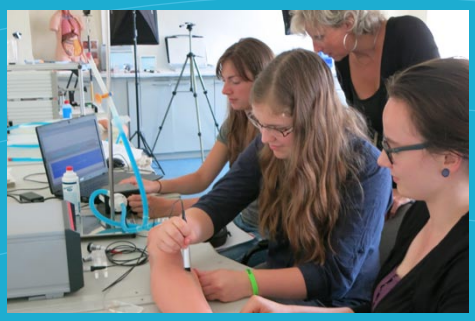
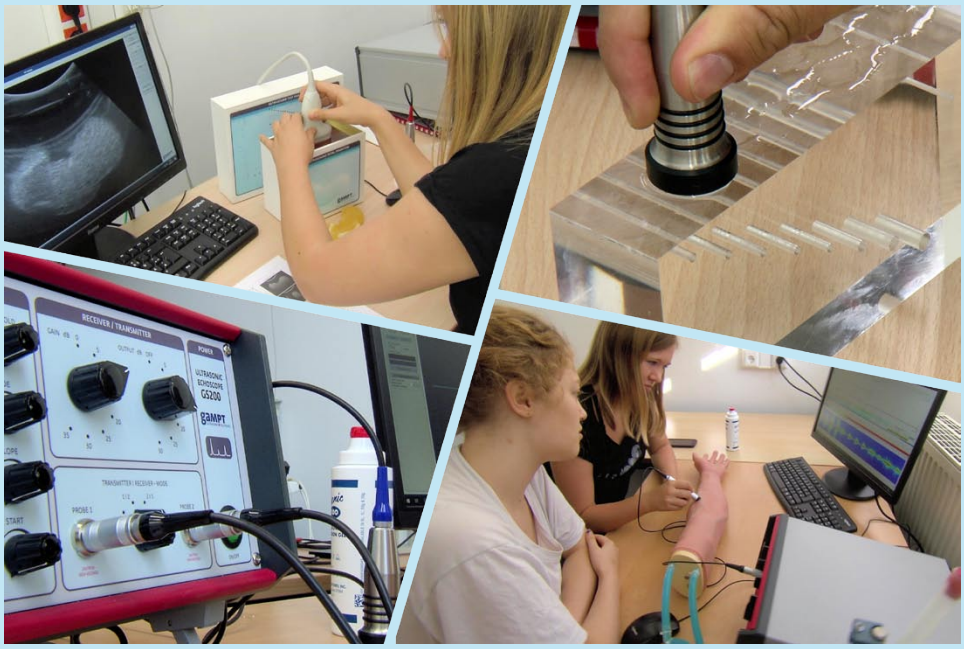
Overview
Experimental sets



Sets for experiments with ultrasound

Ultrasound in Physics, Medicine and Technique

gaMPT ULTRASONIC SOLUTIONS



Dear Sir or Madam,

We are pleased to introduce you to this overview of our training sets with new equipment for practical experiments!

Our training equipment, such as the ultrasonic echoscope **GS200**, has been successfully in use all over the world for many years at universities and other educational institutions. By constantly improving our products, we can offer you new, innovative teaching options.

With our experiments and products, we give students an understanding of fundamental principles of ultrasound technology and their implementation in various application areas like medicine or industry.

For your convenience, we have put together various experimental sets. With these sets, the students are able to perform various topic-related ultrasound experiments.

Your feedback, hints and suggestions are always welcome. Only in this way we can better fulfill your requirements and wishes.

We hope you enjoy browsing through our “Overview experimental sets”. For more information visit our website!

Experimental sets

Each set can be used to carry out different experiments relating to the respective area of training. Set 2 “Ultrasound in medicine”, for example, is aimed more at medical faculties whereas Set 4 “Shear and surface acoustic waves” has been designed more for science departments.

The sets can of course be combined and expanded with other products from our catalogue. This makes it possible to individually adapt the experiments to the respective subject areas, from simple basic experiments up to sophisticated and complex topics.

The set descriptions are divided into:

Related topics: The related topics describe the topics and terms for which experiments can be carried out and the theoretical basic knowledge that is necessary for them.

Equipment: Here the components and materials belonging to the set and shown in the photo above are listed with order number.

