Settings VarAC FM   Rig: TM-D710 Interface: YAESU SCU-17

There is a set up description for Flrig CAT control available.

DH7LK V3.1 03.08.2025 new: obsolete VFO mode removed, minor changes

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Content

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1. General Remarks:

There is still a limitation: If you change the frequency with the VFO knob, VarAC CAT cannot recognize it as the ReadFreqVfoA_Cmd doesn't work for unknown reasons.
So keep *Read frequency every xx* **OFF** as long as we have no other solution and change frequencies only via VarAC menu - or use Flrig.

In **Settings Rig** select one of the two TM-D710 files, see 5.):

TM-D710_MA if you want **VarAC on Band A** and **voice**/ptt/Memory **on Band B** or
TM-D710_MB if you want **VarAC on Band B** and **voice**/ptt/Memory **on Band A.**

(We program the Memory because programming the VFO doesn't allow QSY between bands (limitation of TM-D710).

The SCU-17 maximal output level is too low for 9600 Bd DATA mode/**VARA FM WIDE,** that's the only limitation caused by SCU-17. So we use **FM NARROW.**

SCU-17 we need both COM ports, check via Windows device manager the port number of the **standard port (RTS controls PTT) for VARA FM modem** and port number of the **enhanced port (for CAT commands) for VarAC.**

TM-D710 Menu numbers in **(...)** for TM-D710**E**, in **[...]** for TM-D710**G**

(MCP-2A)or [MCP-6A] can be used via the SCU-17 USB COM-Port! Clearing the TM-D710 com port by switching the transceiver off/on may be necessary before running MCP-xx.

In Windows Device-Manager **DISable the power saving** options for the USB comports, involved USB Hubs and sound devices used here!

2. Settings in VarAC V11.2.0 or higher (basic installation for FM see manual)

 Settings, Rig Control and VarAC configurations

```
PTT configuration       X CAT Kenwood TM-D710_Mx
Frequency control       X CAT Kenwood TM-D710_Mx
CAT Configuration       enhanced Port SCU-17, Baud 9600, see * in part 4
Read freq. every        O OFF
Load last freq.         X ON
Skip slot selector      X ON
Slot size (hz)          12500 (CQ/Beacon) same as in
                        TM-D710 Menu ([101]) TX/RX STEP
VARA modem type         VaraFM (VARA)
Submode                 VARA FM 1200 (Logging)
```
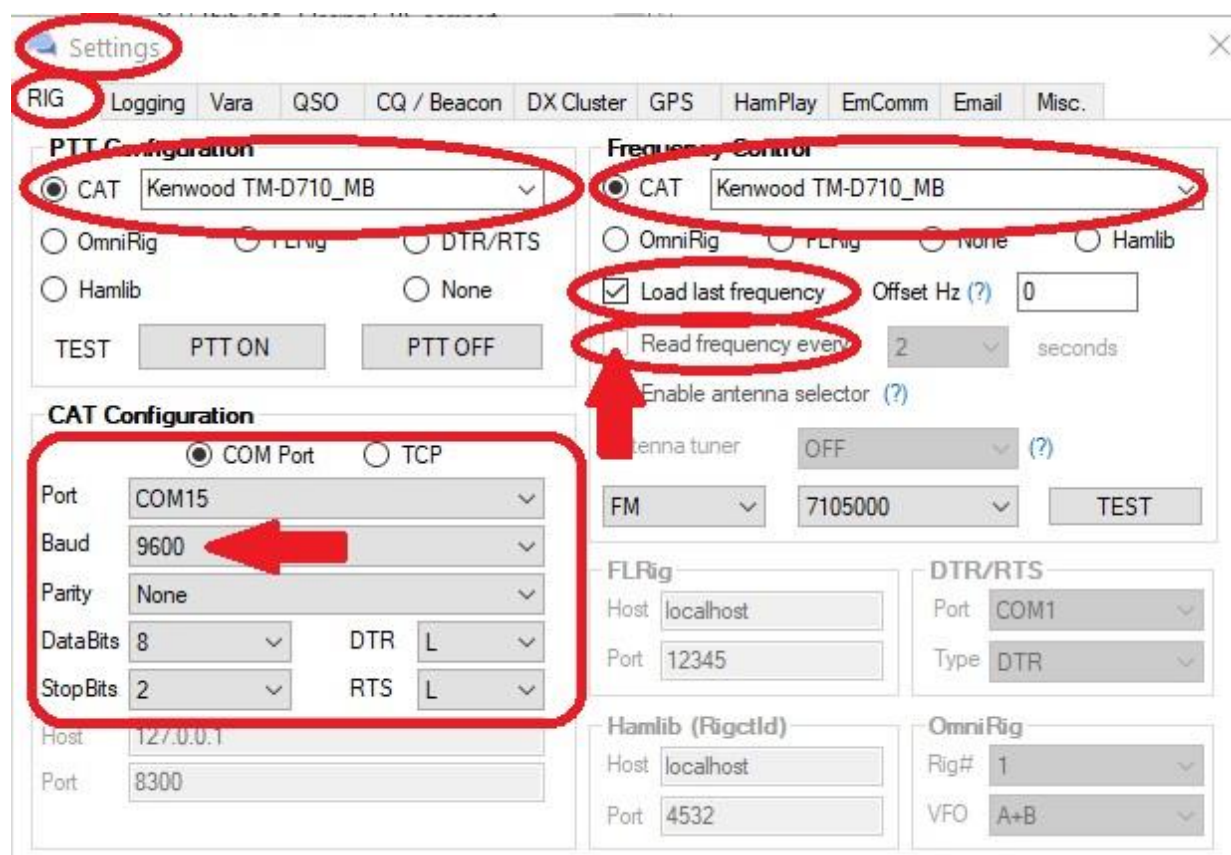
Settings

