KENWOOD

INTERFACE KIT

IF-10A
IF-10B

INSTRUCTION MANUAL

TRIO-KENWOOD CORPORATION

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WARNING

This equipment has been certified to comply with the limits for a Class B computing device, pursuant to Subpart J of Part 15 of FCC Rules. Only peripherals (computer input/output devices, terminals, printers, etc.) certified to comply with the Class B limits may be attached to this computer. Operation with non-certified peripherals is likely to result in interference to radio and TV reception.

Thank you for purchasing the new IF-10A/10B interface kit. Please read this instruction manual carefully before placing your interface kit in service. This unit has been carefully engineered and manufactured to rigid quality standard, and should give you satisfactory and dependable operation for many years.

This instruction manual describes both the IF-10A and the IF-10B. When appropriate, separate descriptions are given for these two items.

IF-10A: INTERFACE KIT FOR THE TS-811A/811B/811E/711A/711E
IF-10B: INTERFACE KIT FOR THE TS-940S

The IF-10A/10B interface kit is designed to be installed internally in transceivers such as the TS-940S/811A/811B/811E/711A/711E, to allow computer assisted control of various transceiver operating parameters. Control is performed via the computers RS-232C terminal via the IF-232C interface (level translator).

CONTENTS

1. FEATURES 3
2. SUPPLIED ACCESSORIES 3
3. SPECIFICATIONS 4
3-1. Interface 4
3-2. Terminal connections 4
4. INSTALLATION 5
4-1. IF-10A 5
4-2. IF-10B 7
5. OPERATION 8
5-1. Precautions for computer-connected operation 8
5-2. Control operation 8
5-3. Commands 9
5-3-1. Command description 9
5-3-2. Parameter description 9
5-3-3. Terminator 11
5-3-4. Types of commands 11
5-3-5. Error messages 11
5-3-6. How to read the command tables 12
5-3-7. Command use precautions 14
5-3-8. Command list 14
6. SCHEMATIC DIAGRAM 47

1. FEATURES

1. A wide variety of control instructions are possible.
2. Powerful, easy-to-understand instruction set.
3. Common commands that are interchangeable between different transceivers, reducing the number of changes necessary in software development.
4. Simultaneous operation of personal computer and transceiver.

2. SUPPLIED ACCESSORIES

The following accessories are supplied with the unit. Confirm that all are present.

1. EPROM ..... (MBM2732A-30) .... 1 ea.
2. Boss (IF-10A only)..... (J32-0795-04)..... 2 ea.
3. Pan-head screw (IF-10A only)..... (N30-2605-41) ..... 2 ea.
4. Self tapping screw (IF-10B only)..... (N35-2605-41) ..... 2 ea.
5. DIN connector bracket (IF-10A only)..... (E06-0655-05)..... 1 ea.
6. Instruction manual..... (B50-8065-00)..... 1 ea.

Note:
The IF-10A/10B does not include computer software, guidelines are provided but due to the wide variety of computers available, all of which have their own languages it is left up to the owner to design his or her own software package.

3. SPECIFICATIONS

3-1. Interface

Communication method ..... Serial interface, full-duplex
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

3-2. Terminal connections

Pin No.	Signal Name		I/O
1	GND	Signal ground	
2	$\overline{\text{TXD}}$	Transmit data	Output
3	$\overline{\text{RXD}}$	Receive data	Input
4 (Note)	CTS	Transmit enable	Input
5	RTS	Receive enable	Output
6	NC		

Note: For the TS-940S pin 4 is +5 V.

GND: This is the signal ground terminal.

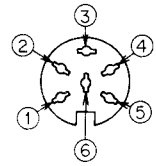
$\overline{\text{TXD}}$: The transmit data is the serial data from the transceiver to the computer. The output utilizes negative logic.

$\overline{\text{RXD}}$: 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.) [Except TS-940S]

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)

4. INSTALLATION

4-1. IF-10A

Caution:
Before removing the cover be sure to disconnect the power cable, or damage may result to the radio or interface kit.

1. Remove the eight screws securing the upper cover using a # 2 Phillips screwdriver.
2. Remove the two screws marked ⊖ from the control unit, and install the supplied bosses.
3. Plug the interface board onto the 7 pin connector (J5) and 9 pin connector (J6) as shown in the illustration.
4. Secure the circuit board using the two screws removed in step number 2.
5. Remove the plastic plug that is currently installed in the ACC1 jack area, at the upper rear corner of the radio.
6. Install the DIN connector using the bracket supplied, as shown in the illustration.
7. Install the EPROM (Erasable and Programmable Read Only Memory) into the vacant socket on the circuit board.

Caution:
Align the notch on the EPROM with the notch in the socket, or damage to the EPROM and or circuit board may result!

8. Replace the top cover.

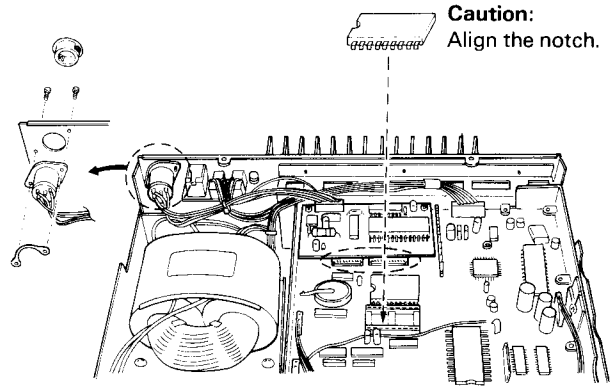


Fig. 4-1

4-2. IF-10B

Caution:
Before removing the cover be sure to disconnect the power cable, or damage may result to the radio or interface kit.

1. Remove the eight screws securing the transceiver's upper cover, using a #2 Phillips head screwdriver, and remove the top cover.
2. Remove the four screws that secure the speaker mounting bracket to the chassis and swing tha bracket up towards the AT (antenna tuner) unit. Be especially careful of the wiring harness. Don't stretch the cable harness.
3. Next remove the four screws that secure the shield covering Digital A unit. Swing the cover to the side. Again be careful of the wiring harness.
4. Place the interface unit on the hexagonal boss on the Digital A unit, and secure it with the screws provided with the interface kit.
5. Connect the connector on Digital A unit to the intetface unit as shown in Fig. 4-6.
6. Install the expansion EPROM (Erasable and Programmable Read Only Memory) into the vacant socket on the digital unit. Orientation of this component is critical for proper operation of the radio, and interface.

Caution:
Install the EPROM so that the notch in the end is on the same end as the notch in the IC socket.

7. Replace the shield cover. Do not pinch any wires under the cover when you tighten it down.
8. Reinstall the speaker mounting bracket, confirming that the connector located on the left side of the digital A unit is secure, and not pinched under the bracket.
9. Replace the top cover.

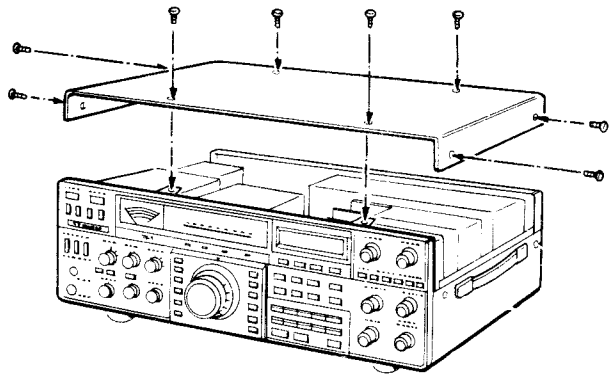


Fig. 4-2

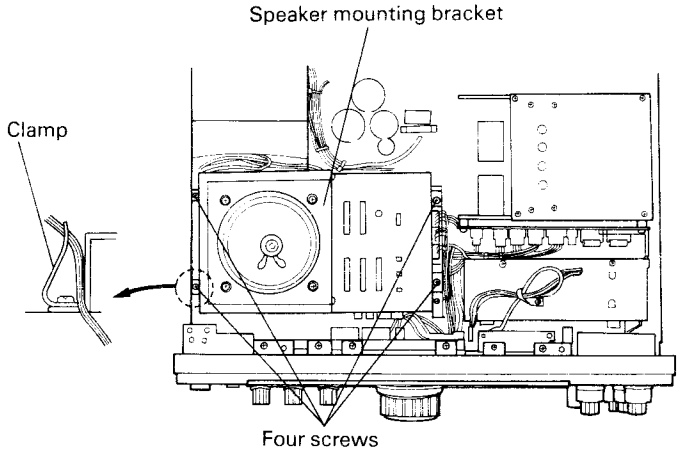


Fig. 4-3

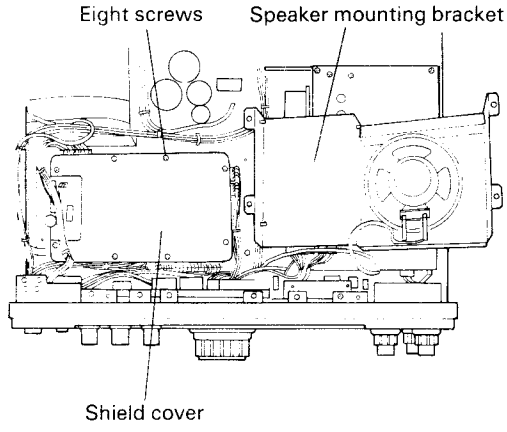
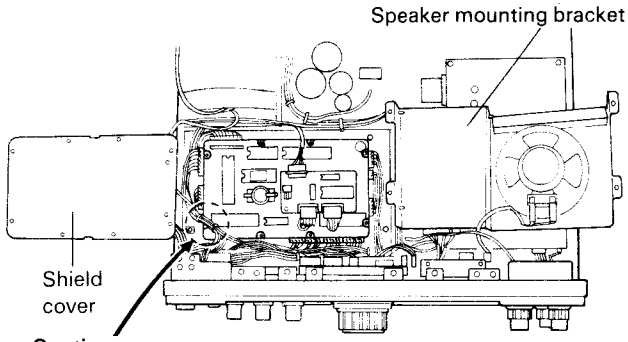


Fig. 4-4



Caution:
Don't stretch the cable harness.

