UF.258

500 MS/s 8 bit A/D transient recorder board, PCI bus

- 500 MS/s sampling on one channel
- 250 MS/s sampling on two channels, simultaneous
- Maximum bandwidth of 190 MHz
- 8 bit ADC resolution
- Six input ranges from ± 100 mV to ± 5 V
- Up to 512 MSamples memory onboard
- 80 MS/s data transfer to PC memory (PCI bus dependent)
- Automatic offset adjustment
- Triggers: Level, Window, Gradient, OR, Pulse-width, External
- Fast repetition frequency measurements for Laser, RADAR
- Multiple boards can be synchronized
- External clock and trigger input and output connectors
- Free SBench program for measurement, analysis and display
- Drivers supplied: Windows 2000/NT/98/95 and Linux
- Optional drivers: LabVIEW, DASYLab, MATLAB and VEE



Applications

Transient recording
RADAR / LIDAR
LDA / PDA
Communications
CCD imaging

Overview

The UF.258 is a high-quality, fast transient recorder board that can be installed into any standard PC equipped with the PCI-bus. The combination of the high sample rates, large on-board memory, fast transfer of data to the PC software and price are attractive features when compared to traditional digital oscilloscopes.

Sample Rates and External Clock

Two independent 8-bit resolution A/D converters are synchronized to achieve true simultaneous sampling of the measurement data to eliminate phase errors.

The sample rate can be adjusted from 2 MS/s to 500 MS/s. However, at rates above 250MS/s the two input channel ADC's use an interleaved sampling method to achieve these higher rates. As a result it is only possible to use one input channel for greater than 250MS/s measurements.

Double Memory

This option allows Channel 0 to use all of the on-board memory (including that normally assigned to channel 1).

Multiple Recording

One method to achieve fast repetition rates is via the Multiple Recording option. This allows data blocks to be recorded on successive triggers and stacked in on-board memory segments. After each acquisition, the board is automatically 're-armed' ready for the next trigger receipt.

Gated Sampling

A second method to achieve fast repetition rates is by the Gated Sampling option. Like Multiple Recording the trigger is re-armed by on-board hardware. However, with Gated Sampling the recording is controlled by an external gated input signal and the data stored consecutively in the on-board memory (not same-size segments like MR). If the gate input is high (or low) sampling occurs and stops when the level returns to its inactive low state (or high).

High Bandwidth option

This option increases the bandwidth from 190 MHz to 250 MHz, but limits the input ranges from ± 100 mV to ± 1 V

SBench Data Acquisition, Oscilloscope, Analysis, Display

Supplied free with every UltraFast board, SBench is a powerful program that supports every feature of the board. A copy of the manual can be downloaded from our website.

Technical Data

Resolution	8 bit	Ext. Trigger accuracy (≤ 250 MS/s)	2 samples
Sample rate	2.5 MS/s up to 500 MS/s	Ext. Trigger accuracy (500 MS/s)	4 samples
Bandwidth DC –3dB	0 Hz to ≥ 190 MHz (1)	Int. Trigger accuracy	1 sample
Bandwidth AC –3dB	40 Hz to ≥ 190 MHz	Ext. clock: delay to internal clock	< 3 ns
Differential linearity error	≤ ± 1.5 LSB (ADC)	Over-voltage protection	± 20 V
Integral linearity error	≤ ± 1.5 LSB (ADC)	Dimensions	312 mm x 107 mm
SNR fs = 70 MHz, fck=250 MS/s	44 dB typical (ADC)	Width	Full size PCI slot
ENOB fs = 20 MHz, fck=250 MS/s	6.7 bit typical (ADC)	Connector	3 mm SMB
ENOB fs = 70 MHz, fck=250 MS/s	6.7 bit typical (ADC)	Warm up time	10 minutes
Aperture jitter	2.3 ps rms (ADC)	Operating temp	0°C to 50°C
Input impedance	50 Ω / 1 M Ω, 25 pF	Storage temp	-10°C to 70°C
Multi: Trigger to 1st sample delay	19 to 44 (fixed)	Humidity	10% to 90%
Multi: recovery time	≤ 20 samples		
Ext. clock input	ECL, AC coupled		

Note 1: High Bandwidth option available increases this to 250 MHz.

	±100mV ±200 mV ±500mV	± 1V ±2V ±5V
Offset error	Adjustable by user	
Gain error (≤ 250 MS/s)	≤ ± 2%	≤ ± 3%
Gain error (500 MS/s)	≤ ± 2%	≤ ± 3%
Noise (≤ 250 MS/s)	≤ ± 1 LSB	≤ ± 1 LSB
Noise (500 MS/s)	≤ ± 2 LSB	≤ ± 2 LSB
Crosstalk (1 MHz square)	≤ - 48 dB	≤ - 48 dB

Software

Drivers for Linux, DOS, Windows 3.1x, Windows 9x/ME and Windows NT/2000/XP as well as programming examples for C/C++, Delphi and Visual Basic are supplied with the board. The free of charge SBench program performs simple data acquisition, analysis and data display. Software drivers for LabVIEW, DASYLab, MATLAB and VEE are available.

