

Шумомеры для измерения уровня внешнего шума автомобилей DELTA ОНМ HD2010МСТС

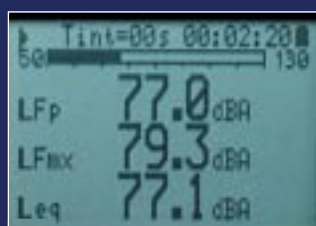
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HD2010 MCTC

Integrated Sound level meter approved by the Ministry of Transport



▶ Basic screen



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The HD2010MCTC is a integrating portable sound level meter able to carry out all the sound level measurements provided for the procedures of vehicles revision (New Circular Letter no.88/1995 of Ministry of Transport and Navigation and following updates). The sound level meter is equipped with communication protocol in accordance with the MCTC-Net specifications (Circular Letter Prot. N.6247/698/99 and following updates). The instrument has been designed as a match of cheapness and ease of use. Attention has been paid to the possibility of updating the instrument: the firmware can be directly updated by the user by means of the DeltaLog5 program.

Technical regulations:

- Sound level meter class 1 according to IEC 61672-1 of 2002 (Certificate of Conformity I.N.RI.M. no. 06-1145-02), IEC 60651 and IEC 60804.
- Acoustic calibrator class 1 according to IEC 60942:1988.

Application Kit

Noise measurement of vehicles (MCTC approved)

- **HD2010MCTC kit 1:** includes sound level meter HD2010MCTC, calibrator HD9101, preamplifier HD2010PNE2, microphone for free field UC52/1, windshield and RS232 serial connection cable. DeltaLog5 PC program

Accessories

Option 7 "SIT calibration": the SIT calibration replaces the calibration Report according to ISO9000. Only for newly manufactured instruments.

SWD10: stabilized power supply with $V_{in}=100\pm 230V_{ac}$ / $V_{out}=12V_{dc}$ / 1000mA.

CPA/5: 5m extension cable for preamplifier HD2010PNE2.

CPA/10: 10m extension cable for preamplifier HD2010PNE2.

VTRAP: tripod max height 1550mm.

HD2110/SA: support to fix the preamplifier to the tripod.

The sound level meter HD2010MCTC is able to measure the vehicles noise according to the directives of Transport and Navigation Ministry (Approval Certificate no. OM00568/e/NET).

The sound level meter introduces two functioning modes: DELTA and MCTC.

DELTA Mode

When the user selects DELTA functioning mode the sound level meter HD2010MCTC can be used as a traditional integrating sound level meter with statistical analysis and measures storing functions.

The sound level can be analyzed by programming 3 parameters with the possibility to easily choose the frequency weighting and the time constants. Parameters such as Leq, SEL, minimum and maximum sound levels can be measured with integrating time from 1 second up to 99 hours. Should a no requested sound event cause an overcharge indication or modify the result of an integration, it's possible to exclude its influence by using the versatile function of data erase.

The sound levels can be stored in the wide non-volatile memory so as to be downloaded to a PC with the DeltaLog5 program (supplied with the instrument).

As a statistical analyser, the HD2010MCTC samples the sound signal 8 times per second with A-frequency weighting and FAST constant and analyses it according to 0.5 dB levels. Up to 3 percentile levels from L_1 to L_{99} can be displayed.

The LINE un-weighted output allows to record the sound sample either on tape or directly on a PC equipped with a data acquisition card.

The data stored in the sound level meter can be dumped to the PC mass memory by means of the RS232 interface and the DeltaLog5 program (supplied with the instrument).

The sound level meter can be entirely controlled by a PC through the RS232 serial interface by means of a specific communication protocol.

The calibration can be made either using the acoustic calibrator supplied with the instrument (type 1 according to IEC 60942) or the built-in reference generator. The electrical calibration makes use of a special preamplifier and check the sensibility of the measuring channel, microphone included. A protected area in the non-volatile memory, reserved to factory calibration, is used as a reference in the user calibrations: this allows to control the instrument drifts and preventing the instrument from "going out of calibration".

By means of a diagnostic program the user can check himself in the field the sound level meter working.

MCTC Mode

When the user choose MCTC functioning mode the HD2010MCTC set up automatically to carry out the measurement according to the New Circular Letter no.88/1995 and following integrations. The PC fixed station communication with the sound level meter is allowed by the RS232 serial connection as "no outcome RS" mode at 9600 baud.

Inputs and outputs

Un-weighted LINE output (jack \varnothing 3.5mm).

Standard RS232C serial port according to EIA/TIA574 with supply to pin 9. Baud Rate from 300 to 115200 baud (9600 baud with MCTC-Net mode).

External power supply 9 \pm 12Vdc (jack \varnothing 5.5mm).



