

Using the AOR DV1 Receiver with the Doppler DDF7001 Direction Finder

A Technical Application Note from Doppler Systems

17 January 2020

Contents

Using the AOR DV1 Receiver with the Doppler DDF7001 Direction Finder	1
1.0 Introduction	1
2.0 DDF 7001 Modification	1
3.0 Wiring.....	2
4.0 Using the MPT User Interface.....	3
5.0 Differences in Operation.....	5

1.0 Introduction

The Doppler DDF7001 Radio Direction Finder firmware version 2.37 and later supports the AOR DV1 receiver. The latest version of the firmware is available from our website <http://dopsys.com/upgrades/firmware%20upgrades.html>. The updated firmware allows the user to tune the receiver and set its volume and squelch. Upon receipt of a signal the audio and RSSI signals from the receiver are used in the firmware to compute the bearing and display the signal strength. This application note details how to

1. Modify the direction finder to use the DV1,
2. Connect the receiver, and
3. Use the MPT User Interface software to setup and test the operation of the direction finder with the DV1.

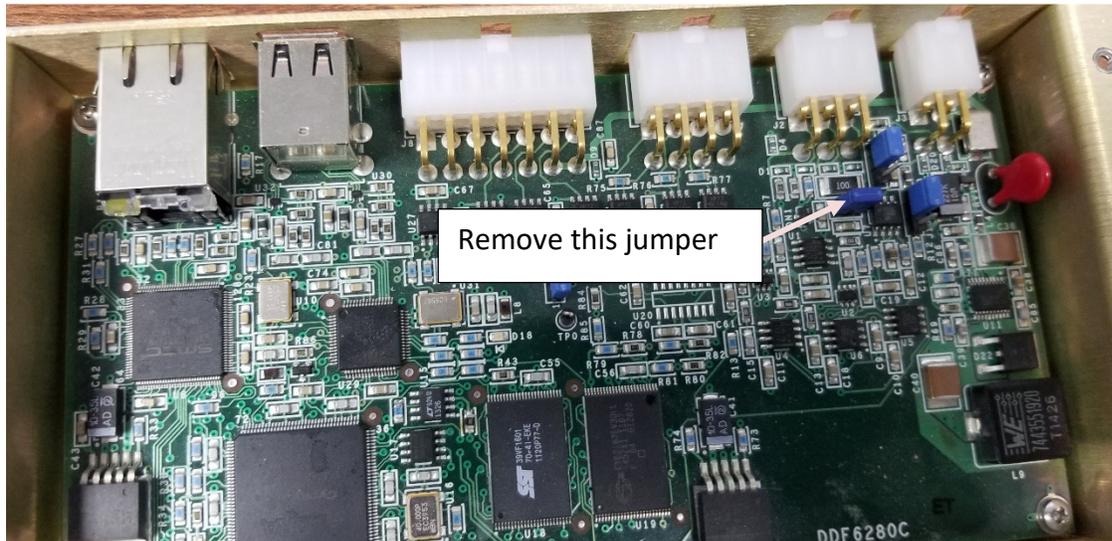
2.0 DDF 7001 Modification

The DV1 is a SDR receiver. Early attempts to use it with the DDF7001 were unsuccessful because the DV1 processing software introduced delays in the audio that changed each time the receiver was powered. As a result the direction finder had to be recalibrated each time the system was powered up. Subsequent investigation and with help from AOR we realized that the signal on the AUX connector on the DV1 was the output of the FM discriminator. Experimenting with this signal verified that no random audio shift occurred when powering up the receiver. So we are able to use the AUX output for our audio source.

The AUX output is designed to drive a high impedance. The receiver input to the DDF7001 is typically low impedance; however, with the removal of a jumper it can be converted to a high impedance input.

The following steps describe this conversion

1. Remove the 4 screws holding the base and remove the base
2. Remove the jumper shown in the figure below and set it aside
3. Reinstall the base using the 4 screws.



3.0 Wiring

Figure 1 below shows the general wiring diagram for the direction finder using a DV1 receiver.

Connect the USB cable from the DF processor to the receiver.

