An AA2MF application
ICOM IC-7300 SETUP WITH ONE USB CABLE

Operation is designed around the N1MM+ contesting software package. All logging will be created and kept within N1MM+.

All programs will be run within the N1MM+ program.

ICOM IC-7300 USB driver is used to connect the computer to the IC-7300 via a new Virtual Com Port.

The Eterlogic Virtual Serial Port Emulator (VSPE) Software will split the com port provided (Virtual) from the radio to interface and control the radio using a single USB cable.

RTTY FSK will be generated with MMTTY

FT-8 FT-4 will be generated WSJT-X

CW will be generated with N1MM+
CW Decoding will be done with FlDigi

An Internet time sync program will be needed.

PSK-31 working with Fldigi (still being looked into). PSK-31 operation has been successful using the N1MM+ Digital Interface Sound Card (MMVARI)1 function. Interesting but still in the development stage.

Before making any changes All IC-7300 MENU SETTINGS should be set to their Default values.

RADIO MENU CHANGE LIST

Menu > Set > > CONNECTORS Screen

DATA MODE > USB

CI-V MENU
     CI-V Baud Rate > 19200
     CI-V Transceive > OFF
     CI-V USB - Remote Transceive address > 94h
     CI-V USB Port > Unlink from [Remote]
     CI-V USB Baud Rate > 115200
     CI-V USB Echo Back > ON

USB Serial Function Submenu > CI-V
USB Send > DTR
USB Keying (CW) > RTS
USB Keying (RTTY) > RTS

Menu > Setting > > FUNCTION Screen

RF/SQL Control > Auto
Time-Out Timer > 3 min
REF Adjust > 27%

Install ICOM IC-7300 USB Driver.
It will be listed as Silicon Labs CP210x USB to UART Bridge (com NR)
This is the com port to use with the Eterlogic Virtual Serial Port Emulator Software.

VSPE SETUP
Start VSPE
Click on CREATE NEW DEVICE
Select device type Splitter
Data Source Serial Port: Com Port from Radio.
Virtual Serial Port: Name the Com Number. Make sure the logging and RTTY FSK keying program has this Com Port number listed to use.

Click Settings: Speed: 115200   DTS/RTS: NO
                   Parity: NO   Bits: 8   Stop Bits:1
Click OK

Redirect Modem Registers: CHECKED

Initial Modem Registers State:
RTS: NOT CHECKED   DTR: NOT CHECKED

When your all setup click the Finish Button. VSPE should say that the
initialization is OK.
Click File, Save As Use a name you will recognize when you run it again.

YOU MUST ALWAYS HAVE VSPE RUNNING IN THE BACKGROUND

N1MM+
Click on CONFIGURE in the entry box window.
The Configure window will appear.
You should now be in the HARDWARE window.
ENTER:
PORT   Virtual COM PORT NUMBER
RADIO   IC-7300
DIGI Box   NOT CHECKED
CW/OTHER   CHECKED

DETAILS - click on the SET box.
A new window will appear.
At the top of the box the VIRTUAL COM PORT NUMBER
ENTER: SPEED 115200
                  PARITY N
                  DATABITS 8
                  STOPBITS 2
                  DTR(pin 4) PTT
                  RTS(pin 7) CW
                  ICOM CODE (HEX) 94
                  Radio Nr 1
                  No other Boxes checked.
NOTE These settings are different from the "suggested ICOM settings"

Click OK

Click on the DIGITAL MODES TAB

Digital Interface 1-TU TYPE - Soundcard
DI-1 MMTTY Setup - MMTTY MODE - FSK
MMTTY PATH - set path to MMTTY
C:/HAM/MMTTY/MMTTY.exe ?

