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# Technical Note

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## Terratec DMX6FireUSB Installation, setup and calibration with Dirac



## TN009 Terratec DMX6FireUSB

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## TN009 Terratec DMX6FireUSB

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### 1 Introduction

Terratec's DMX 6Fire USB device outstanding feature is the support for a 192 kHz samplerate (and a corresponding bandwidth), which is a requirement for scale model measurements.

For normal measurements (other than scale model measurements), the DMX6FireUSB is not a preferred device, because of the following issues:

- The DMX6FireUSB requires the installation of a separate driver, whereas other USB sound devices use the standard drivers that come pre-installed with Windows.
- The DMX6FireUSB uses a proprietary mixer interface that cannot be fully controlled through Dirac. This makes it impossible to control all aspects of a measurement from the Dirac measurement window.
- The DMX6FireUSB has external gain controls that need to be carefully kept at a fixed position during calibration and subsequent measurements.
- The DMX6FireUSB is not bus-powered and therefore requires a separate power adapter.

The Acoustics Engineering website lists a number of devices that are better suited to non-scale model measurements.

See: [http://www.acoustics-engineering.com/dirac/faq.htm#soundcard\\_2](http://www.acoustics-engineering.com/dirac/faq.htm#soundcard_2)

The remainder of this document will guide you through the installation, setup and calibration of the DMX6FireUS.

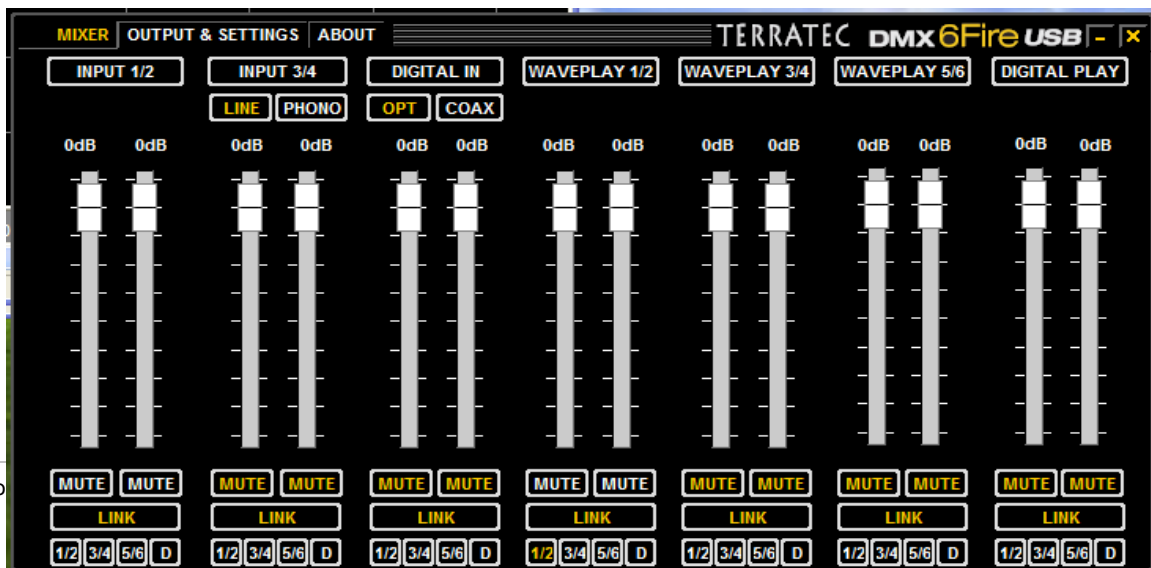
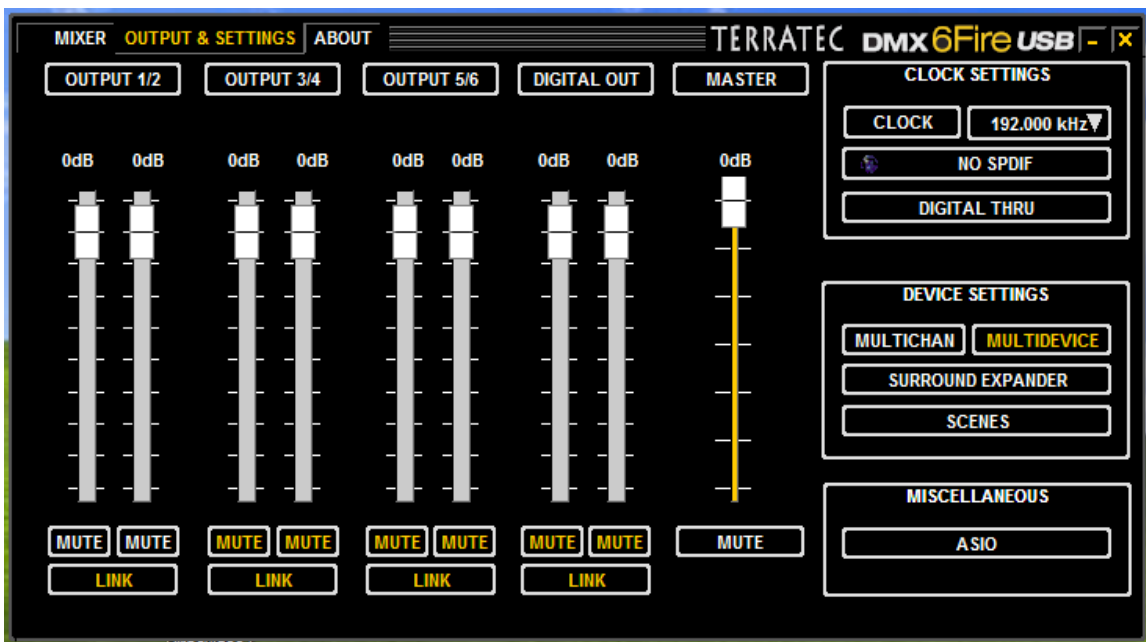
### 2 Installation

