ScanMaster

Ultrasonic Instruments

THE PORTABLE *i–100*

Truly the next-generation instrument for your in-factory or mobile inspector, with application horizons defined only by your imagination

INTRODUCTION

The ***i-100*** uncovers new vistas for the ultrasonic inspector….for the first time, a truly portable, full-featured PC-based instrument is available for factory and field inspection applications.

The ***ScanMaster*** MCI user interface, based on the Windows 2000/XP© operating system, provides the operator with a flexible and versatile platform for inspection combined with reporting, networking and archiving capabilities.

Single or multi-channel instrument configurations offer the operator the capability to store an unlimited number of set-up files for different transducers and inspection practices**.**

Glue bond evaluation in the automotive industry

One instrument…. unlimited inspection vistas

HARDWARE CONFIGURATIONS

The *i-100* is available in four hardware configurations:

The ***i-100***HR is the basic workhorse of the i-100 line. With its 35MHz analog bandwidth, programmable square wave pulser, 95dB true gain, 50dB DAC and range of 3600mm (140”) in steel, the i-100HR is well matched to the most challenging inspection applications.

Three additional hardware configurations are provided, each designed for a group of application specialties:

- The ***i-100***HF, with an extended analog bandwidth of 75MHz, is intended for high-frequency applications.
- For manual inspection of large forgings or lossy composites, the ***i-100***XD provides an extended dynamic range of 80dB.
- The ***i-100*** 4P is intended for those inspections requiring 2-8 channels.

THE PORTABLE *i–100*

SUMMARY PRODUCT DESCRIPTION – ALL MODELS

- Square-wave pulser preamplifier, 10-500nsec programmable pulse width
- 95dB true instrument gain, 0.2dB resolution, +/- 1dB linearity
- 50dB DAC with 160nsec step size, 20dB/160nsec slew rate, 500K steps
- Four hardware gates per channel
- Dynamic backwall tracking with backwall attenuator
- Storage and export of A-scan signals
- 2 x 3.8 Amp-hour internal battery supply with ‘hot-swap’ capability
- USB, parallel, VGA, PSA keyboard and mouse ports
- Dual digital I/O ports
- Approximate weight, including batteries, 8kg (17.7lbs)
- Multi-language capabilities: English, French, German, Italian, Spanish

EXPANSION CAPABILITIES – ALL MODELS

- 32 hardware gates per channel
- 8-port digital I/O
- FFT A-scan signal analysis
- Free-running B-scan
- Networking and database management
- Inspection reports per customer specification

APPLICATION SPECTRUM

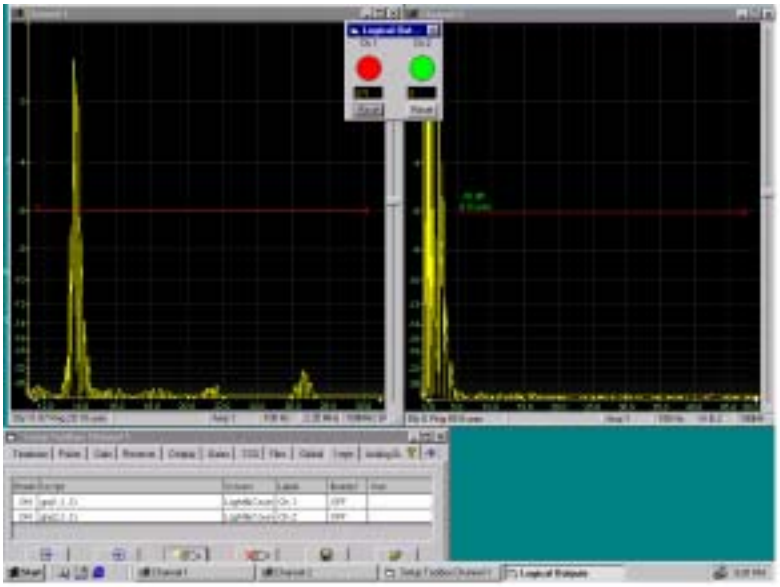
- Flaw detection in metals, composites and plastic materials
- Wall and clad thickness measurements
- A and B-scan evaluation

Spot weld inspection for the automotive industry

THE PORTABLE *i–100*

Instrument operation made easy and efficient ...

