KENWOOD

TS-790A/790E

EXTERNAL CONTROL INSTRUCTION MANUAL

KENWOOD CORPORATION

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92/12 11 10 9 8 7 6 5 4 3 2 1 91/12 11 10 9 8 7 6 5 4 3 2 1

CONTENTS

1. SPECIFICATIONS

■ **Interface**

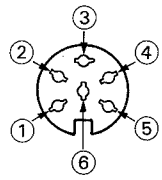
Communication method ... Serial interface, fullduplex
Transfer rate ..... 4800 BPS (bits per second)
Synchronization ..... Start-stop (Asynchronous)
Bit construction ..... 1 start bit, 8 character bits, 2 stop bits
Parity ..... None
Signal format ..... TTL level

■ **Terminal Connections**

Pin No.	Signal Name		I/O
1	GND	Signal ground	
2	TXD	Transmit data	Output
3	RXD	Receive data	Input
4	CTS	Transmit enable	Input
5	RTS	Receive enable	Output
6	NC	No connection	

GND: This is the signal ground terminal.
TXD: The transmit data is the serial data from the transceiver to the computer. The output utilizes negative logic.
RXD: The receive data is the serial data from the computer to the transceiver. The input utilizes negative logic.
CTS: This signal is supplied from the computer, and is used to inhibit transmit data from the transceiver when the computer is not ready to receive. The input utilizes positive logic. (Transmit data is stopped by a logic low.)
RTS: This signal is applied to the computer, and is used to inhibit transmit data from the computer when the transceiver is not ready to receive it. The output utilizes positive logic. (Inhibit is requested when the level is low.)

Connector pin configuration



(Viewed from the rear)

2. OPERATION

Caution:
Turn the POWER switch OFF before making connections.

2-1. PRECAUTIONS FOR COMPUTER-CONNECTED OPERATION

When connecting the transceiver with a computer, check the following points.

1. Are the connections correct ?
   The transceiver output should be connected to the computer input and the transceiver input to the computer output.
   Example:
   Transceiver's transmission data — Computer's receive data
   Transceiver's RTS — Computer's CTS
2. Is the computer's transmission rate 4800 BPS (bits per second)?
3. Is the computer's bit configuration correct?
   1 start bit, 8 character bits, 2 stop bits, no parity.

2-2. CONTROL OPERATION

Most computers handle data in the form of "bits", and "bytes". A bit is the smallest piece of information that the computer can handle. A byte is composed of 8 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 mode is faster, but more complicated, while the serial form is slower it requires less complicated equipment, and therefore is less expensive.
Serial transmission of data occurs over a single line using time-division methods. This use of a single line also offers the advantage of reducing the number of errors due to line noise.
For control of the transceiver via the computer only three lines are theoretically required: transmit data ($\overline{\text{TXD}}$), receive data ($\overline{\text{RXD}}$), and ground (GND). From a practical standpoint it is also necessary to incorporate some means of controlling when this data transfer will occur. We don't want the computer and transceiver sending information at the same time! This is controlled by the RTS and the CTS lines.
The IF-232C is used in conjunction to provide voltage conversion. RS-232C deals in voltages above and below TTL levels, and must be converted to prevent damage to the transceiver. This interface/conversion is handled by the IF-232C.
The actual command sequence would be similar to those described below:
For example, the radio is placed into the transmit mode whenever the character string "TX" is sent from the computer. The character string "TX" is called a command. It tells the transceiver to do something. There are 33 different commands available for control of the transceiver. These commands may be incorporated into a computer program written in BASIC or any other high level language such as PASCAL, etc. Programming methods vary from computer to computer so please refer to the instruction manuals included with your terminal program, and computer.

2-3. COMMANDS

The illustration below demonstrates that a command is composed of two alphabetical characters, various parameters, and the terminator to signal the end of the command.

Example:

FA 00144000000 ; ..... Command to set VFO A to 144 MHz.

↑ ↑ ↑

Command Parameters Terminator

2-3-1. Command Description

A command may consist of either lower or upper case alphabetical characters.

2-3-2. Parameter Description (Refer to the parameter list.)

Parameters are used to specify specific information necessary to implement the desired command. The exact number of parameters necessary for each command is predetermined. If a particular parameter is not applicable to the transceiver you are controlling the parameter digits should be filled using any character except the terminator ";".

For example the MC (Memory channel selector) command uses two parameters, 1 column to specify the memory bank number, and 2 columns to specify the memory channel number. To specify CH9 of memory bank number 1, the command would be:

"MC109;" ..... The memory bank number is not necessary when programming the TS-790 so the command could be as given above "MC109" or as:

"MC_09;" ..... In this case a blank has been used to fill the parameter block for the memory bank number.

The following are examples of bad commands:

"MC09;" ..... No memory bank specification (not enough parameters)

"MC19;" ..... Not enough digits in the memory channel parameter, i.e. CH9 should be given as "09".

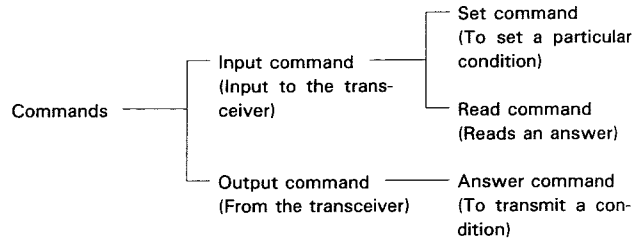
"MC_1_09_;" ..... Unnecessary characters between parameters.

"MC1009" ..... No terminator

2-3-3. Terminator

To signal the end of a command it is necessary to use a special character. The character that has been selected for use is the semicolon ";". This special character must appear as the last character in a particular command string.

2-3-4. Types of Commands



Commands can be classified as shown in the chart above. For example, with the FA (Frequency of VFO A) command.