RIG | Logging | Vara | **QSO** | CQ / Beacon | DX Cluster | GPS | HamPlay | EmComm | Email | Misc.

QSO Configuration

Call ID interval (min)	10 ⌄	(?)
Auto disconnect	5 ⌄	(?)
Show distance in	KM ⌄	
Callsigns block list		(?)
☑ Auto away in	3 ⌄ minutes	(?)
Callsigns dropdown	RECENT ⌄	(?)

(?) ☑ Allow last heard peeking
(?) ☑ Multi-band last heard peeking
(?) ☐ Allow non-ham callsigns
(?) ☑ Allow incoming pings
(?) ☑ Allow info request
(?) ☑ Auto QSY   (F) ☑ Band skip
(?) ☑ Load broadcasts history
(?) ☑ Load datastream history
(?) ☑ Auto accept verbose SNR
(?) ☑ Load chat history upon connection
(?) ☑ Suppress 'is typing' under low SNR
(?) ☐ Consider entire frequency list as CF
(?) ☑ Disable leave Vmail popup alert

File Transfer

Incoming file size limit (bytes)	4000000 (?)
Incoming files directory	D:\Software Docs\VARA
Outgoing files directory	D:\Software Docs\VARA
Open images with	VarAC Viewer ⌄

VMail
(?) ☑ Relay notification
(?) ☑ Allow parking

Path finder
(?) ☑ Allow path finder
(?) ☐ Show my path finders only

SAVE AND EXIT

Settings

RIG | Logging | Vara | QSO | **CQ / Beacon** | DX Cluster | GPS | HamPlay | EmComm | Email | Misc.

Beacons / CQs

Beacon type	ADVANCED ⌄	(?)
Beacon interval (minutes)	30 ⌄	(?)
Digipeat via		(?)
CQ Slot wait time (seconds)	60 ⌄	(?)
Slot size (hz)	12500	(?)

