

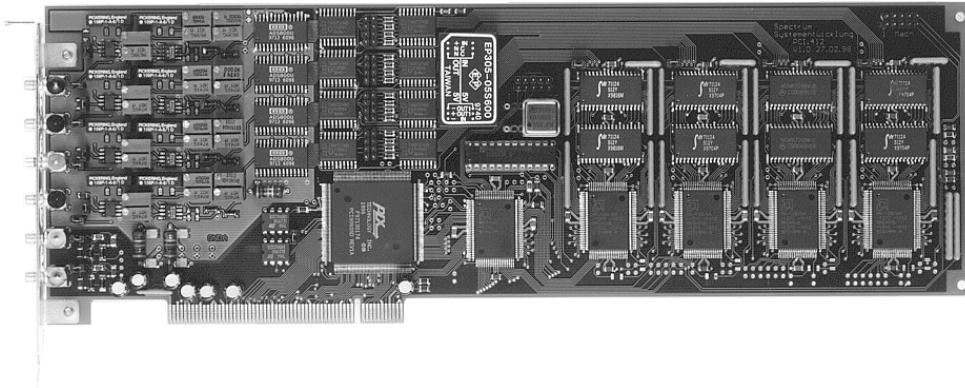


SPECTRUM

SYSTEMENTWICKLUNG MICROELECTRONIC GMBH

PCI.412 10 MHz / 40 MHz PCI transient recorder

- **Hochgeschwindigkeits PCI Interface**
- **4 analoge Kanäle mit 12 Bit Auflösung**
- **Simultane Abtastung auf allen Kanälen**
- **Zwei Versionen: 10 MHz oder 40 MHz**
- **16 digitale TTL-Eingänge**
- **Bis 2 MSamples Speicher (512 kS/Kanal)**
- **Leistungsfähige Triggerlogik**
- **Kaskadierbarkeit mehrerer PCI.412**
- **High speed PCI interface**
- **4 analogue channels with 12 bit resolution**
- **Simultaneously sampling on all channels**
- **Two versions 10 MHz, 40 MHz**
- **16 TTL-compatible digital inputs**
- **Up to 2 MSample memory (512 kS/channel)**
- **Powerful trigger logic**
- **Cascading of several PCI.412**



Allgemeine Information

Der Transientenrekorder PCI.412 ist ein schneller, hochauflösender A/D Wandler für den PCI Bus. Seine 4 ADCs ermöglichen die simultane Erfassung mehrerer Signale ohne die Nachteile gemultiplexer Systeme. Außerdem stehen noch 16 Bit Digitaleingänge zur Verfügung, die mit dem gleichen Takt aufgezeichnet werden.

Jeder Kanal besitzt eine eigene Triggerlogik, die mit denen der anderen Kanäle verknüpft werden kann. Die verschiedenen Betriebsarten wie Speichersegmentierung, interner/externer Takt und Trigger, sowie Pre/Posttrigger ermöglichen dem Anwender eine einfache Anpassung an sein spezielles Meßproblem.

Mit einem speziellen Takt / Trigger Bus lassen sich mehrere Karten zu einem vielkanaligen System ausbauen.

Anwendungsbeispiele: Radar, Ultraschall, LDA/PDA, Qualitätssicherung, Spektroskopie

Software

Kostenlos mitgeliefert werden Treiber für Linux, DOS und Windows 9x/ME/NT/2000/XP. Für die einfache Programmierung sind Beispiele in C/C++, Delphi und Visual Basic enthalten. Darüber hinaus steht zur komfortablen Steuerung die Signalverarbeitungssoftware SBench 5.2 kostenlos zur Verfügung. Außerdem sind Treiber für LabVIEW, DASYLab, MATLAB und VEE erhältlich.

General Information

The PCI.412 transient recorder is a fast high resolution A/D-Converter for PCI based systems. Its 4 independent ADC's enable the simultaneous sampling of signals without the problems of multiplexed systems. Additionally 16 bits of digital inputs are available. These inputs are sampled with the same clock as the analogue inputs.

Each channel has its own triggerlogic, which can be linked together. The different modes, e.g. memory segmentation, internal/external clock and trigger as well as the pre- and posttrigger capability makes it easy to adapt this recorder to the measuring problem.

By using a special clock- and trigger bus the user may upgrade the PCI.412 to a measuring system with high channel count.

Application: Radar, Supersonics, LDA/PDA, Quality management, Spectroscopy

Software

Drivers for Linux, DOS and Windows 9x/ME/NT/2000/XP as well as programming examples for C/C++, Delphi and Visual Basic are delivered with the board. Comfortable programming, initialising and data display are performed by the free-of-charge Windows program SBench 5.2. Software drivers for LabVIEW, DASYLab, MATLAB and VEE are available.

