Applications

Data acquisition & data logger

Test, trial & automation

Monitoring & process control

Vibration measurement

Tried and tested solutions

Measuring. Testing. Automation.

Delphin Technology

Intelligent Measurement Technology

We at Delphin supply our global customers with intelligent, universal data acquisition hardware and intuitive measurement software. This enables our customers to reliably and efficiently carry out their measurement and monitoring requirements.

Contents

Delphin Technology ... even more solutions

Delphin Technology AG

Delphin Technology AG was founded in 1980 by the engineer Peter Renner. Since then the company has been involved in the development, production and marketing of innovative, high quality hardware and software for industrial measurement and testing technology.

Areas of application include data acquisition and analysis, quality assurance, test stand automation, vibration measurement, remote monitoring and mobile Data acquisition as well as laboratory data acquisition and automation.

Delphin products are being used across many different industries. Our customer base includes companies involved in process engineering, mechanical engineering, the chemical and pharmaceutical industries and power engineering.

Continuity

Our customers benefit from our technical expertise as well as over 35 years of tried and tested experience we have gained in development within the field of industrial measurement technology. It is important to us to work closely with customers to know their needs and requirements. This is evident from our modular range of products as well as in the long term relationships we establish with our customers.

Many medium sized companies, world renowned industrial corporations, research companies, institutions and universities have put their trust in us and benefit from our many years of experience.

Quality

Our top priorities are the continuous development of our products and maintaining the highest standards of quality. Delphin Technology AG is certified according to ISO 9001:2008. This guarantees our products meet highest quality assurance requirements and will provide reliable service within your applications. Delphin guarantees products "Made in Germany".

Innovation

Delphin's mission is to optimize production and processing procedures through continuous technological development. Delphin has at its disposal huge resources of expertise and innovation. Delphin is a specialist in the field of industrial measurement technology and supplies innovative hardware and software from one source. Our many years of experience gives us a solid base in product and application expertise. Our innovations have been patented worldwide

Flexibility

Flexibility and simple structures are further elements within our company philosophy.

This means we meet the needs of our customers and provide standard solutions as well as custom-made systems. On request we produce mobile measurement cases, control cabinets and complete test stands or program a specific application software according to your personal requirements using ProfiSignal software.

Customer services

A range of services complete the Delphin product portfolio. Our services include project planning, system installation, calibration, hotline services and training. System installation and training is carried out by a specialist team of experienced engineers.

Our service packages guarantee customer support from the outset, either by hotline or on-site support when necessary.

Delphin Technology – Application overview

Data acquisition and data logger

Universal measurement and acquisition
Stand alone logging and monitoring
Intuitive configuration and operation

Applications

- Stand alone data logger
- Laboratory data acquisition
- Mobile data acquisition
- Temperature data acquisition
- Process and energy data acquisition
- Transient data acquisition
- Error and fault analysis

Test, trial and automation

Measurement and automation
Precision measurement over long periods
Galvanic isolation of I/Os

Applications

- Household appliance testing
- Heating systems testing
- Pump testing
- Switch testing
- Component testing
- Endurance testing
- Test stand for batteries, rechargeable and fuel cells

Monitoring and process control

Monitoring and alarm functions

Fault data acquisition, high-resolution diagnostics

Intelligent signal processing

Applications

- Independent process monitoring
- Remote monitoring using UMTS/LTE
- Mobile measurement case for fault diagnostics
- Cleanroom monitoring
- Environmental simulation in climate chambers
- Energy data acquisition according to EN50001
- Crane monitoring

Vibration measurement

Vibration and process data in a single system

Secure monitoring and online diagnosis

Time signals, frequency spectra, characteristic values

Applications

- Machine vibration measurement
- Vibration analysis
- Shaft vibration measurement
- Pressure vibration measurement
- Acquisition of vibration and process data
- Vibration test stands
- Transmission testing

Data acquisition and data logger

Data acquisition and data logger

Virtually every industry uses data acquisition and analysis to optimize processes and decision-making. The quality of the data acquisition is therefore vital.

Delphin offers highly stable and precision hardware with easy to use software with wide ranging options for data analysis and visualisation. Expert Key devices acquire measurement data and transmit it to a PC via a USB stick or LAN connection where it can be logged and displayed in trend diagrams. LogMessage data loggers independently acquire, store, monitor and pre-process measurement data. ProfiMessage devices can be used for combined measurement, monitoring and control tasks.

