SubEQ

Software for room calibration

User Manual

Caution!

Text passages marked with this symbol contain important information which must be observed if the machine is to operate safely and without problems.

This symbol marks text passages which provide supplementary notes and background information; they are intended to help the user understand how to get the best out of the machine.

Content

General Information

Function

The **SubEQ** program has been developed specifically for the equalization of the **TCD 610 W (including the SE version)**. The software provides a fast, easy method of determining the acoustics of the listening room.

Connecting the **TCD 610 W** using a network cable enables you to adjust the equalizer settings conveniently from your PC.

To ensure the best possible sound balance, the software includes a function which automatically calculates the optimum settings for the equalizers.

The software can also be used to adjust the subwoofer to match the satellite speakers accurately, without requiring tedious listening tests.

Hardware and software

Minimum system requirements:

- Pentium 4 @ 2 GHz or similar
  512 MB RAM
  Windows XP SP3 or higher
- Sound card
- Network connection
- The TCD 610 W requires firmware V 1.10 or later
- The TCD 610 W SE requires firmware V 2.10se or later

ⓘ The firmware version is stated on the Quality Control certificate.

Essential accessories

- Calibration microphone
  (included in the **TCD 610 W (SE)** set)
- Network cable
- Cable with 3.5 mm stereo barrel connector

Installation

Installation

You can download the software from our website at: www.ta-hifi.com/subeq.

Unpack the ZIP file and save the contents to a folder on your computer. The program does not need to be installed; to run it, simply double-click on the file "subeq.exe".

The program itself can generate the test signals required to calibrate the sub-woofer. For detailed information on this please refer to the section entitled "Settings" on *page 7*.

Operating system settings

In Windows Mixer select the sound card's Line input as the standard recording device, and set sensitivity to high.

⚠ If you set the input sensitivity too low, there is a danger of damaging the loudspeaker, since the level would need to be set to an excessive value for the calibration process.

Connecting the speaker to the PC

It is essential to set up a network connection between the computer and the **TCD 610 W** in order to enable the **SubEQ** software to carry out the calibration process and adjust the settings (see wiring diagram on *page 12*).

The connection between the **TCD 610 W** and the PC should be direct, i.e. without detours via routers or similar devices. This is accomplished by connecting a network cable to the LAN socket on the back panel of the **TCD 610 W**, and your PC's network socket.

The IP address of the **TCD 610 W** is preset in the software (192.168.178.253). Depending on the configuration of your computer, it may be necessary to adjust the IP range of your computer. To do this change the network mask to 255.255.255.0 and the IP address to 192.168.178.200 in the settings of your network card. For the Gateway and DNS server entries, the fields remain blank.

Temporarily deactivate all additional unused network cards, WLAN and Bluetooth interfaces, as otherwise it may not be possible to establish a connection to the subwoofer!

Switch the **TCD 610 W** on, wait until the device is ready to play, then click on the "*Connect*" button. The button changes to "*Disconnect*" as soon as the speaker is connected to the PC.

Program layout

① Menu bar

Standard program functions such as "Open" and "Save" are available in the Menu bar.

② Sub-woofer configuration

In this area you can adjust the sub-woofer settings.

③ Trace configuration

The buttons in this area can be used to record, erase, display and hide curves.

④ Network

The network connection with the sub-woofer is created at this point. Data can be called up and transferred when the connection is present.

⑤ Frequency response

Here the measured frequency response can be changed. Each equalizer is marked by an arrow and the corresponding name, e.g. "PEQ4".