Connect the six-pin connector on the receiver cable to the DDF7001 processor and plug the audio connector into the AUX output on the DV1.

Connect the control cable from the antenna to the DDF7001 and connect the coaxial cable to the ANT connector on the receiver.

Connect the computer to the Ethernet connector on the DDF7001 using the supplied crossover cable (orange).

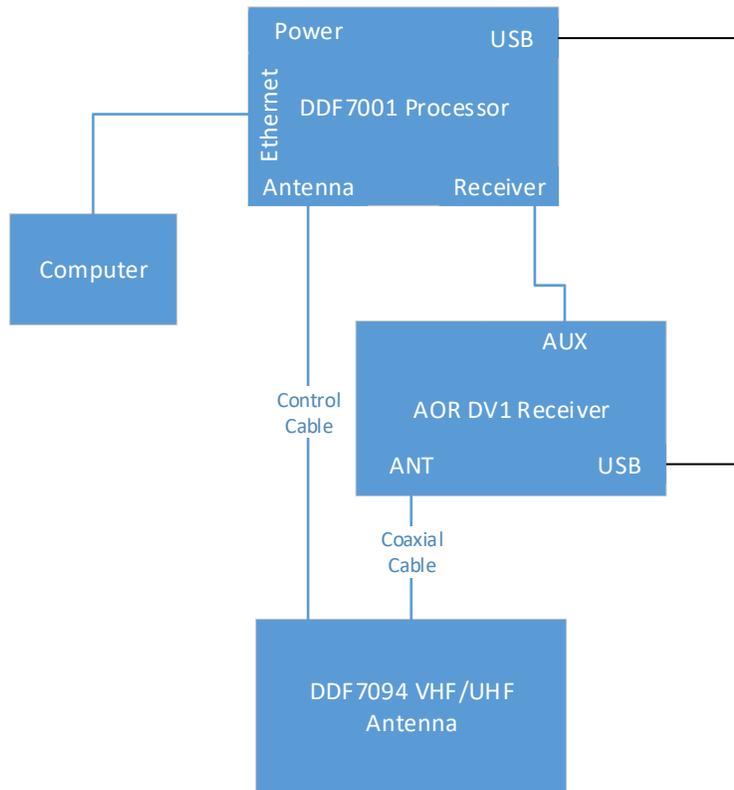


Figure 1: Wiring Diagram for Doppler Direction Finder with AOR DV1 Receiver

4.0 Using the MPT User Interface

Version 2.16 or higher of the MPT User Interface Software is required to use the DDF7001 Direction Finder with the DV1 receiver. The latest version of the software is available from our website at <http://dopsys.com/software/downloads.html>.

Apply power to the power supply and wait 15 seconds. Launch the MPT User Interface program. After a short time a dialog similar to the following dialog will be displayed.

