A Rough Guide to Configuring a Yaesu FT-991 for Ham Radio Deluxe and Digital Master 780

By ZS1JEN (Andre le Roux)

Version 3_21112015

Table of Contents

Version History	2
Acknowledgment	2
Configuration Prerequisites and Assumptions	2
Common configuration Windows XP and 7	2
Yaesu Com Port Driver	2
Yaesu FT-991 Menu Settings	2
Configuration on Windows XP.	
Digital Master an FT-991 Audio Configuration	6
Configuration on Windows 7	7
Digital Master an FT-991 Audio Configuration	
Configuring for Digital Master for CW	

Version History

Version 1_04102015 Original Version 2_21112015 Included a section for Windows 7 and other minor updates Version 3_21112015 Corrected typos and layout, added section for CW under Windows 7

Acknowledgment

Thank you to Prof. Dr. Robert K. Frhr. von Weizsäcker (DL1BOB) for drawing my attention to the fact that the configuration Version 1_04102015 did not work for him. When I tested the original configuration settings on Windows 7 I was able to confirm and identify the problem and have subsequently added a section for that platform.

Configuration Prerequisites and Assumptions

This guide assumes that the radio CPU has been reset and that the Yaesu Virtual COM Port Drivers have not been installed on your computer. It covers both configurations for Windows XP and Windows 7. To reset the FT-991 CPU ensure the radio is switched off, then press and hold in the Fast and Lock buttons while powering the radio on by pressing the on/off button. You will require a USB A/B cable to conenct the FT-991 to your computer. Check that your USB ports are V2 or later.

Common configuration Windows XP and 7

Yaesu Com Port Driver

• Ensure the FT-991 is **NOT** connected to your computer via a USB A/B cable.

• If your FT-991 is connected via USB or Serial cable, power the F-991 off and unplug the USB and/or Serial cables

- Install the <u>Yaesu Virtual COM Port Driver</u> on your computer.
- Ensure the FT-991 is powered off.
- Connect the USB A/B cable to the FT-991 and your computer.

Yaesu FT-991 Menu Settings

- Power on the FT-991
- Press Menu Setup
- Use the Multi selector and select;
- 031 Cat Rate change the value to 38400bps
- 033 CAT RTS ensure value is set to RTS
- 062 Data Mode ensure value is set to PSK
- 070 Data In Select ensure value is set to Rear
- For Windows XP set 071 Data PTT Select ensure value is set to RTS
- For Windows 7 set 071 Data PTT Select ensure value is set to DTR
- 072 Data Port Select ensure value is set to USB

Configuration on Windows XP

HRD 6.2.10.377

Yaesu Main 02:05

• On your computer, open control panel, system, hardware, Device Manager. Under Ports (Com & LPT) you should see your port configuration similar to the following;

B Device Manager	
File Action View Help	
 HACKEON Computer Display adapters DVD/CD-ROM drives DVD/CD-ROM drives IDE ATA/ATAPI controllers IDE ATA/ATAPI controllers Keyboards Mice and other pointing devices Monitors Network adapters Ports (COM & LPT) Silicon Labs Dual CP210x USB to UART Bridge: Enhanced COM Port (COM15) Silicon Labs Dual CP210x USB to UART Bridge: Standard COM Port (COM16) Processors Sound, video and game controllers System devices System devices Universal Serial Bus controllers 	

• Make a note of the com ports used by your radio USB interface. You will need that information later.

• Open HRD and set the radio parameters as follows (Note the COM port for Enhanced and Standard COM ports may differ.)