Experiments: The experiments list names the experiments that concentrate on a thematic focus and can be carried out with this set.

Further possibilities: The suggestions provide an overview for extension with other products to conduct further experiments.

Set 1 Basics of ultrasound

Related topics

With this set, experiments can be carried out on the fundamental physical-technical principles of ultrasound technology and its application in medicine, natural and engineering science. Here, reference is made to both the introduction of the basic technical terms of echoscope measuring technology as well as to the essential physical characteristics of ultrasound.

For example the creation and processing of the signal from the transmission pulse to the reflection echo to the A-scan and B-scan image are clearly demonstrated with the ultrasonic echoscope GS200 and the accompanying software. Essential technical terms such as transmission power, receive gain and time gain control (TGC), probe frequency and coupling are elements of the experiments.

Among the physical characteristics, variables such as, in particular, amplitude, frequency dependence, sound velocity, attenuation and reflection coefficient are the objects of investigations.

The transition to the ultrasound applications is achieved with the demonstration of the creation of an ultrasound B-scan image, the basics of non-destructive testing and simple industrial applications such as the level measurement.

With additional accessories, the physical fundamental experiments can be extended to interesting subjects such as spectral investigations, resonance effects and dispersion of ultrasound waves.

Equipment

Ultrasonic echoscope GS200	10400
Ultrasonic probe 1 MHz	10151
2 Ultrasonic probes 2 MHz	10152
Ultrasonic probe 4 MHz	10154
Test block (transparent)	10201
Test cylinder set	10207
Ultrasonic gel	70200

Experiments

PHY01	Basics of pulse echo method (A-scan)
PHY02	Sound velocity in solids
PHY06	Frequency dependence of resolution power
PHY08	Ultrasonic B-scan
IND01	Non-Destructive Testing (NDT)
IND03	Level measurement

Further possibilities

Shear wave set – 10218:
PHY04 Acoustic attenuation in liquids

Set of reflecting plates – 10202:
PHY05 Spectral investigations

Hydrophone set – 10451:
PHY20 Determination of focus zone

Acoustic impedance samples – 10208:
PHY21 Reflection and transmission at boundaries

Acoustic impedance samples – 10208,
Lambda plates – 10209, Ultrasonic probe 1 MHz – 10151:
PHY22 Phase shift and resonance effects

Tripod set – 10310, Erlenmeyer flask – 10330:
IND03 Level measurement

Transit time pipe – 10180,
Centrifugal pump – 50130, Double reservoir – 50170:
IND09 Transit time flow meter

Breast phantom – 10221:
MED02 Ultrasonic imaging at breast phantom (mammasonography)

Eye phantom – 10222:
MED04 Biometry at the eye phantom

Order no. 19001

Set 2 Ultrasound in medicine

Related topics

This set has been developed for medical vocational training at technical colleges and colleges and medical-technical subjects. The main subject focus is upon the application of ultrasound technology in medical diagnostics.

In assembling the experiments, great importance has been attached to, above all, comprehensive conveying of fundamental knowledge, before the different diagnostic ultrasound techniques such as A-scan, B-scan and M-mode are explained in further experiments.

For example, first of all physical parameters and phenomena relating to the propagation of mechanical waves such as sound velocity, reflection and absorption, frequency dependences of spacial resolution and the fundamental technical parameters of ultrasound devices are dealt with. Then, using selected examples from biometry, echocardiography, and mammasonography, the individual imaging processes of medical diagnostics are explained and different measurement tasks are solved.

This promotes the understanding of the connections between the physical characteristics of an ultrasound wave and the possibilities and limitations in medical use.