... through windows-based inspection screens ...

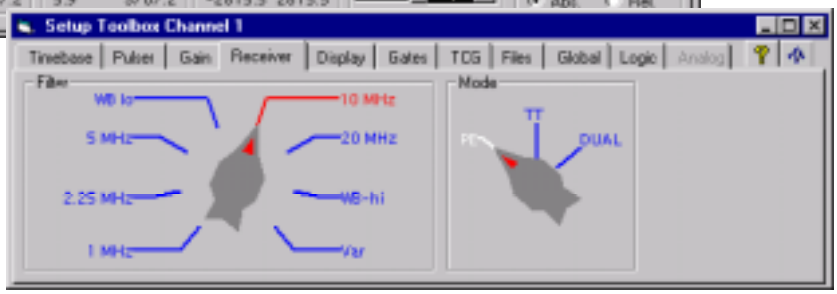


... and intuitive dialog boxes for ultrasonic set-up!

Knobs look and work just like analog instrument controls

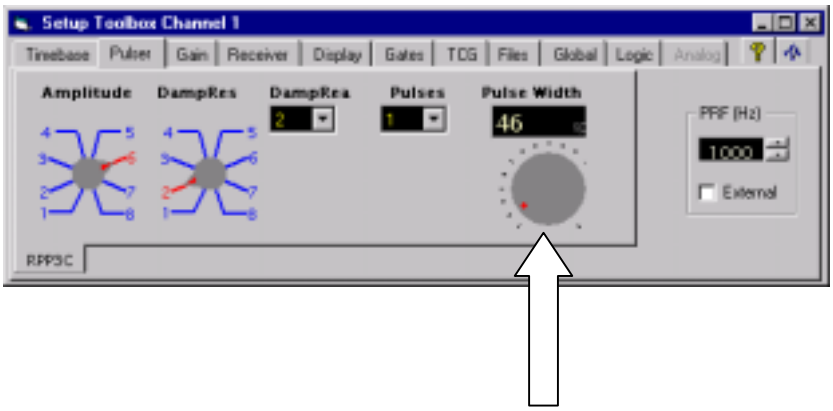
GAIN

TIMEBASE DELAY AND RANGE



FREQUENCY FILTERS

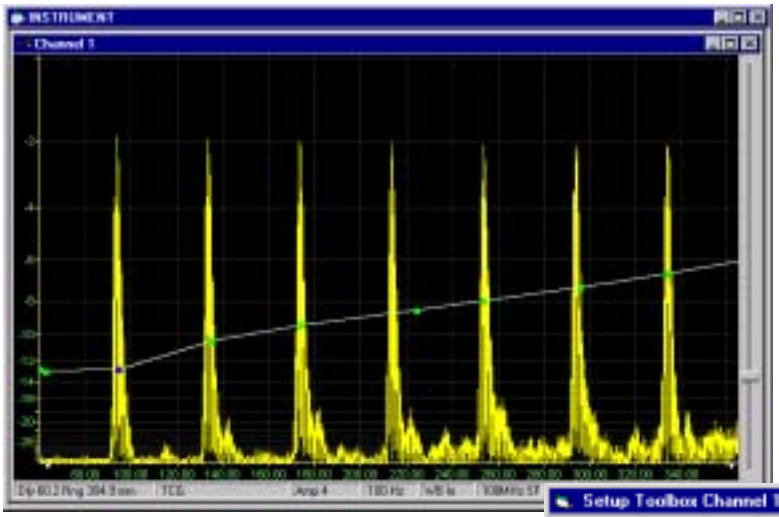
Tune the active transducer for enhanced near surface resolution…..
……. or maximum penetration power ……