A special benefit of Delphin devices is a capability of universally configuring all channels. It is possible to synchronously acquire different types of signals in a single device. All inputs and outputs are galvanically isolated and therefore suitable for non-isolated measurement procedures. Interfaces and power supplies are also isolated. This then prevents any errors occurring from earthing loops.

Further applications are available online under:

www.delphin.com

Stand alone data logger

Delphin's LogMessage hardware series offers data loggers for virtually any area of application. LogMessage devices are capable of acquiring practically any type of sensor signal such as voltages, currents, temperatures, pressures or levels. Digital signal acquisition is also possible such as from meters or switches. Measurement rates range from millisecond to hourly intervals. The data loggers works independently without the need for PC support and can securely maintain recorded measurement data in its data memory for months, even in the event of a power failure. After power is restored, the devices automatically restart and continue data recording. Data memories can be read out via LAN. LogMessage data loggers also capable of monitoring and performing alarm functions.

Application features

- Reliable technology for the independent and secure recording of data
- Universal inputs suitable for any type of sensor (e.g. mA, mV, RTD, thermocouples)
- Simple and easy to follow configuration
- Intelligent processing via internal channels for calculation, statistical and limit values functions
- High-speed data evaluation via an ASCII export function and the ProfiSignal Go software

Laboratory data acquisition

Measurement technology used in laboratories needs to be flexible and very simple to operate. The Expert Key is therefore especially suited for labs in the chemical and pharmaceuticals sectors as well as in universities. Any type of sensor can be operated using the Expert Key. Data from laboratory equipment can also be acquired via serial interfaces. With the ProfiSignal software, Delphin enables serial coupling so that any type of laboratory data can then be acquired within a single system. Connecting to a LIMS is also possible. Lab equipment such as stirrers can be controlled via outputs. Clear and easy to manage process control and monitoring options are available via sequencer objects and limit value channels. Integrated reports automatically process measurement results.

Application features

- Universal inputs suitable for any type of sensor (e.g. mA, mV, RTD, thermocouples)
- Operating and control of laboratory equipment via digital and analog outputs
- Connection of up to 8 devices via serial interfaces
- Connection via 4 mm plugs for laboratory environments
- Complete systems including hardware and operator friendly software

Mobile data acquisition

Machine and plant operation is becoming increasingly complex. While commissioning and servicing may be required around the world, measurement signals from sensors and actuators need to be acquired and analysed in parallel to existing systems of process and control. Measurement systems need to be mobile, flexible and simple to operate. Delphin provides mobile stand alone devices and mobile measurement cases. The mobile measurement cases can be made to individual requirements. The independently operating mobile units are robust and built into a tough plastic case. They use either Message or Expert devices that can process all standard types of analog and digital signals. Signals are attached via plugs or terminals. Even inexperienced users are able to quickly generate meaningful diagrams using the ProfiSignal Go software.

Application features

- Mobile and high resolution data acquisition
- Flexibility via universal inputs and outputs
- Independent functioning without the need for PC support
- Highly compact design including a robust mobile measurement case version
- Intuitive software for fast analysis

Data acquisition and data logger

Temperature data acquisition

Temperature acquisition is a major aspect of measurement technology. Virtually every application measures temperatures, usually via thermocouples or RTDs. Delphin products have been optimised for high-precision temperature measurement. Delphin's decades of experience go into their measurement devices. Analog inputs can be configured to any type of thermocouple or 4-wire RTD. This is made possible through the use of high-resolution, galvanically isolated 24-bit A/D converters and high-precision internal power sources for reference-current feeds. No additional converters are required when using Delphin products.

Process and energy data acquisition

As part of German regulations on renewable energy, optimising energy use has become an issue and not just for high-consumption industries and businesses. It is often necessary to simultaneously acquire process and energy and to identify correlations between them. Delphin's scalable measurement systems are ideal for such tasks. Delphin devices can be installed decentrally and directly at the process site and then used for process control as well as the acquisition of analog data via mA interfaces. A field bus connection is also possible. Meter readings can be acquired via digital inputs. Pulses from the meters are cumulated by the Message devices into power and operation data. This data, along with the process data, can then be evaluated and produced in reports using the ProfiSignal software.

