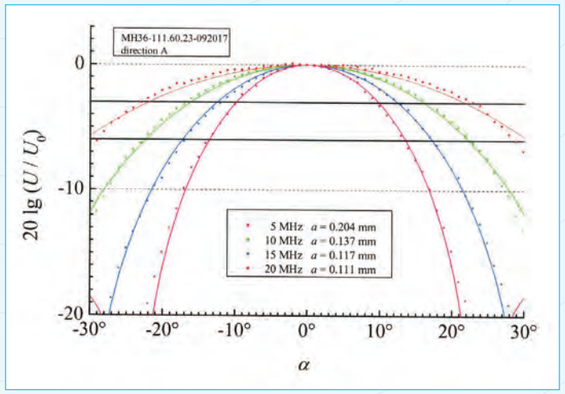
Calibration Options

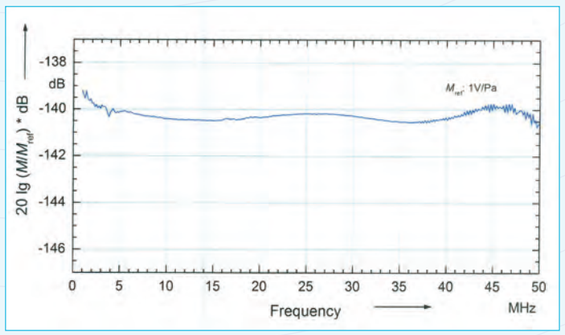
Membrane hydrophones
Sensitivity, phase, effective diameter
Frequency ranges: 0.5 MHz- 5 MHz; 1 MHz – 20 MHz; 1 MHz – 40 MHz

HIFU hydrophones
Pulse calibration (pulse deconvolution) of sensitivity and phase
Frequency range: 0.8 – 100 MHz
HIFU test up to 80 MPa

Thermo-acoustical sensors
Secondary in house (GAMPT) calibration with reference hydrophone
Frequency range: 1 – 7 MHz



Determination of the effective diameter (membrane hydrophon)



Frequency dependence of the sensitivity (membrane hydrophon)

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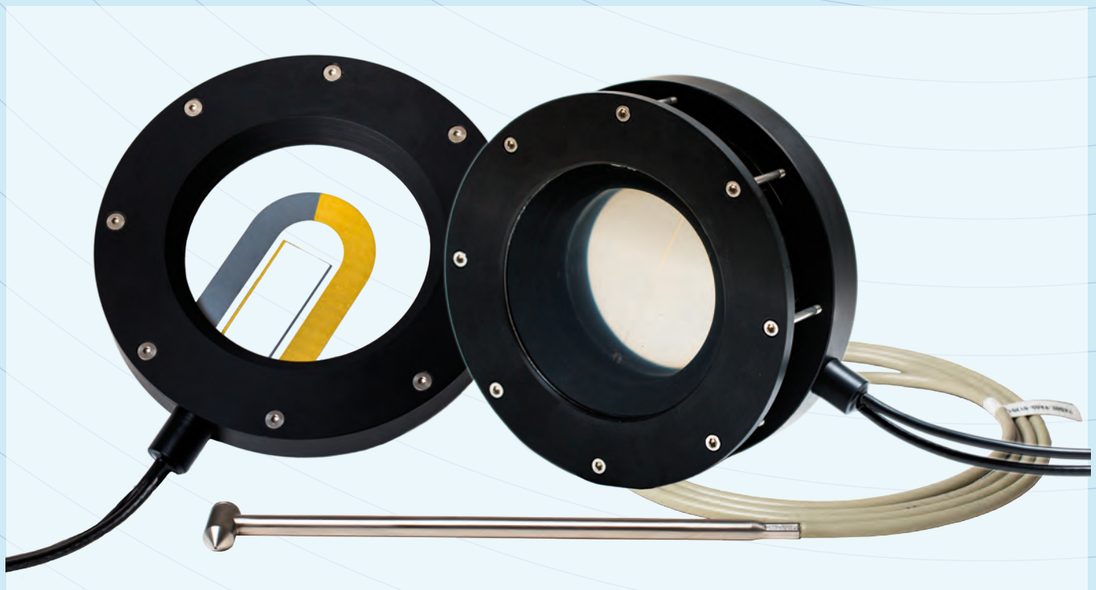
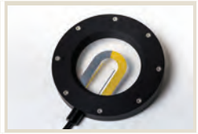
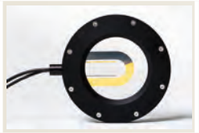
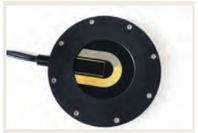
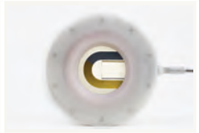
gaMPT ULTRASONIC SOLUTIONS

