Expert Vibro

Vibration analysis and monitoring

Compact. Powerful. Modern technology.

Shaft 1 X pp   76 µm
Shaft 1 Y pp   81 µm
Shaft 1 N   2858 rpm
Shaft 1 Smax   77 µm
Shaft 1 V   19,5 mm/s

2013-03-15 11:06:03

Menu   Setup   Network

Expert Vibro

Delphin Technology

Expert **Vibro** – Maximum performance

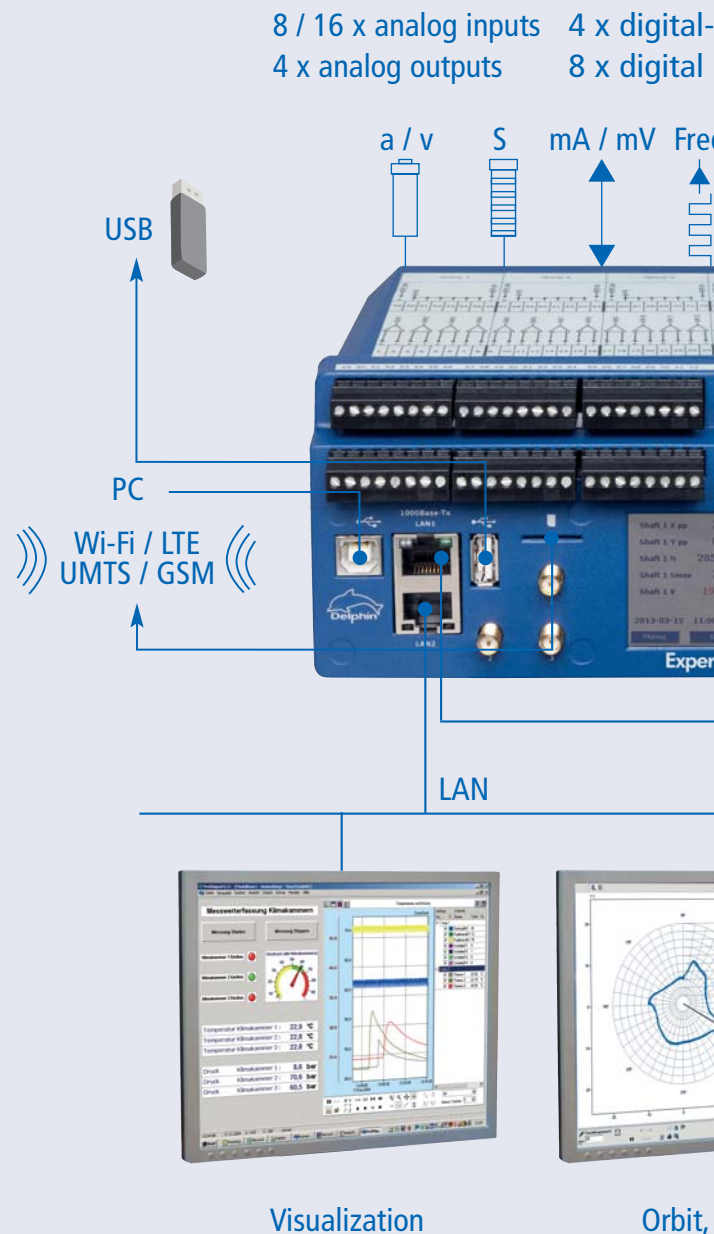## Vibration measurement with state of the art processor technology

Expert Vibro is Delphin Technology's new device for acquiring transient signals and vibrations. The latest processor technology enables 16 synchronous channels to be processed at high sampling rates while requiring minimal space. 24-Bit A/D converters ensure high precision. Users may switch between voltage measurement, IEPE or shaft vibration sensors. Integrated comparators and digital inputs allow flexible triggering. Measurement data is monitored "on the fly" with digital outputs being switched within msecs in the event of a limit value violation.

Universal sensor connection

- Analog inputs switchable via software
  - Eddy current sensors
  - Acceleration sensors
  - Velocity sensors
  - mV / mA signals (pressure, etc.)
- Selectable IEPE feeds
- Integrated comparators for Keyphasor® sensors
- Measuring range to ± 25V
- Plug-in screw terminals

Fully equipped – Compact design

- 8 / 16 vibration inputs capable of being individually triggered
- 50 KHz sampling rate per channel (Σ 800 KHz)
- 32 GB data logger memory
- 4 digital inputs for frequency measurement of up to 1 MHz
- 4 analog outputs for monitoring purposes
- Convenient DIN rail-mounting
- Display capable of on-site graphic portrayal

8 / 16 x analog inputs 4 x digital-
4 x analog outputs 8 x digital

a / v   S   mA / mV Fre

USB

PC

Wi-Fi / LTE
UMTS / GSM

LAN

Visualization   Orbit,

from a compact device

Applications

- Shaft vibration monitoring and analysis
- Bearing damage diagnostics
- Combustion chamber vibration monitoring
- Gear box analysis
- Housing vibrations
- Mobile vibration measurement