Application features

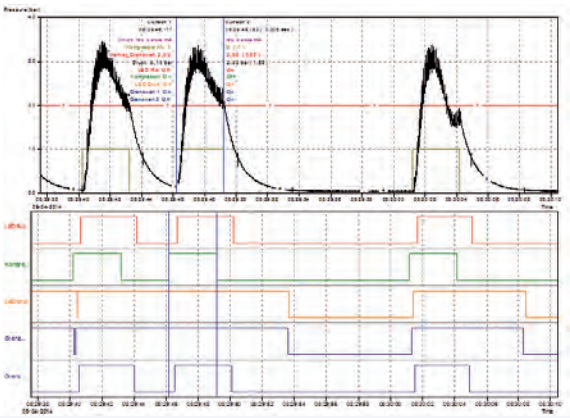
- High-precision temperature measurement of up to +/- 0.05K
- Universal inputs for RTDs and any thermocouple type (K, J, B, S, …)
- Long-term measurement stability with only negligible drift
- No additional requirement for measurement converters, includes galvanic isolation
- Stand alone temperature measurement as well as PC-supported operation via LAN or USB

Application features

- Combined network of energy and process measurement
- Stationary energy data acquisition
- Independent and secure energy data acquisition without the need for PC support
- Easy to analyse correlations between processes and energy consumption
- Monitoring of consumption and output

Transient data acquisition

Events that cause faults – whether in electrical networks or in systems – usually occur only sporadically. A single peak can trigger an alarm. Such peaks require acquisition and analysis which needs long-term and continuous recording. Delphin offers its Expert Transient device to perform such tasks. 8 or 16 analog tracks can be synchronously acquired in parallel at sampling rates of up to 50 kHz per channel. Data recording takes place using an internal or external storage medium (NAS). Expert Transient devices have a highly compact and space saving design. The Expert Transient does not require PC support so data recording is stable and secure. In addition to the analog signals, PROFIBUS „sniffing" can be performed and the data synchronously recorded.



Application features

- Transient data acquisition at sampling rates of up to 50 kHz
- Synchronous measurement of analog signals
- Sniffing function available for PROFIBUS measurement data
- Complete system including the Expert Transient hardware and ProfSignal Go software
- System extendible by up to 64 analog inputs

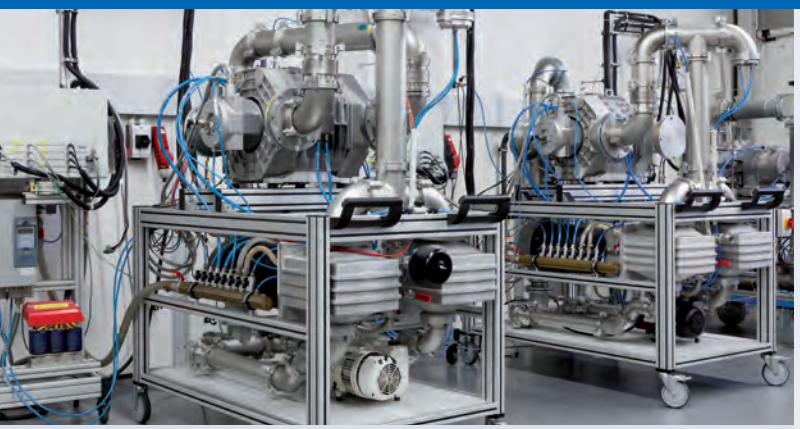
Error and fault analysis

Machinery and plant are usually controlled by PLC systems or industrial PCs. Digital and analog signals undergo complex linking via programmable procedures and algorithms. But what happens when the program fails to function in the desired way, or sporadic failures and irregular patterns begin to occur? Analysis generally requires the acquisition of the relevant digital and analog signals in parallel to existing systems. This is where Delphin products can be used. They are capable of fast and parallel sampling of digital and analog signals thereby detecting errors that would otherwise remain undetected. In combination with ProfiSignal's logic diagrams, analysis is then easy.

