

YAESU FTDX3000D

RS232 WIRED CABLE WITH HANDSHAKE

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Everything started to understand and know exactly how to use the RTS and CTS controls between RADIO (FTDX3000D but also other models or brands) and COMPUTER DB9. A lot of contradictory or unclear info about it, not very descriptive, not combined together (RTX<>PC) and not well explained. The explanations found on the manuals of our radios were missing.

---cut---

On Sat, May 16, 2020 at 04:48 PM, wrote:

RADIO FTDX3k DB9 M		PC DB9 M	
RADIO FTdx3k PIN2 txd	to	PC rxd PIN2	read below
RADIO FTdx3k PIN3 rxd	to	PC txd PIN3	read below
RADIO FTdx3k PIN5 gnd	to	PC gnd PIN5	
RADIO FTdx3k PIN7 rts	to	PC cts ???	** read below the correction
RADIO FTdx3k PIN8 cts	to	PC rts ???	** read below the correction

---cut---

NOTE:

disclaimer: no liability or consequence to what is described, this is result of personal tests only.

NOTE: I apologize for the translation since it "helped google".

HI ALL,

To avoid any errors, simple references to the manuals, for those who want to make the cables at home, here is my result that works, with a description of the various effects and defects.

You're right, normally in fact you're right, if the RTS communicates its status it must "tell" it to the CTS and vice versa.

This is what I have verified and I cannot justify it:
in a standard RS232 it must be like this while on the YAESU FTdx3000d it doesn't seem to be exactly like this and as described on the RTS & CTS PIN in the manual.

Already having two DB9, radio side and PC side, which are two male DB9, suggests something strange and not really standard, as used in most external peripherals such as modems, routers etc ... which have always a DB9 Female to connect PC DB9 male with standard CABLE 1:1 M<>F.

I have made now several tests and contrary to what has been said I have the right and inverted cable for CTS and DTR.

PC SIDE DB9 MALE STANDARD RS232			
DB-9 Male			
Pin	Signal Direction	Signal Name	Signal Function
1	→	CD	Carrier Detected
2	←	RxD	Receive Data
3	→	TxD	Transmit Data
4	→	DTR	Data Terminal Ready
5	—	GND	Ground
6	←	DSR	Data Set Ready
7	←	RTS	Request To Send
8	→	CTS	Clear To Send
9	→	RI	Ring Indicator

→ Transmitted from DTE Device
 ← Receive by DTE Device

FTDX3000D MANUAL

SIDE DB9 MALE RS232

(as viewed from rear panel)

RTTY/PKT

SERIAL OUT = TxD / TRASMINT DATA
SERIAL IN = RxD / RECEIVE DATA

RS232 STANDARD CONNECTION

FOR MALE TO MALE REFERENCE

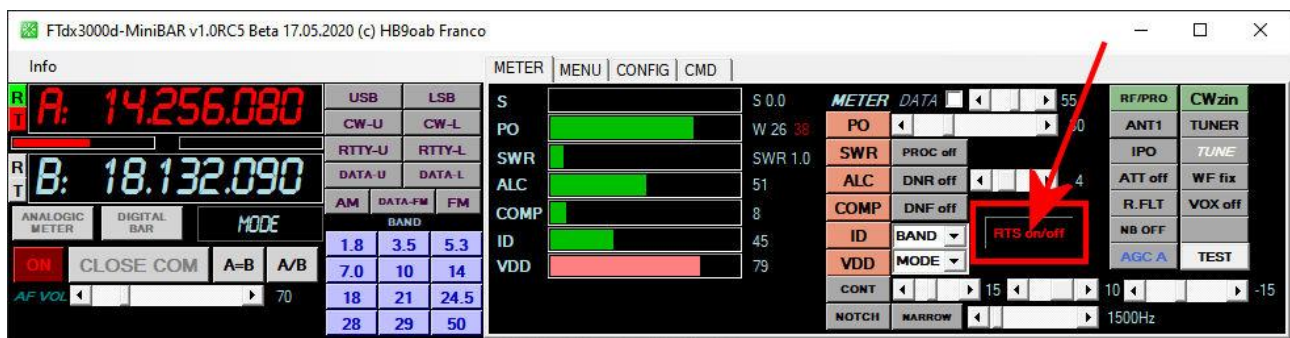
(THIS IS STANDARD BUT NO YAESU!!!!)

As you can see very well, the standard is not respected!!!

To better verify, in addition to measuring the outputs of the levels, I used my own application (FTdx3000d MiniBar) that I configured specifically with the signals:

- >> RTS PC APP cmd: HIGH / LOW
- >> RTS FT3000d cmd: MENU 040 RTS enable/disable

so I played on the signals to better understand what happens and how they are.



With this APP home made I can quickly activate and deactivate the status of the RTS both on the RADIO and in the SOFT, keeping the signal HIGH or LOW (true or false), RTS & CTS necessary if it is activated on the radio to start or stop data transfer. Also the MiniBar shows me simultaneously all the 6 useful signals in real time such as: S - PO - SWR - ALC - COMP ID - VDD.