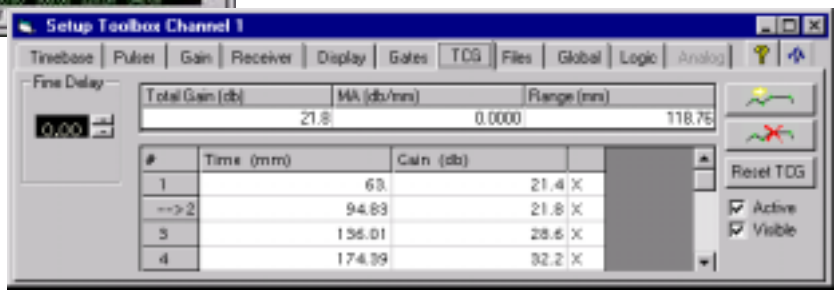


…..simply by rotating this virtual dial.

Using a focused 10MHz probe, resolve a No. 1 FBH at a depth of 0.060” in NI or Ti alloy, to a S/N greater than 20dB. Increase penetration power of contact and immersion probes by up to 9dB with square-wave excitation pulse tuning.

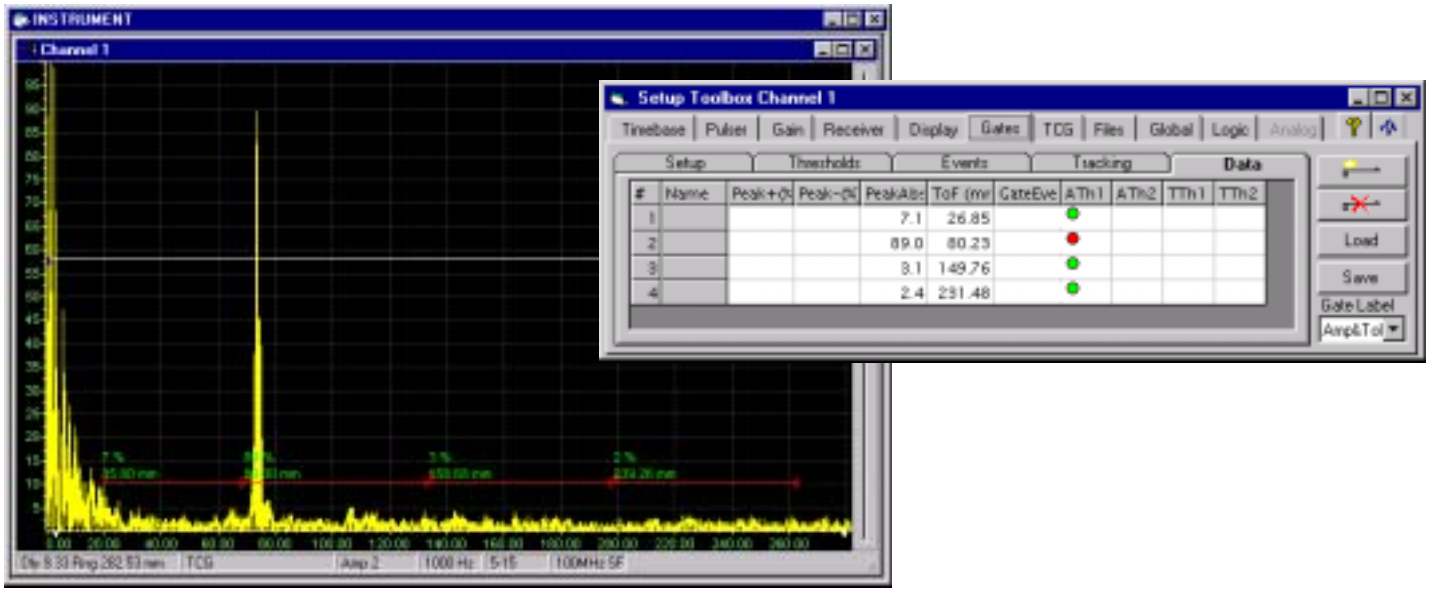
Set TCG requirements directly on the screen display using the control cursor…….