Local and decentralized interfaces

- Interfaces to PC
  - LAN interface to data networks (Modbus TCP)
  - USB device for direct PC connection
  - USB host for data read out
- Field bus interfaces
  - 2 x PROFIBUS DPV1 slave (redundant)
  - 3 x serial interface (Modbus RTU)
  - 2 x CAN interfaces
- Remote monitoring
  - Optional Wi-Fi
  - GSM / UMTS / LTE optional

Monitoring and online analysis in a single device

- Fast limit value monitoring of time signals
- Monitoring of characteristic values
- Online transfer of measurement data
- Spectrum – online – up to 12,800 lines (FFT)
- Versatile characteristics (characteristic values for phase, frequency and amplitude)
- Accounting and statistics function
- Integration functions (two-stage)

/ frequency inputs
outputs

quency

PLC

Modbus PROFIBUS DPV1
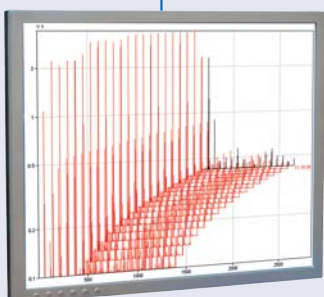
9 ... 36 V
AC / DC

Extension bus
(synchronous)

Graphic display
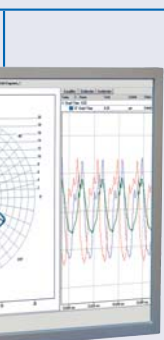
Time signal

Cascade, Spectra

Monitoring and analysis

A range of interfaces

Expert Vibro can be connected via LAN to the intranet/internet and via USB to PCs. For standalone applications, integrated Wi-Fi, UMTS or LTE modules are optionally available. Connection is via an antenna at the SMA connectors. In addition to two PROFIBUS interfaces, Modbus TCP is available to users for fieldbus connections. Multiple Expert Vibro devices can be synchronized with each other.

Expert Vibro		
Inputs / outputs	**Type 8**	**Type 16**
Analog inputs (mV, mA)	8	16
Analog outputs (mV, mA)	4	4
Digital / frequency inputs	4	4
Digital outputs	8	8

Expert Vibro Inputs / outputs

Areas of application

- Hydropower turbines
- Gas and steam turbines
- Compressors
- Generators
- Wind turbines, CMS
- Drives / component test stands
- Remote monitoring of vibrations

User friendly configuration

Vibration measurement with Expert Vibro is user friendly. Intuitive configuration means fast installation and short training times. All relevant characteristic values are obtained from spectra and time signals. Spectra are calculated online and saved independently with time signals and characteristic values. Versatile software channels enable the Expert Vibro to perform complex analysis and monitoring tasks. The Expert Vibro's touch screen can display configuration or measurement data.

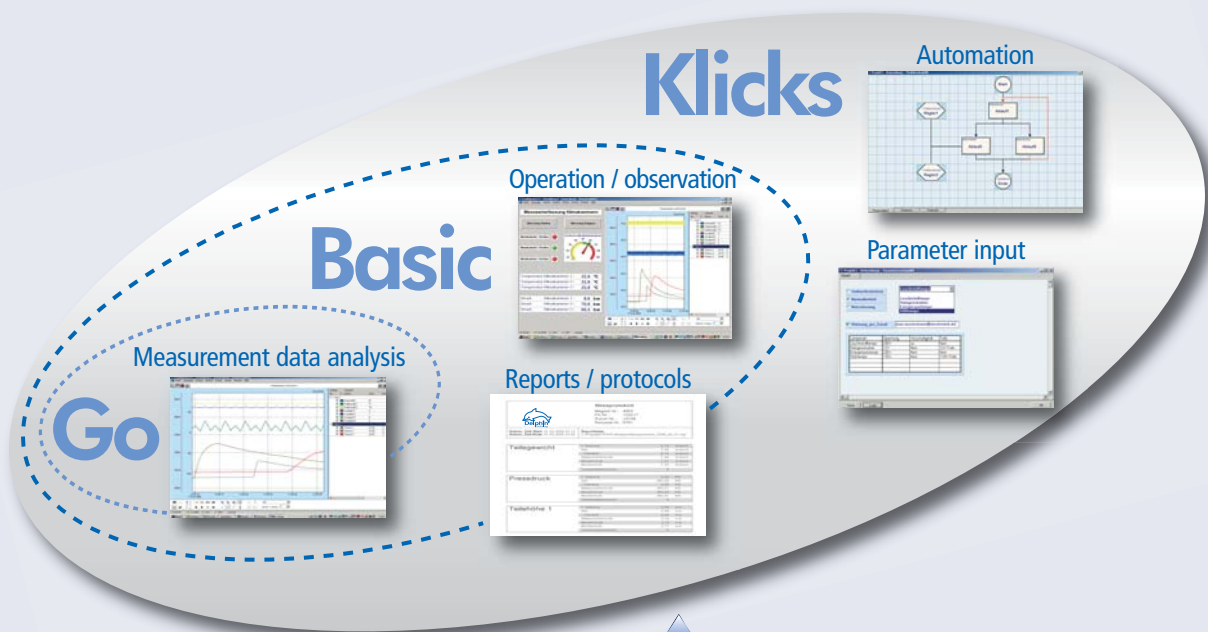| Expert Vibro	
CG 1	1
AIN 1	-62,79 mV
AIN 2	-59,51 mV
AIN 3	-66,43 mV
AIN 4	-86,23 mV
CG 2	1
AIN 5	-62,79 mV
AIN 6	-59,51 mV
AIN 7	-66,43 mV
AIN 8	-86,23 mV