⑥ Status line

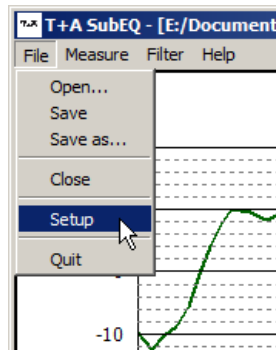Information regarding the current status of the program is displayed here.
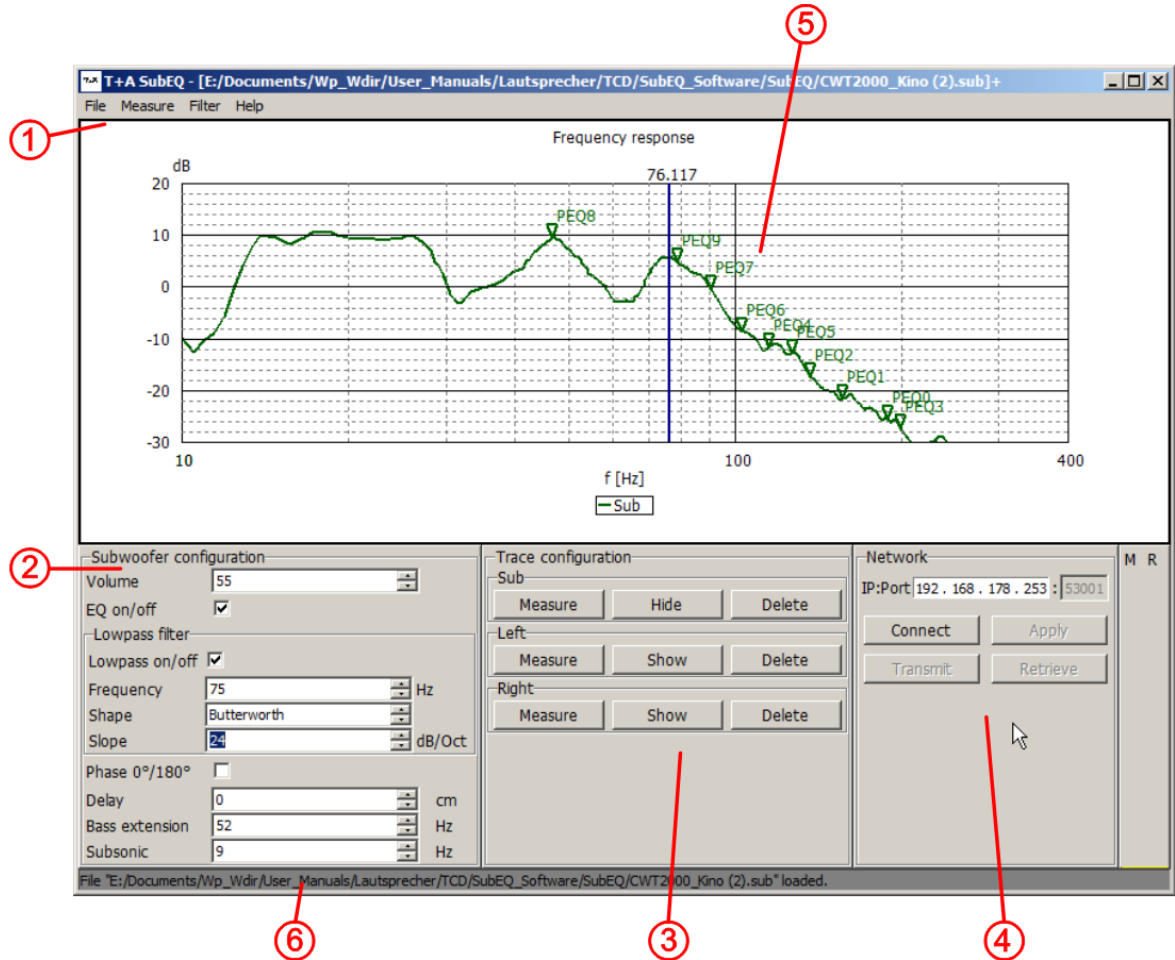
Settings

Calling up the Setup menu

The Setup menu is used to set the type of sub-woofer connection, and generate the test signals.

The Setup menu is called up by clicking on "*File*" in the menu bar, then on "*Setup*".

Sub-woofer audio connection

Here you can select the type of connection to match your configuration. Set "*Both*" if the sub-woofer is connected to both amplifier channels (R and L). If the sub-woofer is only connected to one channel, set the appropriate channel here. If the connection is via one channel and a Y-lead at the sub-woofer, you should also select the "*Y-Cable*" option.