1. Download the latest driver (version 1.4.1.12 as of 10/2008) from the Terratec website: [http://www.terratec.net/en/driver-and-support/driver\\_21300.html](http://www.terratec.net/en/driver-and-support/driver_21300.html)
2. Install the driver, and follow the installation instructions Quick Start Guide that comes with the device.
3. Attach the sound device when prompted to disconnect and connect.
4. In the Windows Control Panel, open the Sound applet and select the Playback tab. Make sure the DMX6FireUSB is not selected as the default device. Do the same on the Recording tab. (All windows sounds, such as email alerts, are routed to the default device, and these sounds must not be allowed to influence the measurements).

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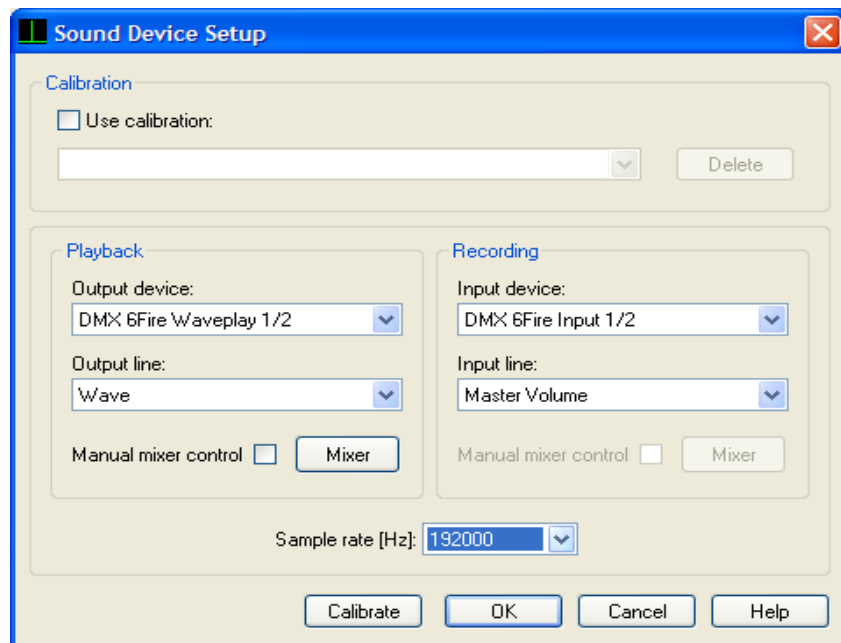
### 3 Setup