Equipment

Ultrasonic echoscope GS200	10400
Ultrasonic probe 1 MHz	10151
Ultrasonic probe 2 MHz	10152
Ultrasonic probe 4 MHz	10154
Test block (transparent)	10201
Heart model	10220
Breast phantom	10221
Eye phantom	10222
Ultrasonic gel	70200

Experiments

PHY01	Basics of pulse echo method (A-scan)
PHY06	Frequency dependence of resolution power
PHY08	Ultrasonic B-scan
MED01	Ultrasonic TM-mode (echocardiography)
MED02	Ultrasonic imaging at breast phantom (mammasonography)
MED04	Biometry at the eye phantom

Further possibilities

Test cylinder set – 10207:
PHY02 Sound velocity in solids

Acoustic impedance samples – 10208:
PHY21 Reflection and transmission at boundaries

Ultrasonic probes 1/2/4 MHz – 10151, 10152, 10154,
Test cylinder set – 10207:
PHY03 Acoustic attenuation in solids

Order no. 19002

Set 3 Ultrasound in material science and engineering

Related topics

One main field of application of ultrasound is the non-destructive testing (NDT). Ultrasound testing has here become established as a standard procedure for the analysis of material faults, such as cracks, cavities, gas bubbles and inhomogeneities, in an extremely wide variety of materials, such as metals, plastics or composites. A large number of methods have been developed for performing the individual testing tasks.

With this experimental set, some of the most common ultrasound testing methods, such as e.g. the pulse echo method and the through-transmission method, angle beam testing and the TOFD procedure, are explained and applied to different material samples.

Based on the knowledge of physical characteristics of ultrasound waves (e.g. sound velocity, acoustic attenuation, reflection, diffraction, scattering), experiments are performed on special test blocks, for the adjustment of ultrasound testing devices such as the production of a DGS diagram (distance gain size diagram) or the calibration of an angle beam probe. Furthermore, the performance of different test methods is tested for different types of faults and quantitative measurements are carried out, such as e.g. determining crack depths in aluminium samples.

By expanding the set with other material samples and accessories from our range, the experiments can be extended to more special testing methods using shear and surface acoustic waves or guided waves (Lamb waves).

The experiments and measurements with this set make it possible to offer the students a clear introduction into the problems of ultrasound testing and are therefore interesting for training in almost all engineering fields.

Equipment

Ultrasonic echoscope GS200	10400
2 ultrasonic probes 2 MHz	10152
Ultrasonic probe 4 MHz	10154
Angle beam wedge 17°	10233
Angle beam wedge 38°	10234
Transceiver delay line (TOFD)	10237
Test block (transparent)	10201
Test block for angle beam probe	10240
Crack depth test block	10241
Ultrasonic gel	70200

Experiments

PHY01	Basics of pulse echo method (A-scan)
PHY06	Frequency dependence of resolution power
IND01	Non-Destructive Testing (NDT)
IND03	Level measurement
IND06	Angle beam testing
IND07	Crack depth determination (TOFD)

Further possibilities

Shear wave set – 10218:
PHY04 Acoustic attenuation in liquids

Discontinuity test block – 10242:
IND08 Detection of discontinuities

Acoustic impedance samples – 10208:
PHY21 Reflection and transmission at boundaries

Order no. 19003

Set 4 Shear and surface acoustic waves

Related topics

In the classic applications of ultrasound, such as e.g. the time of flight measurements in liquids (level measurement, flow measurement), only the longitudinal propagation of the ultrasonic waves plays a role. Ultrasonic waves can, however, also propagate in the form of shear and surface acoustic waves (SAWs), especially in solid bodies. These wave modes, their propagation characteristics and their dependence on elastic material properties make possible a large number of new methods in material testing (aircraft construction), signal processing (SAW filter) and modern medicine (elastography).

With this set it is possible to carry out experiments to demonstrate the mode transformation of ultrasonic waves at boundaries between liquids and solids or at boundaries of different solids. They can also be used to determine the sound velocity of shear and surface acoustic waves (Rayleigh and Lamb waves) in different material samples. These measurements make it possible to determine the elastic coefficients of the materials such as the elasticity modulus and shear modulus.

This set can also be used to demonstrate the dispersion of ultrasonic waves (frequency dependence of sound velocity) by means of the propagation of Lamb waves on thin glass sheets.

A crack depth test can be carried out on an aluminium sample by means of Rayleigh waves as an application of surface waves in non-destructive testing (NDT).

