

384 MIL-STD-1474E SET

High SPL Firearm Noise Test System



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This high-SPL measurement system was developed for suppressor manufacturers wishing to conduct measurements in accordance with MIL-STD-1474E.

It consists of a 2-channel data acquisition (DAQ) system, an MP30-HSPL-342 measurement microphone, and NVH Blast Test software for sound level measurement.

The software can be configured to perform measurements using a 0.3-second pre-trigger and a trigger threshold exceeding 500 Pa for a duration of 2 seconds. The number of test runs can be adjusted; for instance, the peak levels from five consecutive shots can be acoustically summed into a single value.

Users can select acoustic filters (A, B, C, and Z) as well as standard-compliant time weightings (Slow, Fast, Impulse).

Furthermore, various display and analysis functions can be configured, including time history, FFT, averaged FFT, third-octave analysis, and level-versus-time plots.

Calculated results from the individual analysis windows can be exported in CSV format.

A recording function allows sound pressure level (SPL) data to be saved in CSV format with calibrated scaling.

Properties

- 2 Channel IEPE Sensor USB DAQ 384 kHz 32 Bit ADC
- 1 x High SPL microphone Max 186 dB
- 1 x BNC to BNC sensor cable 10 meters
- NVH-Blast Test or FreqCheck Software Optional
- 4010 Microphone Calibrator

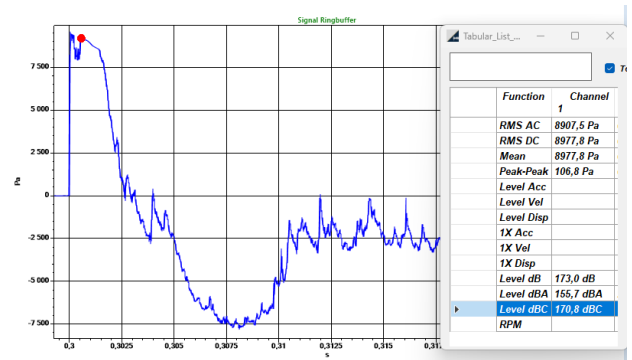
Application

- High sound pressure measurement in research, development and education
- Impulse response measurements
- Analysis of ultra-high impact tests, gas explosions
- MIL-STD-1474E firing sequences from military weapon systems



Specifications:

RogaDAQ 384	2 IEPE inputs
Measuring range	10 Volt Peak
DAQ Frequency	0,3 Hz to 160 kHz (-3dB)
Bandwidth	384 kHz sampling rate per channel
Sensor power supply	via USB
Microphone	1/4" Class 1 WS3P MP30-HSPL-324
Sensor Sensitivity	0.2 mV/Pa
Frequency response	5 Hz -75 kHz
Sensor cable	1 piece
Cable length	10 meters
Connection	BNC to BNC
Microphone Calibrator	94 dB & 114 dB SPL Class 1
Software	NVH Analyzer Blast Test



RogaDAQ 384

USB Audio IEPE DAQ

- 32-Bit 384 kHz ADC
- Galvanic isolated
- DC – 120 kHz
- IEPE AC/DC



The RogaDAQ 384 is valued by both acousticians and NVH engineers for its driverless plug-and-play integration. As a standard USB audio interface, it offers excellent compatibility with programming environments and recording software such as NVH Analyzer, MATLAB, LabVIEW, and Audacity.

Key specifications and features include: High resolution—many specialized cards offer 24- to 32-bit resolution and extremely high sampling rates of up to 384 kHz to capture highly detailed acoustic and vibration data.

IEPE/ICP support—high-quality measurement cards (such as the RogaDAQ 384 or RogaDAQ2 from ROGA-Instruments) feature integrated IEPE (Integrated Electronics Piezo-Electric) support. This enables the direct powering of specialized measurement microphones and accelerometers without the need for a separate signal conditioning unit.

DC coupling—unlike conventional consumer-grade USB DACs, professional audio DAQ cards offer true DC coupling. This allows for the measurement of static or extremely low-frequency signals (often down to 0.3 Hz), making them ideal for seismic analysis and infrasound monitoring.

