

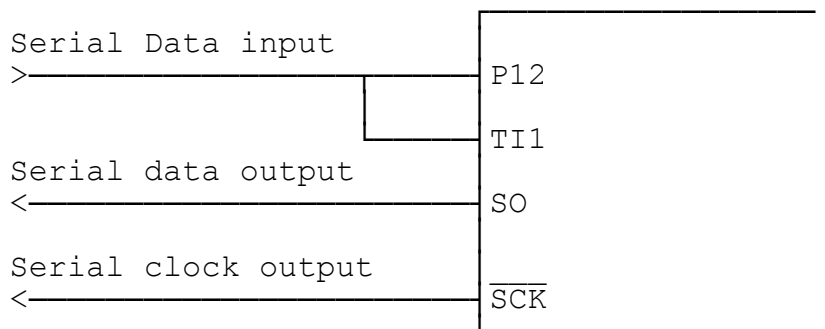
IC-901 CPU SERIAL DATA CONTROL

SERIAL INPUT AND SERIAL OUTPUT

These ports are used for communications between the main CPU (controller) and the sub CPU.

When the operation interrupt START BIT is applied to TI1, the CPU takes serial data from P12 according to its baud rate.

The serial data output is active "Low," signal.

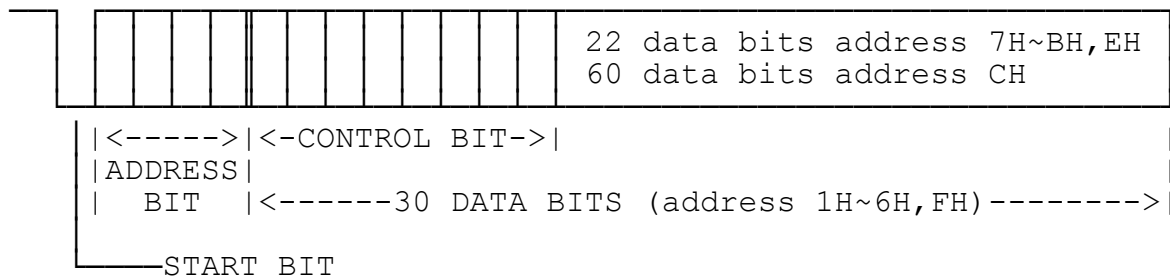


SERIAL DATA FORMAT

Main CPU baud rate = 4800 bps
 Configuration = START BIT (1 bit)
 ADDRESS BIT (4 bits)
 CONTROL BIT (8 bits)
 DATA BIT (22 data bits, address

7H~BH, EH)

(60 data bits, address CH)



ADDRESS BIT

The ADDRESS BIT accesses 16 addresses as shown below.



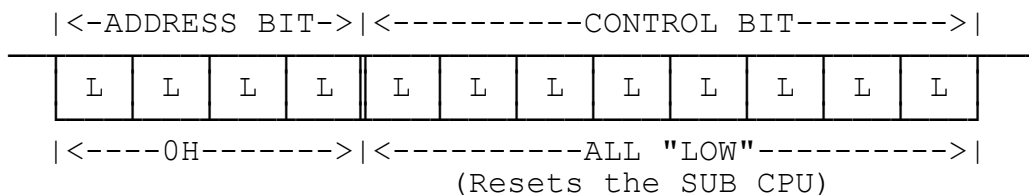
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0H  RESET : SUB CPU RESET
1H  Accesses 28 MHz BAND UNIT (UX- 19)
2H  Accesses 50 MHz BAND UNIT (UX- 59)
3H  Accesses 144 MHz BAND UNIT (UX- 29)
4H  Accesses 220 MHz BAND UNIT (UX- 39)
5H  * * *
6H  Accesses 1200 MHz BAND UNIT (UX-129)
7H  Accesses 144 MHz BAND UNIT (NEW)
8H  Accesses 430 MHz BAND UNIT (NEW)
9H  Accesses 1200 MHz BAND UNIT (NEW)
AH  Accesses 144 MHz SSB BAND
BH  Accesses 430 MHz SSB BAND
CH  Accesses Rx BAND UNIT
DH  Controls SSB
EH  Controls VOL, SQL, T.SQL
FH  DTMF CODE DATA
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CAUTION: The addresses 03H and 07H, 06H and 09H units cannot be used at the same time. If 03H or 06H band units are connected, the 07H or 09H band unit will be accessed.