(?) ☐ Skip slot selector
(?) ☐ Load last heard history
(?) ☑ Time diff view
(?) ☑ Show last known locator
(?) ☐ Start beacon upon startup
(?) ☐ Stop beacon upon band skip
(?) ☑ Show CQ popup alert

VarAC configuration file VarAC_frequencies.conf (**example** only, check for your local requirements)
Edit frequency drop down menu and add frequencies.
Changing 2m <-> 70cm: use Memory Mode via **Kenwood TM-D710_MA or Kennwood TM-D710_MB**

```
#insert:
144.725.000|Sked
144.812.500|SLOT 5
144.825.000|SLOT 4
144.837.500|SLOT 3
144.850.000|SLOT 2
144.862.500|SLOT 1
144.875.000|CALLING 2m
144.887.500|SLOT 11
144.900.000|SLOT 12
144.912.500|SLOT 13
144.925.000|SLOT 14
144.937.500|SLOT 15

430.150.000|Sked
430.137.500|SLOT 5
430.150.000|SLOT 4
430.162.500|SLOT 3
430.175.000|SLOT 2
430.187.500|SLOT 1
430.200.000|CALLING 70cm
430.212.500|SLOT 11
430.225.000|SLOT 12
430.237.500|SLOT 13
430.250.000|SLOT 14
430.262.500|SLOT 15
```

VarAC configuration file VarAC_auto_qsy_allowed_frequencies.conf
(example only, check for local requirements)
Keep attention that slot frequencies are inside this range.
Frequency change only inside active band. No CAT command for TM-D710, band change only via PFx key.

```
#insert:
144.700.000-144.950.000
145.400.000-145.450.000
430.100.000-430.325.000
434.800.000-435.000.000
434.000.000-434.200.000
439.600.000-439.800.000
```

VarAC.ini
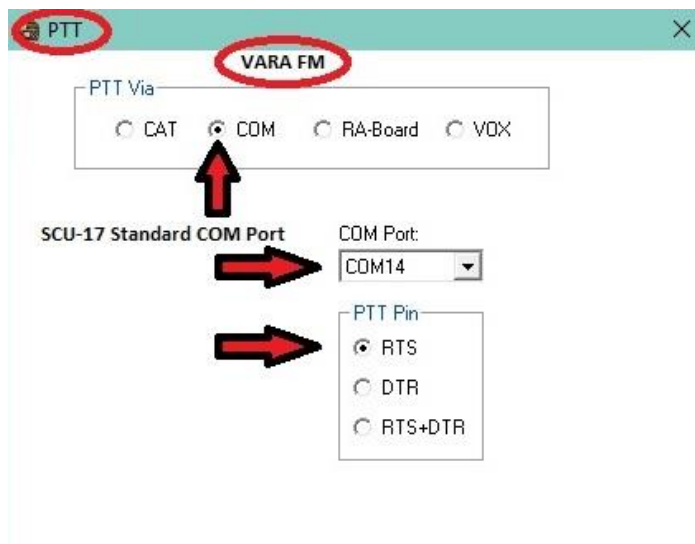Edit in Section **[RIG_CONTROL]**
SafetyPTTOffEveryMinute=OFF

In TM-D710 Menu TX/RX TOT 3 min is sufficient protection

3. Settings in VARA FM Modem V4.3.8 or higher:

Setting PTT
```
PTT Via              COM Port from STANDARD SCU-17
PTT Pin              RTS (X) ON
```

Setting VARA Setup
```
FM-System            NARROW
KISS Interface       (X) ON
Retries              10 (better QSY behavior on weak conditions)
```

Setting Soundcard
```
Device Input         Microphone USB Audio CODEC (SCU-17)
Device Output        Speaker   USB Audio Codec (SCU-17)
```

...check Sound Card AUTOTUNE with qso partner

4. Settings in (TM-D710E) or [TM-D710GE] (F)(MainTune)

As there is no CAT Command to assign the Data Band you MUST assign
the DATA BAND in the TM-D710 Menu:

AUX
EXT. DATA BAND (517) [918] A-Band or B-Band
                            (**same** Band like in Settings CAT)
EXT. DATA SPEED(518) [919]   1200 bps (for VARA FM Narrow)
PC PORT BDRATE (519) [920]   9600 Bd same as in CAT VarAC Baud *****

TX/RX (in VFO-Mode)
TX/RX STEP   (101) [101] **12.5 kHz** adapt to your local needs, same as
                             VarAC slot size, set for each band. Access to
                             menu item in VFO mode only (2x: 2m and 70cm)!

If you use Internal TNC in parallel to VarAC set Band accordingly:
APRS Int. TNC (601) [601] DATA BAND: A or B

*   keep the Baudrate as low as possible, recommended **9600 Bd.** A too
        high Baudrate could cause PTT activation in the opposite band.
        Seems to be a timing issue between RTS for PTT in VARA-FM modem and
        CAT Command execution of TX ON via VarAC CAT.