ProfiSignal – Software

Visualizing and analysing vibration

ProfiSignal is the complete software package for applications in data acquisition analysis, visualization and automation. The software is very user-friendly and combines specialist functions with ease of use. ProfiSignal is clear and logical to use whether for systems with just a few channels or for systems with several thousands of channels.

Users quickly become familiar with the system. ProfiSignal is modular, scalable and available in three versions: Go, Basic and Klicks. Higher-end versions have backward compatibility with lower-end versions concerning usability, data files and application projects.

The ProfiSignal Vibro option extends ProfiSignal with spectra, cascade, time signal and orbit diagrams and enables portrayal of the vibration data acquired and processed by Expert Vibro.

Klicks

Automation

Operation / observation

Parameter input

Basic

Measurement data analysis

Reports / protocols

Go

Combined acquisition of process and vibration data

By fully integrating vibration analysis into ProfiSignal means Delphin systems can be used to simultaneously portray process data and vibration data as characteristic values in digital / analog displays or in trends.

Flexible documentation

A ReportGenerator enables user-defined documentation for vibration data as FFT or cascade graphs as well as envelope spectra curve analyses. Orbit and trend graphs graphically portray kinetic shaft orbits including maximum S_{max} deflection and angular position / phase.

Expert Vibro – Techn. specifications

	Expert Vibro
Inputs / Outputs	
Analog inputs	8 or 16
Sampling rate, adjustable per channel	1 Hz … 50.000 Hz
Voltage / current range	± 25 V / 0 … 20 mA, 4 … 20 mA, free
Signal conditioning, switchable via software-selectable	No, AC coupling, IEPE
Resolution / input impedance	24 Bit / 1 MΩ
Dielectric withstand voltage / galvanic isolation Channel to channel	± 100 VDC / ±500 VDC
Usable signal bandwidth	DC … 20 kHz
Digital frequency inputs	4
Input signal	low: 0 ... 2 V / high: 5 ... 50 VDC@3.5 mA / galvanically isolated
Frequency inputs measurement range	0,2 Hz … 1 MHz
Analog outputs	4
Resolution	16 Bit
Output range	0 … 10 V / ± 10 V / 0 ... 20 mA / 4 ... 20 mA / galvanically isolated
Maximum load resistance	500 Ω
Digital outputs	8
Switching voltage / current / PWM	50 V / 0,6 A / galvanically isolated / 5 Hz ... 10 KHz, to 1:500
Data storage	
Maximum size / measurement values	32 GB /... 1 billion measurement values
Signal processing functions	
High-pass filter	
Cutoff frequency / filter ordering / filter characteristic	0,5 … 20,000 Hz / 4, 6, 8, 10 / Bessel, among others
Low-pass filter	
Cutoff frequency / filter ordering / filter characteristic	0,5 … 20,000 Hz / 4, 6, 8, 10 / Bessel, among others
Integrator / differentiator	
Single or double-integrator / differentiator	
FFT	
Line number / window / average	max 12,800 lines / Hanning, Flattop ... / 2 ... 32 times
Types of FFT	narrow / wide band, envelope / demodulation, amplitude-phase spectra
Characteristic values from time signal	
Maximum / minimum value, peak-to-peak value, arithm. mean, true RMS, max of vect. Sum, arithm. mean of the product	
Characteristic values from frequency spectra	
Frequency, main phase and any harmonic amplitude, frequency, total value, square root means (in any frequency bands), total value, residual value	
Interfaces	
LAN	2 x 1000Base-TX
Wi-Fi / WWAN	802.11b/g/n / GPRS, UMTS, LTE
USB	Device 2.0 / Host 2.0
PROFIBUS	2 x PROFIBUS DPV1 / Slave max. 12 Mbit
CAN / RS 232/485	2 x CAN 2.0 / Modbus RTU, SCPI, ASCII
General technical information	
Dimensions / weight	210 mm x 80 mm x 125 mm / 750 g
Fixing	Support rail DIN EN 50023 or screw fixing, plugable screw terminals, 96 terminals in 2 rows
Signal connections	max. 1,5 mm²
Temperature range	-20 ... 60 °C
Supply voltage / power consumption	12 … 24 / ± 10% / ca. 10 Watts

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ISO 9001 certified

CE

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