Application features

- Parallel sampling of analog and digital sensors and actuators
- Synchronous sampling
- High chronological sampling at µ-second resolution
- Independent fault data acquisition even without PC support
- Relevant and easy to follow data evaluation using logic analysis

Test, trial and automation



Test, trial and automation

Product testing today is a major priority. During development, a product needs to be tested to ensure it meets the requirements and standards set out in the specifications. In the manufacturing phase, verifications is required at a consistent level of quality.

For such tasks, Delphin offers products and services to maximise automation and efficient testing procedures.

ProfiMessage devices are the hardware basis for test stand automation in PC-independent data acquisition, monitoring and control. ProfiMessage devices perform control and regulation tasks independently and are ideal for long-term testing and complex measurement and control requirements.

The ProfiSignal PC software is a major element in the testing process. The Basic and Klicks versions are especially suited for test applications. Testing and automation tasks are very simple to generate by configuring ready-made components. Program procedures can be created using the patented process of „Programming by selection" to significantly reduce system maintenance.

Further applications are available online under:

www.delphin.com

Household appliance testing

The main factors household appliance testing include operator safety, energy efficiency, quality and reliability. Standards and test regulations form the basis for many of the tasks involved in testing. Testing for conformity to standards has a high potential for automation. ProfiSignal Klicks in combination with the Message and Expert Key devices are ideal for testing household appliances. Full galvanic isolation, flexible inputs and the easy to generate test procedures and sequences are the main factors that enable users to easily incorporate testing requirements for different household appliances.

Application features

- Universal inputs suitable for all standard sensor types (RTD, thermocouples, mA, mV)
- Full galvanic isolation of all inputs
- Complete systems including hardware and user friendly software
- Easy to adapt to testing requirements and extendible at any time
- Smooth integration of high-precision power measuring units

Heating systems testing

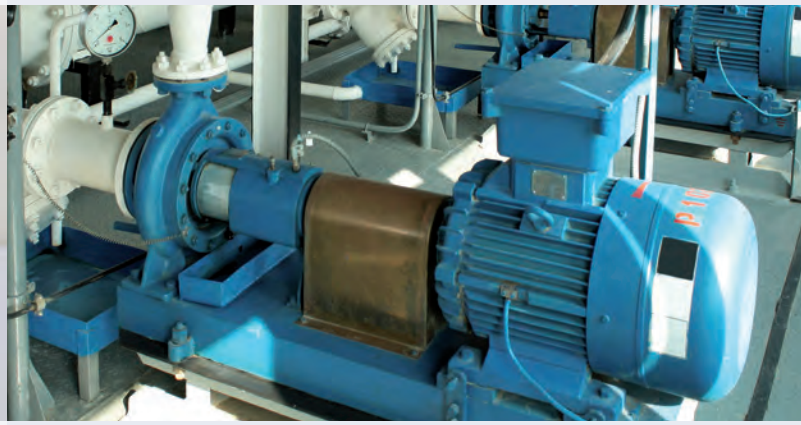
The testing of heating units and systems takes place according to a range of standards. Automation of testing procedures and test results are required but it involves lots of effort and is prone to error. However, the complex series of formulae required for automation are simple to generate using ProfiSignal. Measurement data provides the basis for a product's technical specifications so the technology used needs to be capable of high-level precision. ProfiMessage and Expert Key devices are ideal for delivering the required levels of precision. A special feature within ProfiSignal is its dynamic reporting function. Reports can be opened using the ProfiSignal Viewer, printed and sent as PDF file.

Application features

- Complete systems including hardware and adaptable test stand software
- Simple to connect oil-scale equipment and gas meters
- Fast and flexible connection technology
- Automated evaluation and reporting functions complying to standard requirements
- Easy to maintain and extendible oil and gas analysis tables

Pump testing

Pumps are required in a diverse applications ranging from micro-dosage pumps in chemistry labs and standard pumps for gardens through to large-scale industrial or vacuum pumps. Each application has differing testing requirements. Users from the pump sector enjoy the flexibility and universal inputs of the Message and Expert key devices. Adjustable sampling rates of up to 100 kHz enable users to perform high-resolution inspections and testing. The hardware's dependability and the continuous, long-term archiving of data via the ProfiSignal software makes them ideal for service-life testing, environmental simulation and endurance testing.