Fig. 4-5

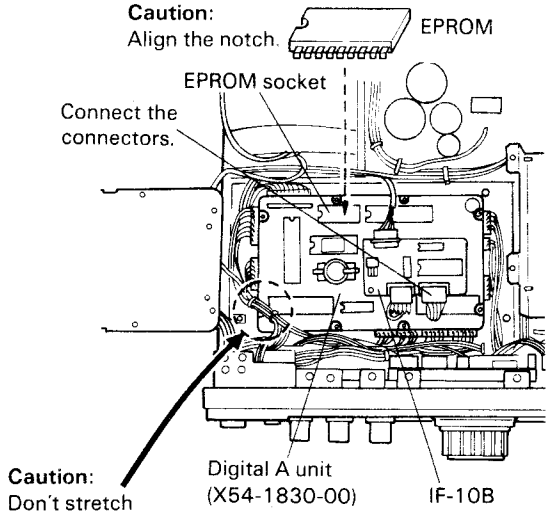


Fig. 4-6

5. OPERATION

Caution:
Turn the POWER switch OFF before making connections.

5-1. 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 receive data — Computer's receive data
   Transceiver's RTS — Computer's CTS

2. Is the computer's transmisson 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.

5-2. 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 and the IF-10A/10B are 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 approximately 25 to 30 different commands available for control of the transceiver.

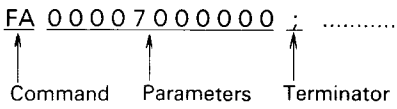
These commands may be incorporated into a computer program written in BASIC or any other high level language

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.

5-3. 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:



5-3-1. Command description

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

5-3-2. 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-811A/811B/811E/711A/711E 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.

"MC109" ..... No terminator

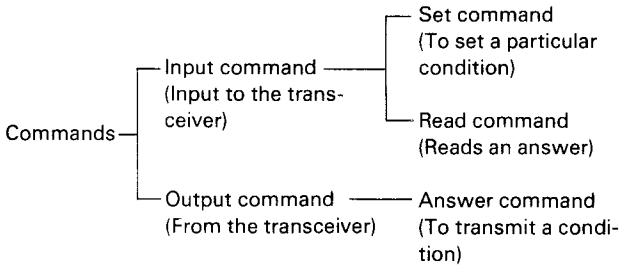
Parameter list

Format No.	Name	Number of columns	Format
1	SW	1	0 = OFF 1 = ON
2	MODE	1	1 = LSB 4 = FM 2 = USB 5 = AM 3 = CW 6 = FSK (AM, FSK: TS-940S only)
3	FUNCTION	1	0 = VFO A 2 = MEMORY 1 = VFO B 3 = COM (COM: TS-811A/811B/811E/711A/711E only)
4	FREQUENCY	11	Represented in Hz, using 11 columns **Example:** 00007200000 is 7.2 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	MEMORY BANK	1	Represented using one column. (TS-940S only)
9	MEMORY CHANNEL SPLIT SPECIFICATION	1	0 = Receive 1 = Trsnsmit (used with the TS-811A/811B/811E/711A/711E only)
10	MEMORY LOCKOUT	1	0 = Not locked out 1 = Locked out (TS-811A/811B/811E/711A/711E only)
11	TX/RX	1	0 = Receive 1 = Transmit
12	PASSBAND	2	Represented using two columns, from 00 to 31. "00" is the normal or wide position and "31" is the narrowest bandwidth (TS-940S only)
13	OFFSET	1	0 = SIMPLEX 2 = – 1 = + (TS-811A/811B/811E/711A/711E only)
14	TONE FREQUENCY	2	Represented using two columns, from 01 to 37. This corresponds to the number displayed on the M.CH display during tone select operation. (TS-811A/811B/711A only)
15	CALL SIGN	6	Represented using 6 columns. Example: WD6DJY
16	MODEL NO.	3	Three column number specifying each set.

5-3-3. 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 semi-colon ";". This special character must appear as the last character in a particular command string.

5-3-4. Types of commands



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

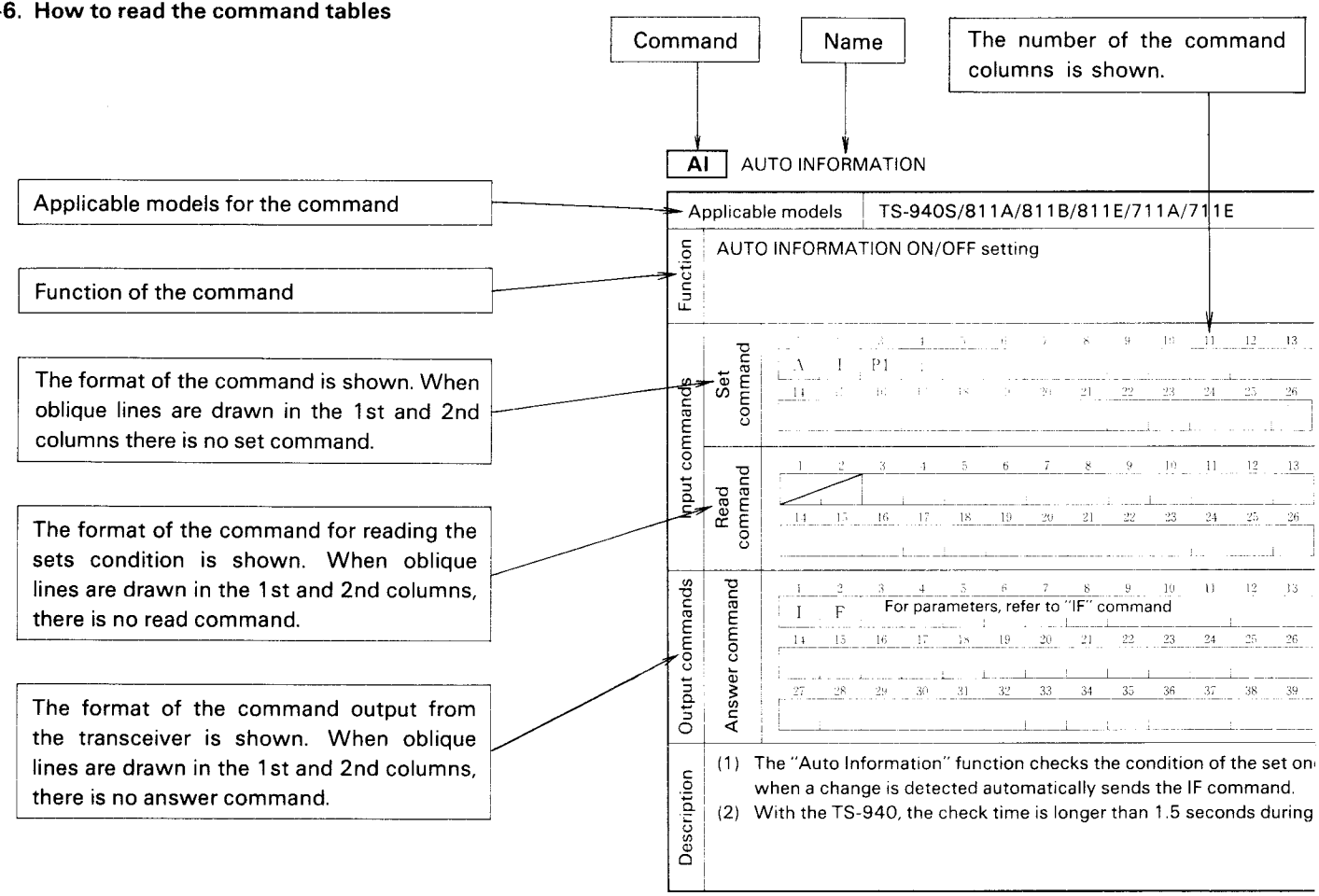
- ○ To set the frequency at 7 MHz, the command sent from the computer to the transceiver is:
  "FA00007000000;"..... (Set command)
- ○ To read the frequency of VFO A, the command sent from the computer to the transceiver is:
  "FA;"..... (Read command)
- ○ When the read command, above, has been sent, the command returned to the computer is:
  "FA00007000000;"..... (Answer command)

