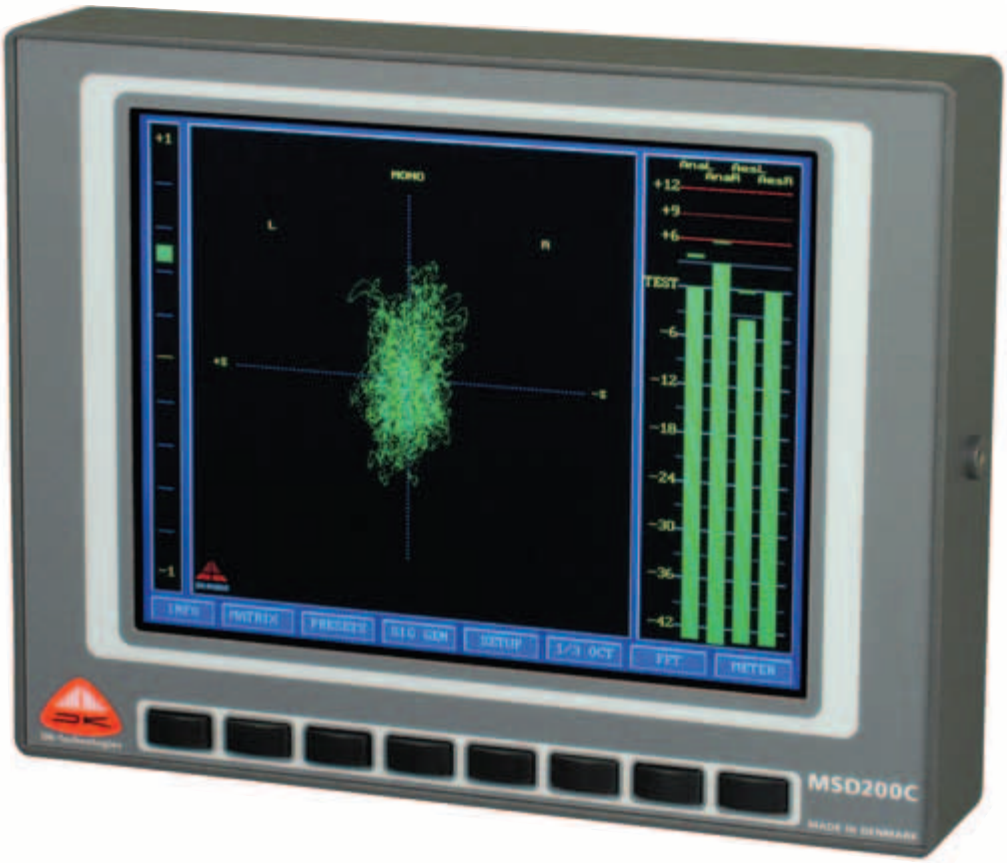
Master Stereo Meter

PRODUCT CODE: MSD200C & PT0200C

DK - Technologies



The MSD200C and PT0200C, Master Stereo Meter, from DK-Technologies offer phase meter, audio vector oscilloscope and PPM / VU level meter as the primary tools.

The Level Meter has direct selection of 7 PPM/VU scales. All the standard scales are available including Nordic, EBU, BBC, ABC, NBC, DIN, VU, Digital and others. Each scale can be configured individually concerning overload level and reference level. Furthermore the colour and width of each PPM bar can be set by the user.

The DK-Scale™ software program for Windows contains a large library of scales which can easily be downloaded to the meter.

Modification of existing scales or designing new scales according to your own specifications are also possible with the software. For easy identification each channel can be named individually with up to 4 characters.

Features...