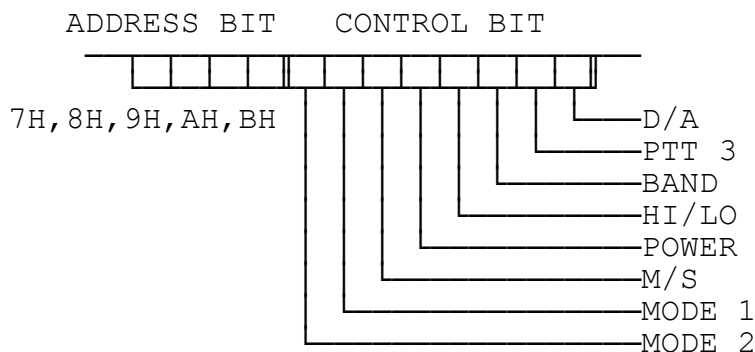
CONTROL BIT

The performance of each bit composing the CONTROL BIT is determined by the accessing address.

1. When the accessing address is 0H (RESET):



2. When the accessing address is 7H, 8H, 9H, AH, BH:



CONTROL BIT CONFIGURATION

MODE 1 & 2 Assigns the mode of each band unit which has been selected by its address.

MODE 1	MODE 2	MODE
L	L	FM
L	H	LSB
H	L	USB
H	H	CW

M/S When the M/S BIT is "HIGH," the BAND UNIT accessed by the ADDRESS BIT operates as the MAIN band transceiver.

When the M/S BIT is "LOW," the BAND UNIT accessed by the ADDRESS BIT operates as the SUB band receiver.

POWER When the POWER BIT is "HIGH," the power to the BAND UNIT accessed by the ADDRESS BIT turns on.

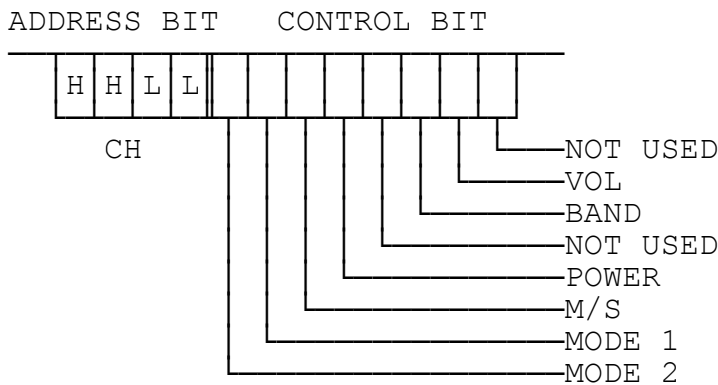
HI/LOW When the HI/LOW BIT is "HIGH," the RF output of the BAND UNIT accessed by the ADDRESS BIT is "LOW."

BAND When the displayed frequency is outside of the amateur band, the BAND BIT is "HIGH."

PTT3 When the PTT3 BIT is "HIGH," the BAND UNIT accessed by the ADDRESS BIT transmits.

D/A When the D/A BIT is "HIGH," the BAND UNIT accessed by the ADDRESS BIT of AH, BH sends the data to the D/A.

3. When the accessing address is CH:



CONTROL BIT CONFIGURATION

MODE 1 & 2 Assigns the mode of the Rx unit which has been selected by its address.