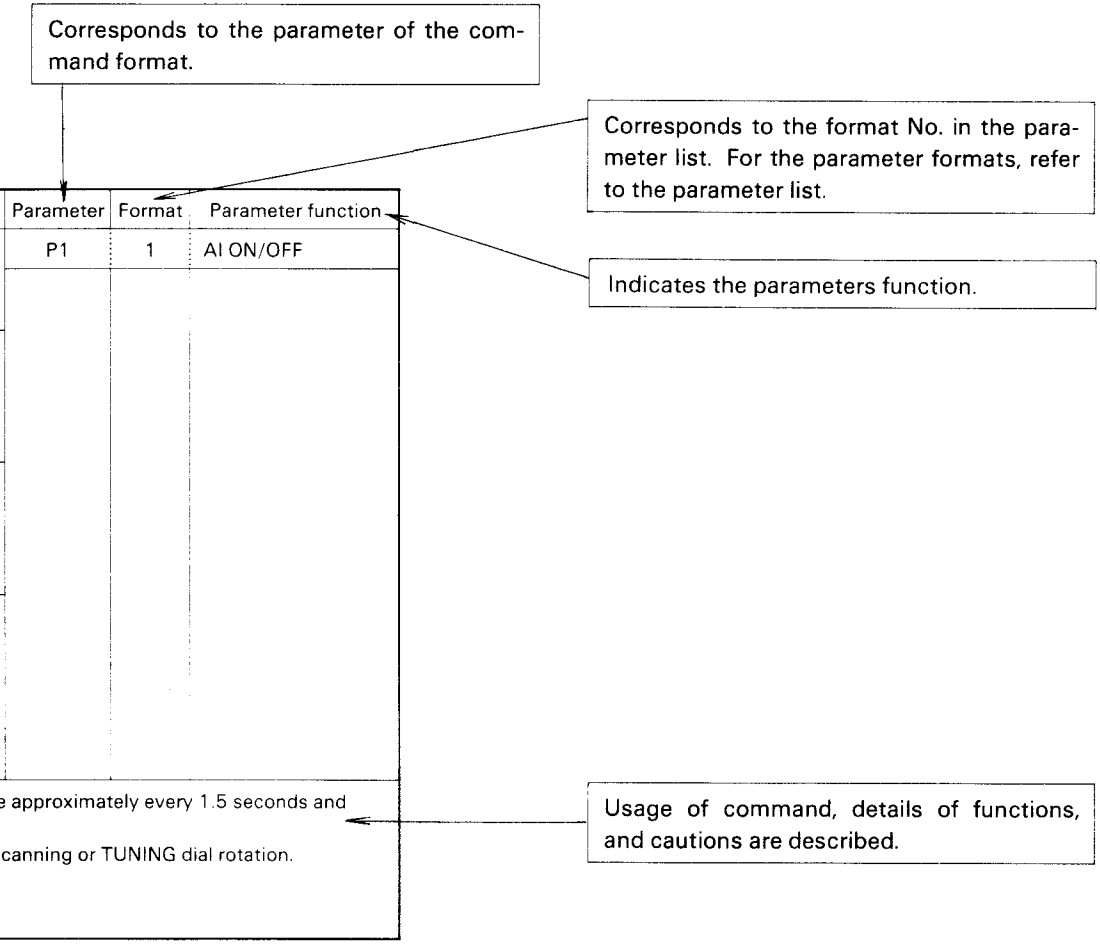
5-3-5. Error messages

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.

5-3-6. How to read the command tables




Corresponds to the parameter of the command format.
Corresponds to the format No. in the parameter list. For the parameter formats, refer to the parameter list.
Parameter
Format
Parameter function
P1
1
AI ON/OFF
Indicates the parameters function.
e approximately every 1.5 seconds and
canning or TUNING dial rotation.
Usage of command, details of functions, and cautions are described.

5-3-7 Command Use Precautions

Model	Precaution
TS-940S/ 811A/811B/ 811E/711A/ 711E	The control characters (00 to IFH) when included in receive data are ignored.
TS-940S	Program execution may be delayed during rapid encoder rotation.
TS-940S	The MW (Memory Write) command cannot be executed during memory channel operation.

Model	Precaution
TS-940S	Receive data is not processed when directly entering the frequency from the keyboard or while the T-F SET key is depressed.
TS-811A	**Note:** When the microprocessor is reset, as when changing the lithium battery, re-enter M.CH1 first by pressing the M.IN switch, or improper operation may result when operating with computer.

5-3-8. Command list

Command	Function	Model					Page
		TS-940S	TS-811A TS-811B	TS-811E	TS-711A	TS-711E	
AI	AUTO INFORMATION	○	○	○	○	○	16
AT	ANTENNA TUNER	○					17
DI	DCS ID		○	○	○	○	18
DN/UP	DOWN/UP	○	○	○	○	○	19
DS	DCS		○	○	○	○	20

Command	Function	Model					Page
		TS-940S	TS-811A TS-811B	TS-811E	TS-711A	TS-711E	
FA/FB	FREQUENCY VFO A/FREQUENCY VFO B	○	○	○	○	○	21
FN	FUNCTION	○	○	○	○	○	22
HD	SCAN HOLD	○					23
ID	ID	○	○	○	○	○	24
IF	INFORMATION	○	○	○	○	○	25
LK	LOCK	○	○	○	○	○	26
LO	LOCAL	○					27
MC	MEMORY CHANNEL	○	○	○	○	○	28
MD	MODE	○	○	○	○	○	29
MR	MEMORY READ	○	○	○	○	○	30
MS	MEMORY SCAN	○					31
MW	MEMORY WRITE	○	○	○	○	○	32
OS	OFFSET		○	○	○	○	33
RC	RIT CLEAR	○	○	○	○	○	34
RD/RU	RIT DOWN/RIT UP	○	○	○	○	○	35
RT	RIT	○	○	○	○	○	36
RX/TX	RX/TX	○	○	○	○	○	37
SC	SCAN	○	○	○	○	○	38
SH/SL	SLOPE TUNE HIGH/SLOPE TUNE LOW	○					39
SP	SPLIT	○	○	○	○	○	40
ST	STEP		○	○	○	○	41
TN	TONE NUMBER		○		○		42
TO	TONE		○	○*	○	○*	43
VB	VBT	○					44
VR	VOICE RECALL	○	○	○	○	○	45
XT	XIT	○					46

* This command is not applicable to "KENWOOD" versions of the TS-811E/711E.

AI AUTO INFORMATION

Applicable models	TS-940S/811A/811B/811E/711A/711E

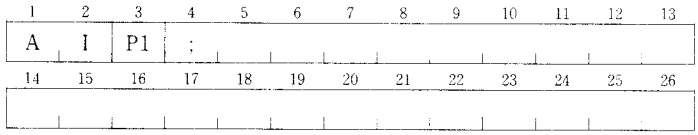
Parameter	Format	Parameter function
P1	1	AI ON/OFF

Function

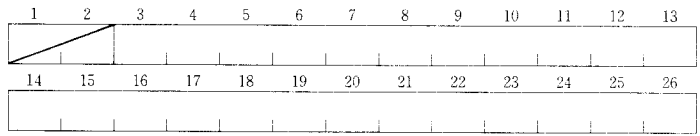
AUTO INFORMATION ON/OFF setting

Input commands

Set command

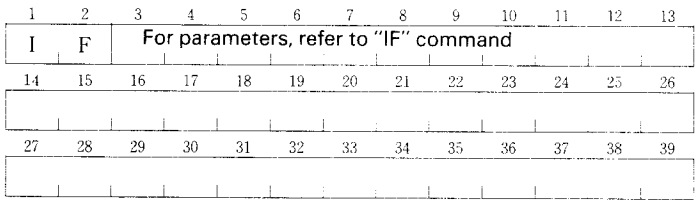


Read command



Output commands

Answer command



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) With the TS-940, the check time is longer than 1.5 seconds during scanning or TUNING dial rotation.