- 2 analogue audio and 1 AES3 inputs are readily available for choice of input format
- Features Stereo Peak Programme Meter for audio level measurements
- 7 scales directly selectable to conform to standard used
- PPM colours and headings are user programmable for easy identification
- Vectorscope display supports aural stereo impression at a glance
- Phase correlation meter indicates proper phasing to allow for mono downmix
- 2 analogue audio and 1 AES3 outputs connect via the internal matrix to inputs, internal audio generator, as well as sum and difference amplifiers
- Choice of 1024-point FFT spectrum analyser and 1/3-octave analyser for display of frequency distribution of each channel over full audible range
- AES3 bitstream status display indicates characteristics of the digital audio signal
- Bright, VGA colour display with adjustable backlight allows adaptation to environmental light conditions
- VGA output connects directly to an external monitor for remote or larger display

The Next Generation

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ORDERING INFORMATION

Base Units

MSD200C
Master Stereo Meter, desktop version. 2 analogue and 1 AES3 inputs, 2 analogue and 1 AES3 outputs, DC supply input, RS-232, and VGA output. Incl mounting bracket

PT0200C
Master Stereo Meter, rack version. 2 analogue and 1 AES3 inputs, 2 analogue and 1 AES3 outputs, DC supply input, RS-232, and VGA output.

PT0200C-BNC
Master Stereo Meter, rack version. 2 analogue XLR and 1 AES3id inputs, 2 analogue XLR and 1 AES3id outputs, DC supply input, and VGA output.

Options

MSD600-PS/0
Power Supply Adapter, 100-240V AC to 15V DC, 3.5A, IEC connector

Accessories

MSD200C-Cable/0
Connector Cable for MSD200C and PT0200C. D-Sub to XLR

200C/600C-U-Cable/0
Utility Cable for MSD200C and PT0200C. D-Sub to Power/RS-232

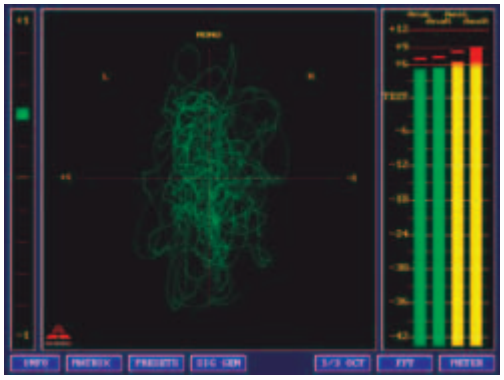
MSD-BASE/0
Aluminium Base Plate for MSD200C

PM8539
19" Rack cabinet for PT0200C

PM8540
Blank Panel for PM8539

Solutions in Audio & Video

SIGNAL GENERATOR



Display of a stereo signal. The level meter to the right has selectable scales.

Another key point of the instruments is the built-in signal generator. It has a tone generator variable in frequency from 31 Hz to 20000 Hz, and the level in steps of 0,1 dB.

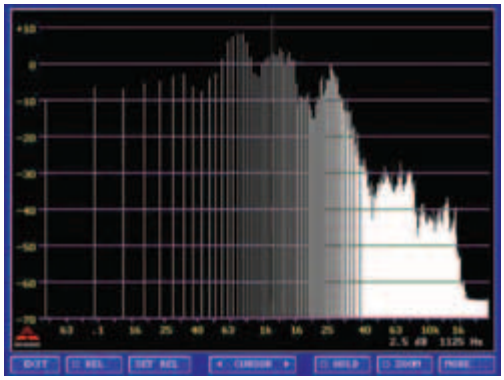
In addition it can also generate the EBU test signal, pulse signals, and white and pink noise signals for use with the spectrum analysers.

Use the generator to turn the instruments into a powerful measurement tools for analysis of linearity and distortion.

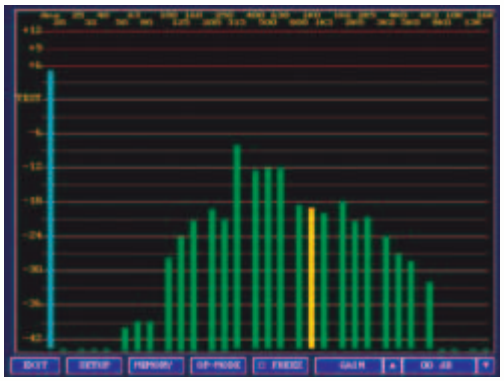
SPECTRUM ANALYSER

The spectrum analyser section has both an FFT-analyser and a 1/3 octave analyser. The FFT is primarily used for accurate measurements and exact identification of problem frequencies.

To this end a cursor is available and level and frequency will be shown for each cursor position across the frequency range on the display.



The FFT spectrum of the input signal is calculated at 1024 discrete frequencies.



