



PRODUCT DATA SHEET

PCH 1420 Vibration Monitor

- 4 real-time vibration channels
- Tacho input
- Process input(s)
- Dual band and bearing fault detectors
- 4 x Configurable outputs 4-20 mA/0-10V/D.O.
- Redundant Safety and Alarm relay
- PL-d (SIL-2) as per ISO/EN 13849-1
- USB and RS-485 port
- Time waveform recordings
- Ready for PCH Cloud and IoT

6 Input channels:

Up to 4 factory configured transducer inputs: 2 or 3-wire accelerometer, velocity sensor, proximity probe or process 0-10V or 4-20 mA. 1 Process input 4-20 mA, 0-20 mA or 0-22 V, 1 Tacho input for NPN, PNP or AC speed sensor. Tacho input from a Proximity Probe or NAMUR sensor is available upon request.

Sensor types:

Accelerometer, 10-1000 mV/g (IEPE/API670):

Maximum input:..... ± 5.4 Vpk
 Input overload:..... ± 5.4 Vpk
 Transducer Bias Current:.....5 mA
 Resolution:.....16 bit

Transducer Setup			
Name:	5. GMF	Type:	[1] IEPE Sensor
Sensitivity:	100,00		mV/g
Info:	[1] IEPE Sensor. [1] Nominal Sens.: 100,00 mV/g.		

Proximity probe, 0.8-8V/mm:

Maximum voltage input:.....-1 to -22 V
 Peak detector, attack time:.....1-1000 ms
 Peak detector, decay time:.....0.1-20 s

Velocity sensors, 4-100 mV/mm/s:

Maximum input:..... ± 6.0 Vpk
 Input overload:..... ± 6.0 Vpk

PCH Mems sensors, 10-333 mV/g, type 3-wire:

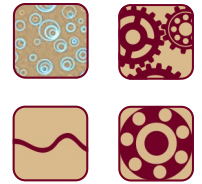
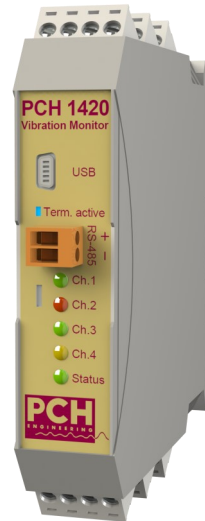
Maximum input:..... ± 5.4 Vpk
 Input overload:..... ± 5.4 Vpk

Voltage input, 0-10V DC:

Maximum input:..... 24 V
 Resolution:..... 5 mV
 Namur EN43 supported:.....Yes

Current input, 0/4-20 mA:

Maximum linear input:..... 21 mA
 Resolution:..... 0.01 mA
 Namur EN43 supported:.....Yes



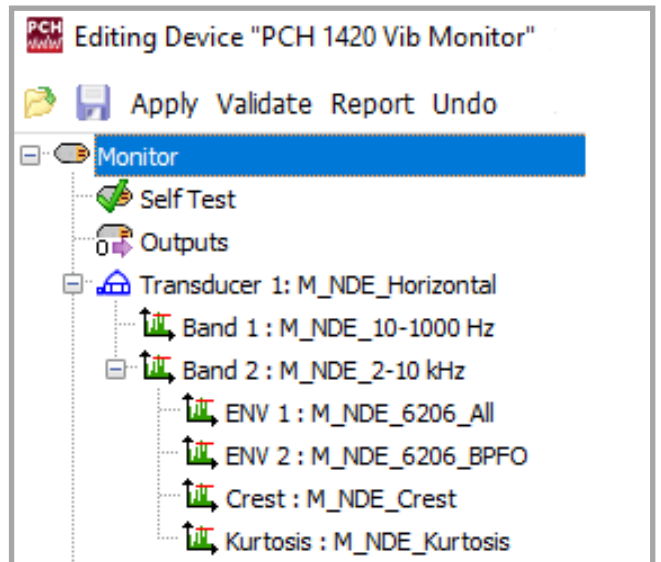
Above input types must be factory configured but ranges and sensitivities are user defined.

2 bands per vibration channel (dual band):

Detectors:.....True RMS, Pk-Pk or Pk
 Sample rates:.....4800 or 24000 Hz
 Filter ranges:.....0.7 Hz to 11.5 kHz
 Optional:.....0.1 to 1500 Hz
 Measuring parameters:.....mm/s, in/s, m/s², g, μm, mm

Bearing detectors for Band 2 (per acc. channel):

Bearing detectors: True RMS, 2 Envelope detectors with user defined filters from 1 - 500 Hz, Kurtosis and Crest factor (top factor) according to VDI 3832.





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Configurable measuring ranges:

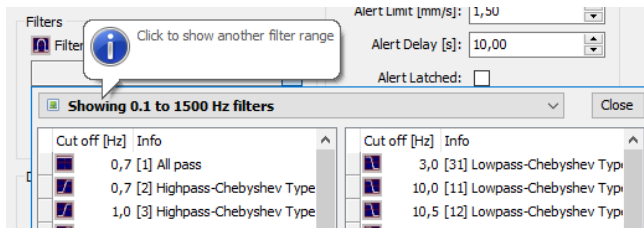
For standard 100 mV/g accelerometer we support Full Scale vibration measuring ranges up to 1000 mm/s, 300 m/s², 1-35 g and 0.1-15 mm Pk-Pk.

