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1.87 mm 41.4dB

13 14 15 16
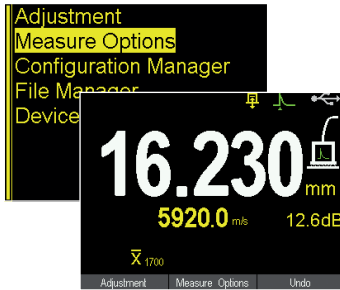
F1 F2 F3

ESC

MENU OK

ECHOMETER

Multichannel rack version also available!

A-Scan ECHOMETER 1077 Portable and Multichannel Rack Version
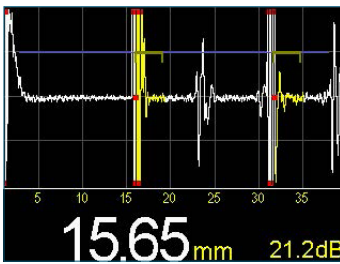Measurement Of Wall Thickness And Sound Velocity

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A-Scan ECHOMETER 1077
High Precision Measurement with A-Scan Indication

User interface: Menu structure (top) and numerical indication of readings with a lot of additional information

AutoMax: Some applications come with interfering intermediate and noise echoes preventing proper evaluation of the ultrasonic signal. AutoMax divides the original gate range into two subregions determined by maximum amplitudes. Thus, signals outside these gate ranges do not influence the measurement.
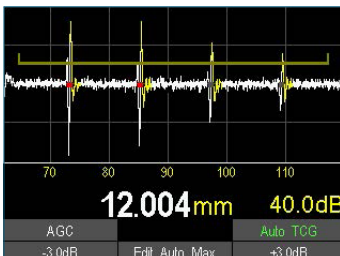
Automatic time-controlled gain ATCG: Depending on the transit time the gain is controlled in such a way that the first four echoes are amplified to nearly the same height

Selection of probes with and without delay line for different measuring demands

The sophisticated measurement technology of the new A-Scan ECHOMETER 1077 and a convenient user guidance provide high-quality measurement results and simple operation. Several automatic modes optionally prepare the measurement signal and allow extremely accurate measurements even with demanding waveforms. In difficult measurement situations, the high-resolution A-scan display is available for an analysis of the echo signals, so the measurement parameters can be adjusted optimally. Since the measurement of wall thickness also can be executed by means of two backwall echoes, precise through-coat measurements are possible as well. Due to the high measurement rate of up to 100 Hz even small defects can be detected during a dynamic material scan. The ECHOMETER 1077 is available as a portable gauge and as a multichannel rack version.

Display and Operation

- High-resolution graphic display of the ultrasonic signal for optimum observation of the wave form (in particular, this is helpful with demanding applications regarding the sound response)
- Convenient operator guidance in many languages and comprehensible plain text
- Variable display modes for optimum adaptation to the measurement task. Optional display of the measured value with or without A-scan.
- Three programmable function keys
- Five different display modes selectable for the measured value: direct display, mean, minimum, difference, relative
- As under Windows®: storage of readings with easy data administration to files with alphanumerical name
- Up to 25 data files with 999 readings each
- Statistical evaluation: minimum, maximum, mean, standard deviation
- Output of readings via the PC interface for customer's applications

Measurement Technique

- Highest measuring precision: individual gate parameters and measurement at zero crossing
- Through-coat measurement by evaluation of backwall echo sequences
- Various options selectable for echo evaluation: polarity, TP-BE, BE-BE
- Square wave transmitter with a pulse width individually adapted to the probe for high resolution and energy
- Selectable: Automatic gain control AGC and – as the first instrument worldwide – compensation of material damping by means of automatic time-controlled gain ATCG
- AutoMax function for efficient suppression of interference echoes
- Very high measuring rate (100 Hz)

Operator Assistance

- Function for automated adjustment of the probe for fast instrument set-up.
- During calibration: auto-detection of probe properties like centre frequency and frequency range, and automatic selection of the measuring range
- Automated adjustment of every suitable single-element probe
- Customized set-up can be stored with alphanumeric name
- Configuration management for quick loading of stored settings for standard probes
- Limit monitoring
- Individual storage of calibration in the respective files

Special Applications

- For special applications probes with high-temperature delay lines are available
- LF instrument (art. no. 1077.998) for highly sound-attenuating materials, such as rubber, GRP, CFRP, etc.

Windows® Software to Connect a PC via the Interface

- "EasyExport" for easy export of individual results or entire files to Windows® applications

The Portable Gauge for Mobile Operation

Specifications:
- Powered with standard (rechargeable) batteries
- Rugged and durable: shock-absorbing protective rubber holster with stand
- Splash-proof housing compliant to IP54
- Delivery in a handy carrying case with a foamed inlay for optimum protection of the case contents

The Expansion Module "Matrix + B-Scan + Extended Storage" Can be Activated at any Time via a Code:
- Matrix memory (2 to 19 lines, 2 to 19 columns, up to 225 matrix cells)
- B-scan to display the cross section of the scanned material area
- Expansion to 25 data files

B-scan: The gauge generates a detailed cross-sectional image of the scanned material region. The scaling of the display is automatic or manual.

Matrix memory: The readings are tabulated in matrix form. Weak spots are shown in a different colour and can be localized accurately.