1. Use a short wire with cinch plugs on both ends to connect Line Out 1 and 2 to Line In 1 and 2 at the back of the device.  
Alternatively you could connect the Line Out 1 to the XLR combo jack on the front panel. In this case you also need to set the PAD switch on the front panel to -20 dB. If you need to reset the PAD switch to Off in order to get enough signal from your microphone, then you need to enter an external gain of 20 dB in the measurement file properties in Dirac.
2. Set all gain controls on the front panel to their minimum position (CCW).
3. Start the DMX6FireUSB control panel and set all controls as in the following 2 screen shots:

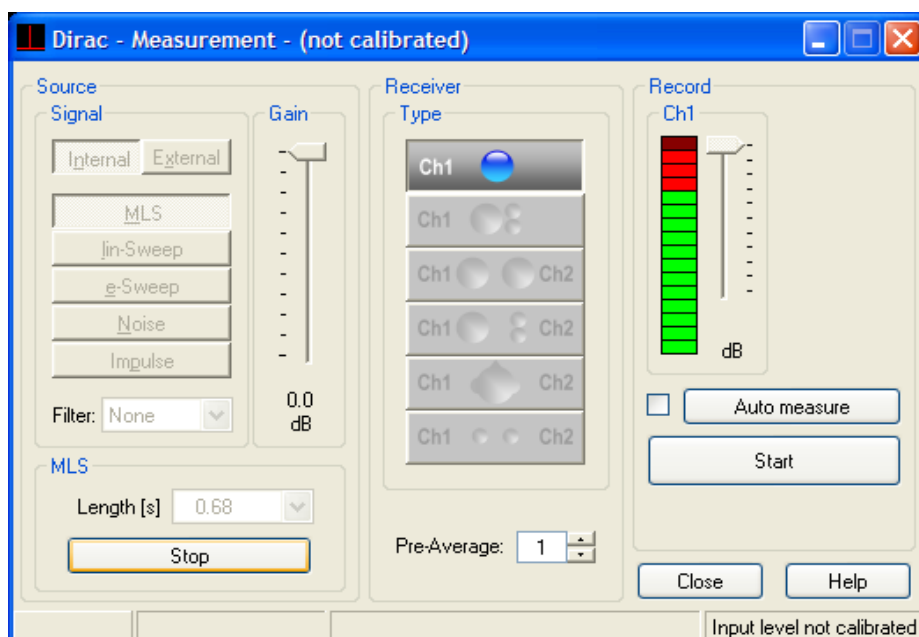


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4. Start Dirac and open the Sound Device Setup window (Setup menu).
5. Copy the settings from the following screen shot:



6. Press OK, and open the Measurement window.
7. Select Internal MLS for the source signal, and a single omni-directional microphone for the receiver. Press the Test button, and verify that the VU meter indicates a strong signal, as in the screen shot below:



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8. If the VU meter does not register a signal, then recheck the settings in the DMX6FireUSB control panel and in the Sound Device Setup window. If running Windows Vista, open the windows mixer, select the 'DMX 6Fire Waveplay 1/2' device, and make sure it is not muted. Do the same for the 'DMX 6Fire Input 1/2' device

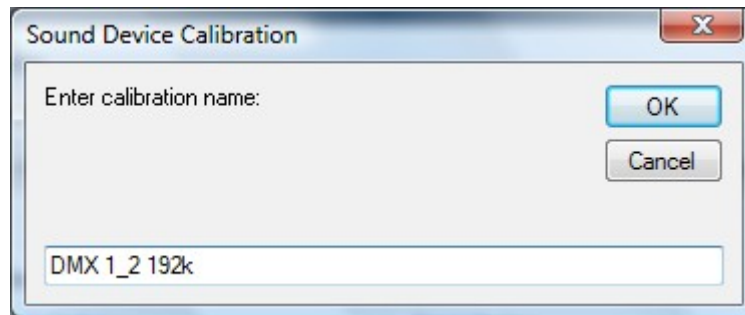
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### 4 Calibration

1. Open the Sound Device Setup window and click the 'Calibrate' button.
2. Do not accept the default name (it contains invalid characters), but use a name such as “DMX 1\_2 192k”.