Connect: ZS1JEN in Republic of South Africa	×
Select a Preset or New definition and press 'Connect'	
New Preset Serial Ports Help	_
Company: Yaesu 💌 Status	
Radio: FT-991	
COM Port: COM15 ▼ Speed: 38400 ▼ CI-V Add: 0- Flow control / Interface power CTS ■ DTR ▼ RTS	
 Connect Always connect to this radio when starting HRD Rig Control. Auto Exit Auto Exit HRD Digital Master HRD Logbook HRD Rotator HRD Satellite Track 	

Configure Digital Master 780 as follows;
Set the PTT

Program Options	
Appearance Callsign (My Info)	
Clock Logbook Modes + IDs	COM Port Ham Radio Deluxe Radio Dperations Center Image: Serial (COM) port via Ham Radio Deluxe · DM780 Let ROC key the radio via interface. Port: COM15 Configure HRD connection None
Radio QSO Soundcard	On TX: Set DTR (data-terminal-ready) Set RTS (request-to-send)
Sounds Storage SuperSweeper Waterfall	COM Port To use a COM port for PTT: • Select <i>via Serial (COM) port</i> • Select the COM port; this must not be in use by another program, • Select DTR, RTS or DTR and RTS.
Alarms Favorites Macros Modes Navigator	When you switch to TX <i>DTR</i> and/or <i>RTS</i> are set (raised), when you return to RX they are cleared. Note: this port cannot be used by another program such as HRD - it must be available for exclusive use by DM780.
Audio Recorder PSK Reporter Soundcard Calibration Time Synchronisation	Ham Radio Deluxe To use HRD the radio pane must be connected to HRD: In the View menu select Radio In the Radio pane press Configure and read the instructions! The Radio must be able to support the TX command in it's CAT control.
Getting Started	Note: If you use Ham Radio Deluxe for PTT and you connect the audio via a rear connector (not the microphone connector) make sure your radio will accept audio via the rear connector when using PTT via a software command, some radios such as the 78 -2000 will not!

Under Modes +Ids set PTT for CW

rogram Options		
Appearance	CW RTTY Reed-Solomon (RSID) Video ID	
Callsign (My Info)		
Clock	Help Code Lable	Use PTT See also: PTT
Logbook	There are four CW variants:	•
Modes + IDs	. One dead OW where the walls is brought is a social or	CW does not support all characters on
PTT	 Standard CW where the radio is keyed via a serial or parallel port. 	your keyboard (see table). If an unsupported character, is entered:
Radio	Modulated CW (MCW) where the tones are generated	
Q50	by the soundcard,	Веер
Soundcard	Flex-Radio radios (read the PTT information	Send: space 💙
Sounds	below),	
Storage	Using the K1EL Winkeyer.	1st extension: 0 ms
SuperSweeper	With standard CW the radio is keyed by a serial port (DTR	
Waterfall	and/or RTS) or a parallel port (Data pins 2 to 8 or Select pin	Compensation: 0 ms
	application such as Ham Radio Deluxe, it must be reserved for	Weighting: 50 % 🛟
Alarms	exclusive use by DM780. Also with standard CW the soundcard	
Favorites	stays in receive mode, no tones are generated. To generate	Enable serial (COM) part kouing
Macros	CW tones use MCW.	Enable senai (COM) port Reying
Modes	For sample keying circuits see	Serial port: COM15 💌
Navigator	http://www.n3fip.com/rigcw.htm .	Toggle pins: DTR VRTS
	To ensure accurate timing the background thread used for	
Audio Recorder	serial and parallel port keyer runs at a time critical priority -	Enable parallel port keying
PSK Reporter	just one step below real-time.	
Soundcard Calibration	РТТ	Port: 🗸 0378 🗸
Time Synchronisation	If checked the radio is switched between TX and RX using the	Pin: 02 03 04 05
· .	selection in the PTT page, if not checked then use VOX /	
	broakini -	017(01-1)
	When using the KY Command with Kenwood and Flex-	I7 [Select]
	Radio you must use VOX / breakin as there is no way	
Getting Started	or knowing when an characters have been sent so that	Test Parallel Port