Ultrasound Measurement Hydrophones and Test Devices by GAMPT

Selection Map



	MH-SD-0.1	MH-BD-0.1	MH-SD-0.2	MH-BD-0.2	MH-SD-0.4	MH-SD-1.0	MH-CD-0.3	MH-HIFU-0.2	MH-HIFU-0.1	TAS-PM-0.5	TAS-PA-0.5
											
Specification	• reference hydrophone	• reference hydrophone with backing	• standard broadband hydrophone	• standard broadband hydrophone with backing	• standard hydrophone	• standard hydrophone	• capsulated hydrophone	• high intensity hydrophone	• high intensity, high resolution hydrophone	• low intensity thermo-acoustical sensor	• high intensity thermo-acoustical sensor
Key Features	• extreme large bandwidth • very flat frequency response • high long term stability	• extended bandwidth • very small active element • high mechanical stability for fast scanning movement	• gold-standard hydrophone • conform to all IEC standards • high long term stability	• high mechanical stability • recommend for fast scanning procedures	• according to older hydrophone standards • high signal • low noise	• according to older hydrophone standards • high signal • low noise	• covered electrodes • chemical resistant housing material • use in aggressive medium (acid)	• very high pressure amplitudes • acquisition of higher harmonics	• very high spatial resolution for very small focus zones	• direct measurement of I_{SPTA} • no trigger required • easy handling • low cost	• measurement of high intensity signals (HIFU) • easy handling • low cost
Active Diameter	100 µm	100 µm	200 µm	200 µm	400 µm	1000 µm	325 µm	200 µm	100 µm	500 µm	500 µm
Sensitivity (typical)	3,5*10-8 V/Pa @ 5 MHz	3,5*10-8 V/Pa @ 5 MHz	1,0*10-7 V/Pa @ 5 MHz	1,0*10-7 V/Pa @ 5 MHz	1,0*10-7 V/Pa @ 5 MHz	2,4*10-7 V/Pa @ 5 MHz	8,0*10-8 V/Pa @ 5 MHz	25*10-9 V/Pa @ 5 MHz	10*10-9 V/Pa @ 5 MHz	1,5*10-4 V/(Wm²) @ 2 MHz	0,4*10-4 V/(Wm²) @ 2 MHz
Max. Pressure	10 MPa	10 MPa	10 MPa	10 MPa	10 MPa	10 MPa	20 MPa	120 MPa	120 MPa	30 MPa	50 MPa
Usable Freq. Range	0.5 – 140 MHz	0.5 – 140 MHz	0.5 – 120 MHz	0.5 – 120 MHz	0.5 – 40 MHz	0.5 – 30 MHz	0.5 – 30 MHz	0.8 – 70 MHz	0.8 – 80 MHz	1.0 – 10.0 MHz	1.0 – 10.0 MHz
Freq. Response	+/-0,5 dB @ 1 – 50 MHz	+/-0,5 dB @ 1 – 50 MHz	+/- 2 dB @ 1- 40 MHz	+/- 2 dB @ 1- 40 MHz	+/- 2 dB @ 1 – 20 MHz	+/- 4 dB @ 1 – 20 MHz	+/- 4 dB @ 1 – 20 MHz	+/- 6 dB @ 0.8 – 70 MHz	+/- 6 dB @ 0.8 – 70 MHz	vary	vary
Applications	• secondary hydrophone calibration (in house calibration of membrane, lipstick and needle hydrophones) • recalibration of hydrophones • long term stable reference device	• high frequency, high resolution acoustic field measurements • regulatory measurements for high frequency diagnostic ultrasound device • development of ultrasound sensors • medical research	• standard sound field measurements • regulatory measurements according to IEC 62127 and 60601 for all medical ultrasound devices • characterization of NDT sensors	• continuous sound field measurements • field measurements with high speed positioning • quality measurements of ultrasound sensors	• broadband measurements with low pressure amplitudes • regulatory measurements according to older standards for diagnostic ultrasound devices	• broadband measurements with very low pressure amplitudes • regulatory measurements according to older standards for diagnostic ultrasound device • measurements for acoustic material characterization (absorption measurement)	• measurements in aggressive liquids • development of sensors for chemical, petrol or food industries • development of flow sensors • quality management during sensor manufacturing	• measurements of highest pressure amplitudes of HIFU sources • regulatory measurements according to IEC 62649 • characterization of focal properties and aperture • dosimetry and constancy test of HIFU sensors and devices • quality check for manufacturing of HIFU sensors	• clinical research of cancer treatment and local ablative therapies • optimizing of HIFU sensors • development of regulatory standards for HIFU applications	• quality management for medical devices • quality check of diagnostic ultrasound devices • stability verification of ultrasound sensors	• measurements of I_{SPTA} of therapeutic ultrasound devices • HIFU measurements • measurement of long burst or continuous wave signals • quality management of therapeutic devices and HIFU
Costumer	• national metrology laboratories • certification laboratories	• national metrology laboratories • certification laboratories • manufacturers of medical ultrasound devices	• certification laboratories • manufacturers of medical ultrasound devices • research and development lab • universities	• certification laboratories • manufacturers of medical ultrasound devices	• certification laboratories • manufacturers of medical ultrasound devices	• certification laboratories • manufacturers of medical ultrasound devices • research labs • universities	• manufacturers of ultrasound sensors • research labs	• clinical centers with HIFU treatment applications • certification laboratories • manufacturers of ultrasound sensors and devices	• clinical research of cancer treatment and local ablative therapies • research and development labs • basic researchers	• medical users of ultrasound diagnostic devices • physicians and ultrasound assistants • NDT engineers	• medical users of ultrasound therapeutic devices • physicians and ultrasound assistants
Article number	VK-11011	VK-11012	VK-11025	VK-11026	VK-11041	VK-11042	VK-11031	VK-21000	VK-22000	VK-31000	VK-32000

MH – membrane hydrophone | SD – standard device with single PVDF membrane and gold electrodes | BD – hydrophone with backing | CD – hydrophone both sides laminated with additional PVDF membranes | HIFU – hydrophone with steel foil on front side and oil backing on back side | TAS – thermo-acoustical sensor | **PM** – TAS with absorber element of acryl | **PA** – TAS with absorber element of polyamide |