



Datasheet

Scan & Listen SETUP

SL-PR/PT/PM/PI

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SCAN & LISTEN

Making particle velocity audible to your ears

Sound source location tool based on your listening skills.

Scan & Listen device allows direct routing of pressure and particle velocity information to your own ears. The device allows also routing to an analog to digital (AD) converter if recordings need to be taken.

Scan & Listen combines the powerful capability of human ears for sound source localization with the particle velocity sensor advantages in terms of background noise cancellation and signal to noise ratio boost. Allowing the user to perform sound source location using the most powerful of tools, his own brain.

I. SCAN & LISTEN WORKING PROCEDURE

FUNCTIONALITY

Scan and Listen is a double function device that allows:

- Listening to pressure and particle velocity:
- Acquisition and recording of both signals

POWERING

The Scan and Listen device provides power supply to the probe in order to make it functional and sensitive. There are two modes of powering:

BATTERY MODE

S&L device works with a 9V battery which allow the powering of the probe. This allows portability of the system. The amplification of the signal is then dependent on the battery charge. The battery level is indicated by the switch color, if green, there is enough battery left to continue using the battery. If red and blinking it needs to be connected to a power socket or battery needs to be replaced with a new one.

POWERED MODE

S&L can be directly connected to a power socket in order to obtain a constant current supply. This mode is mostly recommended to be used for recording and analyzing the signal in a PC in combination with a frontend.

EQUALIZATION

S&L device is calibrated with the probe in order to apply the best curve fitting into the setup. The system works as a simplified equalizer for the Listening function, leaving the signal intact for the signal out function (non-corrected mode).

LISTENING FUNCTIONALITY

The equalization module implemented in the S&L device is simplified compared to the Microflown signal conditioner electronics. The equalization performed enhances high frequencies applying fc2 filter.



CAUTION: THE SENSITIVITY OF THE SENSOR IS CONSTANT ONLY IN POWER MODE, IN BATTERY MODE IS DEPENDENT ON THE BATTERY CHARGE. PRESSURE CHANNEL IS ONLY AMPLIFIED FOR THE LISTENING FUNCTIONALITY.

ACQUISITION FUNCTIONALITY

If the Scan and Listen device is connected to a frontend, the pressure and velocity signal need to be corrected, applying the calibration functions as follows:

- Frequency response: Signal [Volts]/ S_u or S_p , using the equations below. Obtaining the response in the selected units
- Phase response: Signal [Volts]- ϕ_u or ϕ_p

Velocity sensor model correction:

$$Su \left[\frac{V}{m/s} \right] = \frac{Su@250 \text{ Hz} \left[\frac{V}{m/s} \right]}{\sqrt{1 + \frac{f^2 c_{1u}^2}{f^2}} \sqrt{1 + \frac{f^2}{f^2 c_{2u}^2}} \sqrt{1 + \frac{f^2}{f^2 c_{3u}^2}} \sqrt{1 + \frac{f^2 c_{4u}^2}{f^2}}} \quad (1)$$

$$\varphi_p [deg] = \tanh^{-1} \frac{c_{1u}}{f} + \tanh^{-1} \frac{f}{c_{2u}} + \tanh^{-1} \frac{f}{c_{3f}} \tanh^{-1} \frac{c_{4u}}{f}$$

Pressure sensor model correction:

$$Sp \left[\frac{mV}{Pa} \right] = Sp@1KHz \frac{\sqrt{1 + \frac{f^2}{f^2 c_{3p}^2}}}{\sqrt{1 + \frac{f^2 c_{1p}^2}{f^2}} \sqrt{1 + \frac{f^2 c_{2p}^2}{f^2}}} \quad (2)$$

$$\varphi_p [deg] = \tanh^{-1} \frac{c_{1f}}{f} + \tanh^{-1} \frac{c_{2f}}{f} + \tanh^{-1} \frac{f}{c_{3f}} \quad (3)$$

More information about the calibration of probe and signal conditioner calibration contained in the probe datasheet.

II. COMPATIBLE PROBES

More specifications can be found on the probe datasheets.