MODE 1	MODE 2	MODE
L	L	FM
L	H	AM
H	L	--
H	H	--

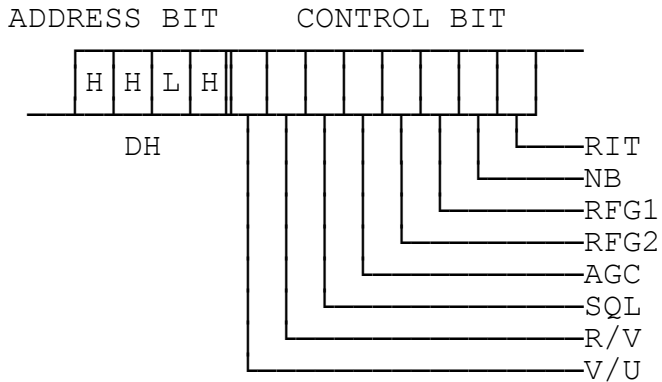
M/S When the M/S BIT is "LOW," the RX UNIT accessed by the ADDRESS BIT operates as the sub band receiver.

POWER When the POWER BIT is "HIGH," the power to the RX UNIT accessed by the ADDRESS BIT turns on.

BAND This bit to be set at "LOW."

VOL When the VOL BIT is "High," the data of the DATA BIT is transferred to the AF level control circuit of the Rx UNIT.

D. When the accessing address is DH:



CONTROL BIT CONFIGURATION

V/U When the V/U BIT is "LOW," the 144 MHz SSB UNIT is selected.

R/V When the R/V BIT is "HIGH," RIT or VOX data is sent.

SQL When the SQL BIT is "HIGH," SSB SQL data is sent.
*R/V and SQL bits cannot be "HIGH," at the same time.

AGC When the AGC BIT is "HIGH," AGC FAST is selected.

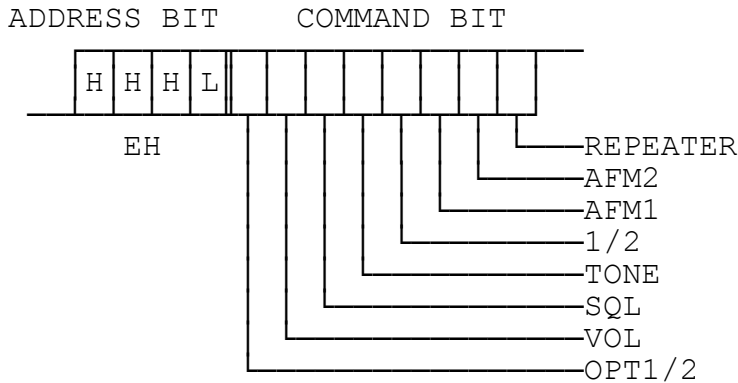
RFG1/RFG2 RF GAIN is selected as follows:

RFG2	RFG1	
L	L	Maximum gain
L	H	Lower than above
H	L	Minimum gain
H	H	

NB When the NB BIT is "HIGH," the noise blanker is turned on.

RIT When the RIT BIT is "HIGH," RIT is turned on.

E. When the accessing address is EH:



CONTROL BIT CONFIGURATION

OPT1/2 The OPT1/2 BIT determines the connection between the BAND UNIT and each optional unit. (UT-40, UT-48).

When the OPT1/2 BIT is "HIGH," the main band unit is connected to OPT1.

When the OPT1/2 BIT is "LOW," the sub band unit is connected to OPT1.

* This bit should be "High", if an optional unit is not connected.

VOL When the VOL BIT is "HIGH," the DATA BIT contains VOL data.

SQL When the SQL BIT is "HIGH," the DATA BIT contains SQL data.

TONE When the TONE BIT is "HIGH," the DATA BIT contains TONE (T.SQL) data.

1/2 When the 1/2 BIT is "HIGH," TONE DATA is sent to OPT 1.

When the 1/2 BIT is "LOW," tone data is sent to OPT 2.

AMF1 When the AMF1 BIT is "HIGH," the main unit AF MUTE is turned off.

AMF2 When the AMF2 BIT is "HIGH," the sub unit AF MUTE
 is turned off.

REPEATER When the REPEATER BIT is "HIGH," the repeater mode
 is selected.

F. There is no control bit if address of 1H~6H is chosen.

POWER When the POWER BIT is "HIGH," the selected band unit is turned on.

