

CTS-4020E

Digital Ultrasonic Flaw Detector



- High-speed Sampling
- Ethernet Communication
- High Limit Sensitivity
- Adjustable PRF
- Low Noise

SIUI



CTS-4020E

Portable, Easy-to-Use, Reliable

—New Generation General-Purpose Digital Flaw Detector

The digital ultrasonic flaw detector CTS-4020E is suitable for various detection demands, such as forged pieces, welding lines and airplane parts.

The CTS-4020E represents the persistent fine tradition of SIUI: innovative technology, advanced process, small size, lightweight, powerful functions and easy operation.



Innovative Technology

Continuous innovation and endeavor towards world-class technology is SIUI's consistent goal. The CTS-4020E combines all good performance of a large ultrasound system in very small size: at least 63dB detection sensitivity surplus will meet detection demand for large forged pieces or coarse-crystal material; LAN Ethernet port for real-time communication with a PC (Host) and remote control; Cine loop function for recording dynamic scanning process; The simple and convenient interface wave tracking function is good for immersion detection; Together with new techniques and new functions such as DAC, TCG, RF echo display, large memory and USB port, the CTS-4020E becomes a handy ultrasonic flaw detector with excellent performance.

Superior Features

- Probe frequency testing function.
- Probe angle (K value) measuring function.
- Variable PRF: avoid reverberation signals during flaw detection.
- Large capacity lithium battery pack for continuous operation over 6 hours.
- High-brightness color TFT LCD, bringing optimized effect for reading and measurement.
- Color differentiation display function for second echo signals, when detecting with an angle probe.
- Ethernet communication for achieving real-time communication with a PC (Host) and remote control
- Large memory for saving up to 1000 data sets, including wave forms, curves, parameters, test reports, etc
- USB port for saving system stored data and data waveforms to a USB disk, as well as easy printing test reports.
- 10 waveform and character colors are available for selection.
- RF (Radio Frequency) echo display: good to thin-wall material measurement, academic research or qualitative analysis.
- Peak value memory function and echo compare function: useful for fast scanning, measurement and comparison on workpieces.
- Cine loop function for recording dynamic scanning process.
- Operating frequency range: 0.5~15MHz, highlighting advantages of high sensitivity and broadband.
- Interface wave tracking function: Immersion detection or precision measurement can be easily achieved through the logic relation between gate A and B
- Complete DAC and TCG curve function: convenient for echo evaluation, suitable for on-spot detection, such as detection on large forged pieces and coarse-crystal material.

Option

- EL display screen: It can work under operation temperature of -20°C -40°C , but does not support screen color change.
- Software DGS/AVG
- Software AWS D1.1

Simple, Practical & Convenient

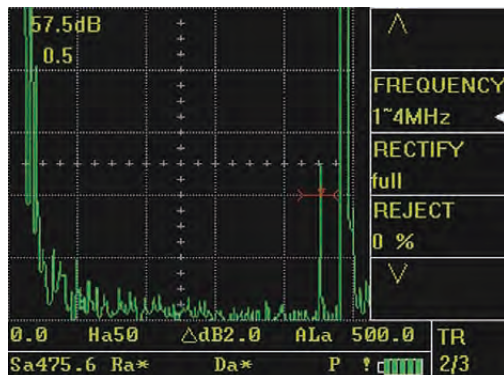
Elegant & handy, easy operation and powerful functions, all of which represent SIUI's persistent design concept: simple, practical, convenient and reliable.



Application Examples

Detection on large forged piece

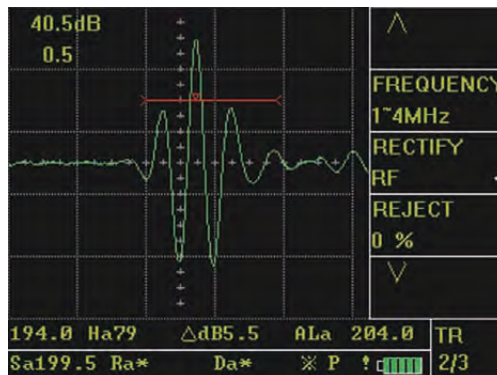
Maximum detection range is 6000mm. Together with high sensitivity far-field detection, the CTS-4020E is suitable for detection on large forged pieces or coarse crystal materials.



(From waveform display of a 500mm Φ 2 flat-bottom hole)

Echo qualitative analysis

RF echo display function is especially suitable for situations that require further analysis on echo characteristics.



(From RF waveform display of a Φ 2 flat-bottom hole echo)

Detection on thin plates

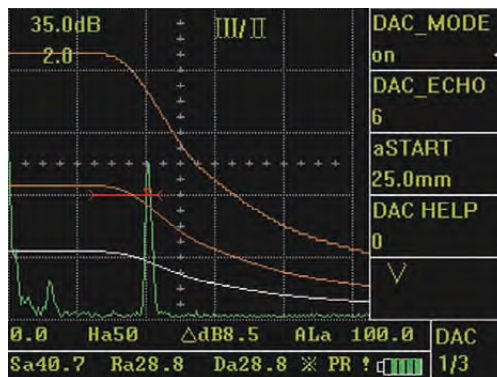
With good near-field resolution, the CTS-4020E is suitable for near-filed flaw detection on forged-pieces, as well as thickness measurement of pressure vessels and pipes.