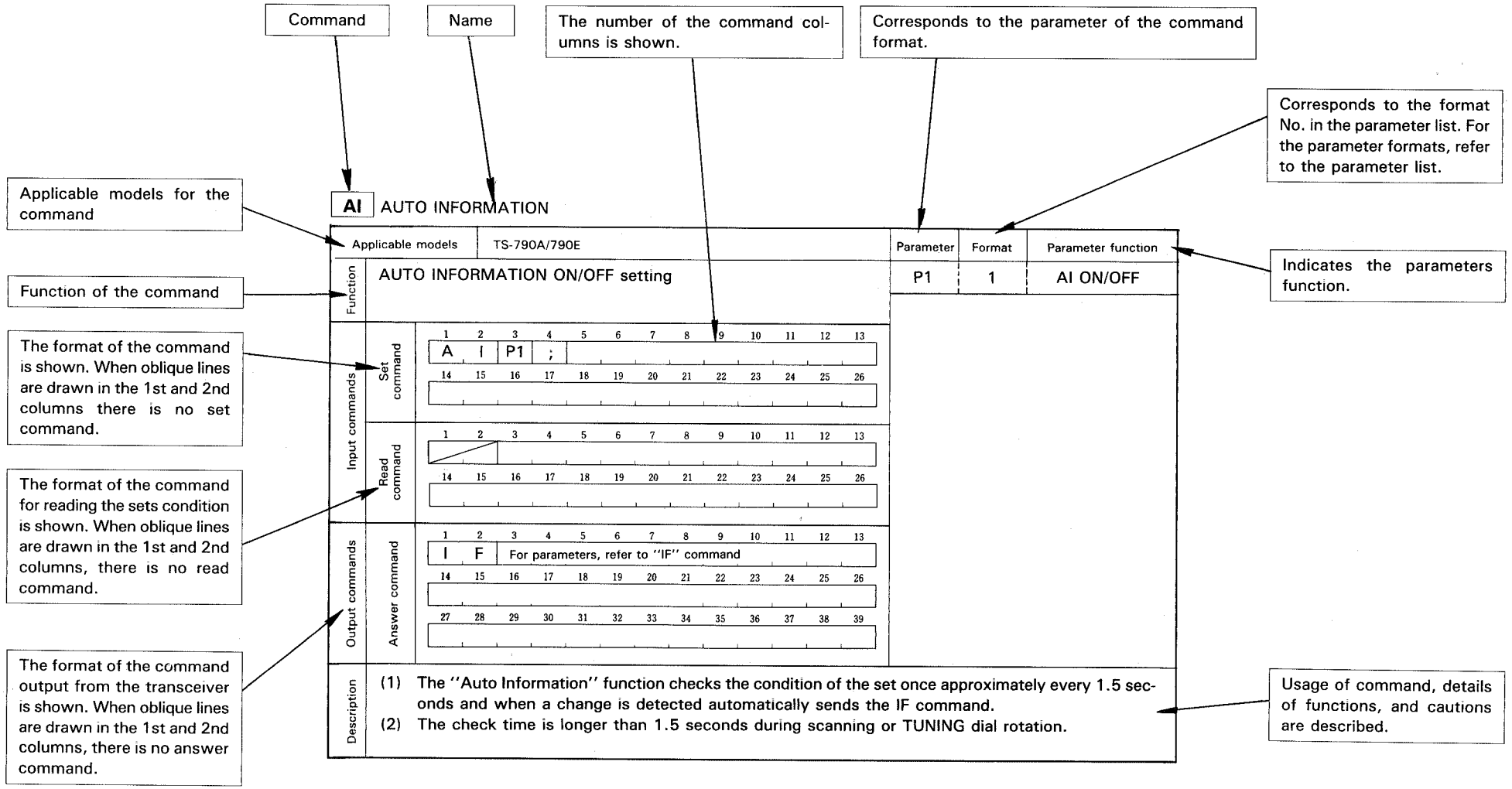
- To set the frequency at 144 MHz, the command sent from the computer to the transceiver is:
  "FA00144000000;" .....(Set command)
- To read the frequency of VFO A, the command sent from the computer to the transceiver is:
  "FA;" .....(Read command)
- When the read command, above, has been sent, the command returned to the computer is:
  "FA00144000000;" .....(Answer command)

2-3-5. Error Messages

In addition to the answer command, the transceiver will send one of the following error messages:

?;	○ When the command syntax is incorrect. ○ When the 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;	When a communication error occurs, such as an overrun error or framing error occurs during serial data transmissions.
O;	When the receive data is sent but processing cannot be completed.

2-3-6. How to read the command tables



2-3-7. Parameter list

Format No.	Name	Number of columns	Format
1	SW	1	0=OFF 1=ON
2	MODE	1	1=LSB 4=FM 2=USB 7=CWN 3=CW
3	FUNCTION	1	0=VFO A 2=MEMORY 1=VFO B 3=CALL
4	FREQUENCY	11	Represented in Hz, using 11 columns. **Example:** 00144000000 is 144 MHz 10 GHz 1 MHz 1 kHz 1 Hz
5	RIT FREQUENCY	5	The first column is "+" or "−", and the remaining four columns indicate the frequency in Hz. **Example:** +5320 is +5.32 kHz
6	STEP FREQUENCY	5	Represented in Hz, using 5 columns.
7	MEMORY CHANNEL	2	Represented in two columns. **Example:** 02 is CH2
8	—	—	
9	MEMORY CHANNEL SPLIT SPECIFICATION	1	0=Receive 1=Transmit
10	MEMORY LOCKOUT	1	0=Not locked out 1=Locked out
11	TX/RX	1	0=Receive 1=Transmit
12	—	—	
13	OFFSET	1	0=SIMPLEX 2=− 1=+
14	TONE FREQUENCY	2	Represented using two columns, from 01 to 38.
15	—	—	
16	MODEL NO.	3	Three column number specifying each set.
17	—	—	
18	—	—	
19	—	—	
20	BUSY Indicator	1	0=OFF 1=ON
21	DESTINATION CODE	1	0=MAIN 1=SUB
22	S METER (SUB)	4	0000 (MIN)↔0015 (MAX)

2-3-8. Command Use Precautions

1. The control characters (00 to 1FH) when included in receive data are ignored.
2. Program execution may be delayed during rapid encoder rotation.
3. Receive data is not processed when directly entering the frequency from the keyboard.
4. To enter the transmitter frequency for split frequency operations using the MW command, enter any number from 1 thru 7 as the mode and either a "0" or a "1" to indicate the memory channel lockout statue.

