

PROGRAMMING PROTOCOL for the KENWOOD TMD-700 transceiver byr Gabriel RIVAT - F6DQM

The parameters of the serial port are generally : 9600 bauds, 8 bits, no parity, 1 stop bit. The speed between the transceiver and the computer may be changed in the transceiver by means of the function 1.9.5 (see user's manual). The cable between transceiver and computer is full and soldered pin to pin (pin1 to pin1; pin2 to pin2; pin3 to pin3; pin9 to pin9).

The two connectors are female 9-pin DB9.

The dialog is established under hardware handshaking.

Programming protocol :

The answer of the TMD700 when receiving a command from the computer is variable.

N : means that the TMD700 has recognised the command but cannot answer it because a parameter is incorrect (for example trying to read a memory which is empty)

? : means that the TMD700 has not recognised the command

received command + data : means that the command has been recognised by the TMD700 and the TMD700 has added the data associated to the command (for example the contents of a memory).

Description of the various fields of the commands (Commands are described later) :

NOTE that a command (for example MW) is separated from the data fields by a space and all successive data fields are separated by commas.

Two successive commas means that the in-between field is empty. A comma at the end of a command means that the last field is empty..

- The field **MEM** (memory number) contains either a number between 001 and 200 (3 characters) or L0 to L9 or U0 to U9.

- The field **NAME** contains the name of the memory number MEM

- The field **NUMVFO** (VFO number) is a number between 1 and 9.

- The field **BAND** equals 0 if band A and equals 1 if band B.

- The field **MODE** equals 0 if VFO mode and equals 2 if memory mode.

- The field **FREQ** (frequency) is coded in Hertz with 11 characters (the far left character is tens of GHz).

- The field **SPLIT** (different receiving and transmitting frequencies) equals 0 if OFF, equals 1 ON.

- The field **STEP** (synthesizer step) values are :

0=5 Khz	1=6.25 Khz	2=10 Khz	3=12.5 Khz	4=15 Khz
5=20 KHz	6=25 Khz	7=30 KHz	8=50 Khz	9=100 Khz

- The field **REVERSE** equals 0 if OFF, equals 1 if ON

- The field **SHIFT** values are :

0=simplex 1=shift + 2=shift - 3=shift -7.1 Mhz

- The field **F_SHIFT** (frequency shift in Hz) is coded on 9 characters (the far left character is the hundreds of Mhz).

- The field **TONE** equals 0 if OFF, equals 1 if ON

- The field **NUMTONE** values are

01 =67.0Hz	11 = 94.8Hz	21 =131.8Hz	31 =186.2Hz
02 =none	12 =97.4Hz	22 =136.5Hz	32 =192.8Hz
03 =71.9Hz	13 =100.0Hz	23 =141.3Hz	33 =203.5Hz
04 =74.4Hz	14 =103.5Hz	24 =146.2Hz	34 =210.7Hz
05 =77.0Hz	15 =107.2Hz	25 =151.4Hz	35 =218.1Hz
06 =79.7Hz	16 =110.9Hz	26 =156.7Hz	36 =225.7Hz
07 =82.5Hz	17 =114.8Hz	27 =162.2Hz	37 =233.6Hz
08 =85.4Hz	18 =118.8Hz	28 =167.9Hz	38 =241.8Hz
09 =88.5Hz	19 =123.0Hz	29 =173.8Hz	39 =250.3Hz
10 =91.5Hz	20 =127.3Hz	30 =179.9Hz	

- The field **CTCSS** equals 0 if OFF, equals 1 if ON
- The field **NUMCTCSS** is coded the same way as the field **NUMTONE** (see above).
- The field **DCS** equals 0 if OFF, equals 1 if ON
- The field **NUMDCS** is coded as xxx0 (4 characters) where xxx is a number between 001 and 104. This number refers to the line number in the list of the DCS codes provided by the Kenwood utility program. Note that it is a list number, NOT the code itself. !!!
- The field **LOCK** equals 0 if OFF, equals 1 if ON
- The field **AM** equals 0 if OFF, 1 equals 1 if ON
- The field **LIMBAND** is coded in Mhz on 5 characters (the far right character is MHz).

Description of the main COMMANDS

Note that the utilisation of some commands was not fully understood by the author and the relevant comments may be corrected. !

The answer of the TMD700 to a command is written in red following the symbol =>.

Note : It must be understood the meaning of “active band” in the following text : The active band is the band which will be effectively used on transmit. It may be A or B depending on the settings of the bands (see BC).

Some commands refer to the “active band”. So, when using this commands, you must be aware of which band is actually “active”.

Reading commands :

TC 1 : looks to be an initialisation command sent when starting the dialog between TRX and computer.

=> **TS 1**

AI : to know if the TMD700 will send its new state when the user moves or switches the manual settings.

=> **AI 0 :** The TMD700 does not send its new state

=> **AI 1 :** The TMD700 sends its new state when the user moves or switches the manual settings.

ID : to identify the transceiver

=> **ID TM-D700**

FL : to read the 9 bands limits

=> **FL LIMBAND,,,,,,,,,,,,,LIMBAND**

18 fields LIMBAND are returned : the first field is the lower limit of band 1, the second field is the upper limit of band 1, the third field is the lower limit of band 2, the forth limit is the upper limit of band 2 , and so on until the eighteenth field which is the upper limit of band 9.

TYD : ??? misunderstood command

=> **TYD 1,3,04,,1 ???**

CR BAND, 0 : to read the CALL channel of active band. If channel is split, the returned frequency is the receiving frequency.