Technical data

Analog Inputs	2 BNC inputs
Optional Galvanic Isolated	
Simultaneous sampling	2 ADC
ADC Resolution	32 Bit Float
Sampling Rate	384 kHz
Measuring range	10 Volt Peak
Coupling selectable DIP switches on the front panel	AC / DC & IEPE
IEPE Sensor Power	23 Volt @ 4.3 mA
Self-adjusting	Anti-aliasing filter
Accuracy better	± 0.2 dB
Dynamic Range with IEPE Supply	133 dB (FFT based)
THD	< 0.0016 %
Frequency response	DC up to 120 kHz - 0.2 dB DC up to 160 kHz - 3 dB
Frequency response with IEPE	0.3 Hz to 120 kHz - 0.2 dB 0.3 Hz to 160 kHz - 3 dB
Dimensions	112(W) x 178(D) x 45(H) mm
Weight	400 grams
Powered by USB port	Power consumption < 4W
RoHS	Yes

The measuring range is set to ± 10 volts Peak by default.

Other input configurations such as 5 V or 1 V are available upon request.



MP30-HSPL-186

186 dB High SPL Microphone
WS3P acc IEC 61094-4



MP30-HSPL-186

The MP30-HSPL-186 high-level microphone can capture extremely high sound pressure levels of up to 186 dB without clipping. Acoustic pressure surges—such as those from gas explosions, detonations, howitzers, and tank fire—are captured precisely.

The electrical connection is made via the permanently attached BNC connector with BNC cables.

The 1/2" MP30 preamplifier is equipped with a 1/2" to 1/4" reducing adapter A 67, so that pre-polarized 1/2" microphone capsules with higher sensitivities or other properties.

The MI-MKPL microphone holder is recommended for holding the microphone. The use of the 1/4" measuring microphone capsule accessories, such as windscreens, etc., is possible.

The microphone can be calibrated with class 1 sound calibrator at 114 dB SPL using a 1/4" adapter.

Technical data

IEPE Supply	24 to 30 V DC
Operating current	2 – 20 mA
Bias	12.5 V
Frequency range (± 3 dB)	3.5 Hz - 70 kHz
Microphone capsule thread	60 UNS
Polar pattern	Sphere
Electrical noise floor	12 dB (A)
Acoustic background noise	60 dB (A)
Limit sound pressure level	186 dB
Sensitivity	0.25 mV/Pa
Measuring range	60 – 186 dB (A)
Connector	BNC
Dimensions	$\Phi 12.5 \times 150$ mm
1/4" outside diameter	7.0 ± 0.02 mm
Weight	47 g

1/4" Microphone Capsule Specs

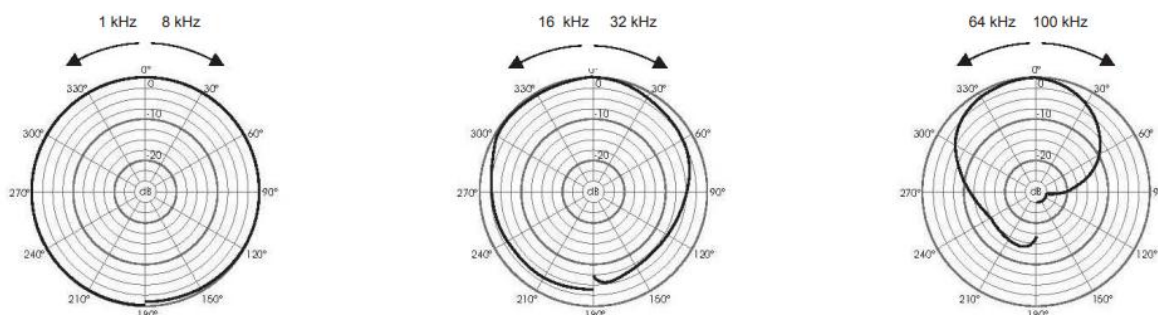
Transducer type WS3P acc IEC 61094-4	Capacitive pressure receiver
Frequency range of free-field transmission measurement	3.5 Hz ... 70 kHz (± 3 dB)
Sensitivity	0.25 mV/Pa
Limit sound pressure level for 3 % distortion at 1 kHz	186 dB
Noise	60 dB
Polarization voltage	backelectret
Capacitance with polarization voltage at 1 kHz	4.2 pF
Working temperature range	-50 ... +100 °C
Humidity up to	70 °C, 90 %
Temperature coefficient	≤ 0.01 dB/K
Static pressure coefficient	0.00001 dB/Pa
Diameter with protective cap	7 $\pm$ 0.02 mm
Height	9.7 mm
Weight	2 g
Thread for preamplifier	5.7 mm 60 UNS
Thread for protective cap	6.35 mm 60 UNS



