

Ultrasonic transducer S1803

DATA SHEET

Intended use

A general-purpose low-frequency transducer S1803 for the dry-point-contact (DPC) excitation or acquiring longitudinal ultrasonic waves in highly scattering materials (concrete, wood, stones etc.) can be used in ready-made housing with the Lemo00 plug or non-wired for self-tailored applications, e.g. for customization of transducer arrays by the customer.

Main technical specifications

Type of transducer:	Dry-Point-Contact (DPC)
Type of generated wave mode:	Longitudinal
Special properties:	Couplant-free operation
Nominal frequency:	100 ± 10 kHz
Electric capacity of the piezoelectric element:	8000 ± 150 pF
Maximum excitation pulse voltage:	400 V
Delay time in transducer protector:	3 μs
Connector type:	LEMO00.250
Overall dimensions:	∅ 15 x 43 mm
Weight:	20 gr
Operating temperature range:	from -20 to +50 °C



Measurement conditions and equipment used

Temperature 25°C, rel. humidity 43%

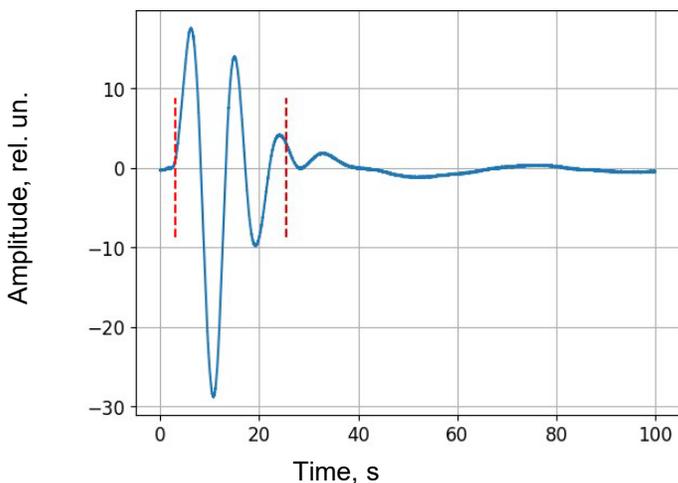
Generator transmitting signal: square pulse with 200 V amplitude, duration 10 μs

Receiving path parameters: integrating amplifier bandwidth 0.001 – 40 MHz, noise 0.7 μV / √Hz, input resistance 4 kΩ.

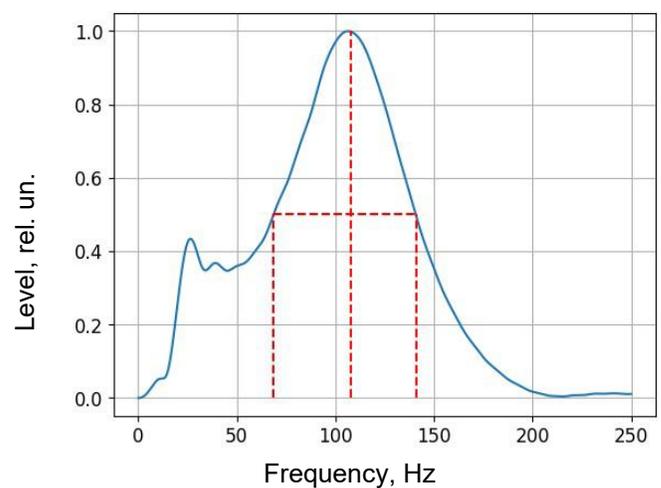
Calibration sample: 3D box UCB500, plexiglass, thickness 175 mm, longitudinal wave velocity 2700 m/s, transversal waves velocity 1300 m/s.

Measured characteristics

Shape of the measured pulse



Amplitude frequency response



Pulse duration:	25.5 μs
AFC frequency maximum f_p :	107.6 kHz
Lower AFR frequency (-3 dB level) f_l :	68.7 kHz
Upper AFR frequency (-3 dB level) f_u :	141.0 kHz

Operating AFR frequency f_c :	104.8 kHz
Nominal double conversion ratio S_{rel} :	-99 dB
Transducer delay:	3.0 μs
Relative band width at -6dB B_w :	69.0 %