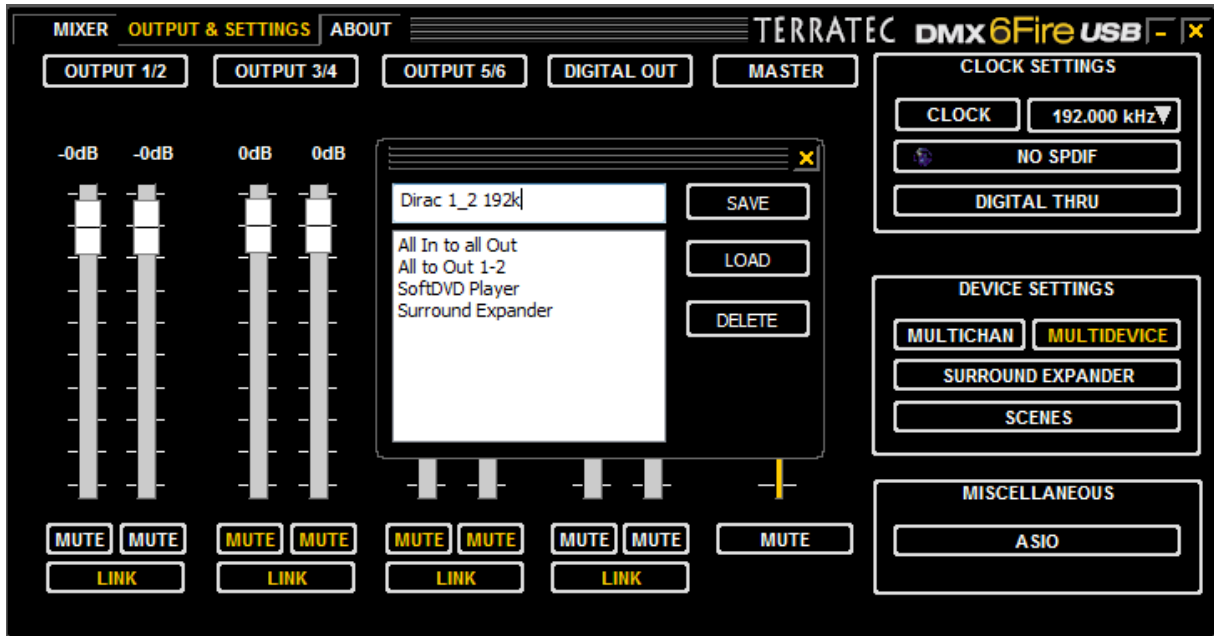


3. Click OK to start the calibration.

### 5 Notes

1. For normal measurements (that is outside the scale model), samplerate of 48 kHz is preferred. This requires a new calibration of the sound device. Close Dirac, and change the samplerate on the 'Output & Settings' tab of the DMX6FireUSB control panel to 48000 Hz. Start Dirac and open the Sound Device Setup window. Change the samplerate to 48000 Hz, and click the 'Calibrate' button. Again, do not use the suggested default calibration name, but use for instance: “DMX 1\_2 48k”.
2. Due to the variable latency of the device through the MME API, Dirac cannot correctly position the start of the impulse response. For scale model measurements with spark gaps (external impulse), this can easily be solved by setting the 'Fixed IR starting point' option on the 'Measurement' tab of the Options window. Alternatively you can use the external noise measurement method. See the Dirac helpfile for more information on this subject.
3. For all measurements, the gain control settings on the front panel of the device, and the gain settings in the DMX6FireUSB control panel, should match those used during the calibration.
4. The settings of the DMX6FireUSB control panel can be saved and restored using the 'scenes' button on the 'output and settings' tab, as seen in the screen shot below:

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