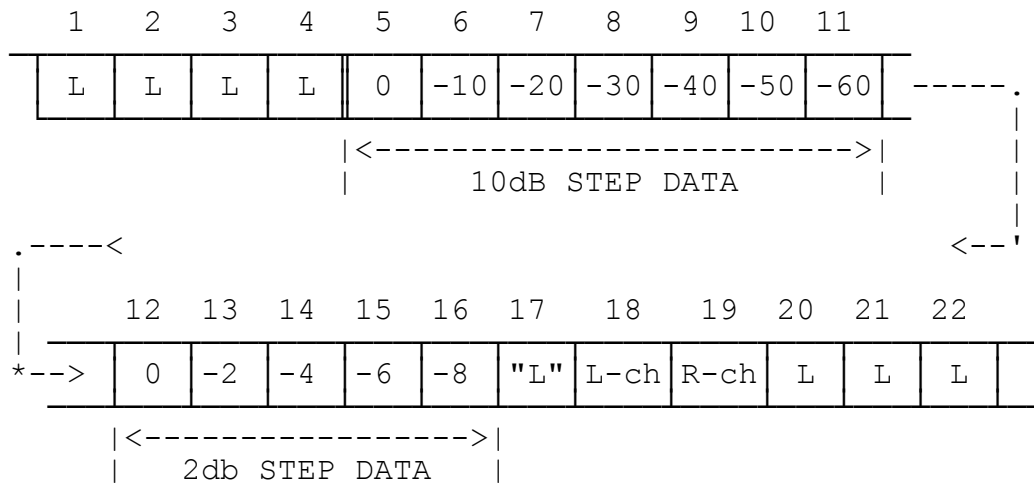
HI/LOW When the HI/LOW BIT is "HIGH," the selected band unit is set to low power output.

BAND The displayed frequency is out of the amateur band when the BAND BIT is "HIGH."

PTT3 When the PTT3 BIT is "HIGH," the selected band unit is switched to the transmit mode. (If the MAIN BIT is "LOW," this bit will not be "HIGH.")

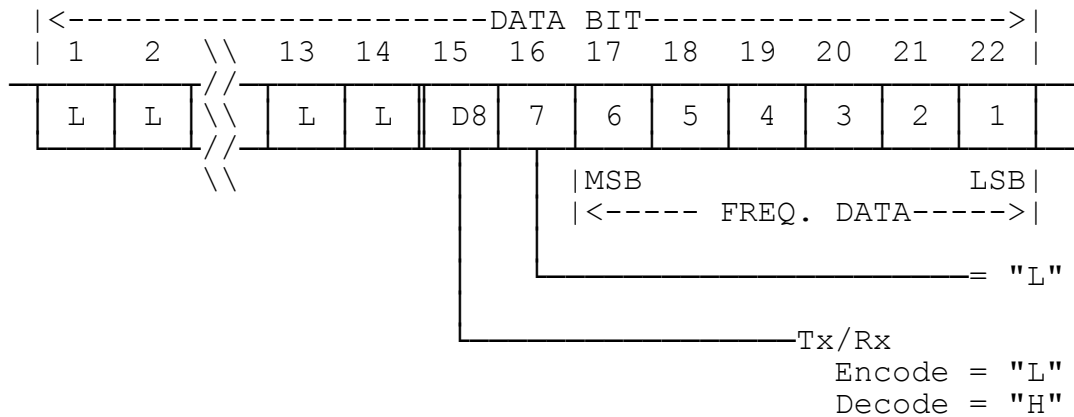
- C. N Data (20 bits)
PLL N data is transferred.
3. When the address is 7H - CH (22 data bits, 60 data bits if address is CH) PLL N data is transferred.
 4. When the address is DH. RIT/VXO, SQL, VOL, data for address of AH, BH to be sent.
 5. When the address is EH. VR, SQL, T.SQL, data is transferred.