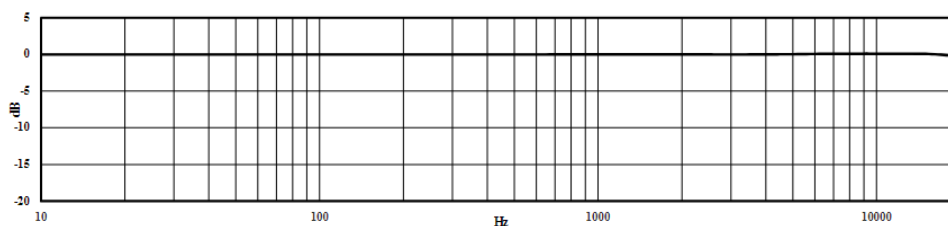
Maintenance and servicing

In order to ensure proper functionality, the measuring microphone capsule must be protected from mechanical damage and, depending on the conditions of use, checked on all sides for contamination at intervals to be specified in the operating voltage-free state. After removing the protective cap, the impurities in its interior, as well as on the membrane, should be removed extremely carefully with a soft brush or cloth. The measurement microphone capsule is not suitable for use in chemically aggressive media and conductive dust. Condensation formation must be ruled out.

Polar diagrams



typical pressure frequency response



4010

Sound Calibrator

Class 1 according IEC 60942

- frequencies 250 Hz and 1000 Hz
- sound pressure levels 94 dB and 114 dB
- microphones 1", 1/2" and 1/4"
- PTB Type-examination Certificate

The 4010 is a sound calibrator conforming to IEC 60942 class 1 and ANSI S1.40 for the calibration and the verification of microphones and sound level meters. The combination of two sound pressure levels and two frequencies allow both level linearity and frequency linearity to be verified. Each sound calibrator is supplied with an individual calibration certificate.



The reference microphone and control circuit together maintain a constant sound pressure level inside the calibration coupler and automatically adjust for changes in load volume, temperature, atmospheric pressure and relative humidity. In addition the sound calibrator measures the environmental conditions temperature, atmospheric pressure and relative humidity.

Delivery

with 1/2"-adapter 4010-2 in a leather case 110 mm x 60 mm x 50 mm

black

order number 610201

Accessories

adapter 1/2"	4010-2	order number 600203
adapter 1/4"	4010-3	order number 600204

Technical Specifications

Temperature measurement	Range	-10°C to +50°C
	Accuracy	±2°C
	Resolution	0.1°C
Atmospheric pressure measurement	Range	65 kPa to 108 kPa
	Accuracy	±0.4 kPa
	Resolution	0.1 kPa
Relative humidity measurement	Range	25% to 90%
	Accuracy	±4%
	Resolution	1%
Levels and frequencies at reference conditions (23°C / 101.325kPa / 50%rh)	250 Hz (251.19±0.30Hz)	(114.0±0.2)dB
Level in dB relative to 20µPa	250 Hz (251.19±0.30Hz)	(94.0±0.2)dB
	1000 Hz (1000.00±1.00Hz)	(114.0±0.2)dB
	1000 Hz (1000.00±1.00Hz)	(94.0±0.2)dB
Distortion		max. 2.0%
Stabilizing time		20 seconds
Sensitivity to environmental conditions		as specified for IEC 60942 Class 1
Microphone size	without adapter	(1/1)“
	with adapter 4010-2	(1/2)“
	with adapter 4010-3	(1/4)“
Battery type	2x LR03	AAA-size
	alkaline batteries	acc. ANSI/NEDA
Power supply		2 V to 3.4 V
Battery life		>10 hours
automatically switching off if battery voltage too low		
Mono-colour OLED graphical display	Resolution	128 x 64 (W x H)
LED indicator		two-colour LED
main value of sound pressure level	IEC 60942, 6.3e	114.0 dB
main value of frequency	IEC 60942, 6.3f	250 Hz
Environmental range for specified operation	Temperature	-10°C to +50°C
	Relative humidity	25% to 90%
	Atmospheric pressure	65 kPa to 108 kPa

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