Italian Laws

- Noise in working environment: Lgs. Decree 195/2006 and European Directive 2003/10/CE.
- Noise in dancing places: D.P.C.M. 215 of 16/4/99.
- Machines noise emissions Lgs. Decree 262 of 4/9/2002 .

Software:

DeltaLog5

The DeltaLog5 program allows simple and easy interfacing of the sound level meter to the relevant PC (DELTA mode). Here below the main functions:

- Dumping of data stored by sound level meter to the PC memory.
- Display of logged data in graphic or table form.
- Export to Excel.
- Sound level meter set up management.
- Sound level meter firmware updating

This software allows an easy compilation of reports concerning the sound level meter measurements: in fact it's able to copy any graph or table displayed by DeltaLog5 in further applications.

Order codes for kits and accessories

HD2010MCTC kit 1: includes sound level meter HD2010MCTC type 1, carrying case, preamplifier HD2010PNE2, calibrator HD9101, microphone UC52/1, windshield HD SAV, DeltaLog5 program and "null modem" type RS232 serial cable for PC connection with type COM interface (9CPRS232).

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CPA/5: 5m extension cable for preamplifier HD2010PNE2.

CPA/10: 10m extension cable for preamplifier HD2010PNE2.

VTRAP: tripod, max height 1550mm.

HD2110/SA: support to fix the preamplifier to the tripod.

Codes of spare parts and accessories

HD9101: calibrator type 1 according to IEC60942:1988. Frequency 1000Hz, sound level 94dB/114dB.

HD SAV: windshield for 1/2" microphone.

HD2010PNE2: Microphone preamplifier with standard connector for 1/2" microphone. It's equipped with CTC device for electrical calibration.

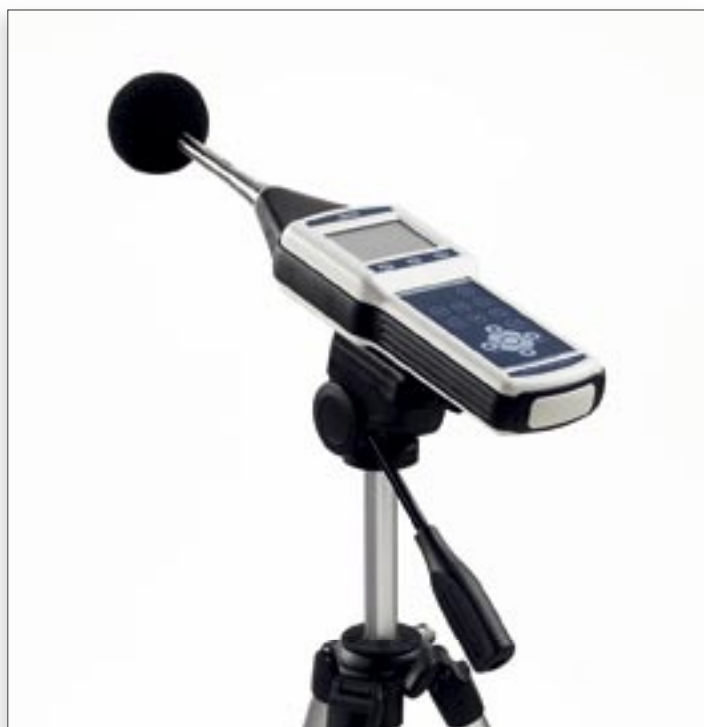
UC52/1: microphone type 1 for free field.

Technical characteristics

Standards	Class 1 group X according to IEC 61672:2002, according to IEC 60651:2001 and IEC 60804:2000
1/2" Microphone	UC52 condenser pre-polarized microphone for free field.
Range	30 dBA ÷ 143 dB Peak
Linear Field	80 dB
Acoustic Parameters	Spl, L_{eq} , SEL, $L_{EP,d}$, L_{max} , L_{min} , L_{pk} , Dose, L_n
Frequency Weighting	Simultaneous A, B, C (only C for L_{pk})
Temporal Weighting	simultaneous FAST, SLOW, IMPULSE
Integration	from 1s to 99 hours with Back-Erase function
Statistical Analysis	Displays up to 3 percentile levels from L_1 ad L_{99}
Display	• Graphic Display 128x64 with 3 parameters in numeric format
Memory	• 2MB sufficient for more than 500 stored values.
Input/Output	• RS232 serial interface with DB9 connector • AC output (LINE)
PC Programs	• DeltaLog5: PC interface for data downloading, setup and sound level meter management (supplied with the instrument)
Operating Conditions	• temperature -10÷50°C, 25÷90%RH (without steam), 65÷108kPa. Protection degree: IP64
Power supply	• 4 alkaline or rechargeable NiMH type AA batteries or external 9÷12Vdc 300mA
Dimensions and weight	• 445x100x50mm equipped with preamplifier, 740g (with batteries).



SWD10



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