A. When the VOL BIT of the CONTROL BIT is "HIGH."
-only the lower 18 bits are valid data.

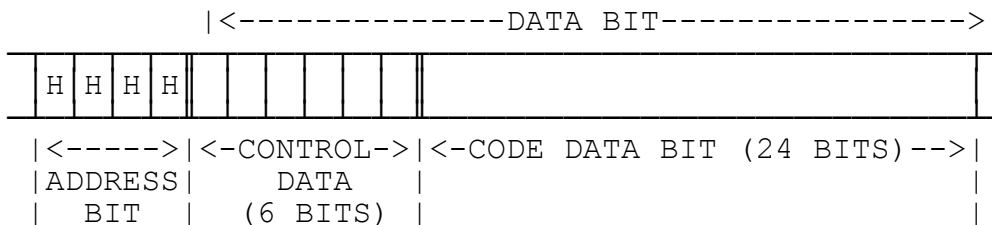


L-ch When the L-ch BIT is "HIGH," the data is for the main unit.

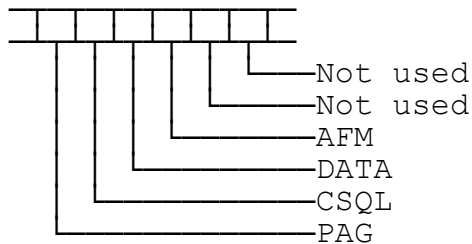
The data to be sent to optional TONE SQL unit.



6. When the address bit is FH.



1. Control data



PAG When the PAG BIT is "HIGH," the pager function is turned on.

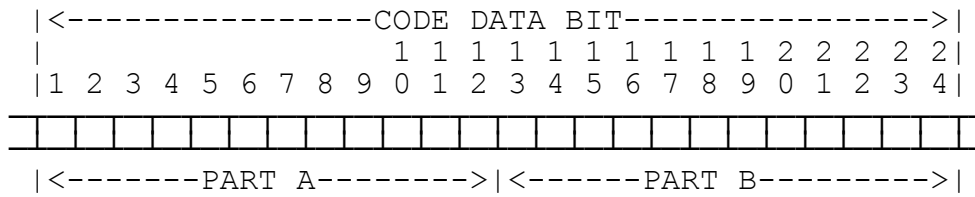
CSQL When the CSQL BIT is "HIGH," the code squelch function is turned on.

DATA When the DATA BIT is "HIGH," the pager or code squelch data is sent.

AFM When the AFM BIT is "HIGH," the main AF mute function is turned on by either pager or coded squelch.

2. Code data bits

Data: "H"



PART A - Code data for calling (group or individual calling code).

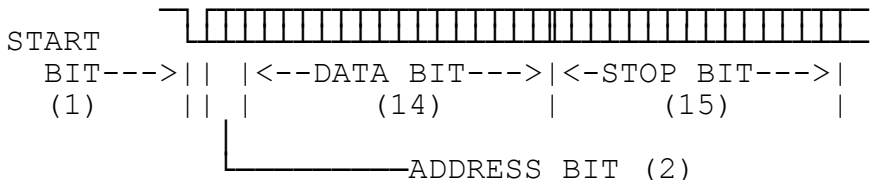
- PART B - 1. PAG: "H" = Code data of own station
- 2. CSQL: "H" = They should be "L"

* - PART A and B data number value to be converted into HEX code. Then the most significant digit will be sent first.

MAIN CPU INPUT (SUB CPU OUTPUT)

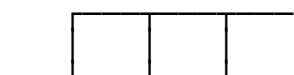
Main CPU output = 4800 bps
Configuration = START BIT (1 bit)
 ADDRESS BIT (2 bits)
 COMMAND BIT (8 bits)
 DATA BIT (14 bits)
 STOP BIT (15 bits)
Total bits = 32 bits

FORMAT



The above data structure shows one frame of data.