AT ANTENNA TUNER

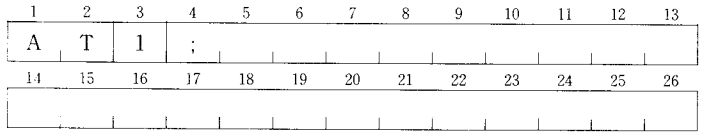
Applicable model	TS-940S	Parameter	Format	Parameter function

Function

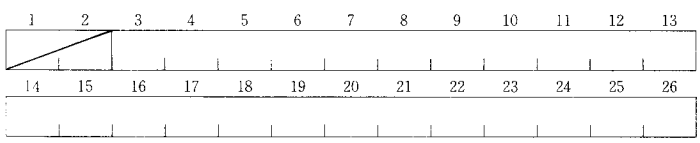
Antenna tuner standby operation

Input commands

Set command

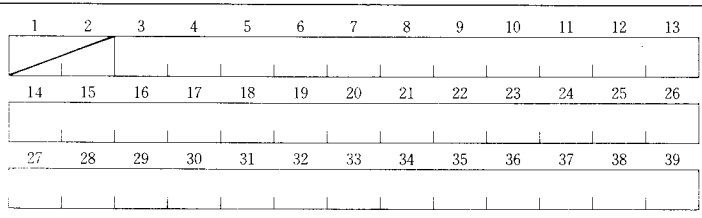


Read command



Output commands

Answer command



Description

DI DCS ID

Applicable models	TS-811A/811B/811E/711A/711E

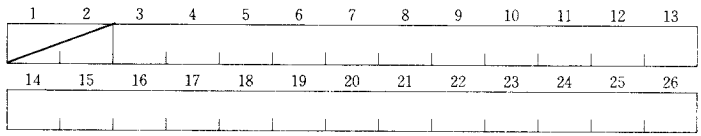
Function

DCS call sign readout

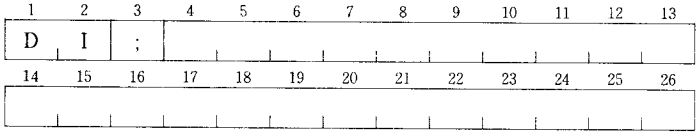
Parameter	Format	Parameter function
P1	15	Call sign of your station
P2	15	Call sign of receiving station

Input commands

Set command

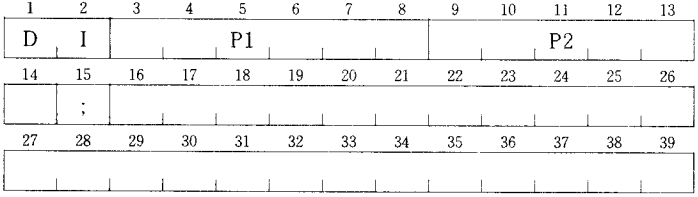


Read command



Output commands

Answer command



Description

The call sign of the receiving station should read out as soon as a signal is received. The analysis of incoming call signs is continuous. However the call sign may be incorrectly display due to noise.

DN UP DOWN/UP

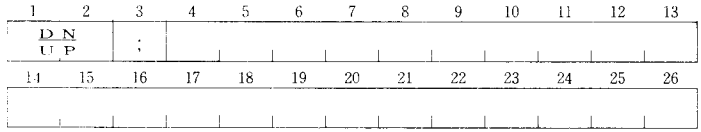
Applicable models	TS-940S/811A/811B/811E/711A/711E	Parameter	Format	Parameter function

Function

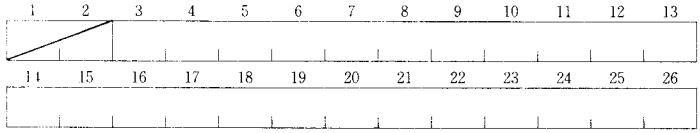
Same function as microphone UP/DOWN switch

Input commands

Set command

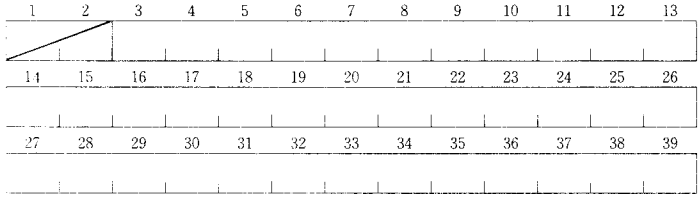


Read command



Output commands

Answer command



Description

DS DCS

Applicable models	TS-811A/811B/811E/711A/711E

Function

DCS system ON/OFF selection and readout

Parameter	Format	Parameter function
P1	1	DCS ON/OFF

Input commands

Set command

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

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	S	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

FA FB FREQUENCY VFO A/FREQUENCY VFO B

Applicable models	TS-940S/811A/811B/811E/711A/711E

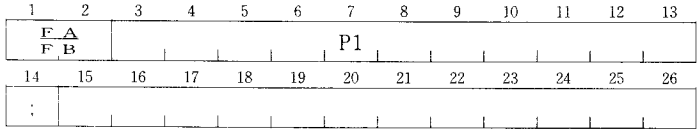
Function

VFO A and VFO B frequency selection and readout

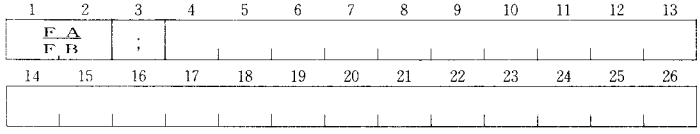
Parameter	Format	Parameter function
P1	4	FREQUENCY

Input commands

Set command

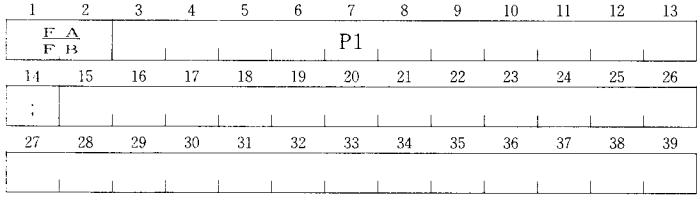


Read command



Output commands

Answer command



Description

Applicable models	TS-940S/811A/811B/811E/711A/711E

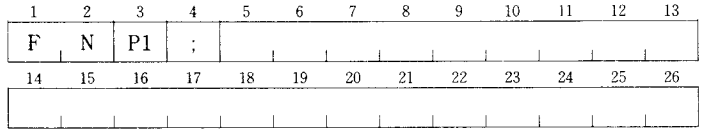
Parameter	Format	Parameter function
P1	3	FUNCTION

Function

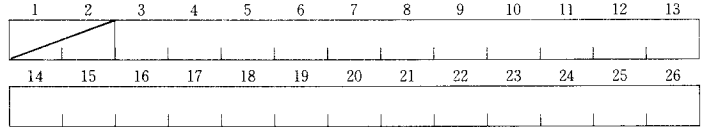
VFO A and VFO B MEMORY COM setting (COM: TS-711/811 Only)

Input commands

Set command

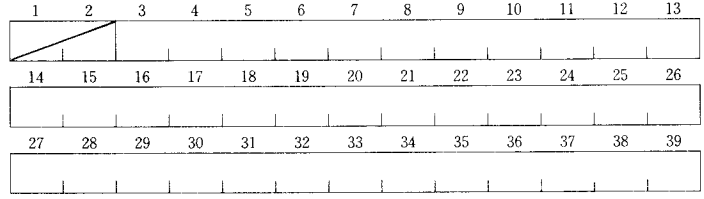


Read command



Output commands

Answer command



Description

HD SCAN HOLD

Applicable model	TS-940S

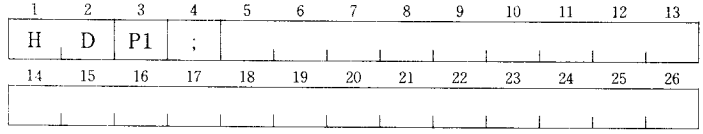
Function

Temporary scan.

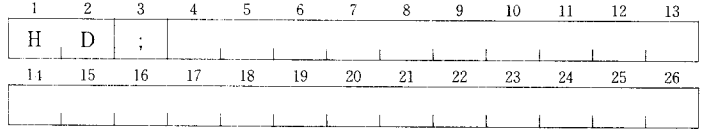
Parameter	Format	Parameter function
P1	15	SCAN HOLD ON/OFF

Input commands

Set command

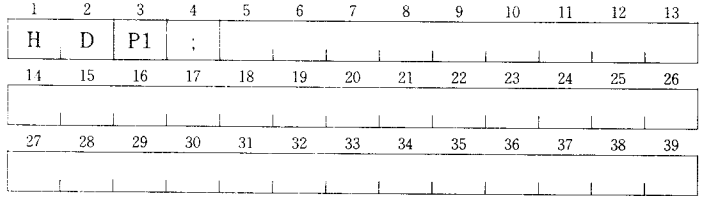


Read command



Output commands

Answer command

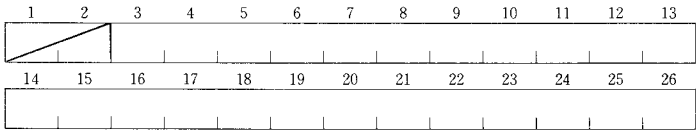


Description

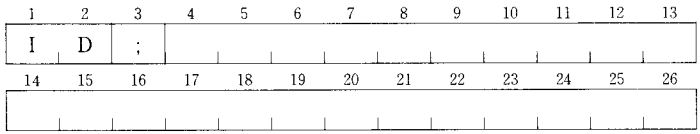
Applicable models	TS-940S/811A/811B/811E/711A/711E	Parameter	Format	Parameter function
Function	Model No. readout for transceiver recogniztion.	P1	16	MODEL No. TS-711: 001 TS-811: 002 TS-940: 003

