

UT Flow Detector with Four- or Eight-Channel Multiplexer for Simple Automated Ultrasonic Systems



Multiplexer:

Optionally from one up to eight testing channels can be connected.

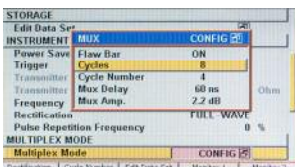
The results of both monitors are displayed for each test channel separately in the bottom area of the A-Scan screen and additionally as a LED summary signal.



With the help of the port-control unit (option) it is possible to see each flaw signal for each test channel and monitor on an auxiliary LED array.



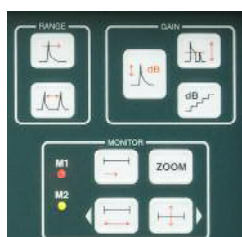
In the configuration mode each test channel can be displayed separately on the screen and in the testing mode all channels are shown.



Interfaces and connectors for flaw signals, trigger and ultrasonic probes on the backside.



Important instrument parameters accessible via direct keys.



and...

- ... delay time for the transmitting signal is separately adjustable for each probe within a range of up to 3800 ns.
- ... gain adjustment can be set separately for each probe from -11 dB to +11 dB.
- ... compact aluminium housing for harsh ambient conditions
- ... selectable colours for menu and A-Scan mode respectively
- ... assistant for various instrument settings, e.g. the determination of the probe zero, adjustment of the screen display, ...
- ... reference A-Scan in the background
- ... freezable echo-dynamics curve
- ... pulse repetition frequency: 8 Hz to 3000 Hz
- ... trigger: internal, external (in/out), 1st echo
- ... specifications acc. to EN 12668-1

Technical Data

DISPLAY

Screen type	<ul style="list-style-type: none"> ➤ colour LC display ➤ transmissive / transreflective ➤ daylight suitable ➤ background illumination
Screen size	143.4 x 79.3 mm ²
Resolution	400 x 240 pixels
A-Scan size	142 x 73.5 mm ²
Grid	Electronically generated, switchable
Grid visualization	<ul style="list-style-type: none"> ➤ coarse: 10-fold horizontal, 5-fold vertical ➤ fine: 50-fold horizontal, 25-fold vertical

A-SCAN-DISPLAY AND DIGITIZATION

Image refresh rate	50 Hz
A-Scan display	<ul style="list-style-type: none"> ➤ normal display ➤ filled echoes ➤ frozen ➤ echo dynamics curve ➤ zoom over monitor 1
RF display	Across the entire adjustment range
Rectification	Full-wave, positive, negative, without (RF)
Suppression	Adjustable: 0 – 99% screen height in 1%-steps (linear)
Zoom	Monitor range (monitor 1) spread on full screen width
A/D converter	9 bit
Digitization method	Direct, with A/D-converter
Sampling rate	80 MHz
Sampling error for digitiz.	< + 0.5% screen height at 4 MHz
Response time	< 20 ms

MEASURING RANGES

Testing range	2.5 – 4850 mm steel
Sound velocity	100 – 15000 m/s in 1 m/s steps
Delay	0 – 3000 mm in 0.1 mm steps
Linearity of time axis	± 0.5 % of screen width

TRANSMITTER

Number of transmitters	2 (resolution and power)
Pulse shape	Unipolar (negative) needle pulse
Transmitter damping	10, 50, 220 [Ω], without
Pulse repetition frequency (PRF)	8 Hz to 3000 Hz (depending on testing range, adjustable from - 85% to +50% in 1% steps)
Trigger modes	internal, external, 1st echo

AMPLIFIER AND ATTENUATOR

Frequency ranges	3 (LF-, RF- and broadband)
Adjustable gain	100 dB in 0.1, 1, 2, 6, 12, 20 dB steps

FLAW EVALUATION

Evaluation of echo height (for both monitors)	<ul style="list-style-type: none"> ➤ % screen height (% SH) ➤ dBabs ➤ dBrel (DAC-version and higher) ➤ mm FBH (DGS/DAC-version)
Flaw position	<ul style="list-style-type: none"> ➤ sound path ➤ depth ➤ projection distance and shortened projection distance ➤ resolution 0.1 mm steel

REFERENCE LINE (DAC version)

Number of DAC points	Max. 11
Reference line	Adjustable offset: max. + 80 dB
Additional eval. curves	4 (max. + 15 dB shift to DAC curve)

DGS METHOD (DGS/DAC version)

DGS curve	0 to 30 mm FBH and backwall echo
Reference reflector	Backwall echo or FBH
Additional eval. curves	4 (max. + 15 dB shift to DGS curve)

MONITORS

Number of monitors	2 (for each channel)
Response time	With PRF (max. 3 kHz)
Operation modes	normal, invers, off
Setting range	<ul style="list-style-type: none"> ➤ monitor start: 0 – 4000 mm in 0.1 mm steps ➤ monitor width: 0 – 3000 mm in 0.1 mm steps
Statistical noise suppression	0 – 250 pulses
Signal outputs (for both monitors)	<ul style="list-style-type: none"> ➤ level: TTL (5V) , low: active, ZA = 100 Ω ➤ response accuracy: ± 0.5% SH ➤ switching hysteresis: < 0.5% SH
Optical indication	2 luminescent diodes on front panel (sum signal) 16 luminescent diodes via port-control-unit*

MULTIPLEXER-OPERATION

Error indicator	ON / OFF
Test channels	1 to 8 (selectable)
Delay	0 - 3800 ns, 15 ns steps
Amplitude adjustment	-11 dB to +11 dB, 1 dB steps

INPUTS, OUTPUTS

Error signal	TTL level (5V) and analogue output
USB interface	USB 1 interface for PC connection and for printing via the PC connection
VGA output*	for external monitor
Trigger input/output*	TTL level (5V), low active, trigger threshold approx. 2 V, trigger on and off

MISCELLANEOUS

Measuring units	mm, inch (switchable)
Date and time	Built-in real-time clock
Languages	German, English (switchable)

STORAGE

A-Scan	Actual A-Scan by means of a FREEZE function on the screen
Internal memory	224 data sets incl. A-Scans, testing parameters and text comment

POWER SUPPLY

Mains operation	12 V battery (e.g. car battery); AC power supply: <ul style="list-style-type: none"> ➤ 85 – 264 V AC, 47 – 63 Hz ➤ output: 12 V DC ➤ operating temp.: 0 °C - +50 °C ➤ storage temp.: -40 °C - +85 °C ➤ allowable humidity 0 – 95%
Automatic switch-off	In case of low voltage

DIMENSIONS, WEIGHT ETC.

Dimensions (H x W x D)	130 x 330 x 340 mm ³
Operating / storage temp.	-10 °C to +50 °C / -20 °C to +60 °C
Weight	4,3 kg
Connectors and interfaces	<ul style="list-style-type: none"> ➤ 2 x Lemo 1 (for ultrasonic probes) ➤ PC: USB 1 ➤ D-Sub socket (9 poles) triggering input ➤ D-Sub socket (9 poles) analogue flaw output ➤ D-Sub socket (25 poles) TTL flaw output ➤ VGA (15 poles)* monitor out ➤ 16 BNC connections for probes ➤ connection for 12 V power supply

* option