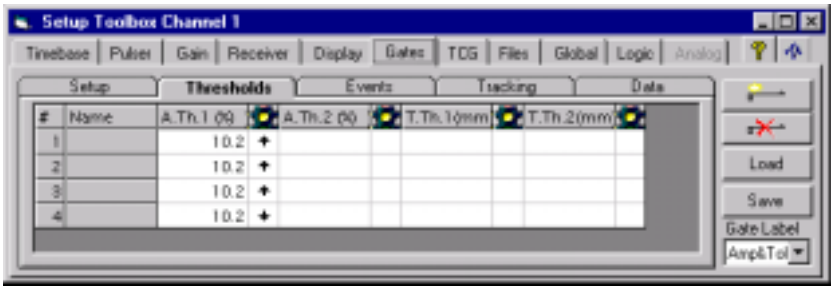


…or type in and fine-tune values directly in the TCG table.

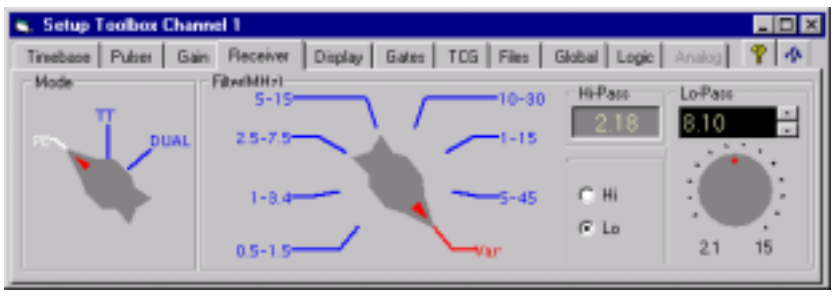
Set 1-4 gates (1-32 optional) Delay, Range and Threshold … using push-pulls icons on the screen display…



… or enter values numerically into the Gates' table



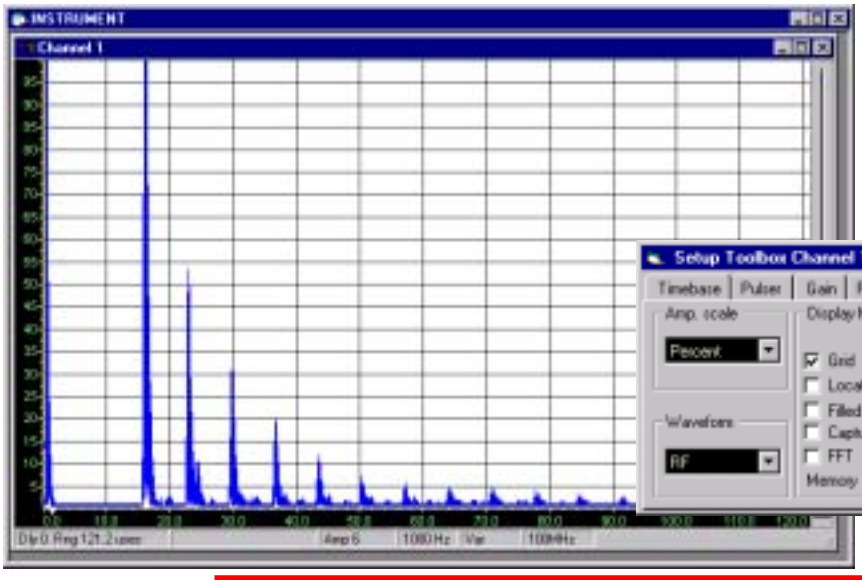
Variable electronic filter for optimizing transducer frequency response



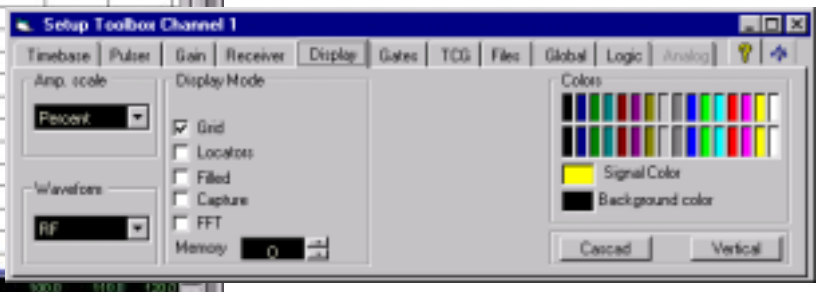
Use on-board tools for A-scan evaluation

