

PRODUCT DATA — TYPE PCH 1026

DIGITAL WINDTURBINE STRUCTURAL VIBRATION MONITOR

USES

- Permanent monitoring of low frequency structural and seismic vibrations

APPLICATIONS

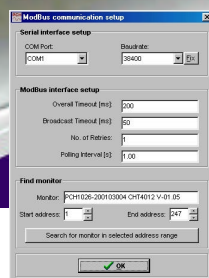
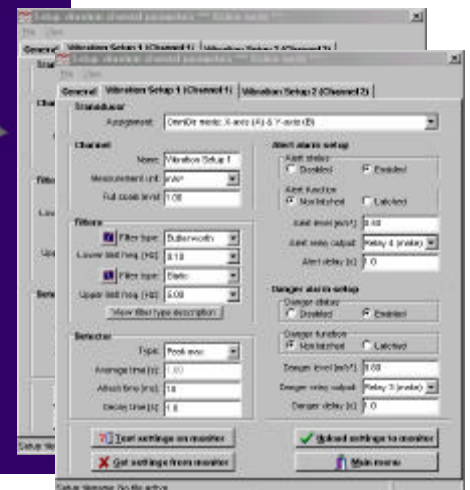
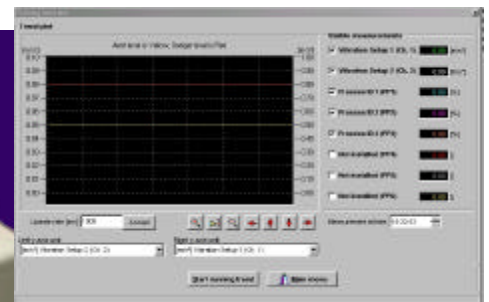
- Wind turbines
 - Tower vibrations
 - Drive Train oscillations (pitch turbines)
 - Edgewise blade vibrations (stall turbines)
- Steel towers
- Chimneys
- Bridges
- Buildings
 - Seismic vibrations according to ISO4866

CONFIGURATION & SETUP

- Setup and configuration can be performed via serial RS-232 port using the supplied setup and monitoring PC program CHT 1012. All settings can be changed on site.
- Setup and Display can also be performed remote through optional RS-485 connection from external PC or controller, e.g. WTC or Process controller
- A log in the PC software keeps record of the settings in the particular monitor, identified by instrument serial no.

FEATURES

- 3 internal vibration sensors (accelerometers)
- Triaxial measurements in A, B and C directions
- OmniDirectional Tower Monitoring
 - Proven optimal monitoring of towers
- Facilitates monitoring of up to 4 different frequencies independently, either one from each sensor or up to 4 different frequencies from one sensor
- Proven filter techniques, based on experience with windturbine applications
- Measures RMS, Max. Peak or Peak-Peak values
- 1 - 4 independent industrial standard 4-20mA outputs
- 4 independent Alarm relays with programmable make/break function and 1 System Failure relay
- Programmable Alarm thresholds and Delay times independently for each Alarm Relay
- Internal constant watchdog of both sensors and electronic circuits. Failures are indicated on the fail-safe System Failure relay
- Test function for all sensors and electronic circuits.
- Designed for rough environments, both regarding temperature, electric noise interference and humidity.
- Possibility of implementation of customer defined monitoring algorithms, allowing customers to differ from their competitors.



SPECIFICATIONS PCH 1026

CONFIGURATION

PCH 1026 is a self-contained monitor in a sealed, rugged box. To function only a DC power supply and desired output connections are required. PCH 1026 is designed for low frequency monitoring applications. Built in vibration sensors in 3 directions: X, Y and Z. Including test functions for all sensors and electronic circuits as well as internal watchdog for continuously self-monitoring functions. The design of PCH 1026 is based on a digital platform allowing multiple customer solutions, and easy rapid change of configuration and settings, also in the field.

