

## PCH 1028 SURVEY AND DIAGNOSTIC MONITOR

Advanced vibration monitoring made simple and cost effective

### Applications

The PCH1028 is designed to provide advanced fail-safe local and remote monitoring of critical machinery 24 hours a day 365 days a year. Typical applications include Early warning of bearing faults and fault types, specific gearwheel faults, pitting, imbalance, misalignment and fatigue. Monitoring can be performed on critical machinery like:

- Industrial gear systems
- Drive trains in wind turbines
- Gas turbines
- Pump systems
- Rolling mills and mills
- Compressors

### Uses and advantages

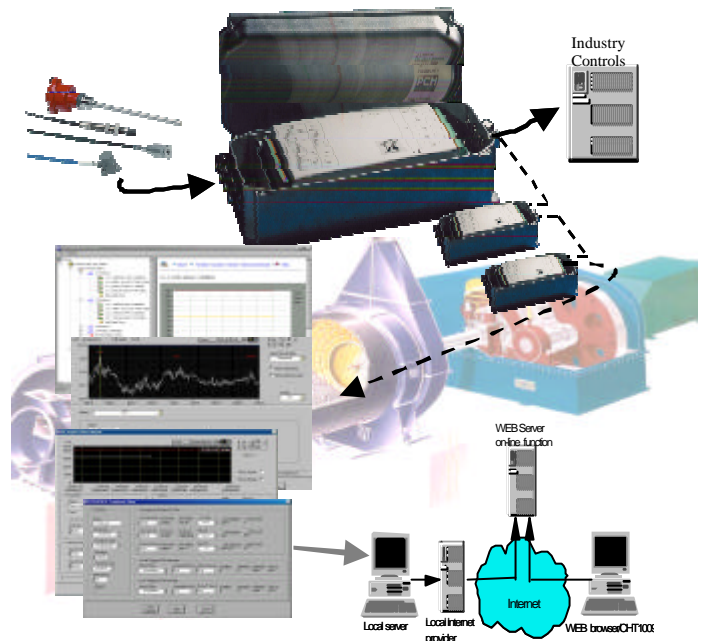
**PCH 1028** is a 2-4 channel digital vibration and process information monitor intended for stand alone operation. Signal processing is based on **embedded** FFT-technology, comprising Real Time 800 line Full Zoom FFT, Envelope FFT and Cepstrum, all performed **directly in the monitor**.

Individual Alarms based on intelligent information from up to **100 different** machine components can be sent directly to the machine controller or control centre using industrial communication standards.

Manually or based on different events, e.g. alarms or vibration changes, the monitor can be programmed to **record and store** Trend information and spectra. Equipped with the optional memory pack live time waves of up to 8 sec (19,2 kHz bandwidth) pr. channel can be stored. Further options include tacho input and trigger input.

**CHT1009** is the **WEB-based** control, database and display software, which is provided with the monitor free of charge. This software is used to configure the monitor and store downloaded information. If connected on-line with the monitor the software can send **status** and **alarm reports** over the Internet, incl. SMS messages. Display graphical status and alarm information on any available LAN connection using the CHT1009 software or through a standard WEB browser.

**All the control functions** e.g. changing **set-ups**, viewing **spectra** can be performed **on-line** via the **Internet**.



The PCH1028 monitoring concept

### Features

- Up to 64 embedded, online analyser set-ups: 800 line full Zoom FFT, Envelope FFT & Cepstrum. True real time monitoring, with 6 band spectrum comparison pr. Online analyser up to 100 bands.
- Low Alert and Danger alarms on all band set-ups.
- %-change triggered trending on all band set-ups
- Monitor Stored Alarm or User triggered:
  - Spectrum recording
  - Time wave recording
- All programmed settings and recordings are retained in the case of power failure.
- Inputs up to 4 DC process parameters pr. system: 4-20 mA, 0-5V or PT100
- User selectable Alarm inhibit and delay: Machine Run up & coast down Filter.
- Full access to all monitor functions through the Internet, including monitor configuration.

## SPECIFICATIONS PCH1028

### SYSTEM REQUIREMENTS

CHT1009 will run on any PC with the following operating systems: Windows 2000 or XP. CHT1009 control, database and display software included.

### INPUT AMPLIFIER - VIBRATION

**Type** ..... CCLD/ICP  
Differential input only + nor input must be grounded. Optionally Charge, Voltage, CVLD or proximity probes  
Input Impedance.....100k $\Omega$   
Transducer impedance.....< 100 $\Omega$   
Noise floor ( 1 to 19,2 kHz).....< 50 $\mu$ V RMS  
Noise voltage density.....0,4 $\mu$ V/ $\sqrt$ Hz  
Max. Input level.....+7,5 V Peak  
Transducer Bias current.....10 mA DC  
Transducer voltage range.....8 to 19 VDC  
Max. Un terminated voltage.....27VDC

### SIGNAL CONDITIONING

All signal conditioning is performed digitally. The Digital Signal Processing is performed by State-of-the-art DSP technology ensuring precise and valid monitoring. The embedded monitoring tools are based on a 800 line full ZOOM FFT.

**Online analysers** .....64  
FFT.....100,200,400,800 lines Full zoom  
Envelope FFT..100,200,400,800 lines Full Zoom  
Cepttrum.....50,100,200,400 lines Full Zoom

Monitoring bands .....100

### Monitoring method:

Scanning one analyser at a time sequentially.

### Frequency range:

1 Hz to 19,2 kHz

### SIGNAL DETECTION

**Max RMS within band, Total RMS within band**

### MEASURING PARAMETER

PCH 1028 offers measurements to be made either in acceleration, velocity or displacement values.