Input commands

Set command

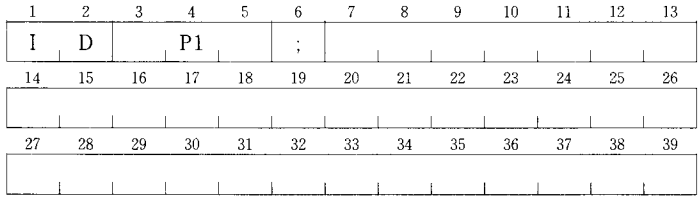


Read command



Output commands

Answer command



Description

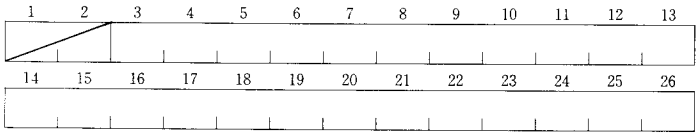
Applicable models	TS-940S/811A/811B/811E/711A/711E

Function

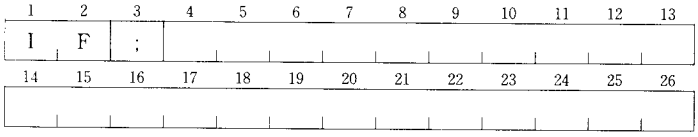
Display of transceivers current condition

Input commands

Set command

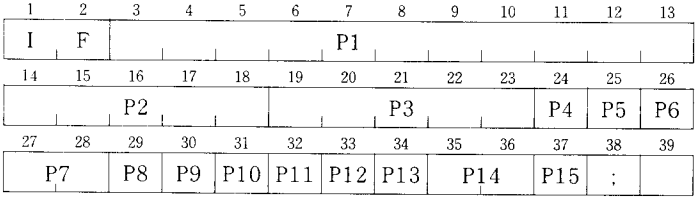


Read command



Output commands

Answer command



Parameter	Format	Parameter function
P1	4	DISPLAY FREQUENCY
P2	6	STEP FREQUENCY
P3	5	RIT FREQUENCY
P4	1	RIT ON/OFF
P5	1	XIT ON/OFF
P6	8	MEMORY BANK
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 (TS-811A/811B/811E/711A/711E only)*
P14	14	TONE FREQUENCY (TS-811A/811B/711A only)
P15	13	OFFSET(TS-811A/811B/811E/711A/711E only)

Description

(1) When the frequency step of the TS-811A/811B/811E/711A/711E is changed, the step frequency of the IF command will hold the previous value until the frequency is changed.

(2) * This command is not applicable to "KENWOOD" versions of the TS-811E/711E.

LK LOCK

Applicable models	TS-940S/811A/811B/811E/711A/711E

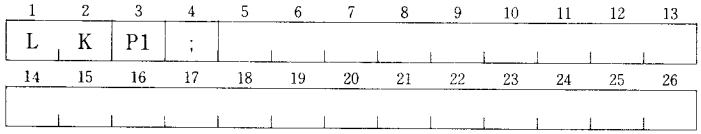
Parameter	Format	Parameter function
P1	1	LOCK ON/OFF

Function

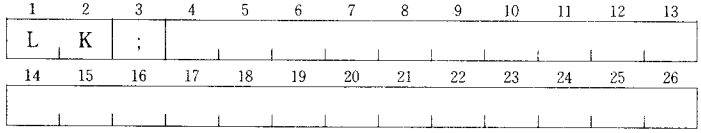
LOCK ON/OFF setting and display

Input commands

Set command

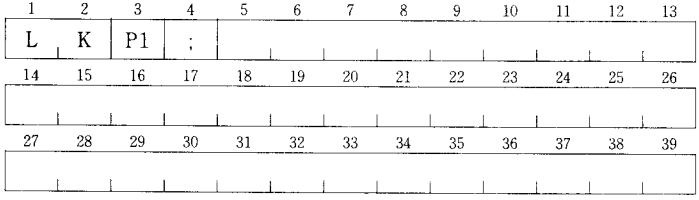


Read command



Output commands

Answer command



Description

LO LOCAL

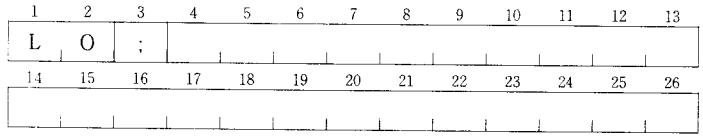
Applicable model	TS-940S	Parameter	Format	Parameter function

Function

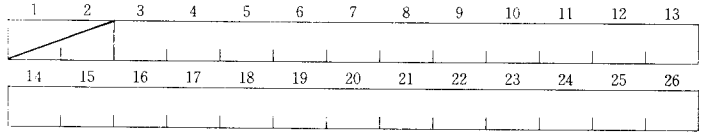
When a personal computer is used to control VBT etc., the transceivers associated controls are disabled. This command releases control back to the transceivers controls.

Input commands

Set command

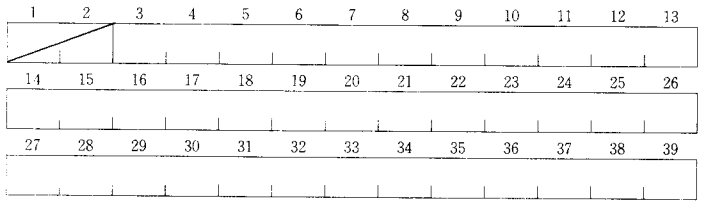


Read command



Output commands

Answer command



Description

When the VB, SL, SH, MC or TX command is executed, the associated switches and controls will not function until the LO command is sent from the computer.

Applicable models	TS-940S/811A/811B/811E/711A/711E

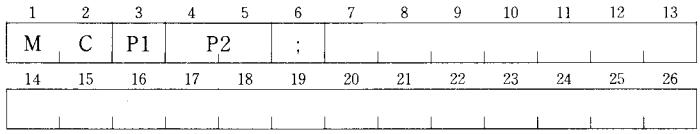
Function

Memory channel setting

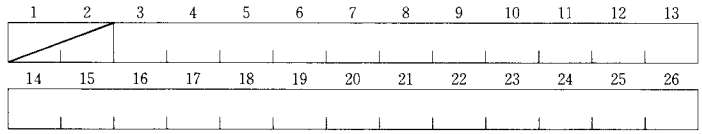
Parameter	Format	Parameter function
P1	8	MEMORY BANK
P2	7	MEMORY CHANNEL

Input commands

Set command

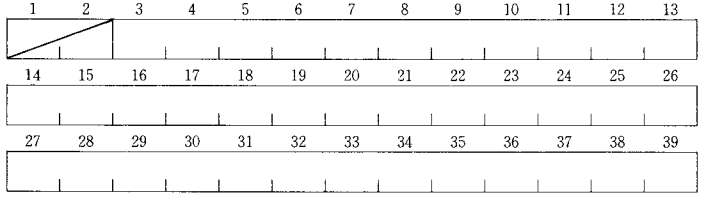


Read command



Output commands

Answer command



Description

With the TS-940, this command will disable the MEMORY BANK switch associated top cover switch.

MD MODE

Applicable models	TS-940S/811A/811B/811E/711A/711E

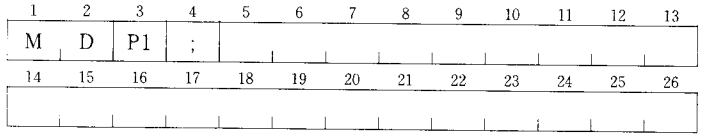
Parameter	Format	Parameter function
P1	2	MODE