Equipment

Ultrasonic echoscope GS200	10400
2 ultrasonic probes 1 MHz	10151
2 ultrasonic probes 2 MHz	10152
2 ultrasonic probes 4 MHz	10154
Shear wave set	10218
Rayleigh wave attachments (pair)	10230
Rayleigh wave test block	10232
Lamb wave set	10300
Ultrasonic gel	70200

Experiments

PHY04	Acoustic attenuation in liquids
PHY07	Shear waves in solids
PHY23	Dispersion of ultrasonic waves (Lamb waves)
IND02	Detection of cracks with Rayleigh waves

Further possibilities

Test block (transparent) – 10201:
PHY01 Basics of pulse echo method (A-scan)
PHY08 Ultrasonic B-scan

Test cylinder set – 10207:
PHY02 Sound velocity in solids

Set of reflecting plates – 10202:
PHY05 Spectral investigations

Hydrophone - 10450
Hydrophone support plate and support – 10252, 60123:
PHY20 Determination of focus zone

Acoustic impedance samples – 10208:
PHY21 Reflection and transmission at boundaries

Order no. 19004

Set 5 Debye-Sears effect

Related topics

With the devices and materials in this set one can conduct experiments as an introduction into acousto-optics and the use of continuously emitted ultrasonic waves (continuous waves - cw). The focus here is upon the Debye-Sears effect and the imaging of a standing ultrasonic wave field using laser light.

With the cw generator SC600 ultrasonic waves of different frequencies can be generated in a water bath. The ultrasonic waves act like the elements of a diffraction grating, the grating constant of which depends on the wavelength of the ultrasound. When parallel laser light passes through, it is diffracted. A classic diffraction pattern, the Debye-Sears effect, results. By using different ultrasound frequencies and red, green and blue laser light, the dependence of the interval of the orders of diffraction on the acoustic and optical wavelengths can be shown. If divergent laser light is used, a direct optical projection of the acoustic wave field can take place. By means of an acoustic absorber, the differences between travelling and standing ultrasonic waves can be demonstrated.

By supplementing the set with a photodiode receiver, it can be expanded into an ultrasound resonance cell. This is primarily used in measuring concentrations.

Equipment

cw generator SC600	20100
Debye-Sears set	20200
Laser module (green)	20211
AOM sample reservoir	20225
Cover for AOM sample reservoir	20223
Projection lens	20230
Acoustic absorber	20227

Experiments

PHY11	Debye-Sears effect
PHY12	Projection of standing waves

Further possibilities

Adjustable reflector – 20302,
Photodiode receiver – 20303:
IND04 Concentration measurement with resonance cell

2 adjustable reflectors – 20302,
2 photodiode receivers – 20303,
Beam splitter – 20301:
PHY17 Acousto-optical modulation at standing waves

Hydrophone set – 10451:
PHY19 Phase and group velocity

Laser module (blue) - 20212:
PHY11 Debye-Sears effect
PHY12 Projection of standing waves

Order no. 19005

Set 6 Ultrasonic Doppler effect

Related topics

The ultrasonic Doppler effect is used in a multitude of measuring devices in industry as well as in medicine. These include devices for measuring flow, characterising blood flow and the foetal Doppler for measuring heart sounds of foetuses.

The set includes the necessary components for building a flow circuit with adjustable flow rates, an ultrasound pulse Doppler with probes of different frequency as a measuring device and software for signal recording and signal processing.

With this one can investigate the essential dependences of the shift in Doppler frequency upon transmission frequency, incidence angle and flow velocity.

The flow pipes of different diameters and the standpipes contained in the circuit allow experiments on fluid mechanics. These include the continuity equation and the Hagen-Poiseuille equation. The flow speed velocity is here measured by means of the Doppler device and the pressure drops with the standpipes.

By supplementing the set with the Doppler probe and the arm phantom, experiments can be carried out on Doppler sonography (application of the ultrasonic Doppler effect in medicine).