2-3-9. Command List

AI AUTO INFORMATION

Applicable models	TS-790A/790E	Parameter	Format	Parameter function
Function	AUTO INFORMATION ON/OFF setting	P1	1	AI ON/OFF

Input commands

Set command

1	2	3	4	5	6	7	8	9	10	11	12	13
A	I	P1	;									

14	15	16	17	18	19	20	21	22	23	24	25	26

Read command

1	2	3	4	5	6	7	8	9	10	11	12	13

14	15	16	17	18	19	20	21	22	23	24	25	26

Output commands

Answer command

1	2	3	4	5	6	7	8	9	10	11	12	13
I	F	For parameters, refer to "IF" command										

14	15	16	17	18	19	20	21	22	23	24	25	26

27	28	29	30	31	32	33	34	35	36	37	38	39

Description

(1) The "Auto Information" function checks the condition of the set once approximately every 1.5 seconds and when a change is detected automatically sends the IF command.
(2) The check time is longer than 1.5 seconds during scanning or TUNING dial rotation.

BY BUSY

Applicable models	TS-790A/790E	Parameter	Format	Parameter function
Function	BUSY signal readout	P1	20	BUSY indicator ON/OFF

Input commands

Set command

1	2	3	4	5	6	7	8	9	10	11	12	13

14	15	16	17	18	19	20	21	22	23	24	25	26

Read command

1	2	3	4	5	6	7	8	9	10	11	12	13
B	Y	;										

14	15	16	17	18	19	20	21	22	23	24	25	26

Output commands

Answer command

1	2	3	4	5	6	7	8	9	10	11	12	13
B	Y	P1	;									

14	15	16	17	18	19	20	21	22	23	24	25	26

27	28	29	30	31	32	33	34	35	36	37	38	39

Description

CN CTCSS No.

Applicable models	TS-790A/790E	Parameter	Format	Parameter function
Function	CTCSS number selection and readout	P1		CTCSS tone frequency

Input commands – Set command

1	2	3	4	5	6	7	8	9	10	11	12	13
C	N	P	1	;								

14	15	16	17	18	19	20	21	22	23	24	25	26

Input commands – Read command

1	2	3	4	5	6	7	8	9	10	11	12	13
C	N	;										

14	15	16	17	18	19	20	21	22	23	24	25	26

Output commands – Answer command

1	2	3	4	5	6	7	8	9	10	11	12	13
C	N	P	1	;								

14	15	16	17	18	19	20	21	22	23	24	25	26

27	28	29	30	31	32	33	34	35	36	37	38	39

No.	Hz	No.	Hz
01	67.0	21	136.5
02	71.9	22	141.3
03	74.4	23	146.2
04	77.0	24	151.4
05	79.7	25	156.7
06	82.5	26	162.2
07	85.4	27	167.9
08	88.5	28	173.8
09	91.5	29	179.9
10	94.8	30	186.2
12	100.0	31	192.8
13	103.5	32	203.5
14	107.2	33	210.7
15	110.9	34	218.1
16	114.8	35	225.7
17	118.8	36	233.6
18	123.0	37	241.8
19	127.3	38	250.3
20	131.8		

Description: Please note that the 97.4 Hz Tone does not function for decode purposes.

CT CTCSS

Applicable models	TS-790A/790E	Parameter	Format	Parameter function
Function	CTCSS ON/OFF selection and readout	P1	1	CTCSS ON/OFF

Input commands – Set command

1	2	3	4	5	6	7	8	9	10	11	12	13
C	T	P1	;									

14	15	16	17	18	19	20	21	22	23	24	25	26

Input commands – Read command

1	2	3	4	5	6	7	8	9	10	11	12	13
C	T	;										

14	15	16	17	18	19	20	21	22	23	24	25	26

Output commands – Answer command

1	2	3	4	5	6	7	8	9	10	11	12	13
C	T	P1	;									

14	15	16	17	18	19	20	21	22	23	24	25	26

27	28	29	30	31	32	33	34	35	36	37	38	39

Description:

DC DESTINATION CODE

Applicable models	TS-790A/790E	Parameter	Format	Parameter function
Function	DESTINATION CODE selection and readout	P1	21	DESTINATION CODE

Input commands

Set command

1	2	3	4	5	6	7	8	9	10	11	12	13
D	C	P1	;									
14	15	16	17	18	19	20	21	22	23	24	25	26

Read command

1	2	3	4	5	6	7	8	9	10	11	12	13
D	C	;										
14	15	16	17	18	19	20	21	22	23	24	25	26

Output commands

Answer command

1	2	3	4	5	6	7	8	9	10	11	12	13
D	C	P1	;									
14	15	16	17	18	19	20	21	22	23	24	25	26
27	28	29	30	31	32	33	34	35	36	37	38	39

Description

DN UP DOWN/UP

Applicable models	TS-790A/790E	Parameter	Format	Parameter function
Function	Same function as microphone UP/DOWN switch			

Input commands

Set command

1	2	3	4	5	6	7	8	9	10	11	12	13
DN/UP		;										
14	15	16	17	18	19	20	21	22	23	24	25	26

Read command

1	2	3	4	5	6	7	8	9	10	11	12	13
14	15	16	17	18	19	20	21	22	23	24	25	26

Output commands

Answer command

1	2	3	4	5	6	7	8	9	10	11	12	13
14	15	16	17	18	19	20	21	22	23	24	25	26
27	28	29	30	31	32	33	34	35	36	37	38	39

Description

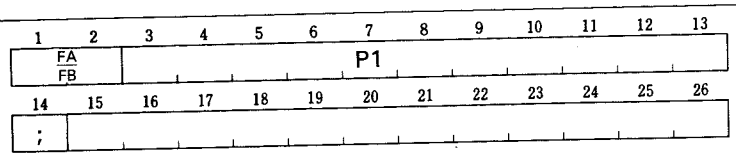
FA FB FREQUENCY VFO A/FREQUENCY VFO B

Applicable models	TS-790A/790E	Parameter	Format	Parameter function
		P1	4	FREQUENCY

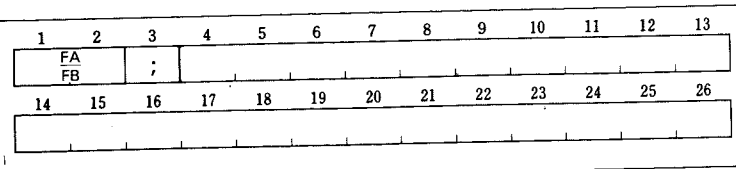
Function: VFO A and VFO B frequency selection and readout