Function

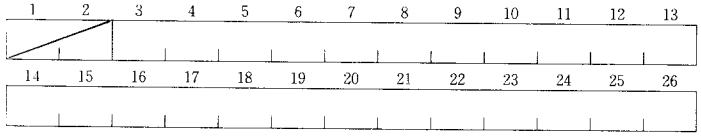
Mode setting

Input commands

Set command

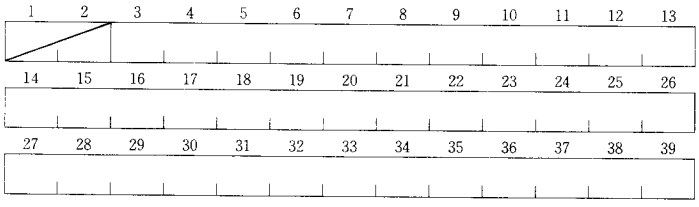


Read command



Output commands

Answer command



Description

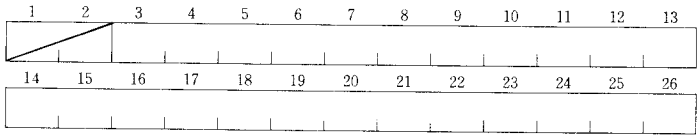
MR MEMORY READ

Applicable models	TS-940S/811A/811B/811E/711A/711E

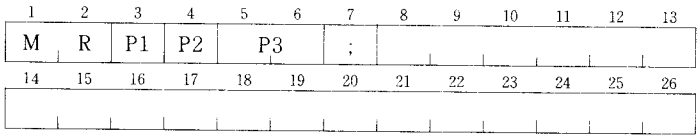
Function: Memory display

Input commands

Set command

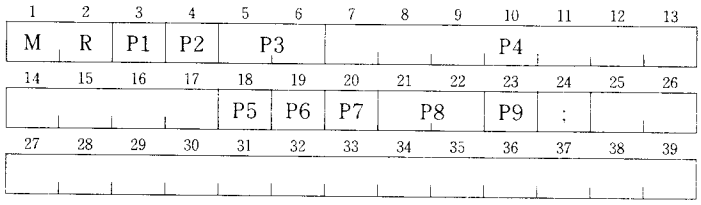


Read command



Output commands

Answer command



Parameter	Format	Parameter function
P1	9	SPLIT SPECIFICAITON
P2	8	MEMORY BANK
P3	7	MEMORY CHANNEL
P4	4	FREQUENCY
P5	2	MODE
P6	10	MEMORY LOCKOUT (TS-811A/811B/811E/711A/711E only)
P7	1	TONE ON/OFF (TS-811A/811B/811E/711A/711E only)*
P8	14	TONE FREQUENCY (TS-811A/811B/711A only)
P9	13	OFFSET (TS-811A/811B/811E/711A/711E only)

Description

(1) All parameters areset to OFF when the memory channel is vacant.
(2) * This command is not applicable to "KENWOOD" versions of the TS-811E/711E.

MS MEMORY SCAN

Applicable model	TS-940S

Function

Memory scan ON/OFF and display

Parameter	Format	Parameter function
P1	1	MEMORY SCAN ON/OFF

Input commands

Set command

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

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
M	S	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
												;

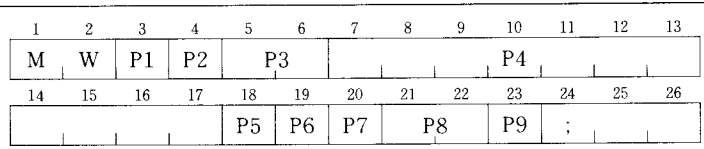
Description

MW MEMORY WRITE

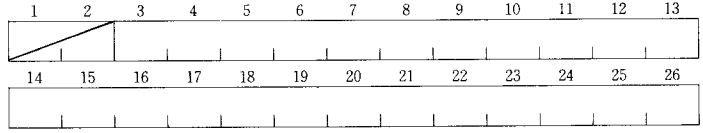
Applicable models	TS-940S/811A/811B/811E/711A/711E

Function: Memory entry

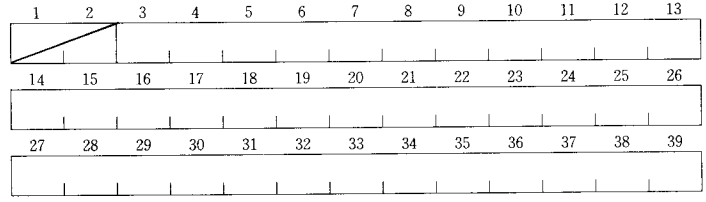
Input commands — Set command



Input commands — Read command



Output commands — Answer command



Parameter	Format	Parameter function
P1	9	SPLIT SPECIFICATION
P2	8	MEMORY BANK
P3	7	MEMORY CHANNEL
P4	4	FREQUENCY
P5	2	MODE
P6	9	MEMORY LOCKOUT (TS-811A/811B/811E/711A/711E only)
P7	1	TONE ON/OFF (TS-811A/811B/811E/711A/711E only)*
P8	14	TONE FREQUENCY (TS-811A/811B/711A only)
P9	13	OFF SET (TS-811A/811B/811E/711A/711E only)

Description

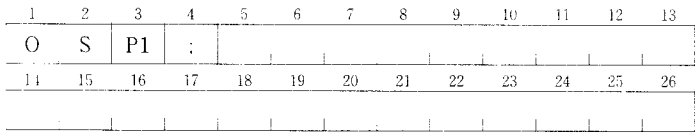
(1) The MW command is valid when all parameters have be correctly entered.
(2) When all effective frequency columns are "0", the memory is set to an open channel.
(3) When the split channe of the TS-811A/811B/811E/711A/711E is open, the transceiver will be set for the same transmit and receive frequencies, i.e. simplex.
(4) * This command is not applicable to "KENWOOD" versions of the TS-811E/711E.

OS OFFSET

Applicable models	TS-811A/811B/811E/711A/711E	Parameter	Format	Parameter function
Function	OFFSET setting	P1	13	OFFSET

Input commands

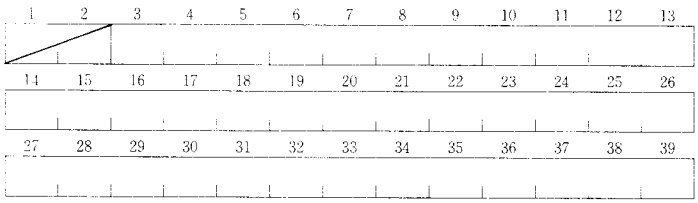
Set command



Read command

Output commands

Answer command



Description

RC RIT CLEAR

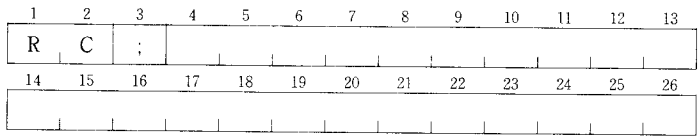
Applicable models	TS-940S/811A/811B/811E/711A/711E	Parameter	Format	Parameter function

Function

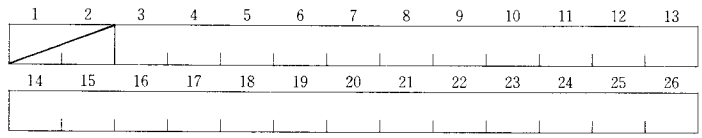
RIT frequency clearance

Input commands

Set command

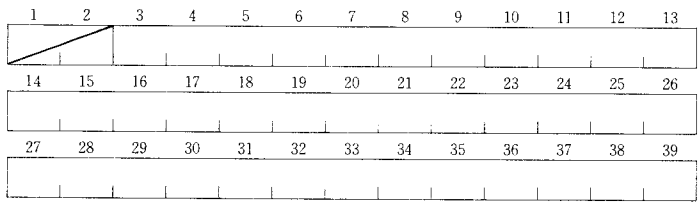


Read command



Output commands

Answer command



Description

RD RU RIT DOWN/RIT UP

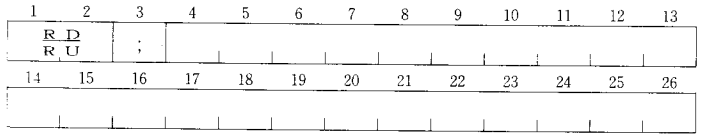
Applicable models	TS-940S/811A/811B/811E/711A/711E	Parameter	Format	Parameter function

Function

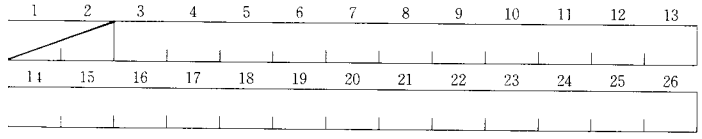
RIT frequency UP/DOWN

Input commands

Set command

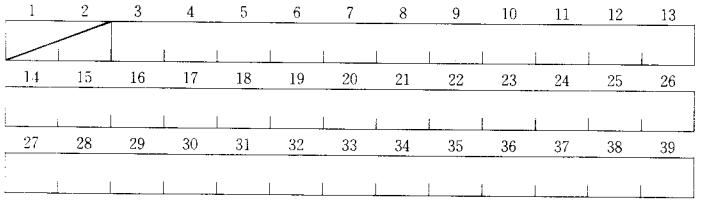


Read command



Output commands

Answer command



Description

RT RIT

Applicable models	TS-940S/811A/811B/811E/711A/711E

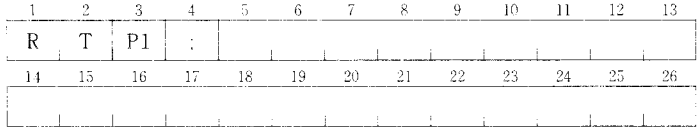
Function

RIT ON/OFF setting

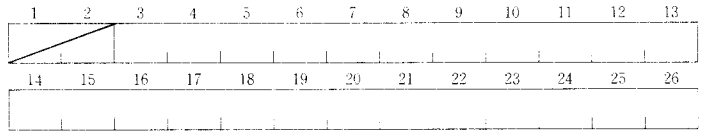
Parameter	Format	Parameter function
P1	1	RIT ON/OFF

