

# LTPA 64/128 - 10Gb

Built on the latest MicroPulse LTPA developments, the LTPA 64/128 – 10Gb provides all the high performance and flexibility of the existing LTPA 64/128 ultrasonic inspection system, but introduces a 10Gb ethernet interface for users that wish to really maximise the speed of their data transfer and truly accelerate the capability for your advanced acquisition processes such as FMC. All LTPA's are completely enclosed units, capable of conventional, phased array and FMC, VSA and PWI acquisition processes.



## Overview

The LTPA 64/128 – 10Gb is a high speed data transfer version of the standard LTPA instrument. With a 10Gb Ethernet interface the instrument seriously speeds up your inspections where data transfer rates are a limitation, such as FMC.

It connects to the PC running the test application via the 10Gb Ethernet and takes its power over ethernet or from a separate 48 V power source.

With all the high performance and low noise ultrasonic characteristics delivered by the standard LTPA, the instrument retains the compact (120mm x 280mm x 310mm), rugged, lightweight (< 5Kg) and enclosed unit (no fans).

Additionally the 10Gb unit has 4 conventional channels (pulse echo or pitch-catch) available.

## Software Platforms

The long-established open and transparent data format MicroPulse command language allows direct access to the instrument control allowing users to develop their own custom applications to meet their specific needs.

Supplied in the box, Peak NDT's ArrayGen software will get you started, then the choices are yours. Off-the-shelf solutions are available such as Utex Scientifics Inspectionware and TWI's Crystal FMC platform both of which have been long developed with the MicroPulse range of instruments.

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. Customers have developed applications in a range of languages such as C, C+, Matlab and Labview as a few examples.

## Features

- Very High data output – 10Gb Ethernet link
- 4 conventional channels available for pulse-echo or pitch-catch
- Small/rugged/lightweight
- Power over Ethernet (PoE)
- No external fans – unique air cradle maintains internal temperature
- All channels available for beam forming
- 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

## Applications

- Pipeline girth weld inspection
- Inline testing systems
- Research and Development

Full Information available at [www.peakndt.com](http://www.peakndt.com)

# LTPA 10Gb PA Channels

	Parameter	Range	Step Size
<b>Configurations</b>		64/128 - one Hypertronics (1-128)	
<b>Pulser</b>	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 2500nsec	1nsec
	Number of Tx Focal Laws	Up to 2048	-
Tx Voltage Apodistion	No	-	
<b>Receiver</b>	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 2500nsec	1nsec
	Number of Rx Focal Laws	Up to 2048	-
	Dynamic Depth Focusing	At 100MHz realtime	-
	Channel Crosstalk	>60dB between channels at 2MHz	-
<b>Distance Amplitude Correction</b>	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		
<b>Digitiser and Digital Processing</b>	ADC Resolution	12 bits	N/A
	Amplitude Resolution	16 bits	
	Sample Rate	10, 25, 50 and 100MHz	Selectable
	Number of ADC's	One per two channels	
	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		1
Averaging	10 to 4095		
Gain Reduced Firing	2 to 256 realtime 1 element, n elements or summed waveform		

# LTPA 10Gb Conventional Channels

	Parameter	Range	Step Size
<b>Configurations</b>		4 p/e or TOFD	
<b>Pulser</b>	Pulser Type	Negative square wave	-
	Pulser Voltage	25 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	
<b>Receiver</b>	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	discrete selection
		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			
Digital Filters	Programmable high and low pass	User definable	
Channel Crosstalk	>60dB between channels at 2MHz		
<b>Distance Amplitude Correction</b>	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		
<b>Digitiser and Digital Processing</b>	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	Selectable
		Fullwave	
		+ve halfwave	
		-ve halfwave	
	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	
	Peak processed data and/or full digitised waveform		
Output Options			
Threshold	10 to 4095	1	
Averaging	2 to 256 realtime		
Gain Reduced Firing	Selectable to be triggered on saturation with programmable adjustment level		

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## General Specification

<b>Interfaces</b>	Communication Interface	10 Gigabit Ethernet
	Output Data Buffer	4Gbytes
	FMC Acquisition Buffer	Uses output buffer
	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

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<b>Connectors</b>	UT Connectors PA	160-pin female connector. Hypertronics™ HLMYJPAPF 1600
	UT Connectors Conventional	Coaxial Lemo 00
	Ethernet Connector	Industrial RJ45
	Encoder Connector	Lemo 1B.310
	I/O Connector	Lemo 0B.306
	Power Connector	Lemo 0B.302
	Analogue O/P Connectors	Lemo 1B.310

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<b>Physical</b>	Case Size (H x W X D)	120mm x 280mm x 310mm
	Power Supply	48V DC separate supply (48V @ 1250mA)
	Power Consumption	60W max
	Weight	Up to 5 Kgs depending on configuration

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<b>Environmental</b>	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