(Bottom echo of a 1.2mm steel plate)

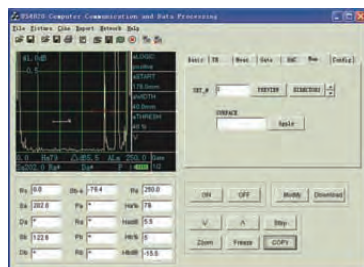
Detection on welding lines

With its complete DAC curves and echo compare function, the CTS-4020E brings easier, more convenient and accurate echo analysis.



(From flaw echo of a welding line and a group of DAC curves)

Ethernet Communication

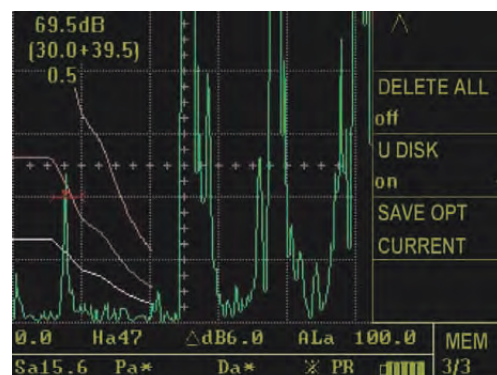


PC Software



With network communication, the CTS-4020E can be connected to a PC directly via 100Mbps Ethernet, so as to achieve real-time display and remote control.

Ability for Finding Small Flaws (0.5FBH)



Function	Unit	Specifications
Attenuator Error	dB	Every 20dB ± 1dB
Vertical Linearity Error	%	≤ 3
Dynamic Range	dB	≥ 32
Horizontal Linearity Error	%	≤ 0.5
Operating Frequency Range	MHz	0.5 ~ 15, two steps selectable: 1 ~ 4 / 0.5 ~ 15
PRF		10 steps adjustable Approx. 20Hz ~ 500Hz for detection range within 1500mm Approx. 20Hz ~ 200Hz for detection range over 1500mm
Thin Plate Resolution	mm	≤ 3 (with a C5-10L probe)
Measure Resolution	mm	0.1
Detection Range	mm	0 ~ 15000 (Longitudinal wave in steel), continuously adjustable, minimum display range 5 mm
Pulse Shift	mm	-10 ~ 1000 (Longitudinal wave in steel)
Probe Delay	μ s	0 ~ 199.9
Material Velocity	m/s	1000 ~ 9999
Damping	Ω	30, 60, 150, 500
Reject	%	0 ~ 80
Rectify		Positive, Negative, Full, RF, Filter
Gain Adjustment	dB	0~110, with steps of 0.5 / 2 / 6 / 12
Ethernet Port		Real-time communication with the PC (Host) and remote control.
Probe Frequency Testing		The probe actual center frequency may be precisely measured based on echoes
Waveform Compare		One waveform at any time can be selected as a reference waveform. The real-time waveform and reference waveform can be displayed at the same time
Second Echo Color		The second echo waveform can be displayed in a different color
Cineloop		Replay up to 30 seconds. It can be saved to a USB disk, recording dynamic scanning process
USB Port		Two USB ports, through which can save the system internal stored data and data waveforms to a USB disk, print out test reports
Printer		Compatible printers: HP-1020, HP-1120, Canon-S100SP
DAC Curve		Up to 10 echo reference points recorded, can be displayed in steps; dB distance between the three DAC curves variable; DAC echo reference point can be inserted, or the selected echo reference point can be modified
TCG Curve		Converted from DAC curves and correct the echo amplitude based on DAC curve, bringing echo amplitude of artificial reflectors (with different sound paths but same size) equivalent
Data Memory		1000 data sets, including detection state parameters, echo figures, DAC curves, remarks, etc.
Monitoring Gate		Two independent measure gates. Gate B can be set as interface wave tracking gate mode
Alarm Signal		Sound & light alarm (built-in buzzer and LED on the panel)
Measure Point Selection		Peak of the highest echo within the gate or the flank of the first echo
Echo Evaluation		Display of sound path, horizontal distance, vertical distance, amplitude and dB difference
A-scan Freeze		Freeze detection pictures
Zoom		Two display modes selectable: normal and zoom
Peak Memory		Echo peak memory display selectable. The background peak waveform can be displayed in different colors
Detection Sensitivity Surplus	dB	≥ 63
Far-field Resolution	dB	≥ 26
Noise Level	%	≤ 20 (1~4MHz)
Display Screen		5.7" high brightness TFT LCD, 320 x 240 pixels
Power Supply		AC or battery
Battery		Lithium battery pack (7.4V, 7.2Ah)
Operating Time	h	≥ 6 (Depends on backlight brightness)
Operating Voltage	V	6 ~ 9 DC (external power supply); 6.0 ~ 8.4 (battery)
Operating Temperature	°C	-10~40
Weight	Kg	Approx. 1.94 (excluding battery)
Dimension	mm	260×95×180 (L×W×H)
Language		Chinese, English, German, Russian, Polish

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Specifications and appearance are subject to change without prior notice.
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