DC POWER SUPPLY

Voltage range.....20-30V
Max power consumption.....7W

DIMENSIONS

Length (without cables).....265 mm
Width.....130 mm
Height.....66 mm
Weight.....app. 2 kg
4 Mounting Slots:
Slot width.....6,5 mm
Hole pattern.....117,5 x 200 mm

ACCELEROMETERS (SENSORS)

3 internal acc. in directions A, B and C
.....Optionally 4 external accelerometers
All internal accelerometers measures statically
Noise Density.....500µg/SQRT(Hz)
All internal accelerometers have built in Self-test function, by an electrostatic force applied to the sensing element.

SIGNAL CONDITIONING

All signal conditioning is performed digitally. This means that settings and configurations can be changed and verified by the supplied PC software program (CHT1012). The Digital Signal Processing is performed by State-of-the-art DSP technology ensuring precise and valid monitoring. Selective monitoring of interesting frequencies or frequency bands can be obtained by choosing among the wide range of High Pass and Low Pass filters. Simply choose from which frequency to what frequency your monitoring should be performed at. The PCH 1026 holds a wide range of filters, which have been proven by years of experience in the industry.

The filter range includes:

High & Low Pass filters

Type.....8th order Elliptic
Cut off frequency.....1,1 - 10 Hz

High & Low Pass filters

Type.....8th order Butterworth
Cut off frequency.....0,1 - 1,0 Hz
Optionally customized solution can easy be performed and uploaded to the monitor. E.g. Low Pass filter at 30Hz complying to ISO4866.

SIGNAL DETECTION

PCH 1026 offers both RMS, Peak and Peak-Peak detectors to be chosen in the supplied setup PC software, thereby offering the well known signal types based on many years of experience in the vibration monitoring industry.

True RMS:

Averaging time.....0,01 - 100 sec.
Resolution.....0,01 sec.

Peak or Peak-Peak:

Attack time.....1 - 1000 msec.
Decay time.....0,1 - 100 sec.
Resolution.....0,1 sec.

MEASURING PARAMETER

PCH 1026 offers measurements to be made either in acceleration, velocity or displacement values, even though the internal sensors are accelerometer types.

Acceleration.....m/s², mm/s², µm/s², g, mg, µg, Inch/s², mInch/s², µInch/s²

Optional:

Velocity.....m/s, mm/s, µm/s, Inch/s, mInch/s, µInch/s

Displacement...m, mm, µm, Inch, Mills, µInch

ALARM & SYSTEM FAIL. RELAYS

Alarm Relays:

PCH 1026 offers 4 independent Alarm relays with programmable Make or Break functions. All 4 relays can be assigned to the desired frequency or measuring direction. E.g. either one relay pr. frequency of interest or up to 4 different frequencies on the same relay. Alarm threshold level, delay time and latch or non-latch function can be setup independently for each relay using the supplied PC software.

System Failure Relay:

PCH 1026 offers a System Failure relay with Break function for optimal fail-safe configuration. Failures inside the PCH 1026, 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.

For all 5 relays:

Max Voltage.....30 V
Max Current.....100 mA

DC OUTPUTS

PCH 1026 offers 2 - 4 independent industrial standard 4-20 mA outputs for connection to PLC, controllers or computers. The 4-20 mA is a varying DC signal representing the amplitude 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.

DC current:.....4-20 mA
.....Full Scale Level corresponds to 20 mA
Precision.....± 0,1 mA
Output Impedance.....> 10 M ohm
Load Impedance.....< 330 ohm

RS-232 INTERFACE

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

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

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

RS-485 INTERFACE

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

Connector on monitor...9 pin SUB-D female

Cable type...120 ohm Screened twisted pair. 120 ohm termination resistor can be selected by shorting two pins in the SUB-D connector, during installation.

BUS COMMUNICATION

Standard:

Modbus RTU both on RS-232 and RS-485

Optional: (OEM customer solutions)

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

ACCESSORIES INCLUDED

Setup & Configuration PC software.....
.....Type CHT 1012*
* Runs on Windows 9x, and NT
User manual.

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:..0,3mm,20m/s²,10-500Hz
IEC68-2-27, Shock:.....750 m/s²
IEC68-2-29, Bump:....1000 bumps at 250 m/s²

Enclosure:

IEC5229: Protection provided by enclosure IP54.

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



The Vibration Monitoring Specialists

CHF1026-UK14