If the sub-woofer is connected to a surround receiver with its own sub-woofer output, set "*Both*" at this point.

Please note that the calibration results may be incorrect if you do not set the correct sub-woofer audio connection.

If you wish to calibrate both primary channels, the sub-woofer must be connected to both channels (R and L) ("*Both*" option). Otherwise only the currently connected primary channel can be calibrated.

Generating test signals

The test signals required for the calibration process can be generated by the program itself. Click on "*Create test signals*" to create the files.

Select the memory location, and save the files, which are created in the .WAV format. If you wish to use a CD player as source device, burn the two files onto an Audio CD. If the source device supports playback of .WAV files from a USB memory stick or similar device (e.g. **T+A** Music Player), you can also play the files directly from such a medium.

The same test signals can also be found on the **T+A** Audio Signals CD (track 1: left channel; track 21: right channel)

Using the software

General operation

In general terms the software is operated in the usual manner using the mouse.

To change the sub-woofer settings, repeatedly click the up or down arrow in the corresponding field until you reach the desired value. The set-up options are described in detail in the operating instructions for the **TCD 610 W**.

Some functions which relate to individual equalizer settings can only be changed using the cursor keys. More on this in the next chapter.

Equalization

The equalization function for the **TCD 610 W** consists of a maximum of ten parametric equalizers. Each of these filters can be freely configured in frequency, level and quality.

The program pre-calculates the effect of the equalizer settings, based on the recorded curves, so that any change in the settings is directly visible.

If a frequency response curve has been recorded, or an existing file has been loaded, the individual equalizers can be adjusted. The first step should be to determine the points at which marked peaks or troughs are located, although priority should be given to filtering out the peaks. The exact frequency can be found by dragging the cursor line to the appropriate point using the left mouse button.

The frequency is displayed above the line. To set an equalizer, briefly press the cursor up or down key, or use the mouse wheel; a green marker then appears automatically at the point on the cursor line with the equalizer number (e.g. PEQ1).

The level of this equalizer can now be altered using the up / down cursor keys or the mouse wheel; its frequency is adjusted using the right / left cursor keys. The quality (equalizer bandwidth) can be changed by holding the Control key (CTRL) pressed in and operating the cursor up / down buttons or the mouse wheel.

To erase an equalizer the first step is to select the appropriate equalizer with the mouse: this is accomplished by dragging the cursor line close to the equalizer. Press the Delete key "Del" to erase the equalizer. If you wish to erase all the equalizers, click on "*Filter*" in menu line ①, then on "*Delete all filters*" in the sub-menu.

The equalizers can be switched on and off using the "EQ on/off" option field in order to make comparisons with the original settings.

The equalizer settings can be transferred to the **TCD 610 W** once the frequency response has been adjusted. This is accomplished by clicking on the "*Transmit*" button. Changes to the settings take effect immediately.

The settings are saved permanently on the sub-woofer by clicking on "*Apply*". The sub-woofer now switches itself off briefly, and then re-starts.

⚠️ The maximum amplification of the equalizers in the **TCD 610 W** is 6 dB, which corresponds to four times the power at the corresponding frequency. This means: please use the amplification function with great caution!

AutoEQ

In addition to manual adjustment of the equalizers, the software provides an automatic set-up facility. To start the equalizers' automatic calculation process, open the "*Filter*" menu and click on "*AutoEQ*"
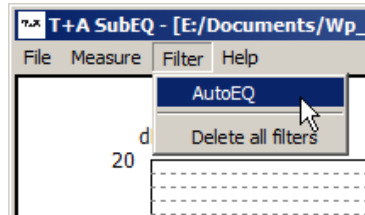
After a short delay the calculated filters appear. The AutoEQ function only filters out the peaks. Troughs are not raised: there are often peaks at other points in the room which become more pronounced if this is done.