- 1. Address bit
 MSB LSB

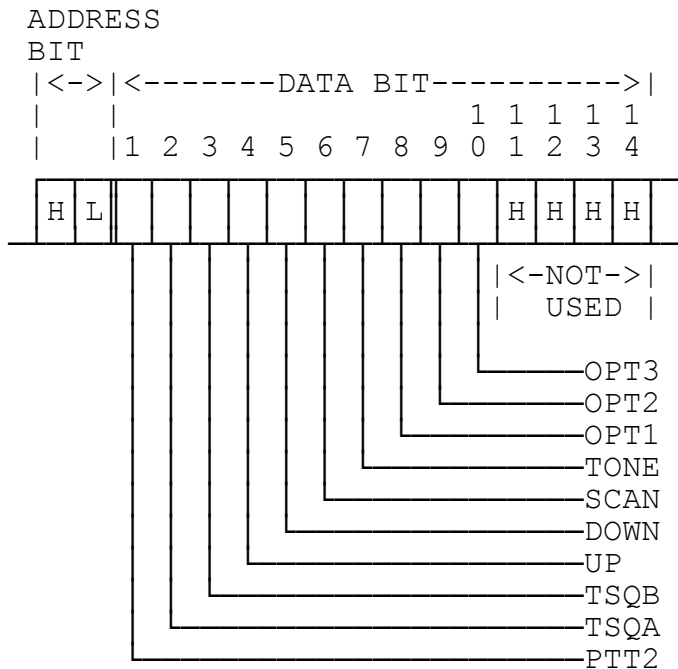


- 0 0 = Band unit confirmation data
- 0 1 = S/RF meter reading data
- 1 0 = Control data
- 1 1 = RX DTMF code data

SRFA Metering data for MAIN band (4 bits).

SRFB Metering data for SUB band (4 bits).

C. When the address bit is 2H.



PTT2 "HIGH," if PTT switch is on.

TSQA "HIGH," if MAIN band T.SQL is open.

TSQB "HIGH," if SUB band T.SQL is open.

UP "HIGH," if MIC UP switch is pressed.

- It will hold if the switch is pressed more than 500 mS.

- It will go "LOW" if the switch is pressed again.

DOWN "HIGH," if MIC DN switch is pressed.

- It will hold if the switch is pressed more than 500 mS.

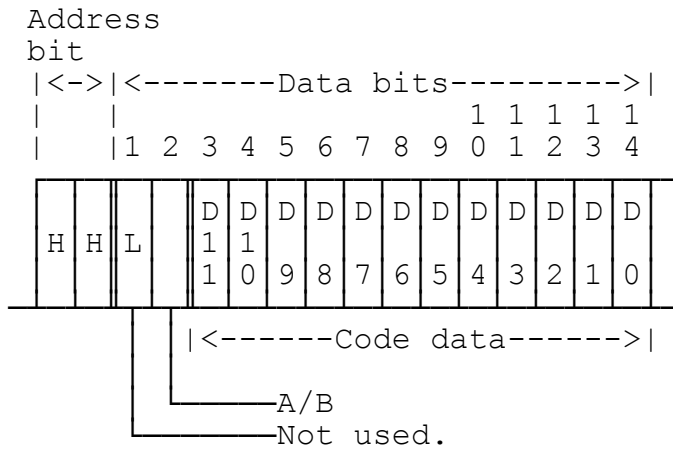
- It will go "LOW" if the switch is pressed again.

SCAN "HIGH," if MIC UP/DN switch is held more than 500mS.

- It will go "LOW" if the switch is pressed again.

- TONE "HIGH," if CTCSS TONE unit is connected to option 1 connector.
- OPT1 "HIGH," if tone squelch unit is connected to option 1 connector.
- OPT2 "HIGH," if tone squelch unit is connected to option 2 connector.
- OPT3 "HIGH," if DTMF unit is connected to option 3 connector.

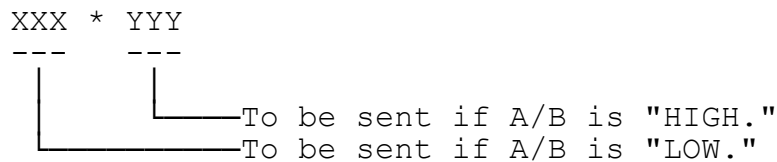
D. When the address bit is 3H.



A 3 digit code from the DTMF decoder will be converted to HEX data, the most significant digit will then be sent first.

- A/B "LOW," if receiving code is to be sent. "HIGH," if the code of the called station is to be sent.

1. Pager function is on.
Received code



- If the receiver decodes code data, received data is to be sent.
- If the receiver failed to decode received code

data, the A/B bit and all data bits are "HIGH."

2. When the code squelch is on, received code data is to be sent if A/B is "LOW."

End