DI-1 MMVARI SETUP - MMVARI RTTY MODE - FSK
FSK PORT - EXTFSK

FLDIGI If you care to use this is where it will go
DI-1 Fldigi setup (if used)
Fldigi Path Select the path to FLDIGI
C:/Program Files (x86) Fldigi-4.1.14\fldigi.exe ?? (my computer)

DO NOT CLICK OK

Click on MODE CONTROL TAB

Mode recorded in log - use radio mode (default)

  MODE SENT TO RADIO
MODE   RADIO1/VFO-A
RTTY   RTTY
DIGI   USB

              DO NOT CLICK OK

Click on AUDIO TAB
1-only use radio 1 output device, output on both channels
Radio 1 OUTPUT Device - SPEAKERS (USB Audio CODEC)

 DO NOT CLICK OK

Click on WSJT/JTDX Setup TAB

WSJT-X and JTDX UDP SETTINGS
Check Enable Box (RADIO #1)

JTDX/Others TCP Settings
Check on Enable Box (RADIO #1)

Path to WSJT/JTDX
WSJT/JTDX Path used for SO1V,SO2V mode and Radio1 in SO2R
C:\WSJT\wsjtx\bin\wsjtx.exe ?? (my computer) Select Location

CHECK - Auto Load the WSJT Decode List Window when
         WSJT-X/JTDX Loads.

CHECK - Radio #1 Enable box

CLICK OK

RTTY WITH MMTTY & N1MM+
Run by clicking digital interface in N1MM+ window list.
Signal levels seen in the RTTY Engine are determined by the computers
AUDIO OUTPUT

RTTY Engine Window - OPTIONS - SETUP(O)…

Click on TX TAB
PTT & FSK - EXTFSK not EXTFSK64

RADIO COMMAND
PORT   NONE
BAUD   4800
CHAR WAIT   0
DATA LENGTH   8 Bits
STOP   2 Bits
PARITY   None

Flow Control   NO Boxes Checked
DTR/RTS   PTT BOX Checked
Commands   Program Default
Model   ICOM CI-V
Polling Interval   1 sec
FREQUENCY OFFSET   Off
GROUP WINDOW Find   Icom xx=addr 01-7f off list.
            DO NOT SAVE   CLICK OK

MISC TAB
TX PORT   COM-TXD (FSK)

SOUND CARD TAB
Reception Microphone (USB Audio CODEC)
Transmission Speakers (USB Audio CODEC)

Running MMTTY a box called EXT FSK 2.0e will appear
      Do NOT CLOSE THIS BOX it must be visible

EXTFSK 2.0e Box settings
      Port   Virtual COM PORT NUMBER
      FSK OUTPUT   RTS
      PTT OUTPUT   DTR
*STATUS OK should be seen. If turns RED check the
              Virtual COM PORT NUMBER

The EXTFSK 2.0e box may disappear because the settings in the
PTT&FSK may change to EXTFSK64. This will cause an unmodulated car-
rier tone. Correcting this to EXTFSK should resolve the problem.

Setting up WSJT-X

Click on File
Click on Settings

GENERAL TAB
Insert your personal setup information

DISPLAY
Check on "Blank line between decoding periods"
Check on "Display distance in miles"
Check on "TX Messages to Rx frequency window"
Check on "Show DXCC, grid, and worked before status"

BEHAVIOR
Check on "Double-click on call sets TX enable"
Check on "Disable Tx after sending 73"
Check on "Allow Tx frequency changes while transmitting"

RADIO TAB
At first check the IC-7300 Radio setting. This will be changed to "DX Lab Suite Commander" after needed information is entered.

CAT CONTROL
PORT - PUT USB SERIAL COM PORT NUMBER

SERIAL PORT PARAMETERS

Baud Rate 9600

Data Bits   Check   EIGHT Box
Stop Bits   Check   TWO Box
Handshake   Check   NONE Box

NOW CHANGE RIG TO "DX Lab Suite Commander"
Screen will change graying out information and removing com port entry box. This is normal.