Calling up, transferring and saving settings

Any changes to the sub-woofer and equalizer settings in the **SubEQ** program have no effect on the settings in the sub-woofer at this stage. To transfer the settings to the sub-woofer, click on "*Transmit*" in screen area ④. The settings take immediate effect once transferred, but are not yet permanently stored (saved). When the sub-woofer is switched off, the settings are reset. If the settings are correct, they can be stored permanently on the sub-woofer by clicking on "*Apply*". The settings are saved by switching the sub-woofer off, then on again. If you wish to read out the stored data, click on "*Retrieve*": the values stored on the sub-woofer are now displayed in the program.

Calibration curve settings

Area ③ of the program window contains the buttons for the calibration curves.

To record a new curve, click on the appropriate "*Measure*" button, depending on the loudspeaker you wish to calibrate.

If you wish to erase a frequency response curve, click on the corresponding "*Delete*" button. Individual curves can be displayed or suppressed by clicking on the associated "*Show*" or "*Hide*" button.

Calibration in Stereo mode

Calibrating the frequency response

This is the procedure for calibrating the frequency response in stereo mode:

- Connect all the components as shown in the wiring diagram entitled "**Calibration in Stereo mode**".

- Insert the CD containing the test signals in the CD player. (Alternatively use a USB memory stick or similar if your source device permits.)

- In Windows Mixer select the sound card's Line input as the standard recording device.

- Switch the **TCD 610 W** on, and wait until it is ready for use.

- Click on the "Connect" button.

- Set up the calibration microphone at your listening position.

- Click on the "Measure" button to start the calibration process.

- Follow the instructions provided by the program.

- The calibration process starts automatically as soon as the Status line at the bottom lights up green.

- When the calibration process is complete, the recorded curve is displayed on the screen.

If you wish the program to calibrate both primary channels, the sub-woofer must be connected to both channels (R and L). If not, only the primary channel actually connected can be calibrated.

Calibration in Surround mode

Calibrating the frequency response

(sub-woofer only)

ⓘ Since the sub-woofer outputs of most surround amplifiers generate the signal in filtered form, the sub-woofer can only be calibrated correctly using the procedure described in the following section.

This is the procedure for calibrating the frequency response in surround mode:

- Complete all the connections as shown in the wiring diagram entitled "**Calibration in Surround mode**".

- In Windows Mixer select the sound card's Line input as the standard recording device.

- In Windows Mixer select the sound card's Line output as the standard output device, and reduce the volume to zero.

- Switch the **TCD 610 W** on, and wait until it is ready to use.

- Click on the "Connect" button.

- Set up the calibration microphone at your listening position.

- Click on the "Measure" (Sub) button to start the calibration process.

- Follow the instructions in the program.

- Start playing the appropriate tracks using Windows Media Player or similar as soon as you see the request "Play audio file".

- Steadily increase the volume on the PC until the calibration process starts. (If the volume is not sufficient, increase the sensitivity of the Line input.)

- Calibration starts automatically as soon as the Status line at the bottom lights up green.

- The recorded curve is displayed on the screen when the calibration process is complete.