Input commands

Set command

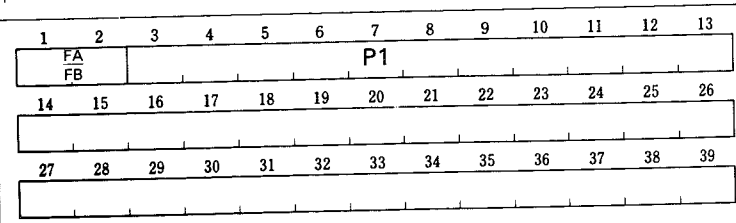


Read command



Output commands

Answer command



Description

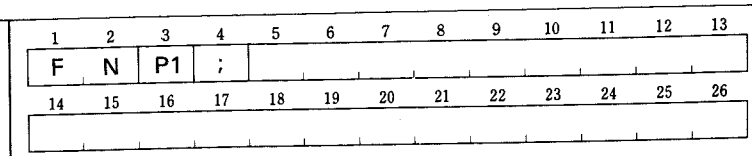
FN FUNCTION

Applicable models	TS-790A/790E	Parameter	Format	Parameter function
		P1	3	FUNCTION

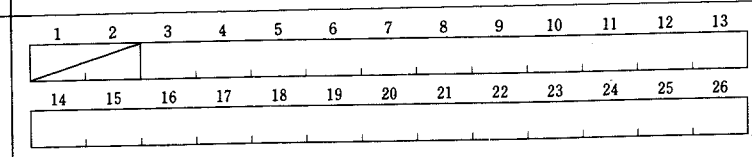
Function: VFO A and VFO B MEMORY CALL setting

Input commands

Set command

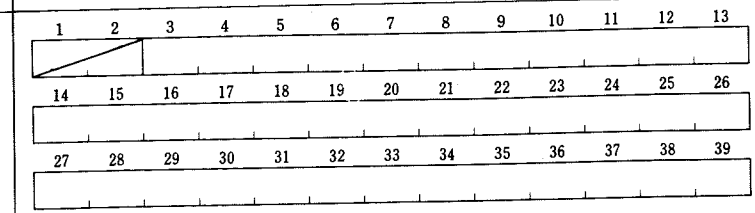


Read command



Output commands

Answer command



Description

ID ID

Applicable models	TS-790A/790E	Parameter	Format	Parameter function
Function	Model No. readout for transceiver recogniztion.	P1	16	MODEL No. TS-790 : 007

Input commands — Set command

1	2	3	4	5	6	7	8	9	10	11	12	13
14	15	16	17	18	19	20	21	22	23	24	25	26

Input commands — Read command

1	2	3	4	5	6	7	8	9	10	11	12	13
I	D	;										
14	15	16	17	18	19	20	21	22	23	24	25	26

Output commands — Answer command

1	2	3	4	5	6	7	8	9	10	11	12	13
I	D	P1			;							
14	15	16	17	18	19	20	21	22	23	24	25	26
27	28	29	30	31	32	33	34	35	36	37	38	39

Description

IF INFORMATION

Applicable models	TS-790A/790E
Function	Display of transceivers current condition

Parameter	Format	Parameter function
P1	4	DISPLAY FREQUENCY
P2	6	STEP FREQUENCY
P3	5	RIT FREQUENCY
P4	1	RIT ON/OFF
P5	—	
P6	—	
P7	7	MEMORY CHANNEL
P8	11	TX/RX
P9	2	MODE
P10	3	FUNCTION
P11	1	SCAN ON/OFF
P12	1	SPLIT ON/OFF
P13	1	TONE ON/OFF
P14	14	TONE FREQUENCY
P15	13	OFFSET

Input commands — Set command

1	2	3	4	5	6	7	8	9	10	11	12	13
14	15	16	17	18	19	20	21	22	23	24	25	26

Input commands — Read command

1	2	3	4	5	6	7	8	9	10	11	12	13
I	F	;										
14	15	16	17	18	19	20	21	22	23	24	25	26

Output commands — Answer command

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

Description

LK LOCK

Applicable models	TS-790A/790E	Parameter	Format	Parameter function
Function	LOCK ON/OFF setting and display	P1	1	LOCK ON/OFF

Input commands — Set command

1	2	3	4	5	6	7	8	9	10	11	12	13
L	K	P1	;									

14	15	16	17	18	19	20	21	22	23	24	25	26

Input commands — Read command

1	2	3	4	5	6	7	8	9	10	11	12	13
L	K	;										

14	15	16	17	18	19	20	21	22	23	24	25	26

Output commands — Answer command

1	2	3	4	5	6	7	8	9	10	11	12	13
L	K	P1	;									

14	15	16	17	18	19	20	21	22	23	24	25	26

27	28	29	30	31	32	33	34	35	36	37	38	39

Description

LT AUTO LOCK TUNE

Applicable models	TS-790A/790E	Parameter	Format	Parameter function
Function	AUTO LOCK TUNE ON/OFF selection and readout	P1	1	ALT ON/OFF

Input commands — Set command

1	2	3	4	5	6	7	8	9	10	11	12	13
L	T	P1	;									

14	15	16	17	18	19	20	21	22	23	24	25	26

Input commands — Read command

1	2	3	4	5	6	7	8	9	10	11	12	13
L	T	;										

14	15	16	17	18	19	20	21	22	23	24	25	26

Output commands — Answer command

1	2	3	4	5	6	7	8	9	10	11	12	13
L	T	P1	;									

14	15	16	17	18	19	20	21	22	23	24	25	26

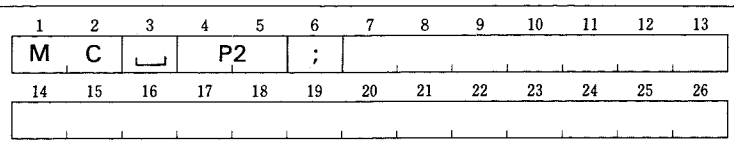
27	28	29	30	31	32	33	34	35	36	37	38	39

Description

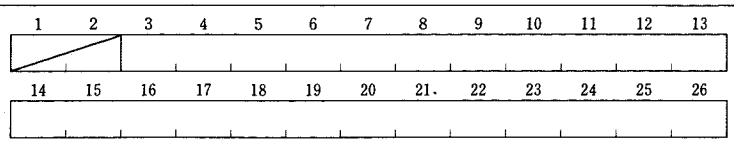
MC MEMORY CHANNEL

Applicable models	TS-790A/790E	Parameter	Format	Parameter function
Function	Memory channel setting	P1	—	
		P2	7	MEMORY CHANNEL