5. VarAC_cat_commands.ini

Use [Kenwood TM-D710_MA] or [Kenwood TM-D710_MB] DH7LK V2.1a/b or later.
and select DATA BAND in TM-D710 accordingly, see 4.)
M001 is predefined as your preferred voice channel, M008 as data Channel.
VFO is set to the calling frequency, please modify to your needs.

Overview of CAT commands:
TM-V71_TM-D710-Kenwood/commands at master · LA3QMA/TM-V71_TM-D710-Kenwood ·
GitHub

This step is not needed anymore since VarAC V11.xx
As long as the two settings **[Kenwood TM-D710_MA]** and **[Kenwood TM-D710_MB]**
are not included in the official distribution

Rig control - CAT command file & CAT Customization guide | VarAC

Please substitute the section [Kenwood TM-D710] by
[Kenwood TM-D710_MA] [Kenwood TM-D710_MB] via copy/paste in the file
VarAC_cat_commands.ini if not found in the official distribution by Irad.

```
[Kenwood TM-D710_MA]
# by DH7LK  V3.0a A BAND VarAC, B Band Voice
# remark on ReadFreqVfoA_Cmd: still doesn't work for unknown reasons, keep "Read frequency every
xx" OFF
# TM-D710 Menu numbers in (...)TM-D710E, in [...] TM-D710G
# Settings in TM-D710:
# Menu (517) [918] EXT. DATA BAND   -> A-BAND
# Menu (518) [919] EXT. DATA SPEED  -> 1200 bps (Vara FM Narrow)
# Menu (519) [920] PC PORT BAUDRATE -> same as in VarAC CAT
# If you use Internal TNC set Band accordingly: APRS Int. TNC ([601]) DATA BAND: A or B (there
is no CAT command)
#
# VarAC Settings Rig.. QSO: enable Auto QSY and Band Skip
# Edit/change M008 to any memory you like for VarAC and MEM 001 to any memory for your standard
voice channel
CmdType=TEXT
PTTOn=TX[ENT]
PTTOff=RX[ENT]
SetFreq_Data_method=TEXT
# use M 008 like a VFO to enable qsy between bands, change next line ME nnn to any nnn channel
number you like to use
SetFreqVfoA_Cmd=[ALLOW_COMMA]ME 008,{},4,0,0,0,0,0,08,08,000,00600000,0,0000000000,0,1[ENT]
SetFreqVfoA_param_length=10
SetFreqVfoA_hz_res=1
ReadFreqVfoA_Result_Data_method=TEXT
#ReadFreqVfoA_Cmd=[ALLOW_COMMA]FO 1[ENT]
#ReadFreqVfoA_Cmd=[ALLOW_COMMA]ME 008[ENT]
#ReadFreqVfoA_Result_hz_res=1
#ReadFreqVfoA_Result_Length=65
#ReadFreqVfoA_Result_Freq_Start_Pos=8
#ReadFreqVfoA_Result_Freq_Length=10
# Set opening frequency on MEM 008 A-Band, CTRL B-Band,prefered voice channel MR 001 on B-Band,
change the channel number nnn to any nnn channel number you like to use
# your VarAC calling QRG   MN nnn          MEM nnn  .......... in Hz
VarACStartCmd=[ALLOW_COMMA]MN 008, VarAC[ENT]ME
008,0144875000,4,0,0,0,0,0,08,08,000,00600000,0,0000000000,0,1[ENT]BC 1,1[ENT]VM 0,1[ENT]VM
1,1[ENT]MR 0,008[ENT]MR 1,001[ENT]
# Back to non VarAC  QRG MEM nnn  .......... in Hz
VarACExitCmd= [ALLOW_COMMA]ME
008,0144875000,4,0,0,0,0,0,08,08,000,00600000,0,0000000000,0,1[ENT]BC 1,1[ENT]VM 0,1[ENT]VM
1,1[ENT]MR 1,001[ENT]MR 0,008[ENT]


[Kenwood TM-D710_MB]
# by DH7LK  V3.0b A BAND Voice, B Band VarAC
# remark on ReadFreqVfoA_Cmd: still doesn't work for unknown reasons, keep "Read frequency every
xx" OFF
# TM-D710 Menu numbers in (...)TM-D710E, in [...] TM-D710G
# Settings in TM-D710:
# Menu (517) [918] EXT. DATA BAND   -> B-BAND
# Menu (518) [919] EXT. DATA SPEED  -> 1200 bps (Vara FM Narrow)
# Menu (519) [920] PC PORT BAUDRATE -> same as in VarAC CAT
# Edit/change M008 to any memory you like for VarAC and MEM 001 to any memory for your standard
voice channel
CmdType=TEXT
PTTOn=TX[ENT]
PTTOff=RX[ENT]
SetFreq_Data_method=TEXT
# use M 008 like a VFO to enable qsy between bands, change next line ME nnn to any nnn channel
number you like to use
SetFreqVfoA_Cmd=[ALLOW_COMMA]ME 008,{},4,0,0,0,0,0,08,08,000,00600000,0,0000000000,0,1[ENT]
SetFreqVfoA_param_length=10
SetFreqVfoA_hz_res=1
ReadFreqVfoA_Result_Data_method=TEXT
#ReadFreqVfoA_Cmd=[ALLOW_COMMA]FO 1[ENT]
#ReadFreqVfoA_Cmd=[ALLOW_COMMA]ME 008[ENT]
#ReadFreqVfoA_Result_hz_res=1
#ReadFreqVfoA_Result_Length=65
#ReadFreqVfoA_Result_Freq_Start_Pos=8
#ReadFreqVfoA_Result_Freq_Length=10
# Set opening frequency on MEM 008 B-Band, CTRL A-Band,prefered voice channel MR 001 on A-Band
# your VarAC calling QRG   MN nnn          MEM nnn  .......... in Hz
VarACStartCmd=[ALLOW_COMMA]MN 008, VarAC[ENT]ME
008,0144875000,4,0,0,0,0,0,08,08,000,00600000,0,0000000000,0,1[ENT]BC 0,0[ENT]VM 1,1[ENT]VM
0,1[ENT]MR 0,001[ENT]MR 1,008[ENT]
# Back to non VarAC  QRG MEM nnn  .......... in Hz
VarACExitCmd= [ALLOW_COMMA]ME
008,0144875000,4,0,0,0,0,0,08,08,000,00600000,0,0000000000,0,1[ENT]BC 0,0[ENT]VM 1,1[ENT]VM
0,1[ENT]MR 0,001[ENT]MR 1,008[ENT]
```