PTT METHOD
CHECK   DTR BOX
PORT   Put the Virtual COM PORT NUMBER

TRANSMIT AUDIO SOURCE
Should be grayed out with Front/Mic selected

MODE Check Data/Pkt Box
SPLIT OPERATION Check Fake it Box

AUDIO TAB
INPUT Default input device MONO
OUTPUT Default output device MONO

REPORTING TAB
Logging Check Box "Prompt me to log QSO"

ADVANCED TAB
Special operation activity box will be checked for contests listed. For ARRL Field Day your report information will be placed in that window. Example: 1D WCF

CHECK ON OK

WSZT-X/JTDX program is listed in the Windows Tab of N1MM+. To run click on "LOAD WSJT/JTDX".
The radio Mode Must be set to USB-D for DATA.
Your QSO's will be stored in an N1MM+ log you create.
A small box will appear when running WSJT-X: N1MM+/WSJT "Radio Connection-1"   DO NOT CLOSE or CHECK THE BOX

Adjust the vertical receive level bar graph to maintain a green color by setting the microphone input level within the computer.
Transmit output audio level is monitored by viewing the radio ALC Meter. This adjustment is unknown.

FLDiGi PROGRAM
FLDidi at this time is only being used as a CW READER. The program does not control the radio in any way. I am working on using Fldigi running within N1MM+ to do PSK31.

To Setup RUN the Fldigi program within N1MM+ with N1MM+ and the radio in the CW Mode. Do this by clicking on CW READER in N1MM+ Window Tab.
The N1MM+ CW Reader setup window will appear.

From the "CW ENGINE TO USE" selection
Check BOX Fldigi to ENABLE
Align Frequency 600
For alignment treat CW as Check USB Box
Path to Fldigi window BROWSE
C:\Program Files (x86)\Fldigi-4.14\fldigi.exe ??
CLICK ON SAVE

RUN Fldigi again clicking on CW Reader in N1MM+ WINDOW TAB.

Within the Waterfall window click on OP MODE then CW as the mode.

Click on Configure Tab in Waterfall window.
Then Config Dialog. A new window will appear FLdigi configuration. From
the configure list select SOUND CARD then DEVICES
Check PortAudio Box
Within the capture entry window list select your audio input devise.
Microphone (USB Audio CODEC)?
Within the Playback entry window list select your audio output devise.
Speakers (USB Audio CODEC)?

Click on SAVE to save this description
Click on CLOSE to close this window.

At the base of the waterfall window you will see a small entry window, by
placing your mouse over it a message "Adjust cursor frequency".
Change that number to 600.

USING FlDigi as a CW code Reader
As CW signals are heard on the radio the waterfall will display signal verti-
cal lines. By tuning your radios receive frequency to place a selected verti-
cal line in the center of the RED BOX now centered at 600Hz at the moni-
tor frequency, the CW will be decoded and written as text onto the large
CW Reader 1 screen. Adjusting your radio so that this vertical line is in the
center of the RED BOX also puts your transmit frequency directly on the
stations receiving frequency. When you do transmit you will be correctly on
frequency. This is important as the station your trying to work may be us-
ing a narrow receiving filter and will not hear you if you transmit outside the
bandpass. CW Receive filters can be as narrow as 125 Hz which makes it
critical for you to be on the correct transmitting frequency.

USING THE WATERFALL AN IC-7300 ADVANTAGE,
Tuning or clicking on the Waterfall signals displayed should place the radio at the correct frequency. You should notice the placement of the signal in the correct location within the FlDigi Red Box. CW signal Decoded text should now be seen.

Software used in this application:

ICOM IC-7300 USB Driver
https://www.icomjapan.com/support/firmware_driver/2417/

N1MM+
https://n1mmwp.hamdocs.com/

MMTTY
https://hamsoft.ca/pages/mmtty.php

WSJT-X
https://physics.princeton.edu/pulsar/K1JT/wsjtx.html

Eterlogic VSPE (Virtual Serial Port Emulator
https://www.eterlogic.com

FLDIGI
https://www.w1hkj.com/ Program File fldigi

DIMENTION4
http://www.thinkman.com/dimension4/

Special Thanks to, Tom NY4I for lending me his IC-7300 radio and sharing his Menu Sittings that became part of this application.

Reference:
WT2P March 21, 2017 article Icom-7300 USB for Radio Control + FSK Keying