Equipment

Ultrasonic Doppler device FlowDop200	50400
Ultrasonic probe 1 MHz	10151
Ultrasonic probe 2 MHz	10152
Ultrasonic probe 4 MHz	10154
Centrifugal pump MultiFlow	50130
Doppler fluid	50140
Standpipes	50150
Flow measuring set	50201
Ultrasonic gel	70200

Experiments

PHY13	Ultrasonic Doppler effect
PHY15	Fluid mechanics

Further possibilities

Ultrasonic Doppler probe – 50435,
Arm phantom – 50160:
MED03 Basics of Doppler sonography
MED05 Vascular ultrasound (angiology)

Double reservoir – 50170:
IND05 Doppler flow measurement

Order no. 19006

Set 7 Doppler sonography

Related topics

Doppler sonography refers to the use of the ultrasonic Doppler effect in human and veterinary medicine. It is primarily used to determine blood flow velocities, characterise flow curves and localise and classify stenoses and valvular heart defects.

This set helps to demonstrate the fundamental physical dependences of ultrasonic Doppler effect on frequency, incidence angle and blood flow velocity. With the ultrasonic pulse Doppler and the accompanying software, the signal recording and signal processing can be shown, up to the colour-coded Doppler frequency spectrum used for medical diagnostic purposes.

With the realistic arm phantom and the microcontroller-driven centrifugal pump, different blood flows (venous = continuous, arterial = pulsatile) can be set and measured. The stenosis incorporated into the arm phantom is to be detected and characterised by means of the Doppler. Using the pulse curves as a basis, statements can be made regarding the flow velocity and air chamber function.

If the set is supplemented with a blood pressure cuff, Doppler measurements of the occlusion pressure for the characterising of peripheral arterial occlusive diseases can be demonstrated.

Equipment

Ultrasonic Doppler device FlowDop200	50400
Ultrasonic probe 2 MHz	10152
Doppler prism ⅜"	50112
Centrifugal pump MultiFlow	50130
Ultrasonic Doppler probe	50435
Arm phantom	50160
Ultrasonic gel	70200

Experiments

PHY13	Ultrasonic Doppler effect
MED03	Basics of Doppler sonography
MED05	Vascular ultrasound (angiology)

Further possibilities

Flow measuring set – 50201:
PHY13 Ultrasonic Doppler effect

Standpipes – 50150,
Flow measuring set – 50201:
PHY15 Fluid mechanics

Double reservoir – 50170,
Flow measuring set – 50201:
IND05 Doppler flow measurement

Blood pressure cuff – 50300:
MED06 Peripheral Doppler blood pressure measurement

Order no. 19007

Set 8 Acousto-optical effects

Related topics

This set has been designed for some sophisticated experiments, which deal with the interactions between a mechanical wave and light - the acousto-optical effects (AOM, acousto-optical modulation). The experiments promote a knowledge and understanding of the propagation characteristics of mechanical as well as electromagnetic waves.

It is shown that the changes in density that occur due to the compression and dilatation of an ultrasound wave cause a change in the diffraction index of the medium. The grating created causes the diffraction of laser light. In addition, the intensity modulation and wavelength alteration of laser light are demonstrated.

In different experiments, the diffraction characteristics of light at standing and travelling ultrasonic waves are investigated and measured. The sound velocity of different liquids is determined by means of the variation of the interference maxima of the laser light at different ultrasound frequencies (resonance cell).

The amplitude modulation and phase shifting of laser light at a standing wave can be represented with a photodiode and recorded with an oscilloscope. The frequency change of the sound wave influences the amplitude modulation and makes it possible to calculate the sound velocity of the medium.

The difference of the diffraction at standing and travelling waves is demonstrated by means of an acoustic absorber, which prevents the formation of standing ultrasound waves in the sample reservoir.

At the travelling ultrasonic wave, a frequency shift of the laser light, caused by the Doppler effect, can be measured. Buy using a beam splitter and reflectors, differently diffracted portions of light can be turned into interference. The resulting beats are displayed and measured with the oscilloscope.

This experimental set is suitable both for the demonstration of the acousto-optical effects and their application in technology and for carrying out interesting experiments in advanced practical training in all natural scientific and technical fields.

