

# CD 44 Digital System Controller



- Digital system controller with 24 bit resolution and 96 kHz sampling rate
- 118 dB dynamic range
- Sense-controlled RMS and peak limiters
- 4 in 4-way, 200 ms delay per input, 4 free configurable filters ('PEQ'), 31-band graphic EQ, Ethernet interface

The K&F CD 44 is a digital 4 in 4-way system controller for the configuration of almost all Kling & Freitag speaker systems with the highest possible operating safety because of sense-controlled limiter functions. The device is equipped with analogue and digital signal inputs (AES / EBU), remote interface via Ethernet, and sense inputs for the connected power amplifiers.

By using state-of-the-art AD and DA converters and 8 integrated signal processors (DSP), the K&F CD 44 offers the highest audio quality as well as a multitude of distinctive features and novel functions with a minimal system propagation delay of 0.5 milliseconds.

For every Kling & Freitag speaker system, there are specific parameters available in the form of 'LSBlocks' that can be assigned to each of the 4 output channels.

Often-used combinations of routings and 'LSBlocks' can be saved together with further parameters (Gain / Delay / 'PEQ') in up to 64 setups.

A separate 31-band one-third-octave EQ is assigned to every one of the CD 44's four input channels. Up to 16 different EQ setups can be saved and administrated in an individual EQ setup library. These EQ setups can be loaded in addition to the setups.

Two limiters work in each of the 4 output channels. A quick-reacting peak limiter limits the peak levels and, thus, the cone excursion of the connected speakers to non-critical levels. A slowly engaging RMS limiter reduces the levels when the permissible average power is exceeded, therefore keeping the voice coils from overheating. In the K&F CD 44, these limiters work especially quickly, exactly, and sound-neutral because of the algorithms used. In this process, the sense technology developed by Kling & Freitag, which controls the limiters in real time, significantly increases the operating safety of the connected speakers.

A further feature of the K&F CD 44 is the function 'Limiter Reduction', that allows for the preset limiter thresholds to be systematically reduced. This, for example, lets the user precisely limit the sound level of the speakers to the desired levels with password protection.

All functions are operated and set on the front-side LCD display using a digital rotary encoder. Often-used functions (GAIN, DELAY, FILTER, PEQ) can be quickly accessed using the shortcut buttons. For mobile use, the system controller has all of its speaker and line signal connectors on the front. The large voltage range of the switch mode power supply enables the worldwide use of the K&F CD 44.



<b>Input Signal Processing</b>	
Input delay	delay up to 200 ms with 100 $\mu$ s resolution
Filters	31-band graphic EQ
	4 selectable filters (Bell, LShelv, HShelv, HighP, LowP, AP)
Gain	digital gain control +20 dB to -96 dB
<b>Output Signal Processing</b>	
Output delay	40 ms total (2 x 20 ms) with 10 $\mu$ s resolution,
Filters	12 filters in the speaker specific K&F LS blocks
Limit	RMS and peak limiter in the speaker specific K&F LS blocks
Gain	digital gain control +20 dB to -96 dB
<b>Sense Inputs</b>	
Maximum input level	150 Vrms
Gain determination	20 dB to 45 dB
<b>Analog-to-Digital Inputs</b>	
Input impedance	10 k $\Omega$ balanced, 10 k $\Omega$ unbalanced, electronic ally balanced
Nominal input level	+6 dBu
Maximum input level	+18 dBu
Frequency response	+0/-0.2 dB, 2 Hz to 20 kHz
THD + noise	0.0006 % (-105 dB) typical @ 1 kHz/-1 dBfs
Dynamic range	118 dB typical, A-weighted
CMRR	65 dB, 20 Hz to 20 kHz, 75 dB typical @ 1 kHz, 70 dB typical @ 20 kHz
<b>AES / EBU Inputs</b>	
Supported resolutions	up to 24 bit
Supported sample rates	44.1 - 192 kHz, internal dejittering via sample rate converter
<b>Digital-to-Analog Outputs</b>	
Output impedance	<40 $\Omega$ , electronically balanced
Nominal output level	+6 dBu
Maximum output level	+18 dBu
Frequency response	+0/-0.2 dB, 2 Hz to 20 kHz
THD + noise	0.0006 % (-105 dB) typical @ 1 kHz/-1 dBfs
Dynamic range	119 dB typical, 20 Hz to 20 kHz, A-weighted @ +18 dBu
<b>Analog-In to Analog-Out</b>	
Frequency response	20 Hz to 20 kHz, $\pm$ 0.1 dB
Dynamic range	115 dB typical, 20 Hz to 20 kHz, unweighted
THD + noise	0.0007 % (-103 dB) typical @ 1 kHz / +17 dBu (all gains zero)
	0.001 % (-100 dB) typical @ 1 kHz / +6 dBu (all gains zero)
Conversion resolution	24 Bit
Internal sample rate	96 kHz
Internal data path	28 bit integer, arithmetic precision: 76 bit
System propagation delay	0.5 ms (analogue to analogue)
<b>Remote Interface</b>	
	RJ45 EtherCon™ connector for a 10/100Base-TX ethernet (IP) connection
<b>Power Requirements</b>	
AC	100 - 240 V~ / 50 - 60 Hz
I nom.	150 - 100 mA
<b>Dimensions and Weight</b>	
Dimensions (W x H x D*)	1 RU rack mount: 483 x 44 x 192 mm (19" x 1.75" x 7.6")
	*installation depth incl. power cord 260 mm (10.236")
Weight	1.8 kg (3.97 lb)

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