▲ DEWESoft®

WHEN "WHERE THE SOUND IS COMING FROM" IS IN QUESTION, NOTHING IS AS SIMPLE AND AS INTUITIVE, AS OUR SOUND INTENSITY SOLUTION. DESPITE BEING SIMPLE, DEWESOFT SOUND INTENSITY SOLUTION CAN BE USED TO DETERMINE SOUND POWER OF DEVICES BIG AND SMALL.

KEY FEATURES

- Complies to sound intensity based sound power calculation - discrete points segmentation method (9614-1) and scanning method (9614-2)
- Calibration according to IEC61672
- Quick sound source Identification
- Adapted method for measuring big chillers and transformers
- Reuse existing sound intensity probes from G.R.A.S. and other manufacturers*
- Feature complete sound intensity measurement
- Works on existing Dewesoft hardware
- Future-proof application
- Easy to use and set-up
- Dewesoft quality and flexibility
- Familiar and comprehensive user interface

contact our support for detailed information

HIGHLIGHTS

HOW DOES SOUND INTENSITY WORK?

The sound intensity measurement technique is a powerful tool used for sound source location, their order ranking and determination of emitted sound power. The method is based on the simultaneous determination of sound pressure and particle velocity using two closely-spaced, face-to-face, phase matched microphones. The sound intensity probe itself must maintain a well-defined acoustical spacing between the microphones and at the same time cause as little disturbance to the sound field as possible.

EASY SETUP

Plug and play solution with only three connectors that need to be connected, our state of the art SIRIUS MINI seamlessly pairable with intensity probes of different manufacturers. Measurement is fully controlled from intensity probe, making it straightforward and agile for the user to conduct.

PORTABLE. EXPANDABLE. ADAPTABLE.

Our powerful solution is completely portable since SIRIUS mini can be powered over USB and coupled directly with intensity probe. Moreover, we support 200V polarization voltage on-the-go for the probes that require it. SIRIUS MINI features four analog inputs, two are used by intensity probe leaving two additional inputs available for other measurement sensors.

Besides fully supporting existing probes, we offer complete kits with intensity probe supplied as well. G.R.A.S. 50GI-R was chosen for this purpose, as it can cover entire frequency range with provided selection of spacers.

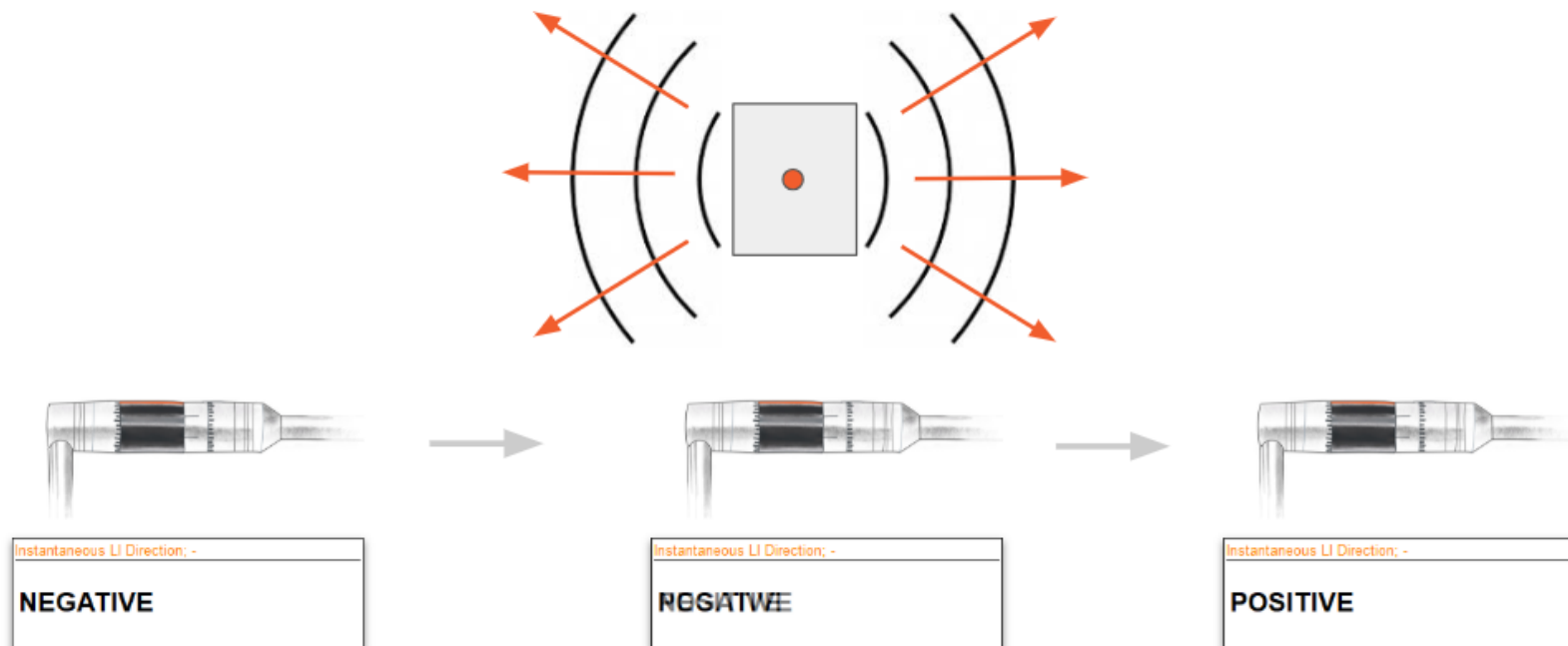The useful frequency ranges for different microphone spacers are shown below:

HIGHLIGHTS

QUICK SOUND SOURCE IDENTIFICATION FEATURE

Depending on the direction of sound waves travel (from microphone A to B or vice versa), Sound Intensity plugin will display different values, either positive or negative as it is moved along the axis of the probe (microphone axis). When the intensity probe is perpendicular to the noise source (located directly above it), the visual control inside

DEWESoft X3 will toggle between positive and negative value. As this process is done for the horizontal and vertical alignment of the probe axis, our Sound intensity solution has reliably identified noise source location with state of the art precision.

Sound sources can be located using the direction of sound intensity (SI Live display)

Instantaneous LI Direction; -	Instantaneous LI Direction; -	Instantaneous LI Direction; -
NEGATIVE	**NEGATIVE**	**POSITIVE**

HIGHLIGHTS

SOUND INTENSITY SOUND POWER MEASUREMENT:

Sound power measurement is universally recognized method which was established to compare devices for their acoustic properties. It is often assumed that sound power is measured. And certain methods do measure all parameters simultaneously which makes calculation happen instantly as well.

So the reality is that sound power is always calculated. Depending on the method used, there are limitations. Some methods require anechoic room or reverberation room which imposes limitation on the size of the measured object and considering all the facts, making them significantly more expensive. Intensity based sound power calculation might not be as fast as other methods, but it definitely brings a set of benefits:

- No limit to the object size and shape
- Few requirements for the room or location of measurement (can be done in any sound field)
- Device requiring specific and complex mounting to operate, can only be measured efficiently with Sound Intensity method
- In-situ measurement to check conformance to factory measurement for fast troubleshooting
- Complex devices where there is residual noise and we are interested only in the sound power of a specific machine

CALIBRATION:

Modern measurement techniques and solutions all require a way to ensure quality and compliance of measurement chain. Dewesoft has recently put special efforts in this area. Every Dewesoft SIRIUS model can thus be calibrated according to IEC 61672-3:2013 Class 1. Our sound intensity solution also includes procedures for single frequency pressure accuracy and also Phase calibration of the whole measurement chain using intensity probe calibrator. In addition, we also carry out calibration of octave-band and fractional-octave-based filters according to EN 61260.

HIGHLIGHTS

Intensity Sound power can be calculated according to two different standards:

SCANNING METHOD (9614-2)

