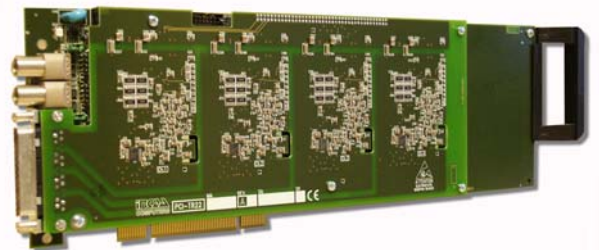


PCI-TR22-5618 Transient Recorder

Features

- 4 separately isolated channels.
- Simultaneous sampling.
- 2 MS/s per channel
- 14 bit resolution.
- 14 bit no missing codes.
- Bandwidth: -3dB @ 1 MHz.
- 14 Input ranges; +/- 10 Volt down to +/- 0.125 Volt.
- 256 MS of onboard memory; 64MS per channel.
- Samples are also available through FIFOs or ring-buffers at sub-sample speed and through ADC registers.
- Selectable trigger options.
- Pre and post trigger recording.
- PCI form factor.
- Synchronisation of several modules.



Description

The TR22 module is an isolated 4 channel digitizer with onboard memory in a PCI form factor. The 4 channels are separately isolated and are sampled simultaneous (not multiplexed) with 14 bit resolution at a speed of max. 2MS/s per channel.

The analog input signals are received by, so-called, instrumentation amplifiers. The instrumentation amplifiers can have a software selectable gain of 1, 2, 4 or 8. A buffer placed after this amplifier gives an extra software selectable gain or 1, 0.5, 0.25 or 0.125. Using this PGA functionality a fairly large range of input signal ranges can be mapped on the ADC range efficiently. An analog filter attenuates the higher frequencies present in the input signal. The filter is built as an active 2nd order Bessel multi feedback filter. The cutoff frequency (-3dB) is at 1 MHz.

The samples are recorded in onboard memory. The memory is organized as a 512MB ring buffer (64MS per channel). On every sample clock the A to D converters convert the analog inputs and send the samples over the isolation barrier where they are recorded into the ring buffer. After the event of a trigger a programmable number of post trigger samples will be stored into this ring buffer before sampling stops.

In parallel samples are also available through FIFOs or second ring buffers at sub-sample rates for control applications. The depth of these FIFOs or ring buffers is software selectable from 1 sample up to 2k samples per channel, up to 4k samples with two channels active, and up to 8k samples with only one channel active.

The samples in the 512MB memory and the sub-sample FIFOs or ring buffers can be copied to the PC memory with DMA transfers.

Modules may be connected via the trigger and clock signals, available via the PCI bracket, to increase the number of channels. The modules can also be connected using a flat-cable to distribute clock and/or trigger signals to more TR22 modules within the PC.

The plug and play functionality provides easy setup and use. A software driver for Linux is available.

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Technical Specifications

INPUT

- Number of inputs : 4
- Input type : isolated, differential
- Input range : 7 ranges, software selectable
+/- 10V, +/- 5V, +/- 2.5V, +/- 1.25V, +/- 0.625V, +/- 0.3125V, +/- 0.15625V
- Extra input range (by digital multiplication) : 7 ranges, software selectable
+/- 8V, +/- 4V, +/- 2V, +/- 1V, +/- 0.5V, +/- 0.25V, +/- 0.125V
- Full power bandwidth : - 3 dB @ 1 MHz
- Full scale step response overshoot : < 10 %
- Input impedance : >1 MOhm, differential
- Damage limit : +/- 35 Volt
- Analog input connector : 25 pole D-connector, female.

TRANSFER CHARACTERISTICS

- Sample rate : max 2 MS/s per channel
- Resolution : 14 bits
- No missing codes : up to 14 bits
- INL : typ. +/- 0.5 LSB, max. +/- 1 LSB
- DNL : typ. 0.3 LSB, max. +0.75 LSB
- Gain error : +/- 1 LSB typ, gain is calibrated
- Offset error : +/- 1 LSB typ, offset is calibrated

MEMORY

- Record length : 256 MS, max. 64 MS per channel.
- FIFO/ring buffer depth : <= 8 kS

DMA

- DMA transfer rate : > 100 Mbyte/s sustained

SAMPLE CLOCK

- Sample clock : internal or external
- Internal sample frequency : software selectable 2MHz down to 30Hz
- Internal sample clock stability : 50 ppm over operating temperature range.

EXTERNAL REFERENCE CLOCK

- Type : selectable TTL or RS485 input
- Input impedance : selectable 100 Ohm (for RS485)
- Input connector : two pole LEMO 0S
- Frequency : 2 MHz max
- PLL mode input frequency : 4 kHz up to 4MHz
- PLL mode sample frequency : 2 MHz

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EXTERNAL TRIGGER INPUT

- Type : selectable TTL or RS485 input
- Input impedance : selectable 100 Ohm (for RS485)
- Input connector : two pole LEMO 0S

ISOLATION

- Isolation barrier per channel : up to 1000 V rms for 1 minute
- Signal transfer : digital couplers
- Power transfer : DC/DC converters, no external power required

MECHANICAL

- Size : single slot, full length PCI module

ENVIRONMENTAL CONDITIONS

- Max. operating relative humidity : 90 %, no condensation
- Operating temperature : 15 – 40 °C
- Power supply requirements : + 5 and + 3.3 Volt derived from PCI

WARRANTY

: 1 year

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