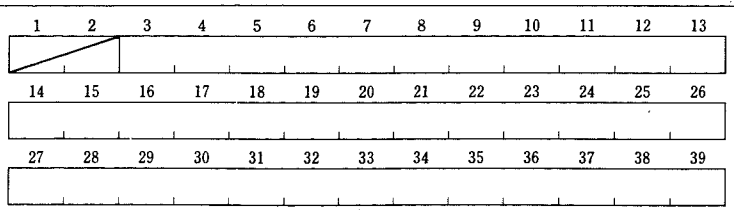
Input commands — Set command



Input commands — Read command



Output commands — Answer command

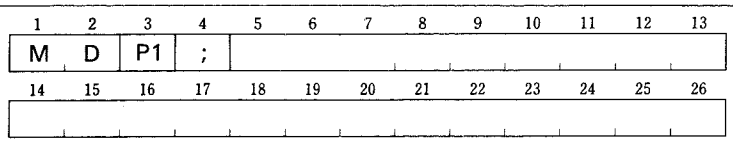


Description

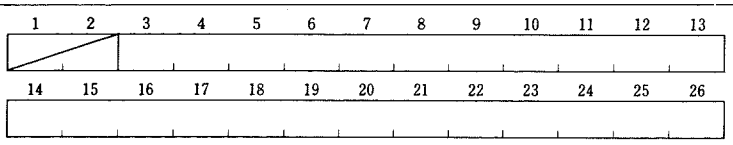
MD MODE

Applicable models	TS-790A/790E	Parameter	Format	Parameter function
Function	Mode setting	P1	2	MODE

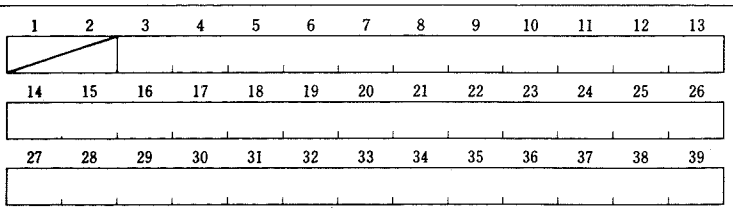
Input commands — Set command



Input commands — Read command



Output commands — Answer command



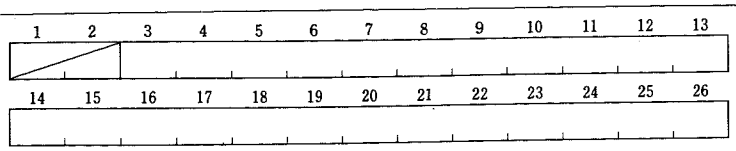
Description

MR MEMORY READ

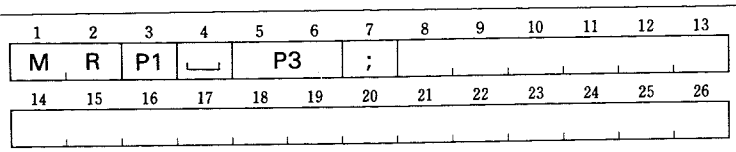
Applicable models	TS-790A/790E

Function: Memory display

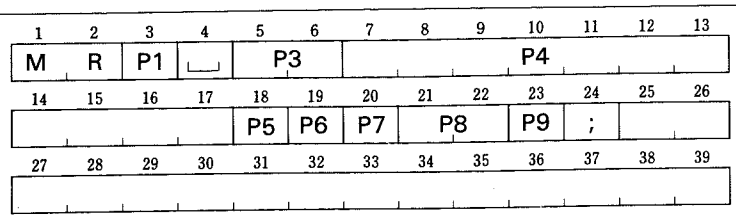
Input commands — Set command



Input commands — Read command



Output commands — Answer command



Parameter	Format	Parameter function
P1	9	SPLIT SPECIFICATION
P2	—	—
P3	7	MEMORY CHANNEL
P4	4	FREQUENCY
P5	2	MODE
P6	10	MEMORY LOCKOUT
P7	1	TONE ON/OFF
P8	14	TONE FREQUENCY
P9	13	OFFSET

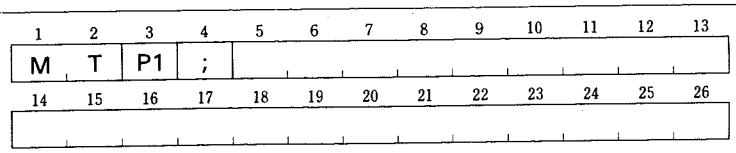
Description: All parameters are set to OFF when the memory channel is vacant.

MT MUTE

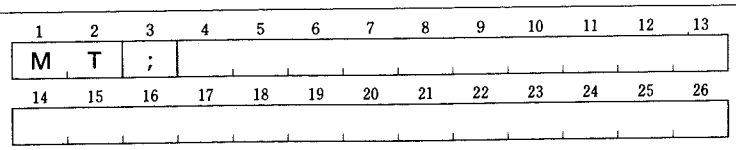
Applicable models	TS-790A/790E

Function: MUTE ON/OFF selection and readout

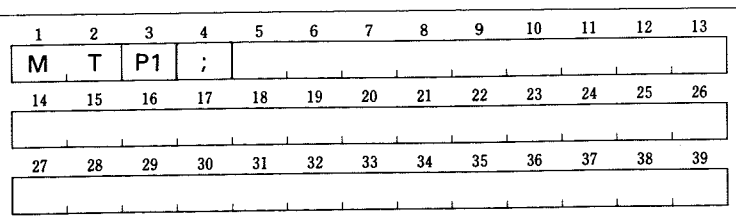
Input commands — Set command



Input commands — Read command



Output commands — Answer command



Parameter	Format	Parameter function
P1	1	MUTE ON/OFF

Description:

MW MEMORY WRITE

Applicable models	TS-790A/790E

Function: Memory entry

Input commands — Set command

1	2	3	4	5	6	7	8	9	10	11	12	13
M	W	P1	␣	P3			P4					

14	15	16	17	18	19	20	21	22	23	24	25	26
				P5	P6	P7	P8		P9	;		

Input commands — Read command

1	2	3	4	5	6	7	8	9	10	11	12	13

14	15	16	17	18	19	20	21	22	23	24	25	26

Output commands — Answer command

1	2	3	4	5	6	7	8	9	10	11	12	13

14	15	16	17	18	19	20	21	22	23	24	25	26

27	28	29	30	31	32	33	34	35	36	37	38	39

Parameter	Format	Parameter function
P1	9	SPLIT SPECIFICATION
P2	—	—
P3	7	MEMORY CHANNEL
P4	4	FREQUENCY
P5	2	MODE
P6	10	MEMORY LOCKOUT
P7	1	TONE ON/OFF
P8	14	TONE FREQUENCY
P9	13	OFFSET

Description

(1) The MW command is valid when all parameters have be correctly entered.
(2) When all effective frequency columns are "0", the memory is set to an open channel.
(3) When the split channel is open, the transceiver will be set for the same transmit and receive frequencies, i.e. simplex.