Finally set sound card as follows

Program Options		
Appearance	Soundcard	
Callsign (My Info)		
Clock	Input (Receive)	Headset Monitor
Logbook	Device: USB Audio CODEC 🗸 🗸	Enable (will be grayed if not available)
Modes + IDs	Sauraa	Microphone:
PTT		
Radio		Line in/Mic in 🛛 👻
Q50	Output (Transmit) Use input device	Fambone:
Soundcard	Device: USB Audio CODEC 🗸 🗸	
Sounds		Realtek HD Audio rear output 🛛 👻
Storage	Source: Wave	Monitor Voice (echo to headset)
SuperSweeper		
Waterfall		soundcard is your radio!
Alarmo		· · · · · · · · · · · · · · · · · · ·
Eavorites		Input (Receive)
Macros		for receiving signals, the line in is
Modes		connected to the audio output from
Navigator		your radio.
		Source: Select the input source -
Audio Recorder		usually Line in. This fader is shown
PSK Reporter		to adjust the input level. Not all
Soundcard Calibration	Show sample rate in main status bar	soundcards have input sources - for
Time Synchronisation		not have any user-selectable input
	Show Supported Formats	sources.
		Output (Transmit)
		Device: Select the soundcard used
Cotting Started	For recording and playback of wave files see: Audio Recorder	for transmitting signals, the speaker 💉
Getting Started		

Close Digital Master 780 Program Options.

Digital Master an FT-991 Audio Configuration

• Adjust input to your computer using menu 073 Data Out level to a suitable value for decoding the received signal. This adjustment affects the volume of the input audio into the computer.

• Select the sound card tab in Digital Master 780 and adjust the output to a suitable level.



• Before you TX set your FT-991's mode to DATA-USB and reduce the RF power out put to so that it is no more than 30W (40W is max and viewed as QRO)

• You may also adjust the DT gain on the FT-991 to adjust the volume of the audio input into the radio during TX. Observe your ALC and adjust as per the suggestions in the owners manual (select DT and reduce the Gain). No more than 3 to 4 bars (watch your output power at the point that it peaks you have enough audio input volume)

• Do not over-drive with your audio. You want a clean signal, so keep an eye on the ALC.

Configuration on Windows 7

HRD 6.3.400

Yaesu Main Firmware 02:08

• On your computer, open control panel, system, hardware, Device Manager. Under Ports (Com & LPT) you should see your port configuration similar to the following;



• Make a note of the com ports used by your radio USB interface. You will need that information later.

• Open HRD and set the radio parameters as follows (Note the COM port for Enhanced and Standard COM ports may differ.)

Connect: ZS1JEN in Republic of Section 2018	outh Africa 🛛 🛛 💽
Select a Preset or New defin	nition and press 'Connect'
New Preset Serial Ports Help Company: Yaesu ▼ Radio: FT-991 ▼ COM Port: COM15 ▼ COM Port: COM15 ▼ Speed: 38400 ▼ CI-V Add: 0- Flow control / Interface power ■ CTS DTR ▼ RTS	Status
 Connect Always connect to this starting HRD Rig Control in Start HRD Rig Control in Full Screen mode HRD L Entire H 	radio when rol. Figital Master ogbook HRD Suite Auto Start HRD Digital Master HRD Logbook HRD Rotator HRD Satellite Track

Configure Digital Master 780 as follows; • Set the PTT

	Program Options
Appearance Callsign (My Info) Clock Data Controller Logbook Modes + IDs PTT Radio QSO Soundcard	PTT COM Port via Serial (COM) port Port: COM5 ✓ On TX: ✓ Set DTR (data+terminal-ready) Set RTS (request-to-send) Ham Radio Deluxe - DM780 must be connected to HRD. Configure HRD connection None via soundcard PTT or radio VOX
SuperSweeper Waterfall Alarms Favorites Macros Navigator	Note: This PTT is separate and in addition to the PTT from the Data Controller. To use a COM port for PTT: • Select [X] Enable PTT • Select the COM port, this must not be in use by another program, • Select either DTR, RTS or DTR and RTS. When you switch to TX DTR and/or RTS are set (raised), when you return to RX they are cleared.
Audio Recorder PSK Reporter Soundcard Calibration Time Synchronization	

