ACOUSTIC CONTROL SYSTEMS

Ultrasonic transducer S1844

DATA SHEET

Intended use

A general-purpose low-frequency dry-point-contact (DPC) transducer S1844 for transmitting or receiving shear-horizontal 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

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Type of transducer:	Dry point contact for couplant free operation
Type of generated wave mode:	Shear horizontal
Nominal frequency:	50 kHz
Electric capacity of the piezoelectric element:	5000±500 pF
Maximum excitation pulse voltage:	400 V
Delay time in transducer protector:	0.9 μs
Connector type:	LEMO 00.250
Overall dimensions:	46x$\varnothing$15 mm
Weight:	10 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 AFCmaximum 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 μs**, equal to half period of the nominal frequency.
Reciever parameters:	integrating amplifier with the bandwidth 1kHz – 15 MHz, input resistance 4 kΩ, equivalent input noise voltage 10 μV.
Environmental conditions:	temperature 25°C, rel. humidity 42%

Measured characteristics

Shape of the measured pulse
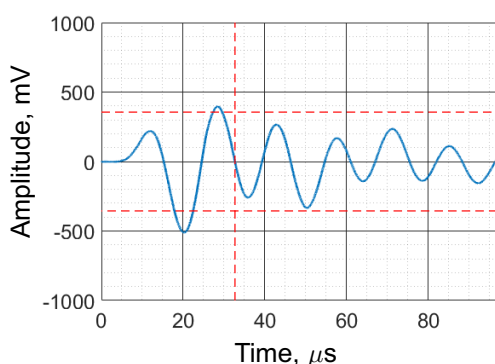
Amplitude-frequency response
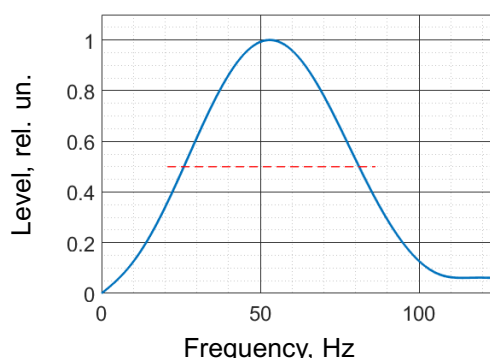
Echo pulse duration:	**23.9** μs	Operating frequency f_c:	**53.4** kHz
AFC frequency maximum f_p:	**54.4** kHz	AFC maximum S_{rel}:	**-50.9** dB
Lower AFC frequency f_l:	**22.1** kHz	Absolute transmission bandwidth P:	**62.6** kHz
Upper AFC frequency f_u:	**84.7** kHz	Relative transmission bandwidth B_w:	**117** %