Application features

- Universal inputs suitable for any type of sensor (e.g. mA, mV, RTD, thermocouples)
- Rotation speed acquisition, vibration measurement, flows and pressures
- High speed acquisition of up to 100 kSamples/s
- Control functions via analog, digital and PWM outputs
- Monitoring of limit values and alarms in the event of faults or failures

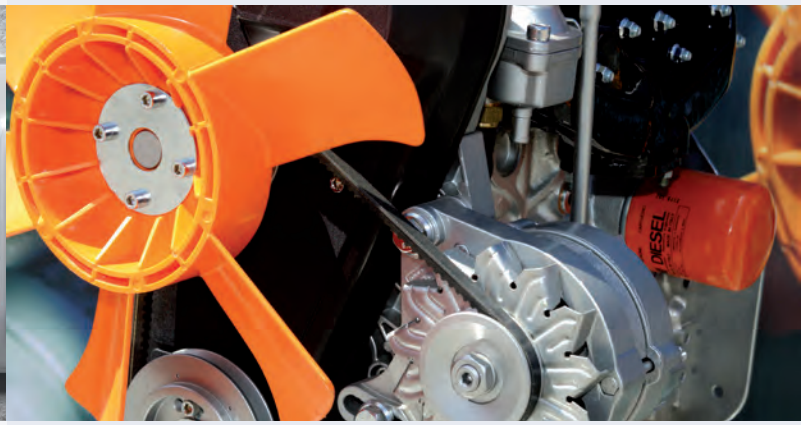
Test, trial and automation

Switch testing

Switches ranging from micro to power switches for medium-voltage networks undergo testing according to different types of norms and standards. Tests are performed according to switching points, bounces and switch opening/closing delays. The Expert Key and Message devices with their high-speed analog and digital inputs provide the necessary hardware. Switch data is precision recorded and stored along with time-stamps. Delay times for opening/closing/switching are accurately determined and can be computed and portrayed using software channels during the actual testing. Logic diagrams within the ProfiSignal software portray test samples clearly as different tracks. Contact bounce and other errors are quick to identify and undergo recording and numbering.

Component testing

The testing of individual components has become essential due to product liability legislation. Components are expected to be reliable and to have long service lives, and costly returns and recalls need to be avoided. Expert Key and Message hardware devices along with ProfiSignal software are therefore being used in a range of sectors for component testing. Customers benefit from the high levels of flexibility and reliability that Delphin products offer. For special testing procedures, Delphin offers inexpensive systems that can be tailored to specific testing requirements.



Application features

- Complete solutions including hardware, software and special applications software
- Individual frontends, connection technologies and evaluations are available at affordable prices
- Easy maintenance, extendibility and calibration via Klicks applications
- High levels of security and reliability during testing
- Any number of test samples can undergo simultaneous and separate testing

Application features

- Universal inputs for mA-, mV-, RTD and thermocouple sensors
- Test applications can be created easily using the „configuration instead of programming" method
- Data acquisition, automation and evaluation in a single unified system
- Network-based systems with optional SQL and ODBC connectivity
- MS Office compatible function for data export to Excel or Word applications

Endurance testing

The aim of endurance testing is to subject products to long-term testing and to provide service life certification. The basis for a PC-independent system of long-term data acquisition and control are hardware devices equipped with 16 GB internal memories and independently operating control and regulating functions. Such devices function operate continuously and restart automatically in the event of a power failure thereby providing uninterrupted data recording. Faults and system failures can be reported via email or switch outputs. An integrated scheduler within the DataService system enables additional data archiving to a PC or server. Users can then use ProfiSignal from any PC to evaluate archived data.

Application features

- Measurement, automation and analysis functions in a single device
- Multiple test stands can be operated independently of each other
- Date security through automated data reading of the device memory
- Data security and automatic restart in the event of power failures
- Monitoring of test samples and email / test message notification in the event of a fault

Test stand for batteries, rechargeables and fuel cells

Testing energy storage capacities of batteries, rechargeables and fuel cells is a current issue. Test stand are being used in the research and basic development sections of a range of different sectors. Message devices are ideal for such applications due to the galvanic isolation between the channels. Any possibility of short circuits occurring between the cells can then be avoided. The devices operate independently and their monitoring functions make them ideal for the high energy densities involved in the testing of batteries and fuel cells. The hardware devices combine perfectly with the ProfiSignal Go software for measurement data evaluation, and with the ProfiSignal Klicks software for automation.