The 1/3-Octave spectrum shows the energy distribution of the input signal.

The 1/3-octave analyser has 30 bars, grouped in full octaves from 20 Hz to 16000 Hz.

This standard tool is primarily used during recording to check the energy distribution of the signal.

STEREO SOUND

The oscilloscope shows the stereo image in the Lissajous-format (Goniometer), where a perfect stereo signal would be represented by a circular figure, or a 'ball', and mono would be a vertical line.

WHAT IS A GONIOMETER?

The goniometer or "audio vector oscilloscope" is an instrument that can give a detailed picture of the relationships in a stereo signal - or between two arbitrary signals. The idea behind the instrument was developed by Holger Lauridsen, the Chief Engineer at Denmarks Radio in the 1940s and early 1950s.

It involves an oscilloscope with one input being used for the X-deflection and the other input for the Y-deflection. In relation to a normal oscilloscope, the image is rotated by 45°.

This means that, when the same signal is applied in the left and right channels (X and Y) respectively it leads to a vertical deflection (a vertical line). If the signals are otherwise identical but in opposite phase, then a deflection will occur in the horizontal plane (horizontal line).

When the signals are different, the display changes from straight lines to spatial figures. What is ingenious about the instrument is that it can show many different parameters in the stereo signal simultaneously.

PHASE METER

The phase meter is of the "centre-zero" type and immediately advises out-of-phase errors by pointing towards the [-1] area and changing to red colour.

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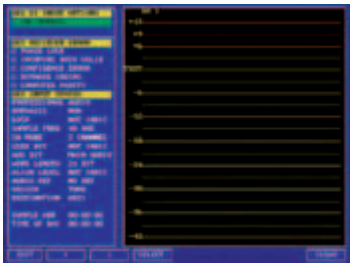
AUDIO MATRIX

The instruments contain a complete 4 x 4 audio matrix. It can route, in broadcast program quality, any input to any output. The x-points of the source and destination channels can be easily selected from the menu. The DK-Matrix™ software make the selection of x-points and several other parameters even easier. Specific instrument set-ups may be stored in any of the 11 presets for later recall.

A/D & D/A CONVERTERS

The analogue inputs have high quality A/D converters, and the digital inputs have sample rate converters to ensure the ability to handle asynchronous signals. The analogue outputs are equipped with D/A converters. The instruments can be used as separate A/D and D/A converters even while you are using the metering functions on the same or other signals.

OTHER FUNCTIONS



The bit status display supplies information about the content and the physical layer of the AES3 data signal.

In the digital mode the instruments will show a Bitstream Status Display.

Other features are the time code input which will synchronize to SMPTE, and a Statistical Session Report showing highest true peak, number of clippings, and number of mutes over time.

RACK MOUNTING

The PT0200C fits into the standard rack mount cabinet next to a video waveform monitor. DK-Technologies also offers a range waveform monitors such as the PT0760M for HD/SDI video.

COMPACT CONSTRUCTION

The instruments are very compact units. Everything has been fitted into a box not much bigger than the size of a pocketbook. The MSD200C will fit nicely into your console or work desk, and the PT0200C sits conveniently next to a video waveform monitor.

On the rear of the instrument a single D-Sub connector provide access to the inputs and outputs. The utility input connector holds the power connection, the RS232 communication port, and a sync input. A separate connector provides the output to an external VGA-monitor.

RELATED PRODUCTS

Desktop versions:

MSD100C
Colour display. Pre-configured, analogue and AES3 stereo inputs and outputs. Basic functionality

MSD600M++
Modular configuration of inputs in analogue, AES3, SDI, and HD and outputs in analogue and AES3.

Rack mount versions:

PT0200C
Colour display. Pre-configured, analogue and AES3 stereo inputs and outputs. Full functionality including spectrum analysis

PT0600M
Modular configuration of inputs in analogue, AES3 & SDI with outputs in analogue and AES3.

PT0660M
Modular configuration of inputs in analogue, AES3 & SDI with outputs in analogue and AES3. Volume control.

