

MicroPulse 5PA T/R

Product Features



The MicroPulse 5PA family combines a fully parallel, scalable array architecture with the highest performance conventional ultrasonic channels, allowing users to carry out PA, Pulse-echo and TOFD inspections without compromising data quality.

Overview

The MicroPulse family was developed as a flexible ultrasonic inspection platform, originally for use in the power and nuclear sector. It connects to the PC via Gigabit Ethernet with data transfer rates of up to 120 Megabytes per second achievable in 8-, 10-, 12- or 16-bit data output modes. The standard size enclosure accommodates 16 conventional channels and up to 128 phased array channels, all of which may be used for beam forming in any combination. The second Hypertronics connector provides for up to 128 dedicated transmit channels for pitch-catch/through transmission type inspections without the need to invest in a 256-channel system.

Software Platforms

The open and transparent data format make for a totally new experience when it comes to the choice of software platforms; no longer is the user forced down the one software platform fits all, resulting in amazingly complex and cluttered applications. Supplied in the box, Peak NDT's ArrayGen software will get you started, then the choices are nearly unlimited. 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 FocalLaw calculation dll with the transparent data formats and standard sockets make writing custom applications a breeze.

Full Information available at www.peakndt.com

Features

- Scalable parallel architecture
- Multiple units can be linked for a PA channel count of up to 512
- Any combination of channels may be used independently in Tx and Rx with a further separate 128 Tx channels
- Open data format
- Highest performance
- Fast inspection speeds with parallel firing capability
- Simple reliable communication over Ethernet

Applications

- High integrity mixed PA, pulse-echo and TOFD inspections such as those found in the nuclear industry
- Pipeline girth weld inspection
- Inline testing systems
- Research and development

MicroPulse 5PA T/R Specification

	Parameter	Range	Step Size
Configurations			
		32/32 +32T, 64/64 +64T, 128/128 +128T, 256/256 +256T, 512/512 +512T	
Pulser			
	Pulser Type	Negative square wave	-
	Pulser Voltage	50 to 200Volts	50Volt
	Pulser Rise Time	<5ns	-
	Pulser Width	20nsec to 500nsec	2nsec
	Pulser Output Impedance	< 10Ω	-
	Pulser Damping	50Ω	-
	Pulse Repetition Frequency	1Hz to 20kHz	1Hz
	Parallel Firing	Yes	-
	Phased Array Pulser Delay	0 to 25000nsec	1nsec
	Number of Tx Focal Laws	Up to 2048	-
	Tx Voltage Apodistion	Yes	-
Receiver			
	Gain	70dB	0.25dB
	Input Noise	2nV/√Hz typical	-
	Gain Linearity	Better than 0.25dB	-
	Input Impedance	50Ω	-
	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 40dB	0.25dB
	DAC Trigger	Transmit pulse or material interface echo	Selectable
	No of DAC curves	2048 utilising up to 64kbytes	N/A
	DAC update	40dB/μsec	N/A
	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 7 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	

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	3.8Gbytes
	FMC Acquisition Buffer	Uses output buffer
	Digital Encoders	4 axes of differential 32-bit encoder inputs accepting 5Volt encoders at rate of up to 700kHz
	Digital I/O	8 inputs and 8 outputs (5Volt TTL compatible)
	Analogue Outputs	Trigger, Gate, A-scan
Connectors	UT Connectors	2 x 160-pin female connector. Hypertronics™ HLMYJPAPF 1600
	Ethernet Connector	Industrial RJ45 / 9-pin D-type
	LVDS Master/Slave	1 x high speed EQDP connector
	Encoder Connector	Lemo 4B.330
	I/O Connector	Lemo 4B.324
	Power Connector	Switched IEC Inlet
	Analogue O/P Connectors	3 x 50Ω BNC
Physical	Case Size (H x W X D)	170mm x 450mm x 380mm
	Power Supply	90-260 VAC at 45-100Hz
	Power Consumption	350W Max
	Weight	15 to 18 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