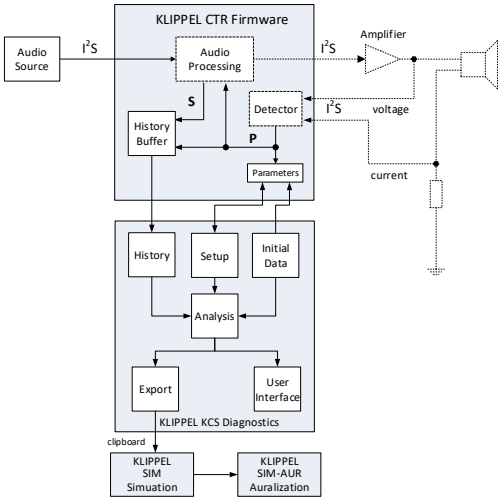
KCS Monitor Software S73

Document Revision 1.0

FEATURES

- Evaluation of the Klippel Controlled Sound Technology (KCS)
- Interface to the Klippel Nonlinear Control Algorithms
- Performing Nonlinear Online Control sessions
- Collects comprehensive diagnostics information such as time-variant transducer states and parameters



DESCRIPTION

The software module *KCS Monitor* is a powerful software tool that is used for evaluating the *Klippel Controlled Sound Technology (KCS)*. The *KCS* is an adaptive software solution featuring nonlinear speaker control, active speaker protection, linear and nonlinear distortion reduction, system alignment and much more.

The *KCS Monitor* is dedicated to setup and control the real-time algorithms implemented in the *KCS Firmware* and exchanging data with the microprocessor running *KCS*. It provides comprehensive diagnostics information such as identified transducer states and parameters (e.g. displacement, temperature, resonance frequency), electric states (e.g. power) and more.

The *KCS Monitor* module comes in two different versions, a standard version which does not require any license and one *Pro* version which requires one.

Using the *KCS Monitor* requires initial KCS data. This data can either be stored in a KCS Monitor operation you get from the provider of the KCS evaluation hardware or has to be created using the KLIPPEL software module KCS-ID Parameter Identification (see [S66] and [KCS-ID]).

CONTENT

1 Overview 2

2 System Requirements 2

3 Operate a KCS Platform 3

4 Customizing Setup 3

5 Results 3

6 References 4

7 Patents 4

1 Overview

1.1 Components

KCS Monitor (Pro) Software Module	Software module running on the PC in the *Klippel dB-Lab* framework.
CTR Firmware	Real-time algorithm running on a microprocessor implemented on the Klippel Analyzer 3 (see [H3]) or other supported hardware platforms.

1.2 Klippel Controlled Sound Technology

For information about the Klippel Controlled Sound Technology, please refer to the according specification document [S72].

2 System Requirements

2.1 Currently Supported KCS platforms

Product	Article	Spec
Klippel Analyzer 3	2000-300	H3
Klippel APE EVB	-	H13
Nuvoton NAU83GXX Evaluation Board	-	

2.2 Software (General)

dB-Lab (version 210.918 or higher)	-	F1

2.3 Software (KCS Diagnostics Woofer)

KCS Monitor (version 1.0 or higher)	-	S54
KCS Monitor Pro (version 1.0 or higher)	8001-133	
CTR Firmware Woofer (version 1006.1 or higher)	8001-120	S11

3 Operate a KCS Platform

Connect	The KCS Monitor module can establish a communication to any connected KCS Platform (e.g. Klippel Analyzer 3).
Start Online Control	If initial loudspeaker parameters are available, it is possible to start the online control of a loudspeaker.
Switch Control Modes	For evaluation purposes, different control modes are available: 1. **Nonlinear Control.** Default operation with active system alignment, protection and distortion compensation. 2. **Equalization Only.** No mechanical protection and no nonlinear distortion compensation. Time-variant parameters are compensated, the system alignment is applied and the thermal protection is active. 3. **Bypass Control.** No alignment, no mechanical protection and no distortion compensation. Only the thermal protection is active.
Setup	Change properties of the KCS algorithm. See next section for available setup parameters.

4 Customizing Setup

Device	Setup of the hardware device, such as input and output channels.
Audio	Setup the audio gain, alignment and crossover settings.
Protection	Setup of the mechanical and thermal protection systems. Define power and excursion limits.
Limiter	Setup of the KCS output limiter.
Display	Setup of some display settings, such as Bl(0) import and number of history records to be shown.
Advanced	Setup of some advanced settings, such as the voice coil stabilization.

5 Results

The available results in the particular KCS Monitor operation depend on KCS Monitor version (Pro/Standard), the KCS hardware and the KCS firmware version. In the following table, a coarse overview over the results are given.

Linear Speaker Parameters	Linear parameters such as resonance frequency, inductance parameters and DC resistance considering time-variant changes.
Nonlinear Speaker Parameters	Nonlinear force factor, nonlinear stiffness and other nonlinear curves.
KCS and Speaker States	Displacement, power, temperature, voltage, current, protection system and other time-variant states.
Setup	KCS Setup parameters such as version, speaker ID and alignment settings are displayed in a table.
Transfer Functions	Electrical Impedance Z(f) and estimated sound pressure transfer function.

6 References

6.1 Related Modules	LSI3 Large Signal Identifcation (KA3) KCS-ID Parameter Identification (KA3)
6.2 Specification	[S72] S72 – *KCS Library Specification,* Klippel GmbH [S66] S66 – *KCS-ID Parameter Identification Specification*, Klippel GmbH [S52] S52 – *LSI3 Large Signal Identification for KA3 Specification,* Klippel GmbH
6.3 Manuals	[KCS] Manual *KCS Monitor* [KCS-ID] Manual *KCS-ID Parameter Identification* [LSI3] Manual *LSI3 - Large Signal Identification*

7 Patents

PATENTS	Germany: 10 2012 020 271 7; USA: 14/436,222; Chi-na: 201380054458.9; South Korea: 10-2015-7012390, Taiwan: 102137485; India: 844/MUMNP/2015

Find explanations for symbols at:

http://www.klippel.de/know-how/literature.html

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