Equipment

cw generator SC600	20100
Debye-Sears set	20200
2 photodiode receivers	20303
3 adjustable reflectors	20302
Beam splitter	20301
Acoustic absorber	20227

Experiments

PHY11	Debye-Sears effect
PHY17	Acousto-optical modulation at standing waves
IND04	Concentration measurement with resonance cell

Further possibilities

Laser module (green) - 20211,
Laser module (blue) - 20212:
PHY11 Debye-Sears effect

Laser module (green) - 20211,
Laser module (blue) - 2012,
Projection lens - 20230:
PHY12 Projection of standing waves

Order no. 19008

Set 9 Ultrasonic CT and scanning methods

Related topics

With this set, comprehensive and clear experiments can be carried out on special measuring procedures by means of ultrasound. The focus is upon conveying knowledge of the structure and function of computer tomography measuring systems. The tomography that is familiar from use in medical X-ray diagnostics is based on attenuation effects and analysis with convolution algorithms, regardless of the type of measurement signal used (X-ray, nuclear spin, ultrasound etc.). The creation of a CT image is explained and demonstrated in the experiment (PHY09) step by step using the example of ultrasonic tomography. By using ultrasound as a measurement signal, two different images can be recorded and analysed, the attenuation and sound velocity tomogram of the test object. Your own test objects can also be scanned. This enables you to make practical work interesting.

The set is also excellently suitable for scanning any samples you choose. This way, cross-sectional images (B-scans) of medical objects, such as e.g. of the breast phantom, can be represented with high image quality as well as line scans of different test blocks from the field of non-destructive testing. The scan images have high lateral resolution. By using different probes, the measurement parameters can be adjusted to the appropriate test objects.

To deepen knowledge of ultrasonic measuring technology, e.g. in the training of medical technicians, the scanner can also be used for the measurement of sound field characteristics such as beam width, focus zone, intensity distribution and near-field length of an ultrasonic probe. An understanding of the characteristics of complex interference patterns within the sound field of an ultrasonic probe is a decisive requirement for improving image quality in medical diagnostics.

The set includes a large number of subject areas, so that it can be used to carry out sophisticated experiments in almost all medical, scientific and technical fields of training.

Equipment

Ultrasonic echoscope GS200	10400
CT scanner	60200
CT control unit UCT200	60210
CT reservoir	60120
CT sample	60121
Ultrasonic probe 1 MHz	10151
2 ultrasonic probes 2 MHz	10152
Test block (transparent)	10201
Hydrophone	10450
Hydrophone support	60123
Ultrasonic gel	70200

Experiments

PHY08	Ultrasonic B-scan
PHY09	Ultrasonic computer tomography (CT)
PHY10	Characteristics of sound field
PHY16	Mechanical scan methods
PHY20	Determination of focus zone

Further possibilities

Breast phantom – 10221:
MED02 Ultrasonic imaging at breast phantom (mammasonography)

Order no. 19009

Set 10 Ultrasonic imaging

Related topics

B-mode imaging is an ultrasound method frequently applied in medicine or in non-destructive material testing. Similar to X-ray or MRI procedures, the B-mode method delivers sectional images of the internal structure of a technical body or an organism, however without exposing it to radiation.

This experimetal set was composed to be able to track the individual steps from the ultrasound signal to the complete B-scan image and to examine the possibilities and limits of the B-scan method as well as training its practical application. The set enables basic and application experiments for training and lab courses in medical and medical engineering specialities.

The 2 MHz ultrasonic probe and the test block enable experiments in view of the fundamental physical principles of ultrasound propagation (time of flight, acoustic attenuation, reflection at boundaries, acoustic shadow, ...). By using a single-element-transducer, it is possible to track the way from the ultrasound signal via the amplitude signal (A-scan), its conversion into a grey scale or coulor coded line scan and the composition of such line scans in a complete sectional image (B-scan).

For practical experiments, the set comprises two ultrasound phantoms with acoustic characteristics similar to those of human tissue.

In order to image the internal structures of the phantoms, a curved array probe (2-5 MHz) is used, as for example applied in medicine for examining the abdomen. This ultrasound probe possesses an array of 64 convexly arranged individual transducer elements. For the controlling of the array probe and the recording and analysis of the signal, a separate extension module is integrated in the GS200i ultrasonic echoscope.

The internal structures can be imaged and their dimensions can be measured by means of the measurement software.

Furthermore, the influence of various parameters (focus, dynamic range, graphic filters, brightness, contrast, ...) on the processing of signal and image can be examined.