• Under Modes +Ids set PTT for CW

Appearance	CW RTTY Reed-Solomon (RSID) Video ID	
Callsign (My Info)	Help Cada Tabla	Ules PTT See also: PTT
Clock		
Data Controller	There are four CW variants:	CW does not all all all and all all all all all all all all all al
Logbook	 Standard CW where the radio is keyed via a serial or 	your keyboard (see table). If an
Modes + IDs	parallel port,	unsupported character is entered:
PTT	 Modulated CW (MCW) where the tones are generated by the soundcard 	Been
Radio	 Using the KY command with Elecraft, Kenwood and 	
QSO	Flex-Radio radios (read the PTT information	Jenu. space v
Soundcard	 Using the K1EL Winkever. 	
Sounds		1st extension: 0 ms
Storage	With standard CW the radio is keyed by a serial port (DTR	
SuperSweeper	17). Note - the serial port cannot be used by another	
Waterfall	application such as Ham Radio Deluxe, it must be reserved for	Weighting: 50 %
	exclusive use by DM780. Also with standard CW the soundcard	
Alarms	CW tones use MCW.	 Enable serial (COM) port keying
Favorites		Social port: COME
Macros	For sample keying circuits see	Senar port. COM5 V
Modes	<u>Intep://www.norp.com/indew.nem</u> .	Toggle pins: 🗹 DTR 🗌 RTS
Navigator	To ensure accurate timing the background thread used for serial and parallel port keyer runs at a time critical priority -	
	just one step below real-time.	Enable parallel port keying
Audio Recorder	DTT	Port: 0279
PSK Reporter	If checked the radio is switched between TX and RX using the	V U378 V
Soundcard Calibration	selection in the PTT page, if not checked then use VOX /	Pin: 02 03 04 05
Time Synchronization	breakin.	6 7 8 9
	When using the KY Command with Kenwood and Flex-	I7 (Select)
	Radio you must use VOX / breakin as there is no way	

• Set Sound card as follows

Program Options		×
Appearance	Soundcard	
Callsign (My Info)	lunt (Density)	I for a design before the second s
Clock	Input (Heceive)	Headset Monitor
Logbook	Device: USB Audio CODEC 🛛 🗸	Enable (will be grayed if not available)
Modes + IDs	Source:	Microphone:
PTT		Line in Arlie in
Radio		
QSO	Output (Transmit) Use input device	Earphone:
Soundcard	Device: USB Audio CODEC 🗸 🗸	Positek HD Audio rear output
Sounds	Source: Milaur	
Storage		Monitor Voice (echo to headset)
SuperSweeper		WABNINGL Do not Enable if the secondary
Waterrall		soundcard is your radio!
Alarms		
Favorites		Input (Receive)
Macros		for receiving signals, the line in is
Modes		connected to the audio output from
Navigator		your radio.
		Source: Select the input source -
Audio Recorder		in the soundcard's RX name, use it
PSK Reporter		to adjust the input level. Not all
Soundcard Calibration	Show sample rate in main status bar	soundcards have input sources - for example the Signal ink USB does
Time Synchronisation		not have any user-selectable input
	Show Supported Formats	sources.
		Output (Transmit)
		Device: Select the soundcard used
Getting Started	For recording and playback of wave files see: Audio Recorder	

Close Digital Master 780 Program Options.

Digital Master an FT-991 Audio Configuration

• Adjust input to your computer using menu 073 Data Out level to a suitable value for decoding the received signal. This adjustment affects the volume of the input audio into the computer.

• Select the sound card tab in Digital Master 780 and adjust the output to a suitable level.



• Before you TX set your FT-991's mode to DATA-USB and reduce the RF power out put to so that it is no more than 30W (40W is max and viewed as QRO)

• You may also adjust the DT gain on the FT-991 to adjust the volume of the audio input into the radio during TX. Observe your ALC and adjust as per the suggestions in the owners manual (select DT and reduce the Gain). No more than 3 to 4 bars (watch your output power at the point that it peaks you have enough audio input volume)

• Do not over-drive with your audio. You want a clean signal, so keep an eye on the ALC.

Configuring for Digital Master for CW

The following configuration has only been tested on Windows 7 with Ham Radio Deluxe version 6.3.400 on a Yaesu FT-991 with Main Firmware version 02:08.