**Acceleration** .....m/s<sup>2</sup>, mm/s<sup>2</sup>,  $\mu$ m/s<sup>2</sup>, g, mg,  $\mu$ g, lInch/s<sup>2</sup>, mlInch/s<sup>2</sup>,  $\mu$ lInch/s<sup>2</sup>

**Velocity** .....m/s, mm/s,  $\mu$ m/s, lInch/s, mlInch/s,  $\mu$ lInch/s

**Displacement**...m, mm,  $\mu$ m, lInch, mlInch,  $\mu$ lInch

### SELF TEST

The monitor is equipped with hardware and software controlled self test system.

### DIGITAL INPUTS/ OUTPUTS

Master reset, inhibit in, test, relay reset, Trigger 1-4, inhibit out, Aux Out, Aux in 1-3

### ALARM & SYSTEM FAIL. RELAYS

#### Alarm Relays:

PCH 1028 offers 4 independent Alarm relays with Make or Break functions. All 4 relays can be assigned to the desired frequency. Alarm threshold level, verifications and latch or non-latch function can be setup independently for each relay using the supplied PC software.

#### System Failure Relay:

PCH 1028 offers a System Failure relay with Break function for optimal fail-safe configuration. Failures inside the PCH 1028, detected by the internal watchdog, either in Test mode or in Monitoring mode, will cause the System Failure relay to trigger. The System Failure relay reacts to: Power Failure, Overloads, Processor halted, Defective sensors and more.

#### For all 5 relays:

Max. Voltage.....48 V  
Max. switching Current.....8A AC or DC  
Max. switching Voltage.....240 V AC or DC  
Max. DC power.....50 to 220 W  
Max. AC power.....2000VA  
Min. DC load.....6V, 1mA

### DC OUTPUTS

PCH 1028 offers 2 - 4 independent industrial standard 4-20 mA/0-5V outputs for connection to PLC, controllers or computers. The 4-20 mA/0-5V is a varying DC signal representing the scalar level of the frequency or frequency area being monitored. The setting of a Full Scale Level in vibration units for a frequency area of interest will correspond to a DC output of 20 mA/5V.

#### DC current:

Current range.....4-20 mA  
Precision..... $\pm$  0,1 mA  
Output Impedance.....> 10 M  $\Omega$   
Load Impedance.....< 330  $\Omega$

#### DC voltage:

Voltage range.....0-5V  
Precision.....+10mV  
Output impedance.....100  $\Omega$   
Load impedance.....> 10k $\Omega$

### AC OUTPUTS

#### Unconditioned

Max. Level.....6 V Peak  
Output impedance.....100  $\Omega$   
Min. Load impedance.....10k $\Omega$

#### Unconditioned

(-0.2 dB).....1 Hz to 30 kHz  
(-3dB).....0,2 Hz to 150 kHz

### RS-232 INTERFACE

Serial two wire asynchron interface complies with IEA -232 standard.

**Connector on monitor** .....9 pin SUB-D male

**Cable** ..Lap-Link or Null modem 9 pin female

### RS-485 INTERFACE

Serial two wire asynchron interface complies with IEA -485 standard. Half duplex.

**Cable type** ....120 ohm Screened twisted pair.

**Terminals:**Data + and Data-

### BUS COMMUNICATION

#### Standard:

Modbus RTU both on RS-232 and RS-485

#### Optional:

E.g. CANopen, InterBUS, ProfiBUS, DeviceNET, etc.

### POWER SUPPLY

Voltage range.....85 - 250V  
Optional.....24V DC  
Mains frequency.....47 - 63 Hz  
Max power consumption.....12VA

### DIMENSIONS

Length (without cables).....378 mm  
Width.....164 mm  
Height.....102 mm  
Weight.....app. 2,5 kg

#### 4 Mounting Slots:

Slot width.....5 mm  
Hole pattern.....148 x 363 mm

### STANDARD COMPLIANCE

**CE** mark indicates compliance with EMC directive and Low Voltage Directive.

#### Safety:

EN61010-1 (1993) and IEC 1010-1 (1991): Safety requirements for electrical equipment for measurement, control and laboratory use.

#### EMC Emission:

EN50081-1 (1992): Generic emission standard part 1: Residential, commercial and light industry.

CISPR22 (1993): Limits and methods of Radio disturbance characteristic of information technology equipment. Class B limits. FCC class B limits.

#### EMC Immunity:

EN50082-2 (1995): Generic immunity standard part 2. Industrial environment (1995).

#### Temperature:

IEC68-2-1 & IEC68-2-2: Environmental testing. Cold and dry heat.

Operating temperature.....-20°C to +50°C

Storage temperature.....-35°C to +70°C

#### Humidity:

IEC68-2-3, Operating:.....95 % RH(40°C)

IEC68-2-3, Storage.....90-95 % RH(40°C)

#### Mechanical: Non operating:

IEC68-2-6, Vibration: 0,3 mm,20 m/s<sup>2</sup>,10-500Hz

IEC68-2-27, Shock:.....750 m/s<sup>2</sup>

IEC68-2-29, Bump:.....1000 bumps at 250 m/s<sup>2</sup>

#### Enclosure:

IEC5229: Protection by enclosure IP67.

### Options - Hardware

Tacho input board - Process input board 4 channels - Vibration input board ch. 3 and 4 - Proximity input - Charge input

### Options - Software

Internet access server, iRelay - LAN access software package - mStore, extra main system WEB-database, Off-line analyser package



The Vibration Monitoring Specialists

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

CHF1028-UK11



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