

Ultrasonic transducer array M2503

DATA SHEET

Intended use

A general-purpose low-frequency dry-point-contact (DPC) transducer array M2503 with dual aperture for pulse-echo transmitting and receiving longitudinal ultrasonic waves in highly scattering materials (concrete, wood, stones etc.)

Main technical specifications

Type of transducer:	Dry point contact for couplant free operation
Type of generated wave mode:	Longitudinal
Nominal frequency:	100 kHz
Electric capacity of the piezoelectric element:	9.600 ± 840 pF
Maximum excitation pulse voltage:	400 Vpp (200 V unipolar)
Delay time in transducer protector:	$0.6 \mu\text{s}$
Connector type:	LEMO 00.250
Overall dimensions:	139x105x89 mm
Weight:	1.1 kg
Operating temperature range:	-20 to +50 °C



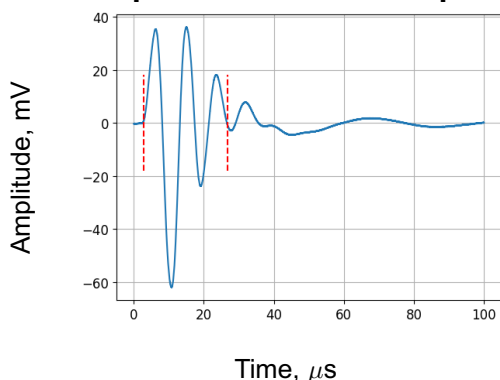
Measurement conditions and equipment used

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 $AFC_{\text{maximum}} S_{rel}$ is determined as a ratio value between the received signal amplitude on the reference transducer and excitation pulse amplitude on the tested transducer.

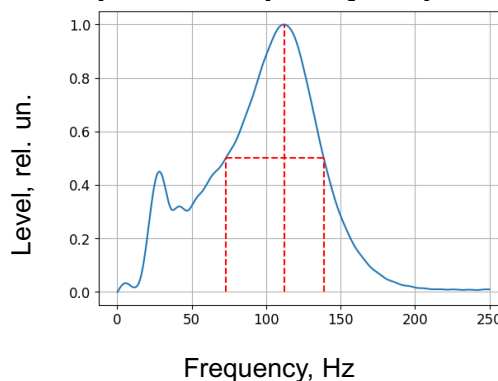
Excitation signal:	square pulse with the amplitude 200 V, duration $10 \mu\text{s}$, equal to half period of the nominal frequency.
Receiver parameters:	integrating amplifier with the bandwidth 1kHz – 15 MHz, input resistance $4 \text{ k}\Omega$, equivalent input noise voltage $10 \mu\text{V}$.
Environmental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

Measured characteristics

Shape of the measured pulse



Amplitude-frequency response



Echo pulse duration:	26.8 μs	Operating frequency f_c :	106.0 kHz
AFC frequency maximum f_p :	54.0 kHz	AFC maximum S_{rel} :	-92.3 dB
Lower AFC frequency f_l :	73.1 kHz	Absolute transmission bandwidth P :	65.8 kHz
Upper AFC frequency f_u :	138.9 kHz	Relative transmission bandwidth B_w :	62.1 %