It is assumed you have followed the Windows 7 configuration for Ham Radio Deluxe and Digital Master 780 and your setup is working for PSK. Select CW mode on Yaesu FT-991, next, select and set the following MENU parameter on the Yaesu FT-991

060 PC Keying Set to value to DTR

Next change the following Digital Master 780 options as follows

- Under option for PTTSet On TX to DTR

	Program (Options	×
Appearance Callsign (My Info) Clock Data Controller Logbook Modes + IDs PTT Radio QSO Soundcard Sounds Storage	Program (PTT COM Port © via Serial (COM) port Port: COM5 V On TX: V Set DTR (data+terminal-ready) Set RTS (request-to-send) Note: This PTT is separate and in addition to the	Options Ham Radio Deluxe Via Ham Radio Deluxe - DM780 must be connected to HRD. Configure HRD connection Configure HRD connection Example PTT from the Data Controller	Data Controller Let The Data Controller key the radio via interface. None via soundcard PTT or radio VOX
SuperSweeper Waterfall Alarms Favorites Modes Navigator Audio Recorder PSK Reporter Soundcard Calibration Time Synchronization	To use a COM port for PTT: Select [X] <i>Enable PTT</i> . Select the COM port, th Select either <i>DTR</i> , <i>RTS</i> When you switch to TX <i>DTR</i> and/or <i>P</i> cleared.	 is must not be in use by another pr or <i>DTR and RTS</i> . RTS are set (raised), when you retu	rogram, m to RX they are

Under option Modes + ID's Set Toggle pins to DTR

Appearance	CW RTTY Reed-Solomon (RSID) Video ID	
Callsign (My Info)	Holp C. J. T.L.	Ulles PTT See also: PTT
Clock		
Data Controller	There are four CW variants:	
Logbook	 Standard CW where the radio is keyed via a serial or 	CW does not support all characters on your keyboard (see table). If an
Modes + IDs	parallel port,	unsupported character is entered:
PTT	 Modulated CW (MCW) where the tones are generated 	
Radio	 by the soundcard, Using the KY command with Elecraft Kenwood and 	Веер
QSO	Flex-Radio radios (read the PTT information	Send: space V
Soundcard	below),	· · · · · · · · · · · · · · · · · · ·
Sounds	Using the KIEL Winkeyer.	1st extension: 0 ms
Storage	With standard CW the radio is keyed by a serial port (DTR	
SuperSweeper	and/or RTS) or a parallel port (Data pins 2 to 8 or Select pin	Compenzation: 0 ms
Waterfall	application such as Ham Radio Deluxe, it must be reserved for	Weighting: 50 %
	exclusive use by DM780. Also with standard CW the soundcard	
Alarme	stays in receive mode, no tones are generated. To generate	Eachla agrich (COM) part keying
Favoritor	Cw tones use MCW.	Enable senal (COM) port Reying
Maaraa	For sample keying circuits see	Serial port: COM5 V
Madaa	http://www.n3fip.com/rigcw.htm .	Togale pins: VDTR RTS
iviodes	To ensure accurate timing the background thread used for	
Navigator	serial and parallel port keyer runs at a time critical priority - just one step below real-time.	Enable parallel port keying
Audio Recorder		Port 0270
PSK Reporter	If checked the radio is switched between TX and RX using the	0378 9
Soundcard Calibration	selection in the PTT page, if not checked then use VOX /	Pin: 2 3 4 5
Time Synchronization	breakin.	6 07 08 09
	When using the KY Command with Kenwood and Elex-	I7 (Select)
	Radio you must use VOX / breakin as there is no way	
	of knowing when all characters have been sent so that 🗸	Test Parallel Port

In Digital Master 780 select CW, CW

Note: I have found that after using CW mode, a restart of Ham Radio Deluxe, Digital Master 780 and HRD Logbook is necessary to again use PSK. Before restarting all the applications select PSK31. I have as yet been able to determine the issue requiring the restart, but had a similar experience on earlier version of Ham Radio Deluxe under Windows XP and using an FT-897.

73 DE ZS1JEN (Andre)