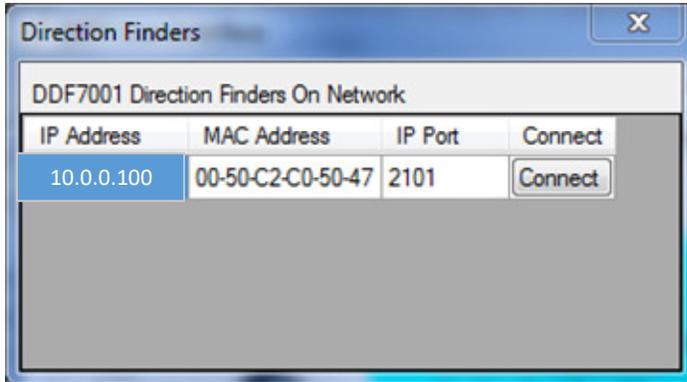


Figure 2: Connection Dialog

Press connect and the following dialog will be displayed

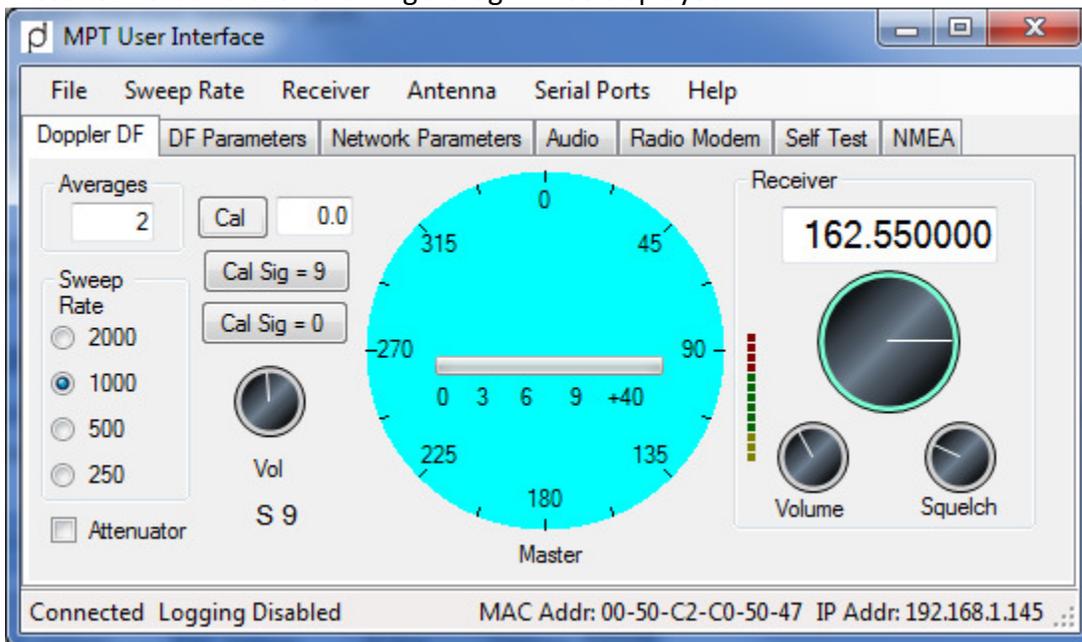


Figure 3: Initial Display of MPT User Interface

Select the Receiver menu and select AOR DV1 from the menu.

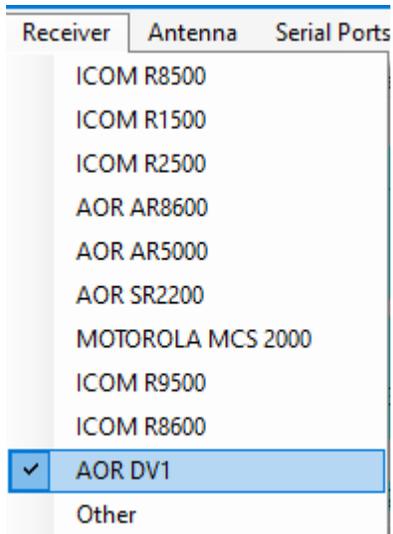


Figure 4: Select AOR DV1 as the Receiver

At this point the direction finder is ready to operate with the DV1 receiver. As a quick check right or left click on the tuning dial to verify that the receiver changes frequency. If it changes frequency the unit has been set up properly.

Refer the MPT Software manual or help for further instructions on using the MPT User Interface software and consult the TargetTrack manual or help files on setting up and using the TargetTrack software. Both of these programs and their manuals are on the CD supplied with the unit. The latest versions of these programs are always available on the Doppler web site (www.dopsys.com).

5.0 Differences in Operation

If you have used the DDF7001 with a different type of receiver, there are some differences in operation of which you need to be aware.

1. Plugging a cable into the AUX connector does not mute the internal speaker in the DV1. So if you prefer you can listen to the receiver audio using the internal speaker; however, be aware that you will hear the direction finder tone. If you do not want to listen to the speaker audio, simply set the volume of the receiver to 0.
2. The volume control on the receiver has no effect on the level of the signal coming out of the AUX connector. Therefore, there is no need to set the volume in order to use the direction finder.
3. The squelch control has no effect on the signal coming out of the AUX connector. The signal is always present as if the squelch is always open. So that the operator does not have to continuously listen to noise, the firmware in the DDF7001 has been modified so that it only streams audio to the computer when a bearing is being computed. If there is no bearing then there is no audio.