Sound intensity Scanning method for sound power determination is on average slightly less accurate from the Segmentation method. The main reason why scanning method comes handy is the speed at which the measurement can be done. This holds especially true for large devices. Dewesoft solution shines with a very clear visual control and on-screen guidance in regards to timing and scanning patterns. The most powerful aspect is the support for the buttons on the sound intensity probe, making it fully operational by a single person. Scanning method is meant to be simple and fast. So we delivered just that.
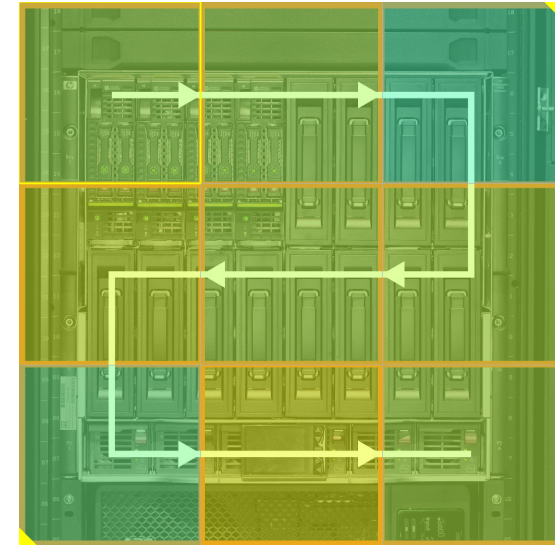
SEGMENTATION METHOD (9614-1)

When more time is available or more detailed approach is necessary, segmentation method is the best option. Once an object is measured from all (usually 5) sides, sound power can be calculated. However, with our solution it is possible to do a more detailed analysis of the result. The software maintains the levels for each segment and further sub-segmentation is possible to extract extra information about the device. On top of all this, intensity probe buttons are supported for moving between segments and triggering start/stop of the measurement. Accompanied with a beautiful visual control with overlay on top of the object image, our solution gives an intuitive view of the results and key quality parameters of measurement.
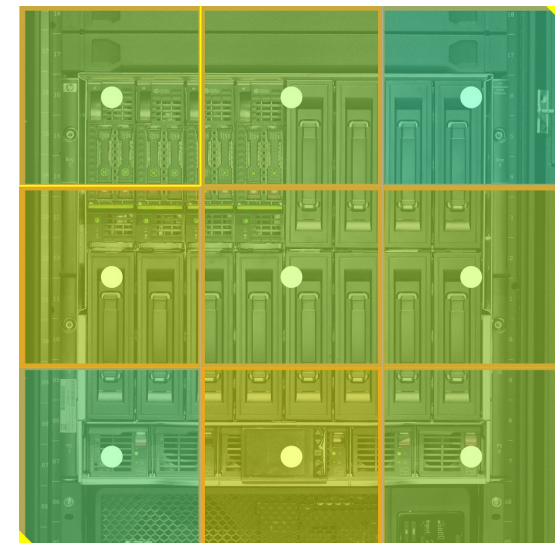
HIGHLIGHTS

DEWESoft Sound Intensity solution features familiar and comprehensive user interface:

DEFAULT DISPLAY

Default Sound intensity plugin display creates a noise map of selected surface shapes, displaying sound intensity values for individual segments in a comprehensive grid, that can be laid over the image of your measured product. Recorded instantaneous sound intensity values for segments are shown in color according to the predefined color scale. Values for sound power of selected segments and surfaces are displayed in frequency domain as a whole or 1/3 octave spectra.
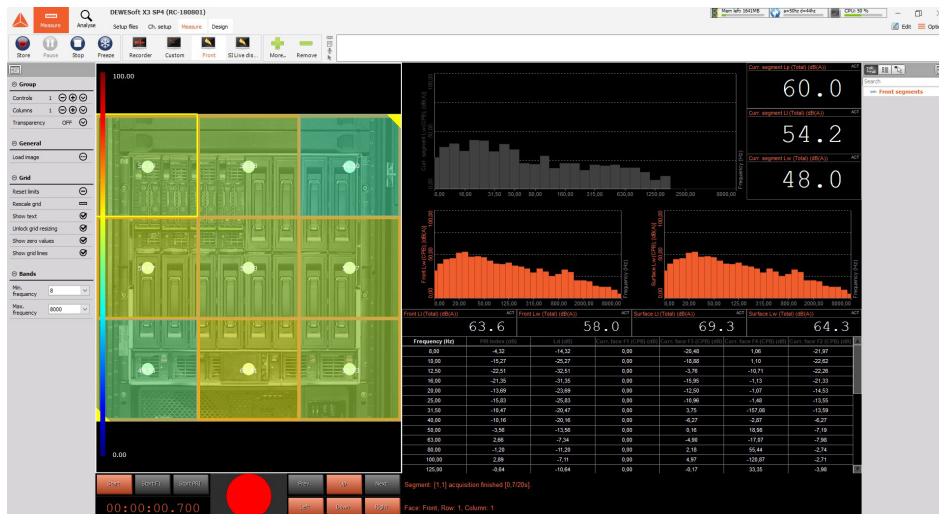
LIVE DISPLAY