Programmable Parameters

Sample rate	2.5 MS/s to 500 MS/s, external clock	Trigger input	50 Ω / 1 M Ω, relay
Input range	±100 mV, ±200 mV, ±500 mV, ± 1V, ± 2V, ± 5V	Trigger mode	channel X, external, software
Input impedance	50 Ω / 1 M Ω, relay	Trigger level	1/16 to 15/16 of the input range
Input coupling	AC / DC (jumper)	Trigger edge	rising, falling edge
Clock input	50 Ω or > 24k Ω	Trigger pulse width	1 to 254 samples in increments of 2
Memory depth	64 Samples up to installed memory, in steps of 64 Samples	Post-trigger	32 Samples up to 256 MSamples, in steps of 32 Samples

Order Information

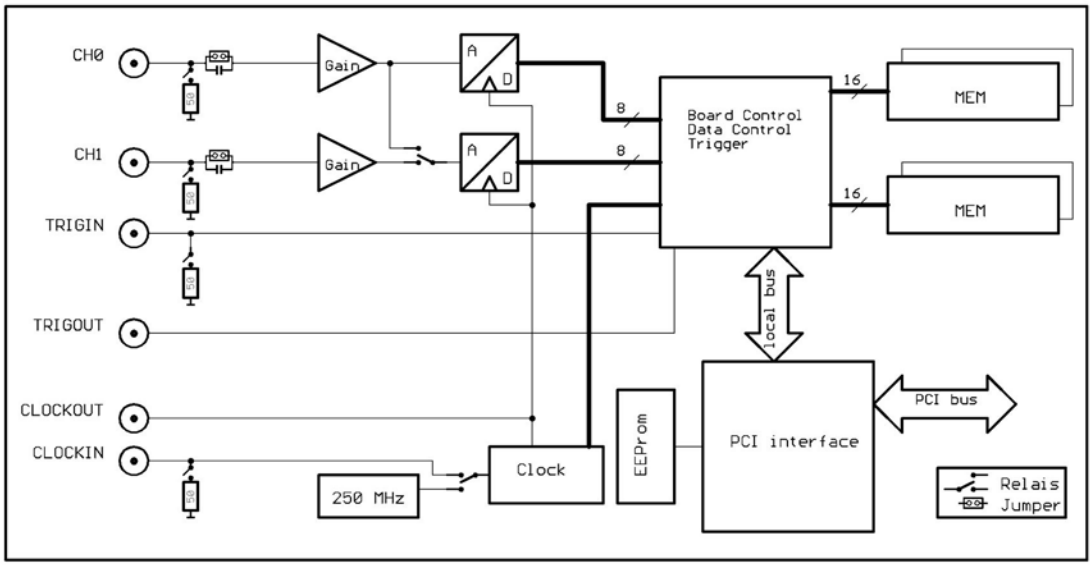
Delivery includes UF.258 board with printed user manual, a CD containing the SBench 5.2 program, software drivers (Linux, Windows XP/2000/NT/ME/98/95, DOS) and programming examples (Visual Basic, C/C++, Delphi).

UF.258	UF258 board with 32 MSamples memory: 400 MS/s one channel, 200 MS/s on two channels
UF.258-64	Option upgrade to 64 MSamples memory
UF.258-256	Option upgrade to 256 MSamples memory
UF.258-512	Option upgrade to 512 MSamples memory
UF.258-mr	Option multiple recording
UF.258-gs	Option gated sampling
UF.258-dm	Option double memory
YF.258-hbw	Option high bandwidth
UF.258-ir	User specific input ranges
UF.258-up	Fee for returning board to factory for later memory upgrade
UF.258-ml	MATLAB driver
UF.258-lv	LabVIEW driver
UF.258-hp	Agilent-VEE driver
UF.258-dl	DASYLab driver

Cab-3f-9m-80	Cable: 3mm SMB female to 9mm BNC male, 80 cm
Cab-3f-9m-200	Cable: 3mm SMB female to 9mm BNC male, 200 cm (most popular)
Cab-3f-9f-80	Cable: 3mm SMB female to 9mm BNC female, 80 cm
Cab-3f-9f-200	Cable: 3mm SMB female to 9mm BNC female, 200 cm

Cables need to be ordered if required, as they are not included with board.
Other cable lengths are available on request.

Hardware Block Diagram



Specifications are subject to change. All copyrights and trademarks acknowledged.
Document: UF258_datasheet.doc
Last update 2004-05-19