Application features

- Galvanic isolation and differential inputs for secure measurement technology
- Ideal for ProfiSignal Klicks applications, easy implementation of test procedures
- Independent data acquisition and control without the need for PC support
- Multiple test procedures can run independently from each other

Monitoring and process control

Monitoring and process control

Data acquired from processes provide important information about the way resources and energy is being used. It also identifies weak points and potential hazards for system failures, ensures and documents product quality, and is the basis for ongoing process and product optimisation.

Delphin has invested over 35 years of experience in process data acquisition into the development of its hardware and software products. The hardware's flexibility and functionality, and the software's intuitive and simple operation are the hallmarks of Delphin products. Customers from a diverse range of sectors have placed their trust in Delphin products.

Data acquisition is performed using Expert and Message hardware devices. The devices have a compact design and have proven themselves in industrial environments. They can be installed directly at the plant and machinery sites. LogMessage and ProfiMessage devices can function completely independently and acquire and archive data to their internal data memories. They also monitor data and use software channels to process the data online during acquisition.

Further applications are available online under:

www.delphin.com

Independent process monitoring

Processes must function smoothly. Downtimes for continuous processes have to be minimized to avoid the resulting extra costs involved. Process monitoring is essential for error-free products and to maintain the required standards of quality. Delphin's ProfiMessage and Expert devices are typically being used for process monitoring tasks and are ideal due to their combination of analog and digital inputs and the capability of acquiring process data also via PROFIBUS, ModBus and OPC. The devices can directly record and report limit value violations without having to rely on PC support. Limit value violations can also be portrayed in an alarm list. Data can be permanently and securely recorded to a ProfiSignal database.

Application features

- Independent acquisition and monitoring of an indefinite number of channels
- PROFIBUS, ModBus, and OPC interfaces
- Alarm database with lists of alarms and events
- Fault reporting via email, text messaging and switch outputs
- DataService databases for continuous and/or batch recording

Remote monitoring via UMTS/LTE

Remote monitoring and data transmission is an important area for applications especially in machine and plant engineering. Message or Expert Transient devices are typically used in this sector due to their ability for independent data acquisition, recording, processing and monitoring. A UMTS module enables the devices to be accessed via a secure VPN tunnel making them independent of customer networks. The devices can be remotely configured, their data accessed, or automatically transmitted using a scheduler or FTP. If an alarm or failure occurs, the devices are capable of sending emails or text messages. The ProfiSignal software is network compatible to minimize configuration effort.

Application features

- Full functionality via UMTS/LTE remote access
- Online access to all measurement data and status information
- Online alarm and fault notification via email and text messaging
- Automated offline data transmission at preset intervals via a scheduler
- Condition monitoring, fault analysis and factory data acquisition in a single system

Mobile measurement case for fault diagnostics

The increasing rate of automation in modern plant and machinery requires high-resolution and detailed fault analysis for sporadically occurring errors. Delphin's mobile measurement case has proven itself in performing such tasks. By using the independently operating Expert and Message devices, no on-site PC or laptop support is required. Signals are attached through channel feeds on the case lid and connected to the analog and digital inputs using either plug-in or terminal connectors. Faults are recorded within the device to a ring memory, or as triggered data with pre and post event history. The data can then be accessed via networks, WLAN or USB and evaluated using ProfiSignal.

Application features

- High-speed and dependable measurement technology within a robust, glass-fibre reinforced plastic case
- Quick and simple connectivity using detachable plug-in connectors
- PC-independent operation via an integrated, industrial-grade data storage capability
- Full galvanic isolation to ensure reliable and undistorted measurements
- Flexible and universal using integrated signal conditioning and sensor feeds

Monitoring and process control

Cleanroom monitoring

Continuous and manipulation-safe data acquisition and documentation is especially important in the pharmaceutical industry for production and storage requirements as well as for research and development. According to FDA Part 11, data acquisition and monitoring systems in cleanrooms must operate in compliance with GAMP/GMP guide-lines. Measurement data and limit values for parameters such as temperatures, humidity, particle count and pressures need to be acquired and monitored as well as archived in a manipulation safe format. Any user intervention relevant to the processes must also be recorded to an audit trail. Delphin's Expert and Message series combined with the ProfiSignal software offers a complete system covering data acquisition through to monitoring, reporting and user management.