6. Troubleshooting

No CAT communication: Check enhanced comport assignment, Baudrate, Windows power saving OFF, USB port SCU power saving off.

PC-Port of TM-D710 needs **RTS** and **CTS** handling, you need a fully wired PG5-H compatible cable. Check with MCP-2A / MCP-6A program and 7.1

Switch TM-D710 OFF and ON to reset the PC-Port if hanging.

If you test communication with a terminal program pay attention that the CAT command delimiter is ENTER (not ";" like on other transceivers).

7. Annex

7.1 PG-5H Programming Cable

You find the wiring in the Kenwood TM-D710A Instruction Manual page 37.

```
PC/SCU-17    TM-D710 PC (main unit)
DB9 (f)      Mini DIN 8pol (m)

1 n/c
2 RXD             3 TXD
3 TXD             5 RXD
4 n/c
5 GND             4 GND
6 n/c
7 RTS             2 CTS
8 CTS             1 RTS
9 n/c
```


7.2 Audio/PTT cable SCU-17 TM-D710 DATA (main unit)
The cable is not ONE-TO-ONE! Mark the SCU-17 and TM-D710 connectors.

```
Mini DIN 6-pol   Mini DIN 6-pol
TM-D710 DATA     SCU-17 DATA

1 TX Data        1 TX-DATA
2 GND            2 GND
3 PTT            3 PTT
4 RX9600         5 RX DATA
5 RX1200         n/c
6 SQL            6 SQL IN (or n/c)
                 4 n/c (FSK-OUT)
```