LTPA

Built on the latest MicroPulse technology, the LTPA sets new standards in high performance, flexible and compact ultrasonic inspection systems. LTPA is a completely enclosed unit, capable of conventional, Phased Array and FMC acquisition processes. Utilising Power over Ethernet technology and Gigabit Ethernet for seriously fast data transfer the LTPA is ideally suited for all your inspection requirements.

Overview

The LTPA is a compact (120mm x 280mm x 310mm), rugged, lightweight (<5 Kg), and enclosed unit (no fans). Interchangeable with the existing MicroPulse systems, it connects to the PC running the test application via Ethernet and takes its power over Ethernet or from a separate 48V power source. LTPA has very low noise and the Gigabit Ethernet provides data throughput up to 120 MBytes/second. The standard size provides 64 phased array channels all of which may be used for beam forming with 64 separate transmitters available for pitch catch/through transmission or other techniques where it is required to send and receive on separate probes. Additionally, 2 conventional channels (pulse echo or pitch-catch) are available.

Software Platforms

The open and transparent data format and long-established MicroPulse command language makes for a totally new experience, no longer is the user forced down the one software platform fits all, resulting in complex and cluttered applications. Supplied in the box, Peak NDT's ArrayGen software will get you started, then the choices are yours. Compatible with procedure based platforms like MIPS/GUIDE to user definable interfaces like InspectionWare, LabView or TWI's Crystal FMC platform. If a bespoke application is what's required, then using Peak NDT's Focal Law calculation dll with the transparent data formats and standard sockets make writing custom applications a breeze.

Features

- Small/rugged/lightweight
- No external fans - unique air-cradle maintains internal temperature
- Easily scalable - up to 4 units connected using Peak NDT's unique MPLink technology - providing up to 256 phased array channels
- All channels available for beam forming
- Power over Ethernet (PoE)
- High power phased array channels - user definable pulser voltage available up to 200V
- Inputs for 2 axes of encoders (single-ended or differential) for true pulse on position
- Outputs digitised waveform and/or peak-detected data with up to 4 hardware gates
- High data output - up to 120 MBytes per second

Applications

- Pipeline girth weld inspection
- Inline testing systems
- Research and development
- Immersion tanks
- Gantry systems
- In-situ monitoring
- Inspections in hard to access areas

Full Information available at www.peakndt.com

LTPA PA Channels

	Parameter	Range	Step Size
Configurations		32/32 + 32T to 64/64 + 64T	
Pulser	Pulser Type	Negative square wave	-
	Pulser Voltage	50 to 200Volts	25Volt
	Pulser Rise Time	<5ns	-
	Pulser Width	20nsec to 500nsec	2nsec
	Pulser Output Impedance	<10Ω	-
	Pulser Damping	100Ω	-
	Pulse Repetition Frequency	1Hz to 20kHz	1Hz
	Parallel Firing	No	
	Phased Array Pulser Delay	0 to 25000nsec	1nsec
	Number of Tx Focal Laws	Up to 2048	-
	Tx Voltage Apodistion	No	
Receiver	Gain	70dB NB Max DAC plus main gain is 110dB	0.25dB
	Gain Linearity	Better than 0.25dB	-
	Input Impedance	100Ω	-
	Bandwidth	0.75MHz to 20MHz (-3dB)	
	Analogue Filters	0.75MHz to 5MHz (-3dB) Bandpass 5MHz to 10MHz (-3dB) Bandpass 2MHz to 10MHz (-3dB) Bandpass	discrete selection
	Digital Filters	Programmable high and low pass	User definable
	Phased Array Receiver Delay	0 to 25000nsec	1nsec
	Number of Rx Focal Laws	Up to 2048	-
	Dynamic Depth Focusing	At 100MHz realtime	-
	Channel Crosstalk	>60dB between channels at 2MHz	-
Distance Amplitude Correction	DAC Dynamic Range	0 to 60dB	0.25dB
	DAC Trigger	Transmit pulse or material interface echo	Selectable
	No of DAC curves	2048 utilising up to 64kbytes	-
	DAC update	40dB/µsec	-
	DAC Clock	0.78125MHz, 1.5625MHz, 3.125MHz, 6.25MHz, 12.5MHz and 25MHz selectable	6 settings (selectable)
	Water path DAC		
Digitiser and Digital Processing	ADC Resolution	12 bits	N/A
	Amplitude Resolution	16 bits	
	Sample Rate	10, 25, 50 and 100MHz	Selectable
	Number of ADC's	One per channel	
	Element Summing	Up to 512 channels	N/A
	Acquisition Gate Delay	64k sample points from trigger or I/F echo	1 sample point
	Acquisition Gate	Up 32K sample points	1 sample point
	Rectification	No Rectification Fullwave +ve halfwave -ve halfwave	Selectable
	Smoothing	None and 10 selectable settings	N/A
	Hardware Gates	4 gates utilising up to 32K samples each	
	Interface Echo	Hardware interface trigger for gate and DAC	
	Hardware Peak Processing	For each gate up to 80 peaks (N + largest), first peak, largest peak, threshold crossing	
	Output Options	Peak processed data and/or full digitised waveform	
	Threshold	10 to 4095	1
	Averaging	2 to 256 realtime	
	Gain Reduced Firing	1 element, n elements or summed waveform	