FFT viewer

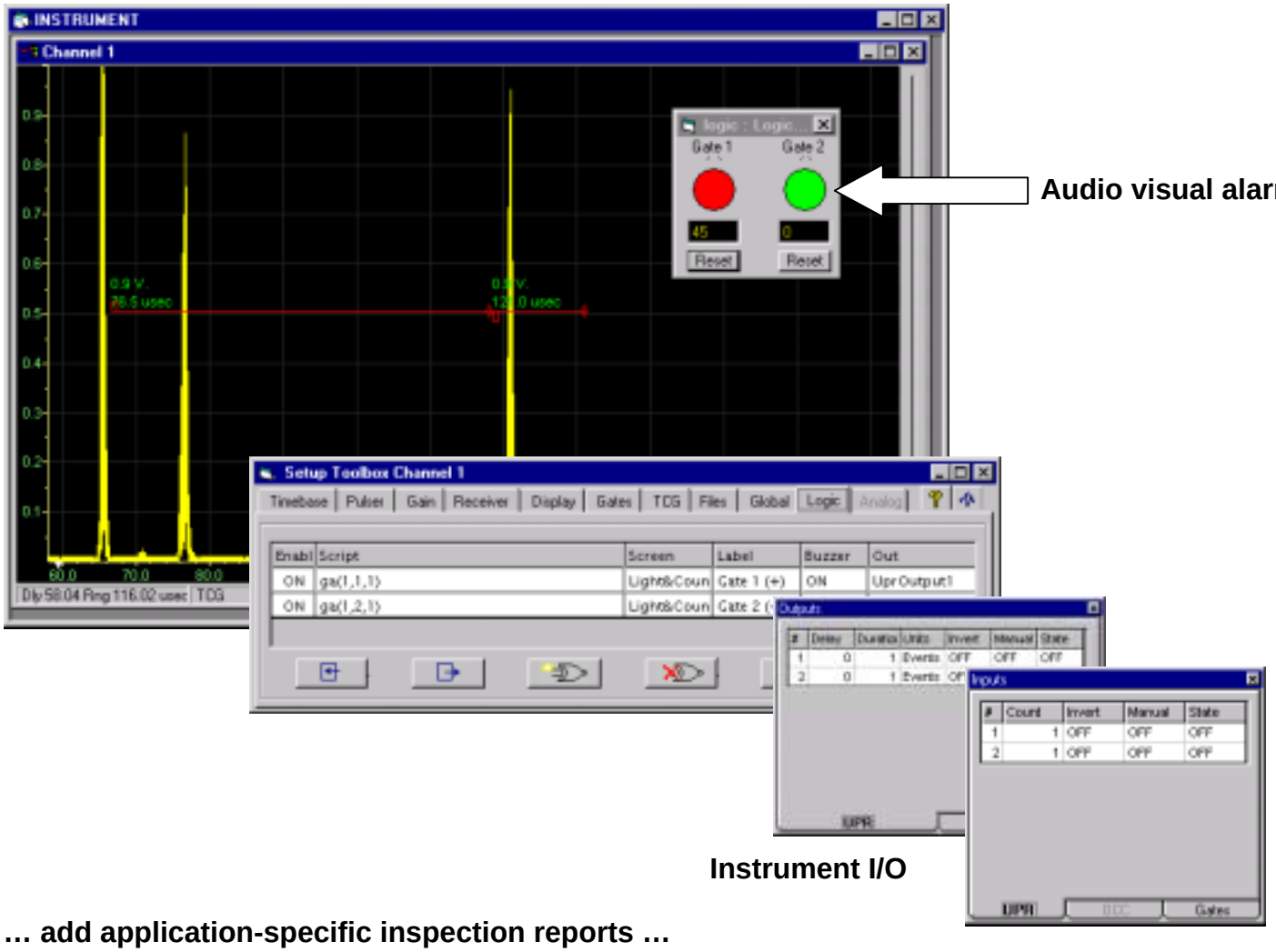
Store and retrieve independent instrument, gate and TCG set-up files.