=> **CR BAND, 0,FREQ,STEP,SHIFT,REVERSE,TONE,CTCSS,DCS,NUMTONE,NUMDCS, NUMCTCSS,AM**

CR BAND,1 : to read the transmitting frequency of the CALL channel of active band if split is ON.

=> **CR BAND,1,FREQ,STEP**

MR BAND : to read the active memory number associated to band number BAND

=> **MR BAND,SPLIT,MEM**

MR 0,0,MEM : to read the contents of memory number MEM. If the memory is split, the returned frequency is the receiving frequency.

=> **MR 0,0,MEM,FREQ,STEP,SHIFT,REVERSE,TONE,CTCSS,DCS,NUMTONE,NUMDCS,NUMCTCSS,F_SHIFT,AM,LOCK**
=> **N** if memory is empty

MR 0,1,MEM : to read the transmitting frequency of memory number MEM if split is ON.
=> **MR 0,1,MEM,FREQ,STEP**
=> **N** si la mémoire n'est pas splittée

MNA 0,MEM : to read the name of memory number MEM
=> **MNA 0,MEM,NAME**
=> **N** if memory name is empty

VR NUMVFO : to read the contents of VFO number NUMVFO
=> **VR NUMVFO,FREQ,STEP,SHIFT,REVERSE,TONE,CTCSS,DCS,NUMTONE,NUMDCS,NUMCTCSS,F_SHIFT,AM**

BC : to read which band is commanded and which band is active for transmit.
=> **BC 0,0** : band A is commanded and active for transmit
=> **BC 1,1** : band B is commanded and active for transmit
The 2 next states are possible but to be used carefully.!!
=> **BC 0,1** : band A is commanded and band B active for transmit
=> **BC 1,0** : band A is active for transmit and band B is commanded

VMC BAND : to read the actual mode on band number BAND
=> **VMC BAND,0** : the band number BAND is in VFO mode
=> **VMC BAND,2** : the band number BAND is in Memory mode

RBN : to read the VFO number of the active band.
Note that the active band must be in VFO mode (see BC and VMC)
=> **RBN NUMVFO** : sends the VFO number (1 to 9) of the active band

PV NUMVFO : to read the low and high limits of the VFO number NUMVFO.
=> **PV NUMVFO,LIMBAND,LIMBAND**

PC BAND : to read the power setting of band number BAND
=> **PC BAND,x** : **x=0** high power, **x=1** medium power, **x=2** low power

DM nn : to read the contents of DTMF memory number nn (between 00 and 99)
=> **DM nn,DTMF code** : the TMD700 sends a DTMF code on 0 to 16 characters (possible characters are 0 to 9,A to F (E=* et F=#))

Writing commands :

The format of the writing commands is the same as the format of reading commands. So, most of the time, the description refers to the relevant reading command.

When a writing command has been accepted, the TMD700 usually resends the same frame as the computer command. In that case, the answer is just a confirmation of the writing command.

BC BAND,BAND : to select the controlled band (first field) and the active band (second field). See BC

VMC BAND ,[0,2] : to select the mode of the active band : 0 if VFO, 2 if Memory. See VMC

RBN NUMVFO : to select the VFO number (1 to 9) of the active band. See RBN.

PV NUMVFO,LIMBAND,LIMBAND : to set the lower and upper limit of VFO number NUMVFO. See PV.

PC BAND,x : to select the output power of band number BAND. See PC.

**VW NUMVFO,FREQ,STEP,SHIFT,REVERSE,TONE,CTCSS,DCS,NUMTONE,
NUMDCS,NUMCTCSS,F_SHIFT,AM** : to set the contents of VFO number NUMVFO. See VR.
=> **VW**

**MW 0,0,MEM,FREQ,STEP,SHIFT,REVERSE,TONE,CTCSS,DCS,
NUMTONE,NUMDCS,NUMCTCSS,F_SHIFT,AM,LOCK** :
To set the contents of memory number MEM. See MR.
=> **MW**

MW 0,0,MEM : to clear memory number MEM.
=> **MW**

MW 0,1,MEM,FREQ,STEP : to set the transmitting frequency of a split memory.
=> **MW**

MNA 0,MEM,NAME : to give a name to memory number MEM
MNA 0,MEM, : to clear the name of memory number MEM.

MC BAND,MEM : to select memory number MEM on band number BAND. The relevant BAND must be in Memory mode. See VMC BAND,2.

DM nn,DTMF code : To define a DTMF code (0 to 16 characters) in the DTMF memory number nn (00 to 99). Characters must be 0 to 9,A to F (E=* et F=#)

DM nn, : to clear the DTMF memory number nn (00 to 99).

**CW BAND,0,FREQ,STEP,SHIFT,REVERSE,TONE,CTCSS,DCS,NUMTONE,NUMDCS,
NUMCTCSS,AM** : to set the CALL channel of band number BAND.

CW BAND,1,FREQ,STEP : to set the transmitting frequency of the CALL channel of band number BAND, if channel is split.

RX : to switch the TMD-700 in receiving state.

TX : to switch the TMD700 in transmitting state.

DW : to decrement the active memory number (if memory mode) or the frequency (if VFO mode).

UP : to increment the active memory number (if memory mode) or the frequency (if VFO mode).

NOTE :

It exists many other commands that the author could not try because the definition of these commands is unknown. If you know them, you will be grateful if you updates the document and retransmits it to the author. Many thanks in advance.

All information that are described in this document are to be used as is. The author will not be responsible for any damage that could occur to materials in case on incorrect, abnormal or unexpected usage of these information.

Good luck

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