Probe type	Diameter	Maximum level range		Temperature range
		Pressure	Velocity	
 PU regular	12.7 mm	110 dB	125 dB	-17 to 63
 PU mini	12.7 mm	110 dB	125 dB	-17 to 63
 PU match	8.2 mm	131 dB	130 dB	-20 to 85
 PU match packaged	12.7 mm	110 dB	135 dB	-17 to 63

*SPL ref:
20 e-5 Pa

*PVL ref:
50 nm/s

III. S&L ESPECIFICATIONS

Physical

Height: 24 mm
 Width: 79 mm
 Depth: 130 mm
 Weight: 180 g

General electrical features

Electric impedance: 56 Ohms
 Power supply: Input voltage: 15-18 V
 Consumption:

- max : 1W (56.7mA at 18V)
- idle : 0.8W (44mA at 18V)

Fuse: 250 mA

S/N : Lower than probe (included in probe datasheet)
 Harmonic distortion: 20 dB reduction within first harmonic

Environmental parameters

Variation due to temperature: <0,1 dB (20-55 Deg)
 Variation due to humidity: <0,1 dB (20-90%)

Head phones specifications

Transducer Type: Dynamic
 Frequency response: 5-30.000Hz
 Nominal impedance: 80 Ohm
 Nominal SPL: 105 dB
 Ambient noise isolation: 35 dBA
 Total Harmonic distortion: < 0,2 %

Function	Characteristics	Modes			
		Battery mode		Powered mode	
Listening	Power	9v E-block battery		14-18 V DC power	
	Maximum output power	0,5 W @ 1KHz		1,5 W @ 1KHz	
Acquisition	Connector type	3,5 mm jack (to Headphones)			
	Maximum output power	Pressure	Velocity	Pressure	Velocity
		330mV	330mV	700 mV	330mV
	Connector type	3,5 jack (to 2 BNC)			

IV. SYSTEM COMPONENTS

PROBE	PR/PM/PT/PI
CONDITIONER	S&L device
HEADPHONES	1x Beyer Dynamic
CABLE	1x Lemo probe - S&L cable (type depends on probe type)
POWER SUPPLY	1x
BATTERIES	1x 9v E-block battery
PELICAN CASE	1x

V. USAGE AND PRECAUTIONS



- Do not submerge the electronics in water as this will lead to permanent damage.
- Only use the cables supplied with the kit. Any modifications to these cables or the use of cables of a different brand or type may result in permanent damage to the probes or the rest of the electronics.
- The probes must be powered via a Microflown™ signal conditioner, the new MFPA series or the prior MFSC/ Router. Do not power the sensors with any other device; this might cause permanent damage to the system.
- IRIS camera should always be powered with its own power supply.
- Access exposure to dust/dirt particles could damage the Microflown™ sensor. Do not remove the metal mesh

VI. TECHNICAL SUPPORT

For any problem or doubt with your equipment, please contact Microflown™ Technologies Customer service:

- Mail: cs@microflown.com
- Skype: cs.microflown
- Telephone: +31(0) 88 001 08 11 Monday to Friday, from 9:00 to 17:00 (UTC+1).

VII. WARRANTY POLICY, REPAIRS AND REPLACEMENTS

WARRANTY AND REPLACEMENT OR SUBSTITUTION

During the first two years (24 months) the seller offers a warranty on all its products, except for trading items and third party manufactured items. The seller warrants that all products will be free from defects in materials and workmanship for this period of two years. During this two year period, the seller will repair or replace defect products free of charge. Products damaged by accident, abuse, misuse, natural disaster or by any unauthorized disassembly, repair or modification are not covered by this warranty. The incurred transportation costs of returning the products to seller will be borne by the buyer. The logistical cost for returning the products back to the buyer will be borne by the seller. Several products come with a “VOID if seal is broken” sticker, the warranty is void at all times when this sticker is broken.

GRACE PERIOD (YEAR 3 AND 4)

During the third and fourth year the seller offers a grace period. In the grace period the products purchased at an earlier date can be replaced by completely new state of the art products of the same scope of the original purchase. This applies only for the products known as standard probes and signal conditioners. In the first year of the grace period, (year 3) customers have an option to replace their products for 25 % of the actual ex works end-user price. The full freight and packaging charges apply.

In the second year of the grace period, (year4) customers have an option to replace their products for 50 % of the actual ex works end-user price. The full freight and packaging charges apply.

The new products are accompanied by a new warranty. Both the two years warranty and grace period become applicable again from the date of invoice.

REPAIRS OUTSIDE WARRANTY POLICY

Replaced/repared parts come with a six month warranty under the same conditions as the two year warranty.