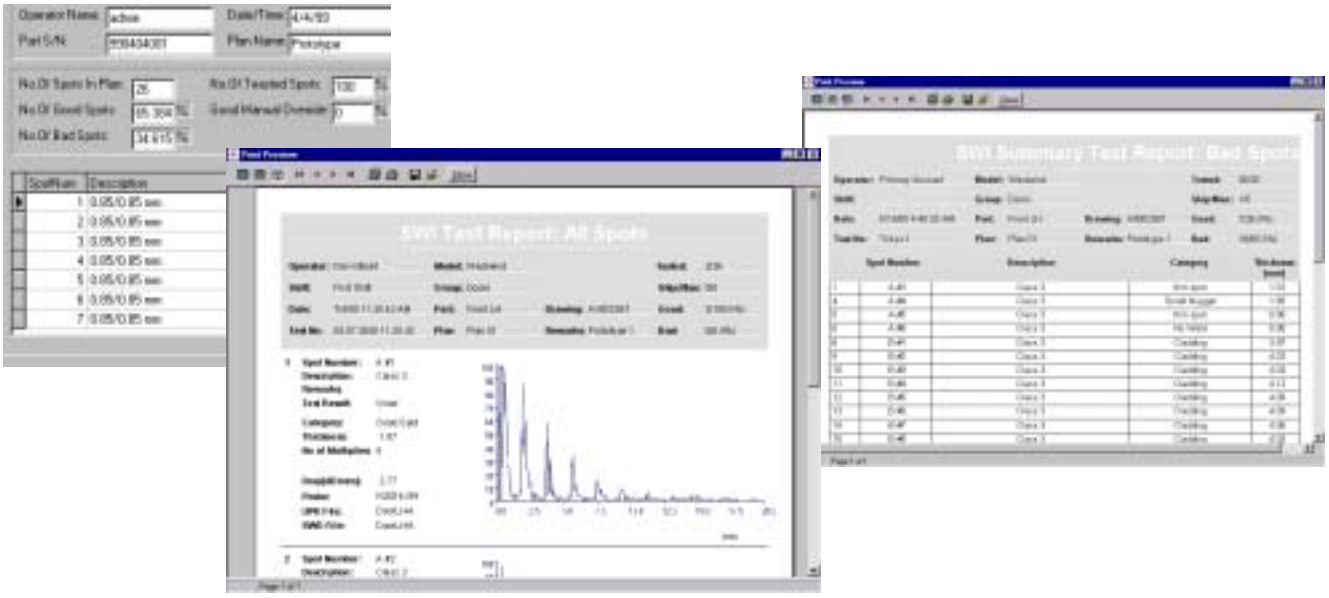
Select screen display colors



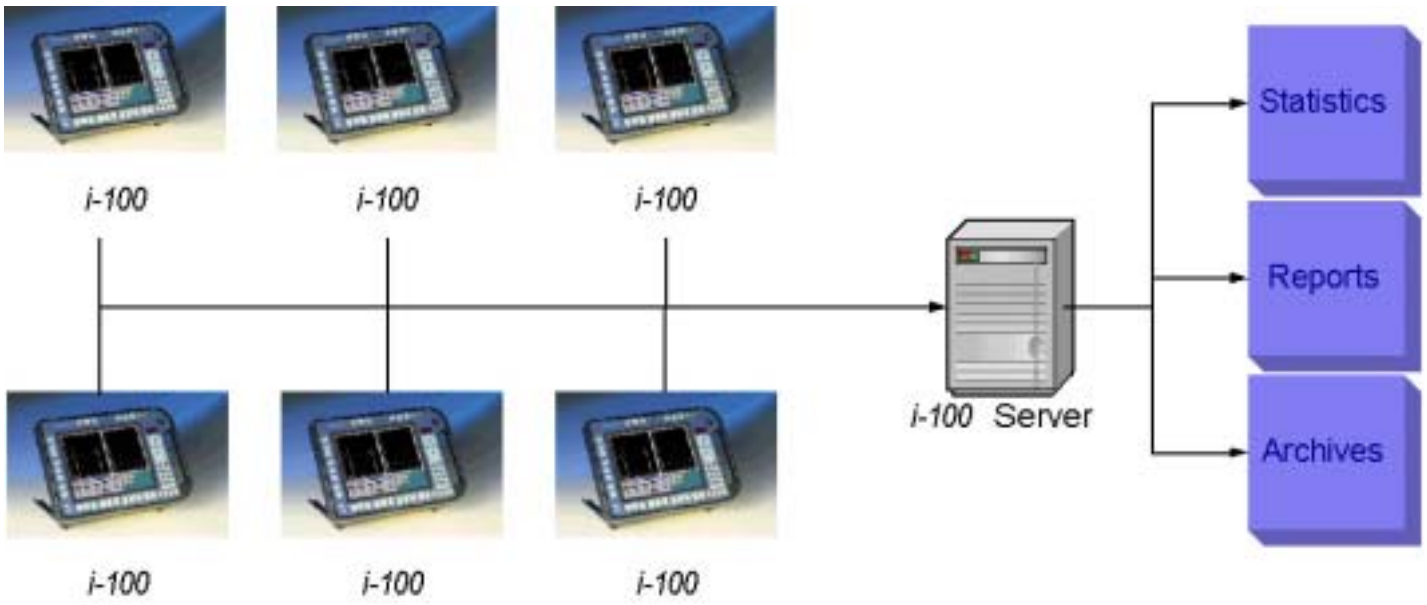
