Technical Datasheet
UltraWood

DASEL
sistemas

Revision:	8
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1 CHANNELS

The UltraWood system has 1 UT channel with 2 connectors:

- Trigger (Connector 1): In this connector the user has to plug the transducer which signal starts the data acquisition process,

- Receiver (Connector 2): In this connector the user has to plug the transducer used to get the ultrasonic signal.
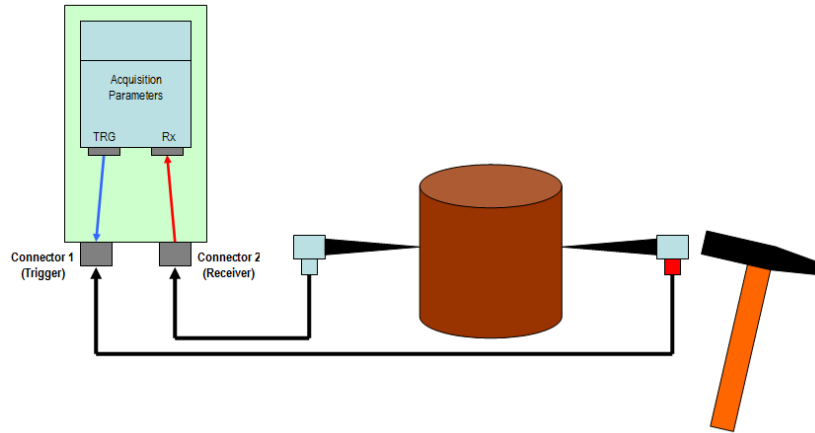

Fig 1.- UT transducers connection.

Channels:	
1 UT channel with two connectors: - Connector 1 (Trigger): signal transducer which starts data acquisition. - Connector 2 (Receiver): ultrasonic signal received (A-Scan).	

2 RECEIVER

Amplifier:	Wide-band and low-noise amplifier	
Gain	Programmable from 0 dB to 80 dB	
Bandwidth (-3 dB)	20 KHz to 2.5 MHz	
Equivalent input noise	1 nV/√Hz (equivalent to 5.5 μVef in the bandwidth)	
Maximum input signal	1.4 Vpp	
Input impedance	1.6 KΩ	

Sampling (A/D Conversor):	Differential input A/D converters with LVDS output	
Resolution	10 bits	
Sampling frequency	Programmable from 1.25 MHz to 20 MHz	

Acquisition depth	- Programmable up to 6.400 μs, with 100 ns of resolution - Programmable up to 1.600 μs, with 25 ns of resolution	
Start Delay (Inhibition Time)	- Programmable up to 6.400 μs, with 100 ns of resolution - Programmable up to 1.600 μs, with 25 ns of resolution	

3 SIGNAL PROCESSING

Signal processing	Real-time signal processing of acquired scan lines (Hardware Implemented)	
Band-Pass filter with programmable cutoff frequencies 63 coefficients FIR implementation. - Constant response in the pass band (ripple < 0.1 dB) - High attenuation in the stop band (typ. > -50 dB)		
Signed 10 bits format data		
Acquisition information data in real-time: A-scan, peak position and amplitude (gates)		
2 hardware gates for the peak detection (Independent or linked): - gate type → Detection of the maximum or the minimum. - start / end gate → Programmable 0 µs to 6.400 µs, with 100 ns of resolution. - start / end gate → Programmable 0 µs to 1.600 µs, with 25 ns of resolution. - threshold gate → Programmable (0 to 100 % screen)		(1)
Scan compression with Non-Peak-Loss compression algorithm, up to 128:1 compression rate.		
Programmable down-sampling factor from 1 to 16 (equivalent sampling frequencies between 1.25 MHz and 20 MHz)		
Digital Envelope detection.		
EMI Filter - *Removes, in real-time, the impulsive noise* - *Improves flaw detection and reduces the production of false alarms* - *Keeps a high dynamic range in noisy environments for C and D-scans*		(2)

(1) When the gates are linked, the start time of the gate 2 depends on the peak detected by the gate 1.
(2) Hardware processing

4 OTHER SPECIFICATIONS

Power consumption	900 mA (5 V) Maximum, loaded 50 Ω, PRF=10 KHz, pulse amplitude -400 V.	
Power supply	100- 220 V 47- 63 Hz , Fuse 2 A.	
Dimensions	150 x 106 x 38 mm	
Weight	0.45 Kg	
Temperature range	0 ºC to 50 ºC (Ambient)	
Operative system	Microsoft Windows 7 / VISTA / XP / 2000 / 98SE de 32 bits	
Interface	USB 2.0 480 – MBITS/s	
Internal memory	1 MB (512 KSamples)	

5 SOFTWARE

DASEL provides the " *UltraWood* " application to configure all the acquisition parameters, as well to show, save and load the A-Scan signals acquired by the system.

All the data acquired with the " *UltraWood* " application can be loaded from MatLab, to make a post processing.

The " *UltraWood* " application and the programming library are available to run in Windows 32/64 bits 7 / VISTA / XP / 2000 / 98SE.