ACOUSTIC CONTROL SYSTEMS

Ultrasonic piezoelectric transducer S3745 0.5A0D30CL
DATA SHEET

Main technical specifications

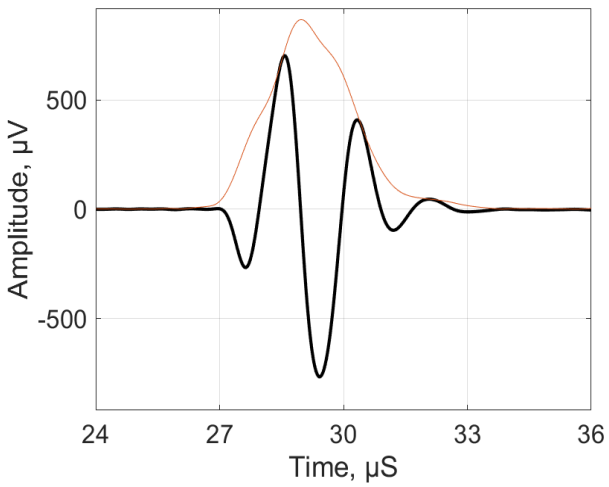
Transducer type	contact straight combined
Nominal frequency	0,5 MHz
Piezoelement diameter	30 mm
Time of double passage	0,15 μs
Max transmitter pulse voltage	400 Vpp
Nominal piezoelement capacity	9800 ± 2000 pF
Connector type	LEMO 00.250
Operation temperature range	-20 ...+ 50 °C
Dimensions	36,5 × 40 mm
Weight	220 g

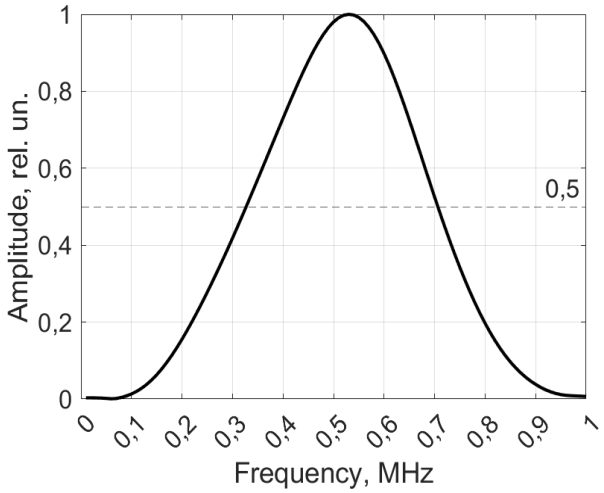
Measurement conditions and used equipment

Excitation	Rectangular pulse with amplitude 20 V and duration, equal to half-period of nominal frequency oscillations.
Receiver	Amplifier with 0,01 - 15,00 MHz bandwidth and 3,6 kΩ input impedance. Effective noise level, normalized to the amplifier input level, is less than 20 μV.
Damping resistor	200 Ω (connected in parallel to the transducer).
Cable	Single LEMO-LEMO with wave resistance 50 Ω and 1 m length.
Calibration blocks	Set of ultrasonic samples of thickness and speed of propagation of ultrasonic waves UCB016

Measurement results

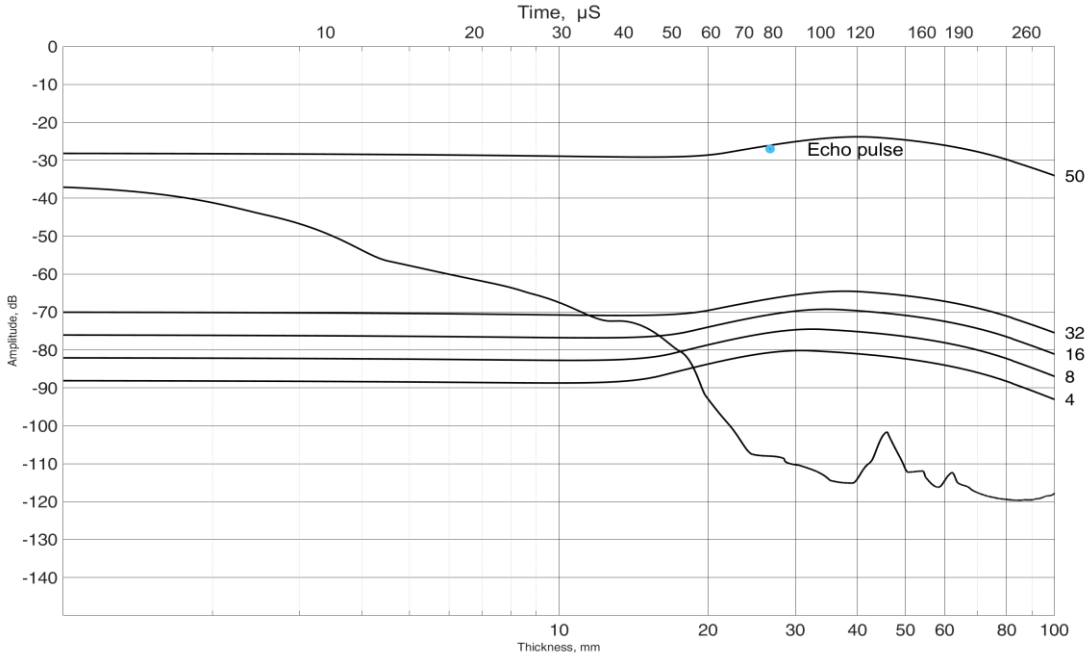
Backwall echo pulse and its spectrum in UCB016





Reverberation noise characteristics (RNC) for the transducer without acoustic load and the curve of backwall echo signal level for steel samples of different

The level of 0 dB corresponds to the excitation pulse amplitude.
The time and thickness axes are marked minus the ultrasound delay time in the prisms.



The level of the bottom echo signal in UCB016 from a depth of 50 mm is marked on the RNC graf by a dot. A calculated curve of the dependence of the bottom signal level in steel 20 on depth is drawn through it. To the right of the ARD curves is the area of the corresponding disk reflector in square millimeters.

Calculated parameters and acceptance results

Parameters	Value	Tolerance	Result
Work frequency (mean of border spectrum frequencies), **MHz**	**0,52**	from 0,4 to 0,6	**+**
Relative spectrum bandwidth (at minus 6 dB level), **%**	**73,1**	more than 30	**+**
Sensitivity (bottom echo pulse and excitation pulse amplitudes' ratio), **dB**	**27,0**	less than 60	**+**
Difference between amplitude and RNC in CB002-2	**50,0**	more than 26	**+**