Input commands

Set command

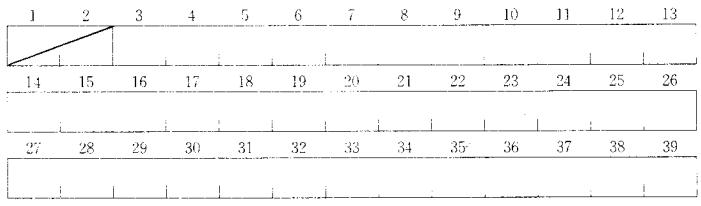


Read command



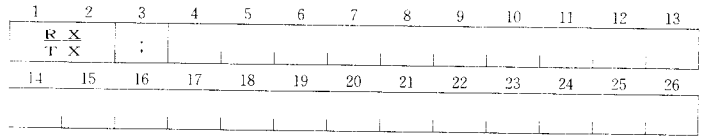
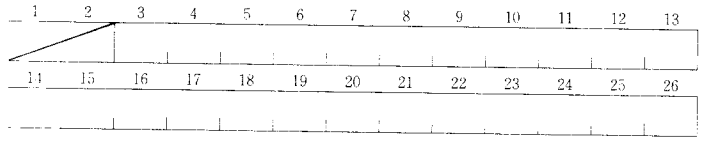
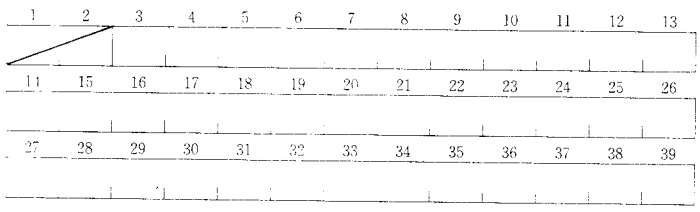
Output commands

Answer command



Description

RX **TX** RX/TX

Applicable models	TS-940S/811A/811B/811E/711A/711E	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-940S/811A/811B/811E/711A/711E

Function

Scan ON/OFF setting

Parameter	Format	Parameter function
P1	1	SCAN ON/OFF

Input commands

Set command

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

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

SH SL SLOPE TUNE HIGH/SLOPE TUNE LOW

Applicable model	TS-940S

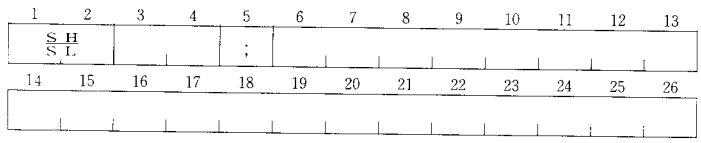
Parameter	Format	Parameter function
P1	12	PASSBAND

Function

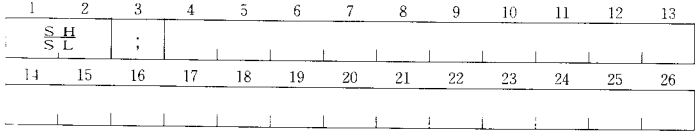
Slope tune band setting and readout.

Input commands

Set command

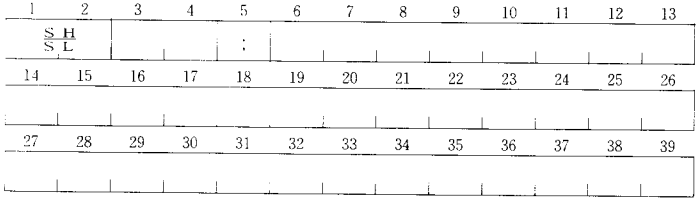


Read command



Output commands

Answer command



Description

The execution fo this command will disable the transceivres associated front panel controls.

SP SPLIT

Applicable models	TS-940S/811A/811B/811E/711A/711E

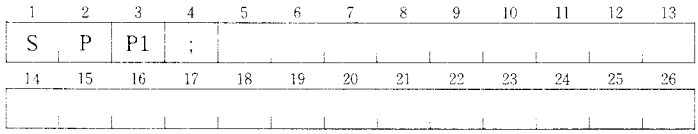
Function

SPLIT ON/OFF setting

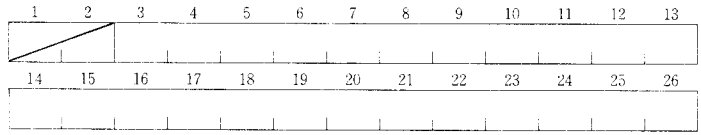
Parameter	Format	Parameter function
P1	1	SPLIT ON/OFF

Input commands

Set command

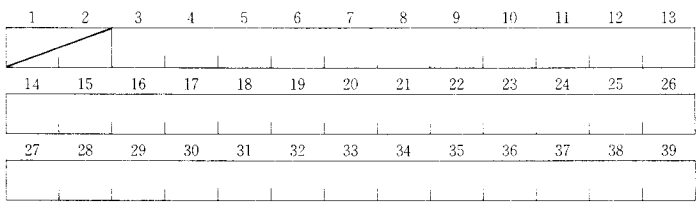


Read command



Output commands

Answer command



Description

ST STEP

Applicable models	TS-811A/811B/811E/711A/711E

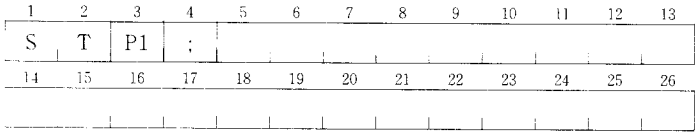
Function

STEP ON/OFF setting

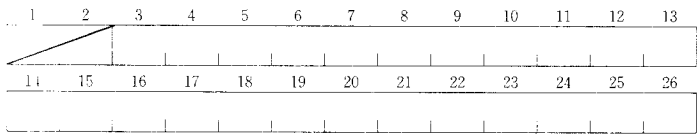
Parameter	Format	Parameter function
P1	1	STEP ON/OFF

Input commands

Set command

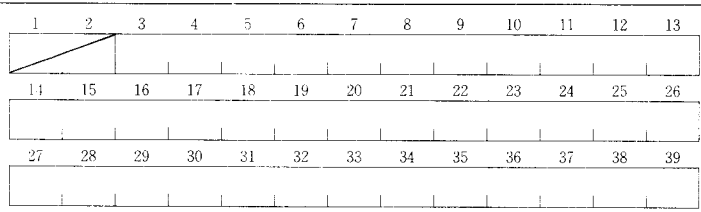


Read command



Output commands

Answer command



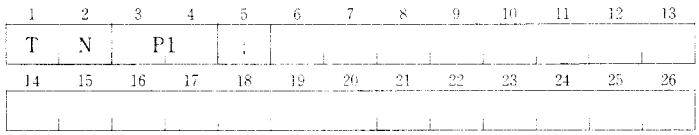
Description

TN TONE NUMBER

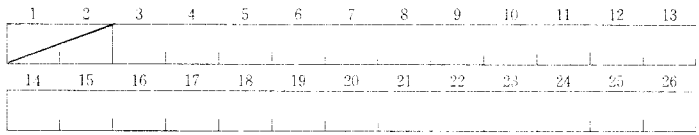
Applicable models	TS-811A/811B/711A	Parameter	Format	Parameter function
Function	Sub-tone frequency setting	P1	14	TONE FREQUNCY

Input commands

Set command

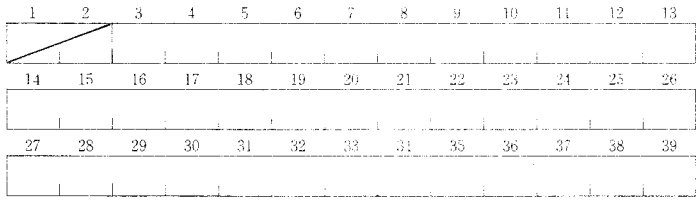


Read command



Output commands

Answer command



Description

TO TONE

✱ This command is not applicable to "KENWOOD" versions of the TS-811E/711E.