Default frequency ranges:

1/2/3/5/10 Hz - 1000/1500 Hz, -1 dB, 24 dB/oct.
 High frequency band 24 kHz.....2-10 kHz
 Linearized filters for velocity sensors are available.

A range of individual filters are available by the user software PCH Vibration Studio and upon request more can be offered.

Example, Low Frequency:..... 1-300/1000 Hz
 Example, Gear Mesh Frequency:..... 500-5000 Hz

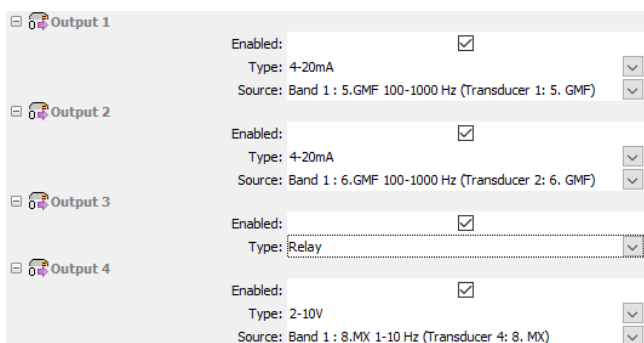


Up to 4 configurable outputs:

The user can configure up to 4 outputs as DC outputs or alarm relay drivers. DC outputs can be configured as 4-20 mA, 0-20 mA, 2-10 V or 0-10 V. Each output can be assigned to any of the measuring parameters.
 Voltage load:.....min. 10 kΩ
 Current load:.....max. 400 Ω

Relay drivers for external coil with break-function, can be user configured as Alert or Danger alarms with latch function or auto reset.
 Max voltage:.....28 V
 Max current:.....100 mA@25 °C

The 4-20 mA active outputs support NAMUR E43 and requires no separate power source.



Alarm detectors:

Alert and Danger alarm per each detector with adjustable alarm limits. Alarm delay time:
 Alert delay time..... 0-100 s
 Danger delay time..... 0-100 s
 Hang time for Alert and Danger.....0-100 s

The alarms can be directed to the same relay output.

Up to 24 additional relays (optional):

The user can connect up to 2 PCH Relay Boxes consisting of 12 galvanic isolated relays each. Alert and Danger alarms can be directed to these relays.
 Max voltage:.....28 V
 Max current:.....100 mA@25 °C
 PCH Relay Box #2 is pending. 50 V is optional.

Safety relay:

1 galv. isolated redundant relay with break-function (power fail-safe). Danger alarms can be forwarded to this relay, when the monitor is configured as a Safety Monitor according to ISO/EN 13849-1.



All system failures, like cable short, cable break and internal system failure, will automatically trip the safety relay.

Max voltage:.....50 V
 Max current:.....400 mA@25 °C

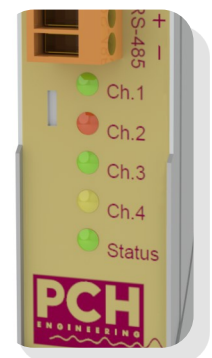
Test function:

Can be activated digitally or by PC. As default the alarm relays activate and DC outputs increase to the specified test level of 102 %. The user can configure the full test function through PCH Vibration Studio®.

Front panel:

5 light diodes indicate channel status (green, yellow, red) for each of the 4 vibration input channels, as well as for general system status.

A blue light diode will indicate if the RS-485 interface has been terminated internally by 120 Ohm.



Data storage:

All input channels can be trended and alarms can be stored when connected to a PC running PCH Vibration Studio®, PCH Dataviewer software or using IoT (REST API).



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PCH EtherBridge can be used for storing of trends and time waveform recordings in PCH Cloud. More PCH 1420s can be connected to the same PCH EtherBridge. The recommended maximum is 10.



Communication:

- RS-485 interface.....2 screw terminals
- Daisy chain, up to 255 units
- USB interface (USB-C pending):..... Mini USB

An integrated 120 Ohm resistor can be activated to terminate the RS-485 chain.

Modbus TCP/RTU is possible by adding PCH EtherBridge for up to 255 units in a daisy chain. PCH EtherBridge supports Modbus TCP mapping and multiple Modbus clients.