OS OFFSET

Applicable models	TS-790A/790E

Function: OFFSET setting

Input commands — Set command

1	2	3	4	5	6	7	8	9	10	11	12	13
O	S	P1	;									

14	15	16	17	18	19	20	21	22	23	24	25	26

Input commands — Read command

1	2	3	4	5	6	7	8	9	10	11	12	13

14	15	16	17	18	19	20	21	22	23	24	25	26

Output commands — Answer command

1	2	3	4	5	6	7	8	9	10	11	12	13

14	15	16	17	18	19	20	21	22	23	24	25	26

27	28	29	30	31	32	33	34	35	36	37	38	39

Parameter	Format	Parameter function
P1	13	OFFSET

Description

RC RIT CLEAR

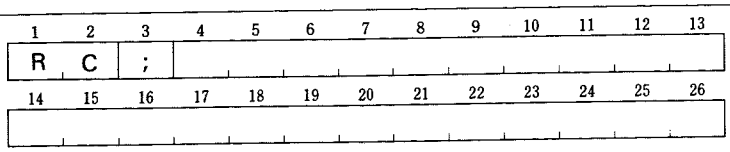
Applicable models	TS-790A/790E	Parameter	Format	Parameter function

Function

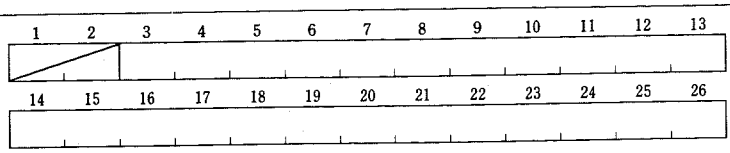
RIT frequency clearance

Input commands

Set command

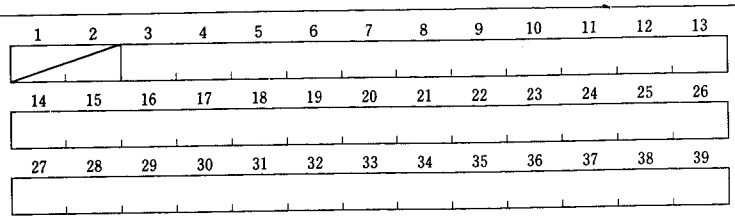


Read command



Output commands

Answer command



Description

When using these commands the center frequency point on the RIT control may not coincide with the center point printed on the front panel. The center point will coincide with the position of the RIT control before these commands were initiated.

RD RU RIT DOWN/UP

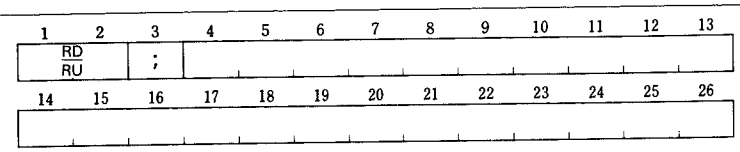
Applicable models	TS-790A/790E	Parameter	Format	Parameter function

Function

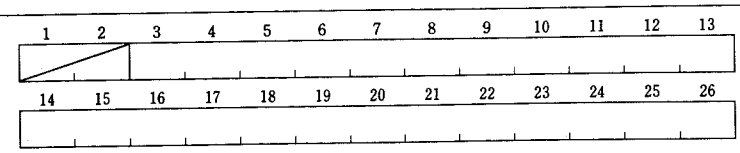
RIT frequency UP/DOWN

Input commands

Set command

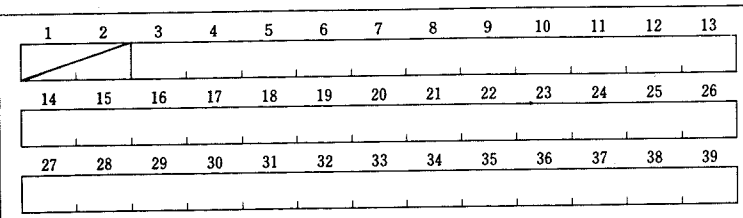


Read command



Output commands

Answer command



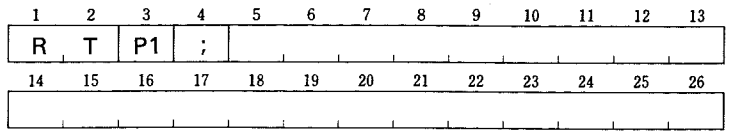
Description

When using these commands the center frequency point on the RIT control may not coincide with the center point printed on the front panel. The center point will coincide with the position of the RIT control before these commands were initiated.

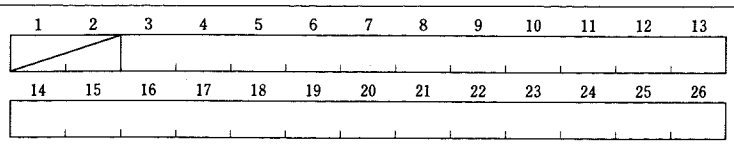
RT RIT

Applicable models	TS-790A/790E	Parameter	Format	Parameter function
Function	RIT ON/OFF setting	P1	1	RIT ON/OFF

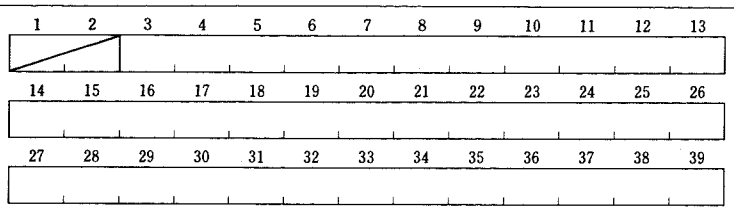
Input commands — Set command



Input commands — Read command



Output commands — Answer command

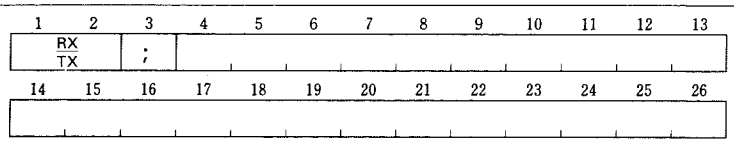


Description

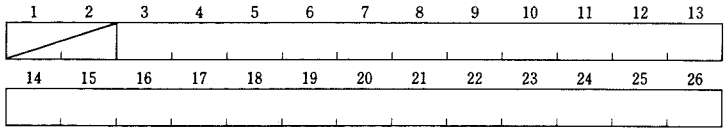
RX TX RX/TX

Applicable models	TS-790A/790E	Parameter	Format	Parameter function
Function	RX: For receive operation TX: For transmit operation			