ⓘ It is not possible to calibrate the primary loud-speakers in Surround mode, since the surround amplifier's sub-woofer output does not generate the audio signals required for measurement, or only partially generates them.
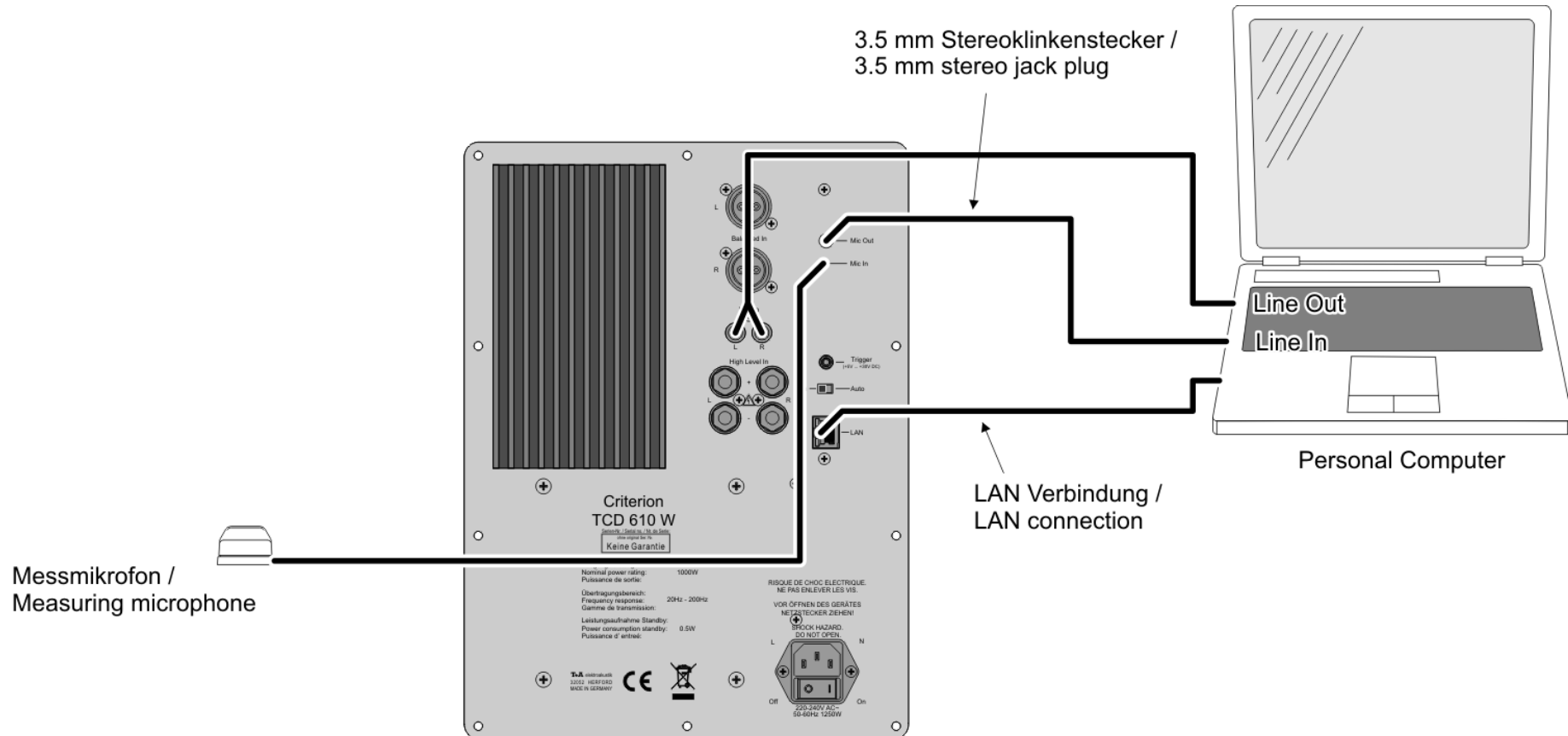
If a surround amplifier is in use, the low-pass filter of the **TCD 610 W** should be switched off; the amplifier's integral filter should be used instead. Set the crossover frequency to suit the remaining loudspeakers.

Wiring diagrams

Calibration in Stereo mode

Linker Lautsprecher /
Left loudspeaker

Rechter Lautsprecher /
Right loudspeaker

Quellgerät /
Source device
(CD-Player)

Verstärker /
Amplifier

Anschlussvarianten

- - - - - symmetrisch XLR

――――― asymmetrisch Cinch

– – – – Hochpegeleingang

Connection options

- - - - - balanced XLR

――――― unbalanced RCA

– – – – High level input

3.5 mm Stereoklinkenstecker /
3.5 mm stereo jack plug

Line In

Personal Computer

Criterion
TCD 610 W

Keine Garantie

LAN Verbindung /
LAN connection

Messmikrofon /
Measuring microphone

Calibration in Surround mode

3.5 mm Stereoklinkenstecker /
3.5 mm stereo jack plug

Line Out

Line In

Personal Computer

LAN Verbindung /
LAN connection

Messmikrofon /
Measuring microphone

Criterion
TCD 610 W

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