Software programmable parameters

Samplerate	157 kHz to 10 MHz / 40 MHz	Trigger output	enable / disable
Input range	±500 mV, ±1 V, ±2 V	Triggermode	channel x, external, software
Clocksource	Internal, external	Triggerlevel	1/64 ... 63/64 of the input range
ADC-Clock output	enable / disable	Triggeredge	rising or falling edge
Digital inputs	enable / disable	Triggercombination	single channel, OR- / AND- combination
Memory depth	32 Samples up to installed memory in increments of 32 samples	Posttrigger	32 Samples up to 512 kSamples in increments of 32 samples

Technical data

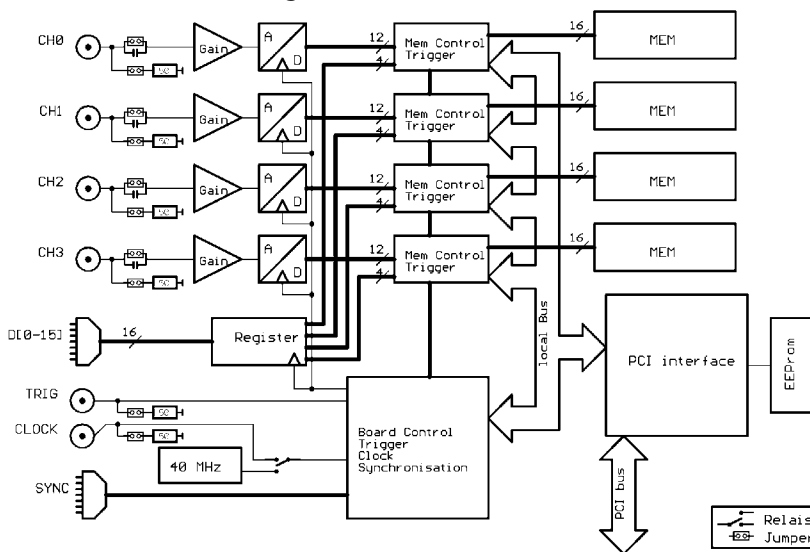
Resolution	12 bit
Samplerate	160 kHz up to 10 MHz / 40 MHz
Bandwidth DC -3 dB	0 Hz to 14 MHz / 21 MHz
Bandwidth AC -3 dB	20 Hz to 14 MHz / 21 MHz
Differential linearity error	±0.5 LSB typ. (ADC)
Integral linearity error	±2 LSB typ. (ADC)
SFDR $f_s = 1$ MHz $f_{ck} = 40$ MHz	69 dBFS typ. (ADC)
ENOB $f_s = 1$ MHz, $f_{ck} = 40$ MHz	10.8 bit typ. (ADC)
ENOB $f_s = 10$ MHz, $f_{ck} = 40$ MHz	10.8 bit typ. (ADC)
Aperture jitter	1.2 ps rms (ADC)
Multi: Trigger to 1 st sample delay	0 to 4 samples (fix)
Multi: Recovery time	≤ 3 samples
Trigger output delay	6 to 14 samples (fix)
Trigger accuracy	1 sample
Digital input to analog input delay	1 to 8 samples (fix)
Ext. clock: output delay	5.5 ns
Ext. clock: delay to internal clock	10 ns
Sync: board to board trigger jitter	0 samples
Sync: board to board clock delay	≤ 1.5 ns

Input range	±500 mV	±1 V	±2 V
Offset error	≤ 5 LSB	≤ 4 LSB	≤ 3 LSB
Gain error	≤ 2 %	≤ 1.5 %	≤ 1.0 %
Noise	≤ 3 LSB	≤ 3 LSB	≤ 3 LSB
Crosstalk	-60 dB	-63 dB	-66 dB

Dimension	312 mm x 109 mm
Connector	3 mm BNC female
Input impedance	50 Ohm or 1 MOhm 15 pF
Overvoltage protection	±20 V
Warm up time	10 minutes
Operating temperatur	0°C - 50°C
Storage temperatur	-10°C - 70°C
Humidity	10% to 90% non condensing

	+3.3 V	+5 V	+12 V	-12 V
Power consumption (A)	0 mA	2650 mA	35 mA	0 mA
Power consumption (W)	0.0 W	13.3 W	0.4 W	0.0 W

Hardware block diagram



Order information

PCI.412 40 MHz	PCI.412 with 512 kSamples memory, 40 MHz, including drivers	PCI412-40
PCI.412 10 MHz	PCI.412 with 512 kSamples memory, 10 MHz, including drivers	PCI412-10
Option 2 M	Memory upgrading to 2 MSamples	PCI412-2
Multiple recording	Memory segmentation for fast repetition rates	PCI412-mr
Gate	Gated sampling with an external control signal	PCI412-gs
Cascading	Synchronisation of several PCI.412 for multi-channel-systems	PCI412-ks
Input range	3 user specific input ranges between ±500 mV and ±2.5 V bipolar or unipolar	PCI412-ir
SBench 5.0	Signal processing software for Win 95/98, Win 2000, Win NT	SBENCH5
DASylab driver	Drivers for DASylab 5.0 for Win 95/98, Win 2000 and Win NT	PCI412-dl
HP-VEE driver	Drivers for HP-VEE 5.0 for Win 95/98, Win 2000 and Win NT	PCI412-hp
LabVIEW driver	Drivers for LabVIEW 4.0 for Win 3.11, Win 95/98, Win 2000 and Win NT	PCI412-lv
MatLab driver	Drivers for MatLab 5.0 for Win 95/98, Win 2000 and Win NT	MATLAB

Adapter cables for SMB to BNC are **not** included and must be ordered separately. See Accessories section of the catalog.
This is an old product and is not recommended for new designs. Use the MI.3013 or MI.3121 instead

Spectrum reserves the right to make changes at any time to improve design and to supply the best product possible