LTPA Conventional Channels

	Parameter	Range	Step Size
Pulser	Pulser Type	Negative square wave	-
	Pulser Voltage	50 to 200Volts	25Volt
	Pulser Rise Time	<5ns	-
	Pulser Width	16nsec to 1010nsec	2nsec
	Pulser Output Impedance	<10Ω	-
	Pulser Damping	50Ω too 660Ω in 8 steps	-
	Pulse Repetition Frequency	1Hz to 20kHz	1Hz
	Parallel Firing	No	
Receiver	Gain	70dB NB Max DAC plus main gain is 110dB	0.25dB
	Gain Linearity	Better than 0.25dB	-
	Input Impedance	660Ω	-
	Bandwidth	0.75MHz to 25MHz (-3dB)	
	Analogue Filters	0.75MHz to 12MHz (-3dB) Bandpass 2.5MHz to 18MHz (-3dB) Bandpass 3MHz to 22MHz (-3dB) Bandpass 3MHz to 25MHz (-3dB) Bandpass 0.5MHz Bandpass Filter 1MHz Bandpass Filter 2MHz Bandpass Filter 4MHz Bandpass Filter 5MHz Bandpass Filter 10MHz Bandpass Filter 5MHz 2nd order TOFD Bandpass Filter 10MHz 2nd order TOFD Bandpass Filter	discrete selection
	Digital Filters	Programmable high and low pass	User definable
	Channel Crosstalk	>60dB between channels at 2MHz	
Distance Amplitude Correction	DAC Dynamic Range	0 to 60dB NB Max DAC plus main gain is 110dB	0.25dB
	DAC Trigger	Transmit pulse or material interface echo	Selectable
	No of DAC curves	256 utilising up to 64kbytes	-
	DAC update	40dB/µsec	-
	DAC Clock	0.78125MHz, 1.5625MHz, 3.125MHz, 6.25MHz, 12.5MHz and 25MHz selectable	6 settings (selectable)
	Water path DAC		
Digitiser and Digital Processing	ADC Resolution	12 bits	-
	Amplitude Resolution	16 bits	
	Sample Rate	10, 25, 50 and 100MHz	Selectable
	Number of ADC's	1 per channel	
	Element Summing	N/A	N/A
	Acquisition Gate Delay	64k sample points from trigger or I/F echo	1 sample point
	Acquisition Gate	Up 32K sample points	1 sample point
	Rectification	No Rectification Fullwave +ve halfwave -ve halfwave	Selectable
	Smoothing	None and 10 selectable settings	-
	Hardware Gates	4 gates utilising up to 32K samples each	-
	Interface Echo	Hardware interface trigger for gate and DAC	-
	Hardware Peak Processing	For each gate up to 80 peaks (N + largest), first peak, largest peak, threshold crossing	Selectable

	Parameter	Range	Step Size
	Output Options	Peak processed data and/or full digitised waveform	
	Threshold	10 to 4095	1
	Averaging	2 to 256 realtime	
	Gain Reduced Firing	Selectable to be triggered on saturation with programmable adjustment level	

General Specifications

Interfaces	Communication Interface	Gigabit Ethernet capable of up to 120MB/s
	Inter-system Master Slave	High speed LVDS (6 pipes @ 800MBits/sec + TTL sync) allowing for expansion of element count by connection of two MicroPulse systems
	Output Data Buffer	2Gbytes
	Digital Encoders	2 axes of differential 32-bit encoder inputs accepting 5Volt encoders at rate of up to 700kHz
	Digital I/O	4 inputs and 4 outputs (5Volt TTL compatible)
	Analogue Outputs	Trigger
Connectors	UT Connectors	Coaxial Lemo 00
	Ethernet Connector	Industrial RJ45
	LVDS Master/Slave	1 x high speed shielded connector
	Encoder Connector	Lemo 1B.310
	I/O Connector	Lemo 0B.306
	Power Connector	Lemo 0B.302
	Analogue O/P Connectors	Lemo 1B.310
Physical	Case Size (H x W X D)	120mm x 280mm x 310mm
	Power Supply	48V DC from Ethernet or separate supply (48V @ 1500mA)
	Power Consumption	75W max
	Weight	Up to 5 Kgs depending on configuration
Environmental	Operating / Storage Conditions	Operating Temperature: 0 to 45°C Storage Temperature: -10 to 55°C Relative Humidity: less than 85% non-condensing
	EMC	EN61326
	Safety	EN61010