default set
P3 +: Plus Shift
-: Minus Shift
P4 0 - 9
P5 000 - 255
P6 0: μ-TUNE is not connected.
1: μ-TUNE is connected.

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

P1 000 - 100

VM	VFO-A TO MEMORY CHANNEL									
Set	1	2	3	4	5	6	7	8	9	10
	V	M	;							
Read	1	2	3	4	5	6	7	8	9	10
Answer	1	2	3	4	5	6	7	8	9	10

VS	VFO SELECT									
Set	1	2	3	4	5	6	7	8	9	10
	V	S	P1	;						
Read	1	2	3	4	5	6	7	8	9	10
	V	S	;							
Answer	1	2	3	4	5	6	7	8	9	10
	V	S	P1	;						

P1 0: VFO-A
1: VFO-B

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

P1 0: VOX "OFF"
1: VOX "ON"

XT	TX CLAR										
Set	1	2	3	4	5	6	7	8	9	10	P1 0: TX CLAR “OFF” 1: TX CLAR “ON”
	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	;							

ZI	ZERO IN										
Set	1	2	3	4	5	6	7	8	9	10	(CW AUTO ZERO IN Function)
	Z	I	;								
Read	1	2	3	4	5	6	7	8	9	10	※:requires FFT-1 (option)
Answer	1	2	3	4	5	6	7	8	9	10	

YAESU
The radio

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