Program instrument I/O and audio-visual alarm display



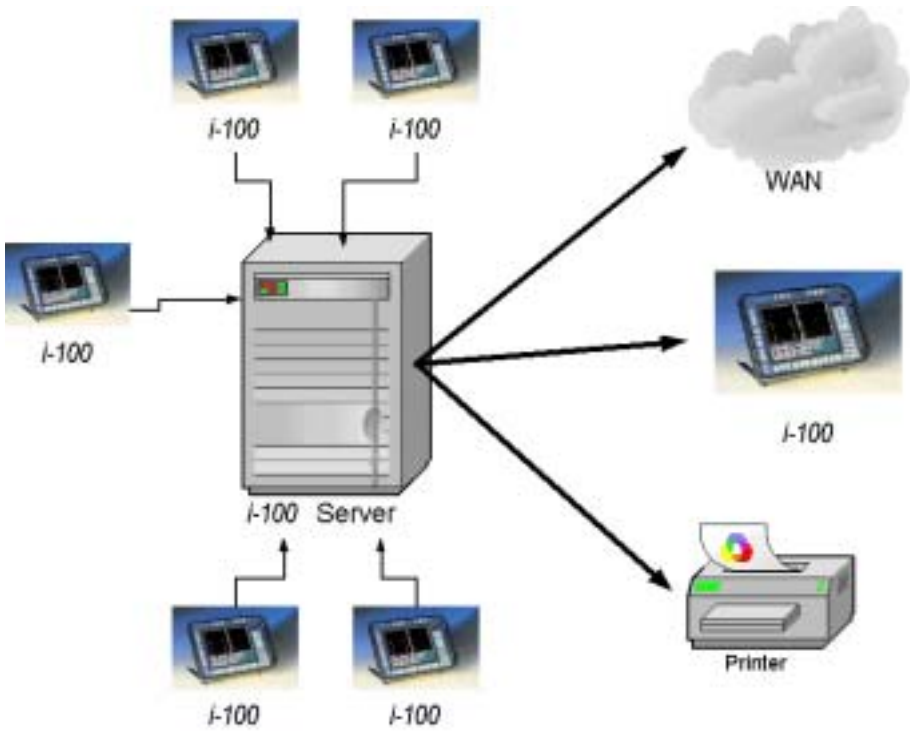
… add application-specific inspection reports …