PCH 1420 Link Concept modularity:

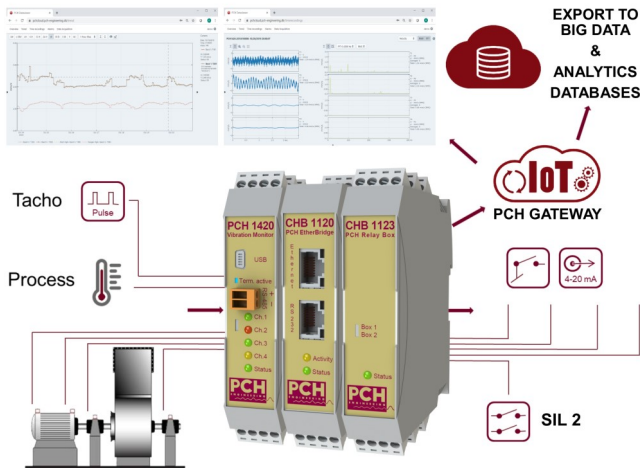
PCH 1420 Vibration Monitor can be supplemented by several PCH modules. PCH EtherBridge, PCH Relay Box, PCH Input Box and PCH Output Box can be interconnected by means of DIN rail bus connectors.

Time waveform recording:

Up to 4 input channels can record digital raw data (time waveform) simultaneously to a PC running PCH Vibration Studio®. The recording can be done through:
 RS-485/LAN.....Up to 10 kHz
 USB (real-time).....Up to 10 kHz

Time waveform recording is user activated and contains scalar values for vibration and process input data at start of recording.

Adding PCH EtherBridge IoT automated recordings can be generated in various open formats like .tdms, .csv, .wav, .json and .bunv.



PCH 1420 can be delivered with buffered outputs from screw terminals and from BNC connectors as well.

PCH Input Box offers: 6 x 0-10V inputs, 6 x 4-20 mA inputs with loop power or 4 x PT100 3-wire and 2 x 4-20 mA with loop power.

PCH Output Box offers (pending): 12 isolated and configurable outputs as 0/2-10 V or active 0/4-20 mA.

Only one box of the same type can be added and only one PCH 1420 can be the master on the same DIN rail bus connection.

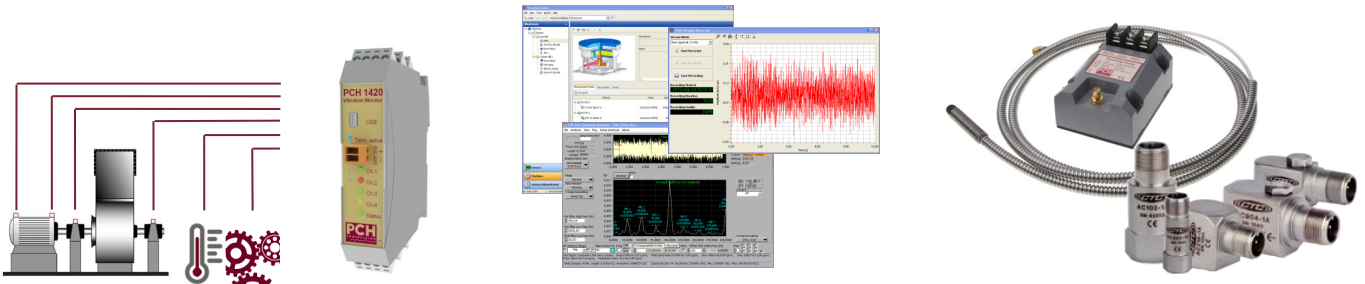
The latest PCH 1420 firmware type c6000 is needed to support PCH Boxes. Please contact PCH for a firmware update if required.

More information about PCH Relay Box, PCH Input Box, PCH Output Box and PCH EtherBridge is available in separate brochures.



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Buffered voltage outputs / BNCs:

PCH 1420 can be ordered with integrated buffered output channels. A 2-channel version offers 2 x buffered outputs from the screw terminals for local BNCs and a 4-channel version offers 4 BNCs in the housing.

Raw data from all 4 channels are available simultaneously incl. an anti-aliasing filter.

BNC outputs..... Up to 50 kHz
Terminal outputs..... Up to 50 kHz
Damping: -1dB at 100 kOhm, 0.1 nF, 1 meter cable

Trigger (ask for more details):

Speed/tacho buffered output is available from screw terminals and must be connected to a separate BNC.

Ex applications:

PCH 1420 must be mounted in the safe zone but can be used in Ex applications if zener or isolation barriers are mounted. Please contact us for a solution.

SIL-2 and Functional Safety:

PCH 1420 can be used in SIL-2 safety related systems. Please refer to the Reliability Safety Manual, CHF2091 for detailed information and recommended ways of installation.

Performance Level..... PL-d
Safety Integrity Level..... SIL-2

Power supply:

+24 V DC, ±5 %, max. power consumption; 10 W

Please secure 0.2 Amp for start-up in case all sensor and input options are installed.

Environmental (+60 °C optional):

Operating temperature..... -10 °C to +50 °C
Storage temperature..... -40 °C to +85 °C

Housing:

DIN rail enclosure IP20 with screw terminals
Dimensions:.....H:109,W:22.5,D:114.5 mm
Dimensions w BNC:.....H:109,W:45,D:114.5 mm

Compliance:

CE, ISO 13849-1, ISO 10816/20816, VDI 3832, 100 ms response time as per API 670, PL-d, ETL listed- Conforms to UL Std. 61010-1, EAC from 2023.



Intertek
5000509

PCH Engineering A/S reserves the right to change all specifications and accessories listed in this sheet without notice.

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