

Ultrasonic transducer array M1003

DATA SHEET

Intended use

A general-purpose low-frequency dry-point-contact (DPC) transducer array M1003 for transmitting or receiving longitudinal ultrasonic waves in highly scattering materials (concrete, wood, stones etc.) can be used in ready-made housing with the Lemo00 plug.

Main technical specifications

Type of transducer:	Dry point contact for couplant free operation
Type of generated wave mode:	Longitudinal
Nominal frequency:	50 kHz
Electric capacity of the piezoelectric element:	35.000 ± 5.000 pF
Maximum excitation pulse voltage:	400 Vpp (200 V unipolar)
Delay time in transducer protector:	0.9 μ s
Connector type:	LEMO 00.250
Overall dimensions:	80x $\varnothing$ 60 mm
Weight:	150 g
Operating temperature range:	-20 to +50 °C



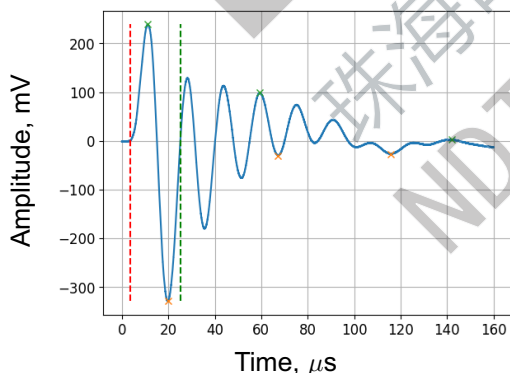
Measurement conditions and equipment used

The measurement of the tested DPC transducer characteristics occurs in combination with the reference DPC transducer, whereby both transducers are connected by their tips with the nip force of 2 N. The tested transducer operates as a transmitter and the reference transducer operates as a receiver of ultrasonic waves. The double conversion ratio AFC maximum S_{rel} is determined as a ratio value between the received signal amplitude on the reference transducer and excitation pulse amplitude on the tested transducer.

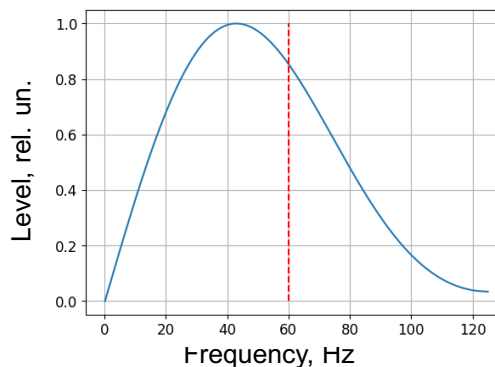
Excitation signal:	square pulse with the amplitude 200 V, duration 10 μ s, equal to half period of the nominal frequency.
Receiver parameters:	integrating amplifier with the bandwidth 1kHz – 15 MHz, input resistance 4 k Ω , equivalent input noise voltage 10 μ V.
Environmental conditions:	temperature 25°C, rel. humidity 42%

Measured characteristics

Shape of the measured pulse



Amplitude-frequency response



Echo pulse duration:	143.9 μs
AFC frequency maximum f_p :	48.4 kHz
Lower AFC frequency f_l :	22.1 kHz
Upper AFC frequency f_u :	84.7 kHz

Operating frequency f_c :	43.4 kHz
AFC maximum S_{rel} :	-50.9 dB
Absolute transmission bandwidth P :	62.6 kHz
Relative transmission bandwidth B_w :	117 %