I did some tests. Here is the evidence:

1. RTX CABLE PIN 2-3-5-7-8 <to> PC PIN 2-3-5-7-8

- 2. MENU40 RTS ENABLE - APP RTS TRUE => ALL CAT OK and full Handshake
 - 3. MENU40 RTS ENABLE - APP RTS FALSE => STOP no longer works with incorrect handshake/wait
 - 4. MENU40 RTS DISABLE - APP RTS TRUE => OK but without RTS and false handshake
 - 5. MENU40 RTS DISABLE - APP RTS FALSE => OK as above without handshake
- ➔ 1+2 RTS works correctly and connected right to its CTS and vice versa (**)

6. RTX CABLE PIN 2-3-5-7-8 <> to PC PIN 2-3-5-8-7 (inverted RTS CTS)

- as also described in some manuals and here: RTS to CTS and CTS to RTS
 - 7. If MENU40 RTS enable > APP RTS TRUE no DATA
 - 8. If MENU40 RTS enable > APP RTS FALSE no DATA
 - 9. If MENU40 RTS disable > APP RTS TRUE OK DATA but without handshake
 - 10. If MENU40 RTS disable > APP RTS FALSE OK DATA but without handshake
- ➔ 6 to 10 RTS works INCORRECTLY and NOT right connected to its CTS and vice versa (**)

As you can see very well, there are some cables made but positive "false" since the RTS CTS are not correctly used or even forgotten.

Then I deduce that also the RTS CTS signals in the manual are defined as OUTPUT/INPUT as INPUT/OUTPUT or "to RTS" and "to CTS" but on the contrary described?

However now with PIN 1: 1 as above, I can "play" with the MENU40 ENABLE RTS which does its job of INHIBIT and RECEIVE signal levels without blocking otherwise unavoidable data traffic, indicating that they

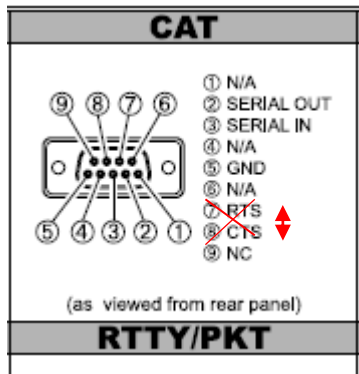
would appear on the manual described "on the contrary" as for TXD and RXD which however are described as correct and which also need direct connection here.

The description on the YAESU FTdx3000d manual, however, thus described for me is wrong.

(**) The correct result:

RADIO	FTDX3k	DB9	M		PC	DB9	M
RADIO	FTdx3k	PIN2	txd	to	PC	rx	PIN2
RADIO	FTdx3k	PIN3	rx	to	PC	tx	PIN3
RADIO	FTdx3k	PIN5	gnd	to	PC	gnd	PIN5
RADIO	FTdx3k	PIN7	rts	(is CTS?)	to	PC	rts
RADIO	FTdx3k	PIN8	cts	(is RTX?)	to	PC	cts

THEN IF RTS go to CTS and CTS go to RTS in FTdx3000d MANUAL:

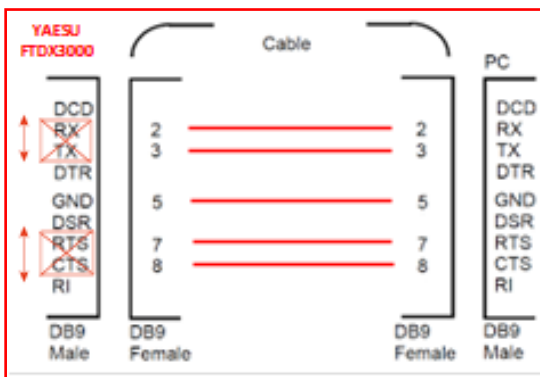


7 CTS or RTS INPUT ???
8 RTS or CTS OUTPUT ???

And TEST 1. & 2. above are correct!

NB: and it may be necessary to connect them together PIN7-8, on the PC SIDE if the software needs these signals, creating a FALSE-POSITIVE.

I deduce that therefore also the RTS CTS signals in the manual are defined as OUTPUT and INPUT but contrary described!



Now with PIN 1:1 as image, I can "play" with the MENU-40 ENABLE RTS which does its job of INHIBIT and READ signal levels without blocking otherwise unavoidable software with data traffic handshake, indicating that they would appear on the manual described "on the contrary" as for TXD and RXD which however are described as correct and which also need direct connection here. The description on the YAESU FTdx3000d manual, however, thus described for me is wrong... ;-(
As I was able to check on several specific commercial cables also for these transceivers. Too bad that the description is not complete, as well as for other things. I hope I did what I liked.

Details on my personal "ftdx3k server":

<http://yaesu.no-ip.org/ftdx3000d>

Ps: If you find any errors in this text, thank you for letting me know about any corrections.

73 [Franco](mailto:hb9oab@amsat.org)
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