19" Industry Rack Version for Automated System Operation with up to Six ECHOMETER 1077 Modules

The 19" rack is optimized for use in the field of industrial systems and has space for up to six ECHOMETER 1077 modules. Every module provides the proven metrological characteristics of the portable.

Network and PC standard interfaces are provided to communicate with a host computer.

Additional Specifications of the Modules:
- Data output with selectable baud rate
- Variable pulse repetition frequency
- A-scan display for each channel
- Remote control (single or multichannel): Adjustment, set-up of sound velocity or opening of configuration files
- Special software for extended telegram evaluation

- The readings can be transferred alternatively via USB, LAN (Ethernet) or RS232.
- Tailored to application requirements: Simultaneous measurement with up to six channels
- Option: 4 digital switching outputs for exceeding or dropping below limits, reading within limits and illegal reading / probe lifted

Example of a 19" rack with six ECHOMETER 1077 modules

Technical Data and Order Numbers

Technical Data A-Scan ECHOMETER 1077

Display	TFT colour display, 320 px x 240 px, 50 mm x 37 mm approx., illuminated
Measurands	Wall thickness, sound velocity, transit time
Measurement uncertainty of gauge for wall thickness measurement (resolution)*	0.1 mm, 0.01 mm, 0.001 mm, 0.0001 Inch, 0.001 µs (selectable)
Measurement uncertainty of gauge for sound velocity measurement (resolution)	1 m/s, 0.1 m/s and 1 Inch/s (selectable)
Ranges for wall thickness measurement **Measurement uncertainty (gauge) in mm** **Measurement uncertainty (gauge) in Inch**	0.25 mm .. 450 mm (depending on probe and operating mode) 0.001 mm (may be limited by application) 0.001 Inch (may be limited by application)
Interface	**Portable:** RS232C for printer and PC (PC USB connection via adapter cable)	**19" Rack:** USB: per virtual COM port, PC drivers for FTDI-chip required (currently available for Windows, Linux and MAC-OS), TCP/IP, RS232C with 57600 Bd
Measuring rate	100 Hz	
Storage	arrangeable in 5 (standard) or 25 (with expansion module "Matrix + B-Scan + Extended Storage") files for up to 999 readings each	
Power supply	**Portable:** 2 pcs Alkali Manganese batteries or 2 pcs Lithium batteries, type AA/IEC R6 each	**19" Rack:** power supply plug, 110 to 240 V, 50/60 Hz, current consumption < 0.5 A
Battery level indicator (only with portable gauge)	Symbol with additional acoustical and optical alarm signal when undervoltage occurs	
Channels and switching outputs (only with 19" rack)	1 channel per module. The rack may be expanded to 6 channels. Up to 4 galvanically isolated switching outputs (10 V to 30 V) per channel.	
Size, weight	**Portable:** 135 mm x 82 mm x 32 mm approx., 237 g (with batteries and protective holster)	**19" Rack:** 3 RU; module: 12 HP

*stated measuring ranges in steel

Order Numbers

Instruments

A-Scan ECHOMETER 1077 Data	1077.020
A-Scan ECHOMETER 1077 LF Data	1077.998

Scope of delivery for both types: Instrument incl. red protective holster, 100 ml ECHOTRACE couplant, Lithium batteries, instruction manual and carrying case

A-Scan ECHOMETER 1077 19" Rack	1077.851
A-Scan ECHOMETER 1077 (19" Module)	1077.801
A-Scan ECHOMETER 1077 (19" Module) Low Frequency	1077.802

Software expansion

Module "Matrix + B-Scan + Extended Storage" for ECHOMETER 1077	1910.002

Probes for BE-BE and TP-BE evaluation with delay line

Probe DS 6 PB 4-14 incl. 10 mm delay line, Microdot	1422.001
Probe SDS 3 PB 6-16 incl. 6 mm delay line, Microdot	1498.220
Probe S 12 PB 1-7 incl. 25 mm delay line, Lemo 00	1422.703

Probes for TP-BE evaluation without delay line

Probe DS 6 HB 4-12 Microdot	1432.701
Probe DS 6 HB 2-7 Microdot	1432.702
Probe DS 12 HB 0,8-3 Microdot	1433.703
Probe DS 12 HB 2-7 Microdot	1433.705

Probes for measurement of corrosion with TP-BE evaluation

TR probe DSE 8.3/15 PB 5 C, incl. 1 m cable, Lemo 00	1465.771
TR probe DSE 4.2/4 PB 10, incl. 1 m cable, Lemo 00	1465.671

Broadband composite probes for sound-attenuating materials

Probe S 10 PB 1–3 C, with delay line 20 mm, Lemo 00	1498.278
Probe S 12 HB 1–4 C, with wear resistant face, Lemo 00	1498.279

More accessories:

Probe cable, length 1 m, Lemo 00 / Lemo 00	1616.010
Probe cable, length 1 m, Lemo 00 / Microdot	1618.010
Stepped reference block 4-7-15 mm (steel), cannot be certified	1713.003
Protective bag for ECHOMETER 1075, 1076 TC, 1076 Data	1868.003
ECHOTRACE couplant (500 ml bottle), water-based	9000.003
ECHOFLUID couplant (1 l bottle), oil-based	9004.002
PC cable for ECHOMETER 1077 -> USB (incl. driver CD)	1657.314
EasyExport, PC software for Windows XP/2000/Vista/7/8.1 (32/64)	2905.001

additional accessories on request

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