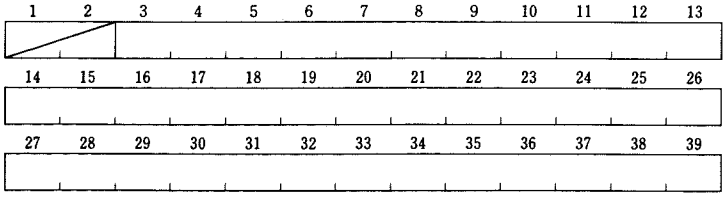
Input commands — Set command



Input commands — Read command



Output commands — Answer command

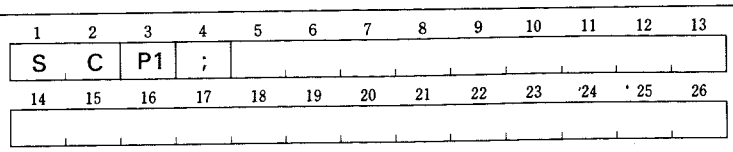


Description

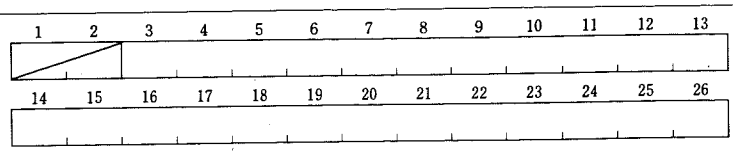
SC SCAN

Applicable models	TS-790A/790E	Parameter	Format	Parameter function
Function	Scan ON/OFF setting	P1	1	SCAN ON/OFF

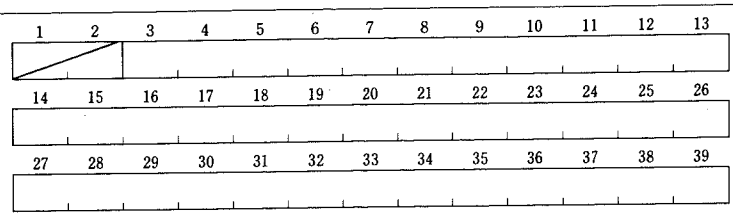
Input commands — Set command



Input commands — Read command



Output commands — Answer command

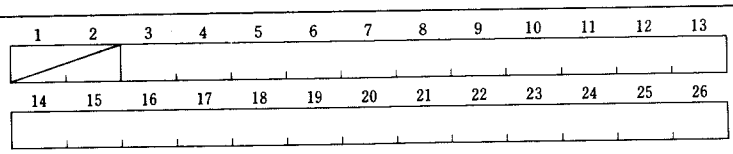


Description

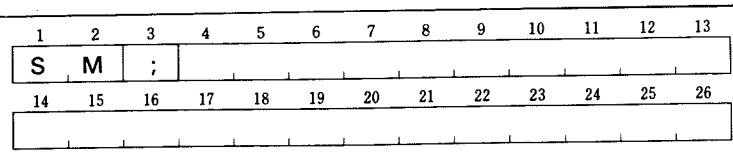
SM S-METER (SUB)

Applicable models	TS-790A/790E	Parameter	Format	Parameter function
Function	S-Meter signal output (SUB)	P1	22	S-Meter signal output (SUB)

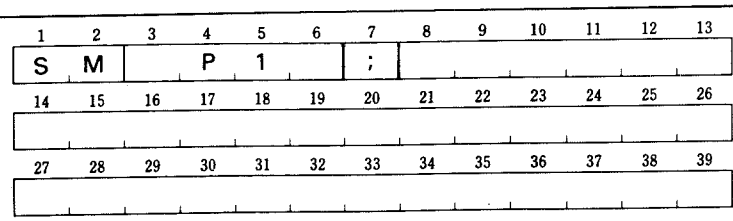
Input commands — Set command



Input commands — Read command



Output commands — Answer command

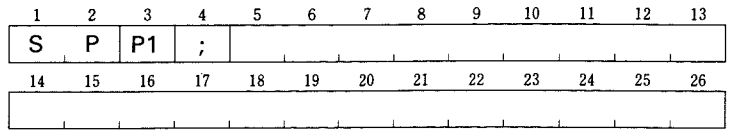


Description

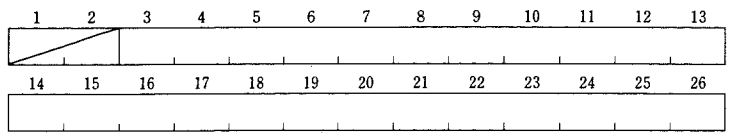
SP SPLIT

Applicable models	TS-790A/790E	Parameter	Format	Parameter function
Function	SPLIT ON/OFF setting	P1	1	SPLIT ON/OFF

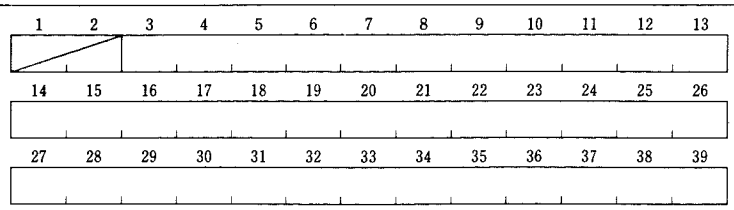
Input commands — Set command



Input commands — Read command



Output commands — Answer command

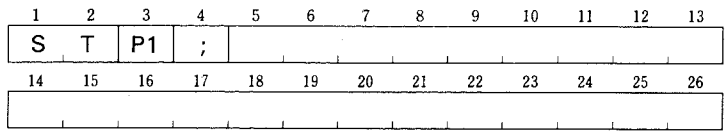


Description

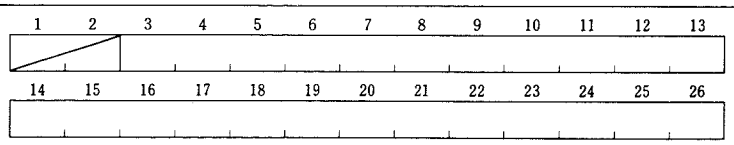
ST STEP

Applicable models	TS-790A/790E	Parameter	Format	Parameter function
Function	STEP ON/OFF setting	P1	1	STEP ON/OFF