PT0660M-LS
Modular configuration of inputs in analogue, AES3 & SDI with outputs in analogue and AES3. Stereo loudspeakers and volume control

Peak Programme Meters:

478-series
Stereo PPM with AES3 or analogue inputs and phasemeter. Horizontal or vertical versions for rack mount and desktop. Choice of scales.

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PRODUCT DATA

PPM Analogue References
- Indication: 0 dBu
- Input voltage: 1.55 V

PPM Scales
Dynamic response:
- Pflichtenheft 3/6: 3 ms / -3 dB
- IEC 268-10: 5 ms / -2 dB
- IEC 268-17: VU: 300 ms

Return (fallback) time:
- Pflichtenheft 3/6: 20 dB / 1.5 s
- IEC 268-10: 20 dB / 20 s

Division of scales:
- Type I: -42 dB to +12 dB
- Type IIA: +1 dB to +7 dB
- Type IIB: -12 dB to +12 dB
- Type DIN: -50 to +5 dB
- Type VU: -20 dB to +3 dB
- Type DMU-I: +60 dB to 0 dB
- Type DMU-2: -6.0 dB to 0 dB

Phase Correlation Meter
- Indication range: +1 to –1

Audio Vectorscope
- Automatic gain offset range: 30 dB
- Phase error between channels: none

LCD Display
- Resolution in dots: 640 x 480
- Pixel size: 0.2 mm
- Lifetime: 50.000 hours
- Contrast ratio: 100:1
- Viewing area: 135 x 100 mm
- Luminance: 300 cd/m2
- Contrast ratio: 100:1
- Viewing area: 135 x 100 mm
- Luminance: 300 cd/m2

Analogue Inputs
- Maximum input level: +24 dBu
- Sample rate with internal sync: 48 kHz
- Sample rate range with external sync: 32 kHz to 50 kHz
- Bit resolution: 24 bits
- Frequency range within ±0.3 dB: 30 Hz to 20 kHz
- Passband ripple: ±0,002 dB
- Group delay: less than 0.82 msec
- Dynamic range, A-weighted: more than 103 dB
- Crosstalk at 1 kHz: less than –96 dB
- Signal-to-noise ratio: typical 93 dB
- Nominal input impedance: greater than 20 kohm

Digital input
The digital input is equipped with a sample rate converter to synchronize the input to the internal clock. The sample rate converter may be by-passed. In this case the base unit should be synchronized externally by an AES3 signal applied to the sync input on the utility connector.
- Sample rate range: 30 Hz to 100 kHz
- Internal sample rate: 48 kHz
- Bit resolution: 24 bits
- Group delay: maximum 1.75 msec
- Passband ripple: ±0.008 dB
- Total harmonic distortion and noise: typical –103 dB at 1 kHz
- Dynamic range: more than 120 dB
- Nominal input impedance: 110 ohm

Analogue Outputs
- Output connector: 25-pole D-Sub
- Maximum output level: more than +18 dBm at 600 ohm
- Sample rate with internal sync: 48 kHz
- Sample rate range with external sync: 32 kHz to 50 kHz
- Bit resolution: 24 bits
- Frequency range within ±0.3 dB: 30 Hz to 20 kHz
- Passband ripple: ±0,007 dB
- Group delay: less than 0.21 msec
- Dynamic range, A-weighted: more than 101 dB
- Crosstalk at 1 kHz: less than –96 dB
- Signal-to-noise ratio: typical 93 dB
- Nominal output impedance: less than 5 ohm

Digital Output
- Output impedance: 110 ohm ±20%
- Amplitude: 3 V
- Rise and fall time: 10 - 30 ns
- Jitter: less than 20 ns
- Data rate: 3.072 Mbit/s
- Sampling frequency: 48 kHz

Power Supply
- Supply voltage range: 12 V to 24 V DC
- DC power consumption: approx. 18 W at 12 V DC nominal supply
- Safety: according to IEC 65

Environmental Conditions
- Temperature range: 0°C to 45°C

Cabinet Dimensions
MSD200C, desktop version:
- Width: 186 mm
- Height: 144 mm
- Depth: 50 mm plus connectors.

PT0200C, rack version:
- Width: 214 mm
- Height: 134 mm
- Depth: 50 mm plus brackets and connectors.

PT0200C-BNC - REAR PANEL

MSD200C - REAR PANEL

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