Applicable models	TS-811A/811B/811E/711A/711E✱

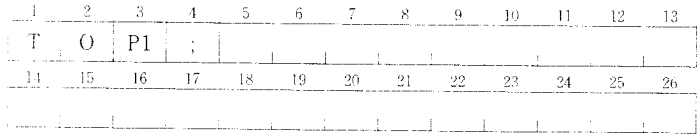
Parameter	Format	Parameter function
P1	14	TONE ON/OFF

Function

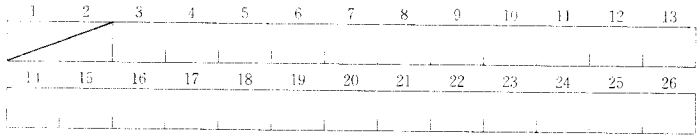
TONE ON/OFF setting

Input commands

Set command

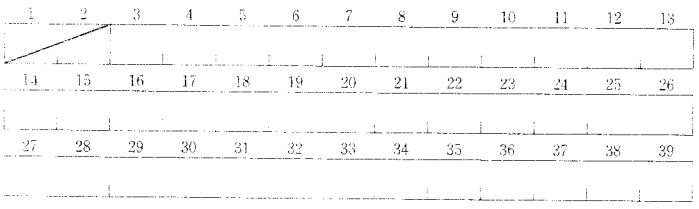


Read command



Output commands

Answer command



Description

Applicable model	TS-940S

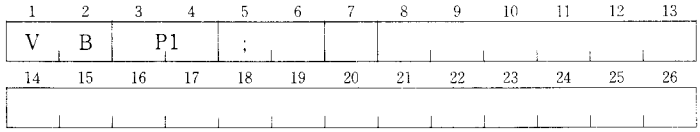
Function

VBT passband setting and display

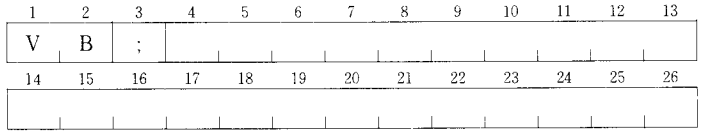
Parameter	Format	Parameter function
P1	12	PASSBAND

Input commands

Set command

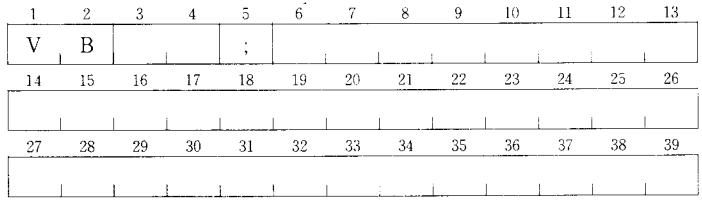


Read command



Output commands

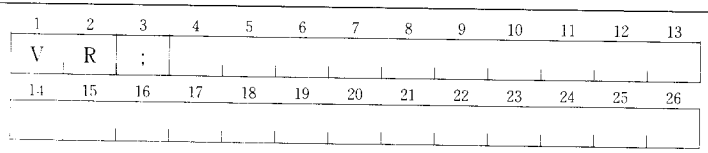
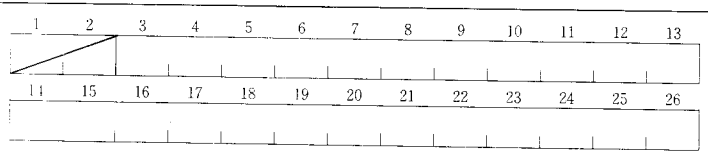
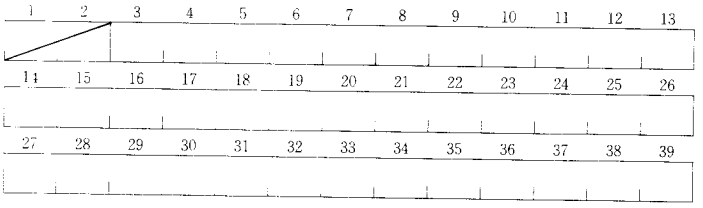
Answer command



Description

The execution of this command disables the transceivers associated front panel controls.

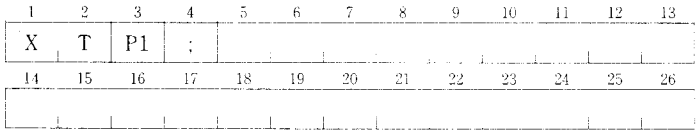
VR VOICE RECALL

Applicable models	TS-940S/811A/811B/811E/711A/711E	Parameter	Format	Parameter function
Function	Generation of synthesized voice.			
Input commands — Set command				
Input commands — Read command				
Output commands — Answer command				
Description				

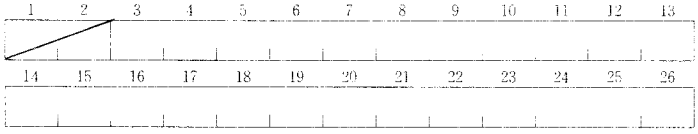
Applicable model	TS-940S	Parameter	Format	Parameter function
Function	XIT ON/OFF setting	P1	1	XIT ON/OFF

Input commands

Set command

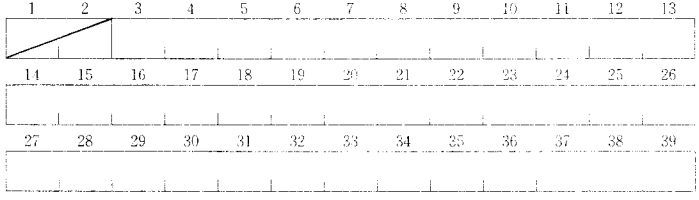


Read command



Output commands

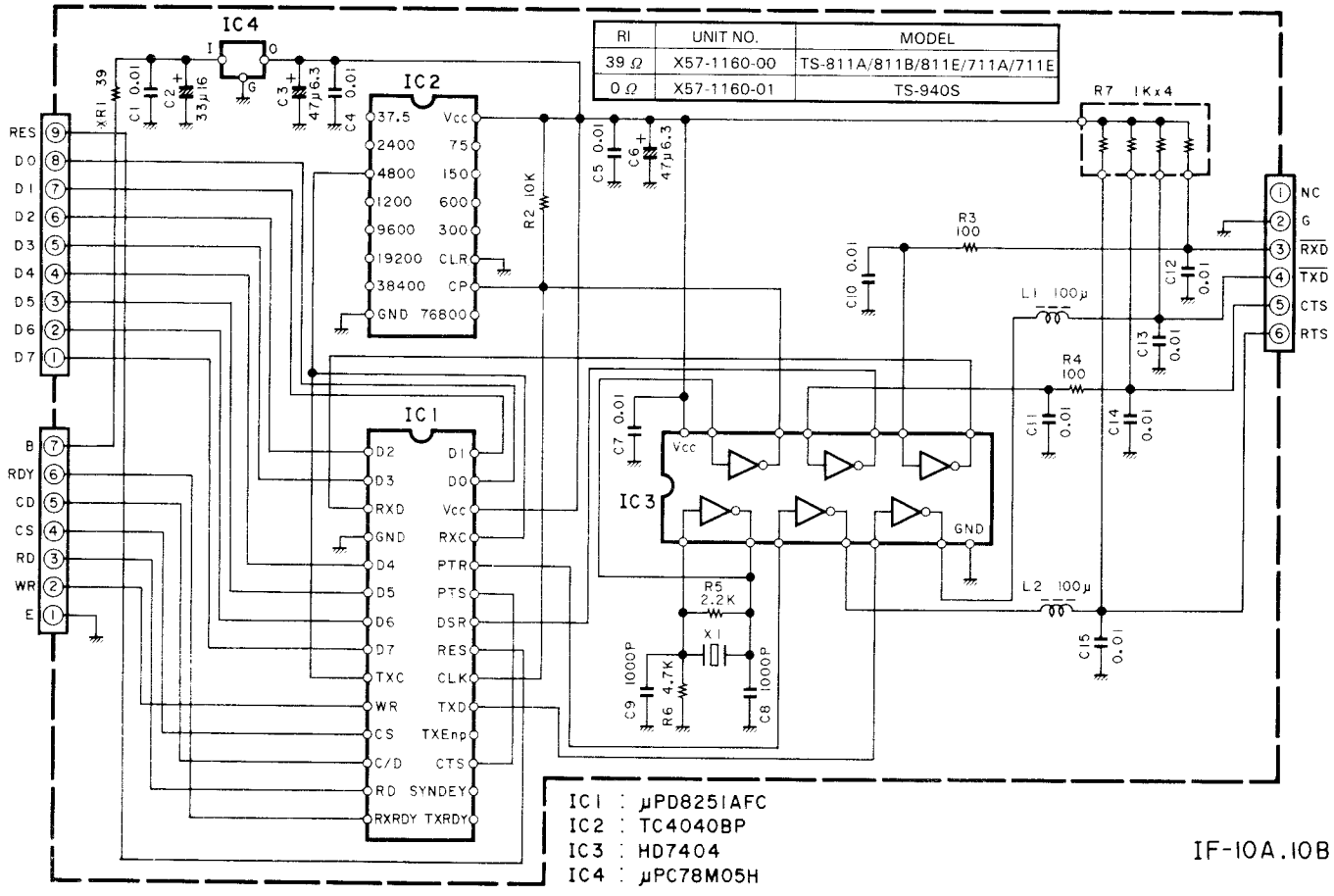
Answer command



Description

6. SCHEMATIC DIAGRAM

(X57-1160-00,01)



RI	UNIT NO.	MODEL
39 Ω	X57-1160-00	TS-811A/811B/811E/711A/711E
0 Ω	X57-1160-01	TS-940S

IC1 : μPD8251AFC
IC2 : TC4040BP
IC3 : HD7404
IC4 : μPC78M05H

IF-10A.10B

KENWOOD