Live Sound intensity plugin display portrays instantaneous sound power and intensity in either whole or 1/3 octave spectra and displays instantaneous overall values for both quantities. Instantaneous directions for individual octave bands are exhibited in the table on the right side of the screen and overall instantaneous direction is written out as well.
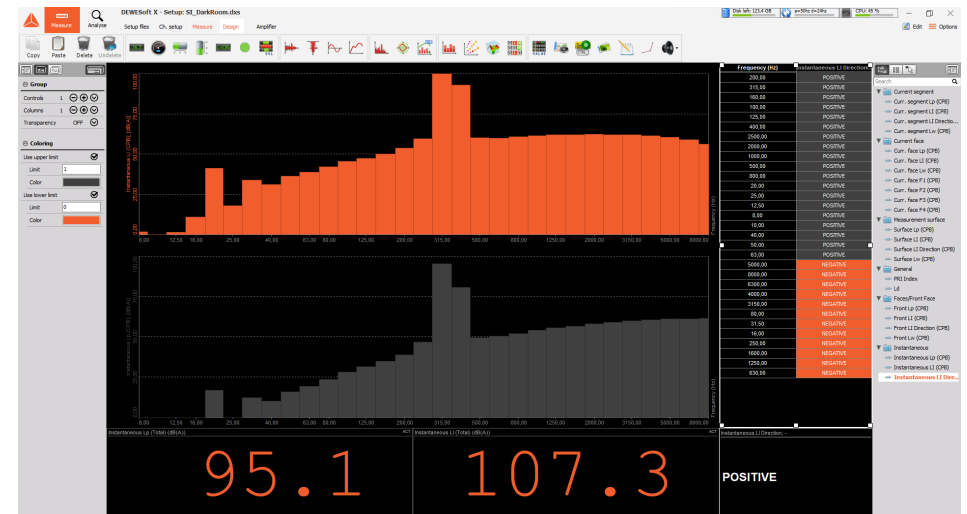
TECH SPECS

	SIRIUSm-4xACC	
Analog inputs		
Input type	"Voltage IEPE"	
ADC type	24bit delta-sigma dual core with anti-aliasing filter	
Sampling rate	Simultaneous 200kS/sec	
Ranges (Dual Core Low Range)	±10V (±500mV)	±500mV (NA)
Input Accuracy (Dual Core)	±0.1% of reading ±10(1)mV	±0.1 of reading ±1(NA)mV
Dynamic Range@10kS (Dual Core)	140 dB (160 dB)	135 dB (NA)
Typ. SNR@50kS (Dual Core)	107 dB (125 dB)	100 dB (NA)
Typ. CMR @ 50Hz/1kHz	140/120 dB	140/120 dB
Gain Drift	Typical 10 ppm/K, max. 30 ppm/K	
Offset Drift	Typical 0.5 µV/K + 2 ppm of range/K, max 2 µV/K + 10 ppm of range/K	
Gain Linearity	<0.02%	
Inter Channel Phase-mis-match	0.02° * fin [kHz] + 0.1° (@ 200 kS/sec)	
Channel Cross talk	>160 dB @ 1kHz	
Input Coupling	DC, AC 0.1 Hz,1Hz	
Input Impedance	1 MΩ (270kΩ for AC coupling ≥ 1Hz)in parallel with 100pF	
Overvoltage Protection	In+ to In-: 50 V continuous; 200V peak (10msec)	

IEPE mode	
Excitation	2, 4, 8, 12, 16 or 20mA
Compliance voltage	25 Volt
Output Impedance	>100 kΩ
Sensor detection	Shortcut: <4Volt; Open: > 19Volt
Additional Specifications	
Input connector BNC	BNC
TEDS support	IEPE mode only
Digital Inputs	
Inputs	-
Counter modes	-
Input level compatibility	-
Input protection	-
Digital output	-
Power specifications	
Operating temperature	-10℃ .. 50℃
Storage temperature	-40 to 85℃
IP protection rating	IP40
Environmental specifications	
Size	146 x 139 x 64 mm (5.57 x 5.47 x 2.52 inch)

ORDERING INFO

Sound Intensity solution comes in the following packages:

DEWESOFT SOUND INTENSITY BASIC

DEWESoft SI: Sound intensity plugin
SIRIUSm-4xACC: Sirius mini, 4 Channels
50GI-R CCP: Sound intensity probe inlc. preamplifier, remote control, G.R.A.S.
42AG: G.R.A.S. Multifunction Sound Calibrator, Class 1
Meteo: SPARC meteo (Temp., humidity and static pressure)
UC-232A: USB to RS-232 Adapter (35cm)

DEWESOFT SOUND INTENSITY ADVANCED

DEWESoft SI: Sound intensity plugin
SIRIUSi-8XACC, 8XAO: Sirius, 8 Channels, 8 Analog outputs
12AB: G.R.A.S. 12AB 2-Channel Power Module
42AG: G.R.A.S. Multifunction Sound Calibrator, Class 1
51AB: Sound intensity calibrator, G.R.A.S.
Meteo: SPARC meteo (Temp., humidity and static pressure)
CPB-CAL: Filter calibration according to IEC 61260
UC-232A: USB to RS-232 Adapter (35cm)

DEWESOFT KIT (SUPPORTS B&K PROBE)

DEWESoft SI: sound intensity plugin
SIRIUSm-4xACC: Sirius mini, 4 Channels
12AB: G.R.A.S. 12AB 2-Channel Power Module
Adapter LEMO: 18 pin LEMO to 12 pin & RS232 adapter
Meteo: SPARC meteo (Temp., humidity and static pressure)
UC-232A: USB to RS-232 Adapter (35cm)
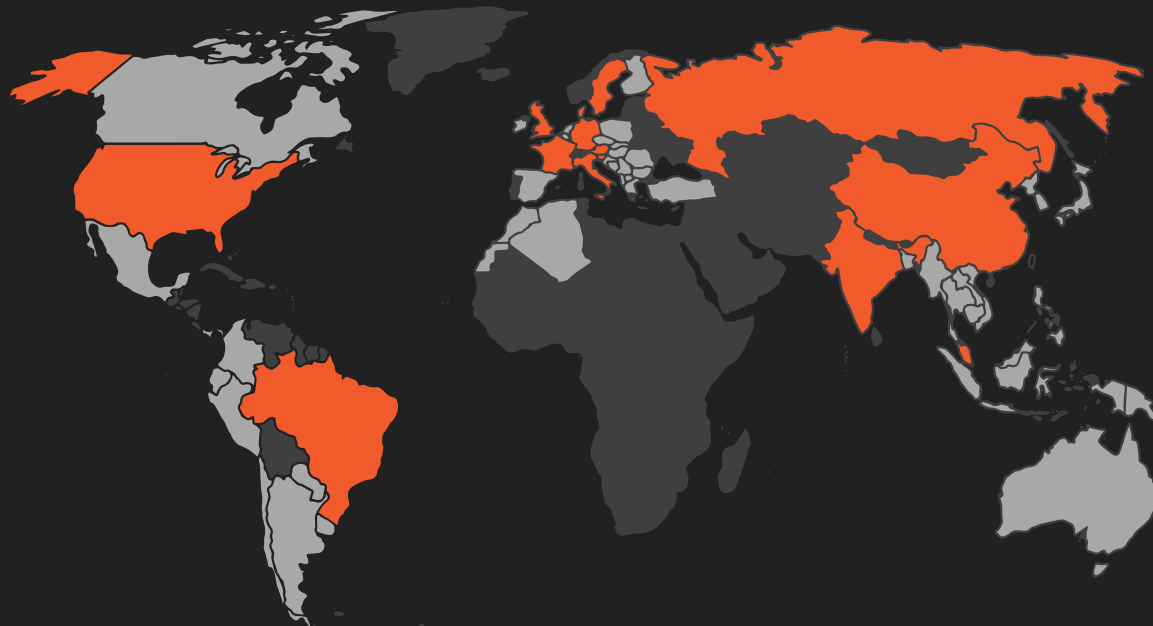
OPTIONAL ACCESSORIES

42AA: G.R.A.S. Pistonphone, Class 1
50GI-CAL: Microphone calibration IEC 1043 Class 1 accredited
42AG-CAL: Calibrator calibration IEC 60952 accredited
51AB-CAL: Calibrator calibration IEC accredited
CPB-CAL: Filter calibration according to IEC 61260

DEWESOFT®WORLDWIDE:SLOVENIA,AUSTRIA,BRASIL,CHINA,DENMARK,FRANCE,GERMANY,HONG
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