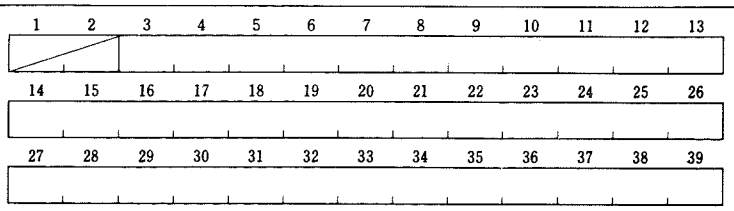
Input commands — Set command



Input commands — Read command



Output commands — Answer command



Description

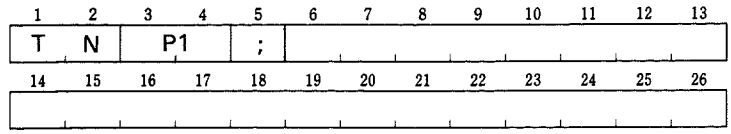
TN TONE NUMBER

Applicable models	TS-790A/790E	Parameter	Format	Parameter function
		P1	14	TONE FREQUENCY

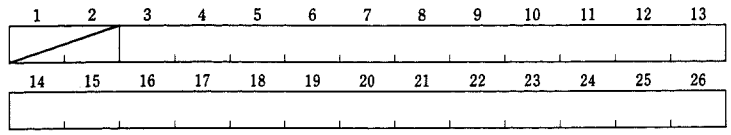
Function: Sub-tone frequency setting

Input commands

Set command

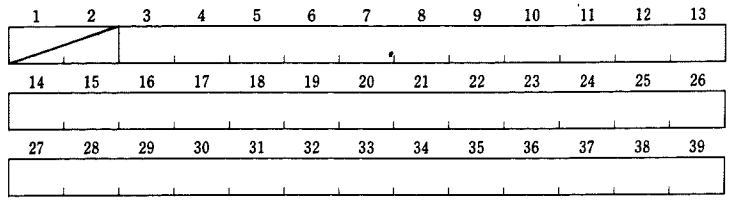


Read command



Output commands

Answer command



No.	Hz	No.	Hz
01	67.0	20	131.8
02	71.9	21	136.5
03	74.4	22	141.3
04	77.0	23	146.2
05	79.7	24	151.4
06	82.5	25	156.7
07	85.4	26	162.2
08	88.5	27	167.9
09	91.5	28	173.8
10	94.8	29	179.9
11	97.4	30	186.2
12	100.0	31	192.8
13	103.5	32	203.5
14	107.2	33	210.7
15	110.9	34	218.1
16	114.8	35	225.7
17	118.8	36	233.6
18	123.0	37	241.8
19	127.3	38	250.3

Description

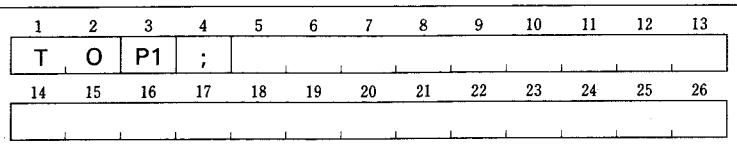
TO TONE

Applicable models	TS-790A/790E	Parameter	Format	Parameter function
		P1	1	TONE ON/OFF

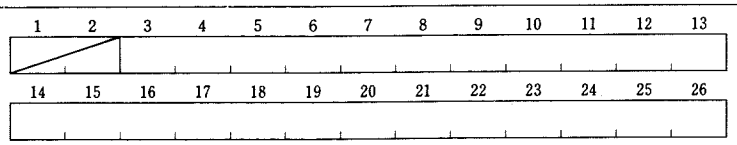
Function: TONE ON/OFF setting

Input commands

Set command

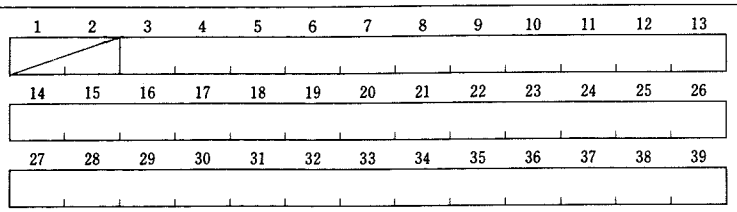


Read command



Output commands

Answer command



Description

VR VOICE RECALL

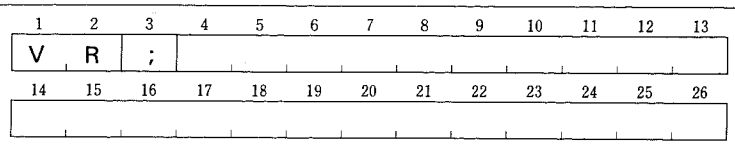
Applicable models	TS-790A/790E	Parameter	Format	Parameter function

Function

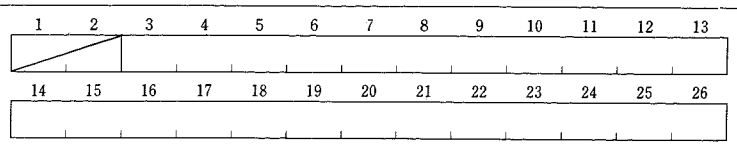
Generation of synthesized voice.

Input commands

Set command

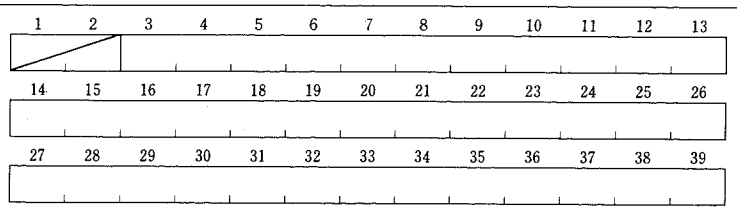


Read command



Output commands

Answer command



Description

Requires the use of the optional VS-2 Voice Synthesizer.

MEMO:

MEMO:

KENWOOD