... networking capability …



… and database management software …



…to provide the productivity and competitive edge you are looking for in your inspection application

THE PORTABLE *i–100*

i-100 TECHNICAL SPECIFICATION

Overall Analog Performance	
Analog bandwidth	1 to 35MHz (-3dB)
Calibrated gain	95dB
Gain step size	0.2dB.
Equivalent input noise	<6nV/√Hz
Linearity	± 1dB

Channels	
Number of channels	1
Channel triggering	Internal or external

Pulser Characteristics (RPP3)	
Excitation	Square wave
Amplitude	8 levels
Max. pulse amplitude, 50Ω load	350V + 10%
PRF per channel	1 to 10,000Hz
Damping	8 settings
Stability	± 2% FSH
Flatness	± 0.5dB
Mode	PE, TT
Pulse fall time	< 5nsec
Single pulse width	10-500nsec
Pulse width resolution	1nsec
Burst	1,2,3,4
Isolation (PE/TT)	> 65dB @ 5MHz

Preamplifier Characteristics	
Programmable gain	0, 15, 30, 45dB
Frequency Filters	
Number and type of filters	7 fixed

Time Base	
Range	100nsec to 10msec
Delay	0 to 10msec
Resolution [1)]	10nsec

Hardware Gates	
Number per channel	4, expandable to 32
Range	60nsec to 10msec
Resolution [1)]	10nsec
Peak detection	Positive, negative or absolute
Alarm threshold	Positive or negative going
Dynamic gate	Backwall echo tracking in last gate

DAC	
Dynamic range	50dB
Amplitude resolution	0.2dB
Range	160nsec – 1msec
Timebase resolution	160nsec
Position resolution	10nsec (first step)
Slew rate	20dB/160nsec
Interpolation	Linear between calibration points
Last gate attenuator	Back wall echo attenuation

Analog to Digital Conversion	
Resolution	10 bit (8 bit effective)
Sampling rates	12.5,25,50,100,200 (interleave) MSPs
High speed buffer	1MByte

Data acquisition speed	
Peak amplitude and time of flight	Up to 10M measurements/sec

Data Storage and Display	
Hard disc drive	40GByte
Built-in display (standard)	10.4" high brightness TFT color
Control device	Keyboard, mouse or trackball
Remote control	Hand-held infra-red

Interfaces	
Hardware	External VGA USB
	Parallel
	Ethernet

General	
Power requirements	115V or 230V ± 10%
	48-63Hz, 250VA
Battery operation	Up to 2 hours continuous, with additional 'hot' swap' capability.
Operating temperature range	5 to 45°C
Humidity	<95% non-condensing
Dimensions	400mm x 290mm x 100mm (16" x 10.8" x 4.3") - W:H:D
Weight	~6.8Kg (15lbs)

1) At 100 msps digitizing rate

OPTIONAL CONFIGURATIONS

i-100 HF
High-frequency bandwidth, 1-75MHz (-3dB)

i-100 XD
Enhanced dynamic range of 80dB.
Single-channel version only

i-100 P4
1-4 Channels with internal RPP4 pulser pre-amplifier (replaces RPP3).

* Specifications are subject to change without notice.

Corporate Offices

ScanMaster Systems (IRT), Ltd.
5B Ha'Nagar St., Neve Ne'eman B
45800 Hod Ha'Sharon, Israel
Phone: 972-9-7475
Fax: 972-9-7475444
Email: sales@scanmaster-irt.com
Web site: http://www.scanmaster-irt.com

IRT•ScanMaster Systems, Inc.
319 Garlington Road, Suite B4
Greenville, SC 29615, USA
Phone: (864) 288-9813
Fax: (864) 288-9799
e-mail: irtinc@irtscanmaster.com

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