Equipment

Ultrasonic echoscope GS200i incl. curved array probe (convex)	10410
Ultrasonic probe 2 MHz	10152
Test block (transparent)	10201
Ultrasound test phantom	10420
Ultrasound fetal phantom	10430
Ultrasonic gel	70200

Experiments

PHY01	Basics of pulse echo method (A-scan)
PHY08	Ultrasonic B-scan
MED07	Ultrasound test phantom
MED08	Ultrasound fetal phantom

Further possibilities

Ultrasonic probes 1 MHz - 10151 and 4 MHz - 10154:
PHY06 Frequency dependence of resolution power

Acoustic impedance samples – 10208:
PHY21 Reflection and transmission at boundaries

Heart model - 10220,
Ultrasonic probe 4 MHz - 10154:
MED01 Ultrasonic TM-mode (echocardiography)

Eye phantom - 10222:
MED04 Biometry at the eye phantom

Ultrasound breast model with cysts - 10224,
Ultrasound breast model with tumors - 10225:
MED09 Mamma sonography

Order no. 19010

Set 11 B-scan ultrasonography

Related topics

Ultrasound imaging based on the B-scan method is an important tool in medical diagnostics. Similar to the X-ray or MRI methods, the B-scan ultrasonography provides sectional images of the internal structure of a technical body or an organism, however without exposing it to radiation exposure.

This experimental set enables application-oriented experiments for the training and practical courses of the medical and medical-technical disciplines. With the experimental set, the possibilities and limitations of the B-scan technique can be investigated and the fundamental handling of an B-scan ultrasound device can be trained.

For practical experiments, the set includes various ultrasound models with acoustic properties similar to those of human tissue.

A curved array probe (convex) with sound frequencies of 2-5 MHz and a wide field of view in depth is used to image the internal structures of the models, such as is used in medicine for examinations of the abdominal cavity.

The internal structures can be imaged and their dimensions can be measured by means of the measuring and control software. In addition, the influence of various parameters (focusing, dynamic range, graphic filters, brightness, contrast, ...) on the signal and image processing can be examined.

The set can be supplemented by a linear array probe (item no. 10416) with sound frequencies of 5-12 MHz and a narrow field of view in depth, as used e.g. in medicine for the examination of structures close to the ultrasonic probe.

Equipment

B-scan ultrasound device Gi210 incl. curved array probe (convex)	10412
Ultrasound fetal phantom	10430
Ultrasound breast model with cysts	10224
Ultrasound breast model with tumours	10225
Ultrasound gallbladder model	10440
Ultrasonic gel	70200

Experiments

MED08	Ultrasound fetal phantom
MED09	Mamma sonography
MED10	Gallbladder ultrasound

Further possibilities

Ultrasound test phantom - 10420:
MED07 Ultrasound test phantom

Linear array probe - 10416:
MED09 Mamma sonography

Order no. 19011

The Company

GAMPT

Gesellschaft für Angewandte Medizinische Physik und Technik

(Company for Applied Medical Physics and Technique)

Founded in 1998 by employees of the *Institut für Medizinische Physik und Biophysik* of Martin Luther University Halle-Wittenberg, the name **GAMPT** now stands for comprehensive expertise in the field of ultrasonic measuring technology. We design our own projects and work together with partners from business and research to find solutions. A growing network of customers and partners in Germany, Europe, Asia and the USA is a reflection of many successful collaborations.

Top Products for Realistic Training

Based on many years of experience in supporting students in the widest variety of subject areas in physics practical work, we develop and produce equipment and experimental sets, with which clearly demonstrative training can be carried out in practical applications of ultrasonic technology in medicine, physics and materials science.

The Most Modern Ultrasonic Measuring Technology

Know-how gathered over many years in the field of ultrasonic measurement qualifies us to plan and realise even very complex and highly sensitive measuring methods and equipment – examples include the “BubbleCounter” in the field of medical technology and the membrane hydrophone for the measuring of sound fields.

Research on Behalf of the Customer

In addition to our own devices we also develop individual ultrasonic solutions upon request. From the circuit design to the construction of sensors, the development of suitable software solutions to the production of complete devices – the brains at GAMPT find the right concepts for highly specialised requirements.

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