Application features

- Manipulation-safe acquisition of all measurement data from cleanrooms and pharmaceutical environments
- Independent data storage within the Delphin device parallel to PC storage
- Flexible setting up of monitoring functions using email, fax, text messaging or switch outputs
- Individually adaptable process visualisation and reporting using ProfiSignal
- Scalable system for large and small systems

Environmental simulation in climate chambers

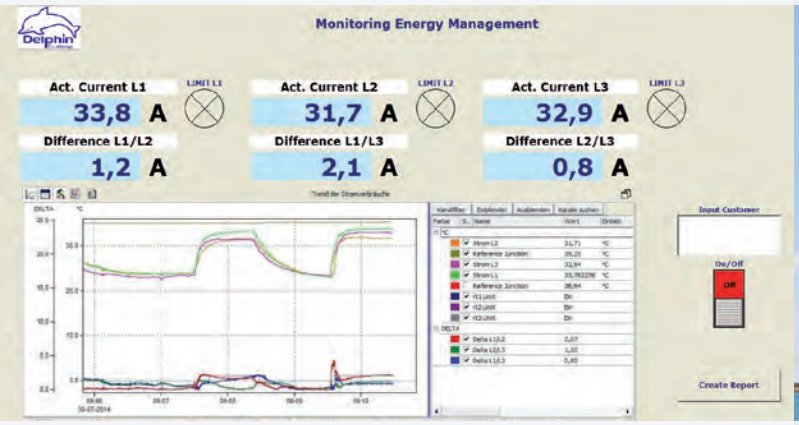
Climate chambers are the basis for long-term product testing that simulate actual operational conditions and the specific requirements of the application. Depending on the application, factors are combined such as temperature and humidity profiles, UV radiation and vibrations. The Delphin products continuously monitor and record test sample and climate data. An integrated data memory ensures the measurement data undergoes secure and continuous archiving. Faults and limit value violations can be reported via switch outputs, text messaging, fax or email. The ProfiSignal software portrays all the information in clear visualisations and diagrams and enables users to quickly access current and historical data.

Application features

- Combined measurement, automation and monitoring functions within a single system
- Data security through PC-independent data storage within the device
- Test sample monitoring with email, fax and text messaging in the event of errors or failures
- Software channels within the device enable functions to be extended
- Online analysis and historical data within a single diagram

Energy data acquisition according to EN50001

The EN50001 standard requires high energy consuming industries to implement energy saving measures and, when required, energy management systems. Energy consumption data therefore requires recording which can be performed using Message devices. Due to their LAN interfaces, these can be located throughout a company and installed directly at the plant and machinery. Consumption data can then be transmitted to a central data server or workstation PC. Universal inputs can directly measure analog units such as pressures and flows. Pulse inputs and/or serial interfaces can acquire data from electric, gas and water meters. Characteristic values for consumption data are processed and monitored directly within the devices. All the information can be analysed, portrayed and accounted for using the ProfiSignal software.



Application features

- Message devices represent a decentralised, intelligent point of collection for all energy data
- Problem-free connection of measuring meters for energy, quantities, gas, water and electricity, as well as measurement converter attachment
- Serial interfaces using ModBus RTU and ASCII protocols, and PROFIBUS DP
- High sampling rates enable simultaneous fault analysis and process data acquisition
- Complete system including the ProfiSignal software for archiving, visualisation, analysis and protocols

Crane monitoring

Cranes are complex systems made up of many different component types. They need to be continuously available, have low operating costs and high productivity and therefore justify the use of a monitoring system that uses LogMessage or ProfiMessage devices. These ensure continuous monitoring for wear and tear as well as detailed analysis in the event of a fault. Digital and analog signals can be acquired and recorded independently within the Message device. A partitionable data memory enables differentiated storage of fault data including pre and post histories as well as long-term data for condition monitoring. The crane data can be accessed via UMTS, WLAN or a USB stick and evaluated using ProfiSignal.

Application features

- Synchronous acquisition of high-speed analog and digital signals
- Condition monitoring and fault diagnostics within a single device
- No requirement for an on-site PC and easy data read-outs using a USB stick
- Data transmission options via WLAN, UMTS or network routers
- Fast and easy data evaluation using logic analyses and trends

Vibration measurement

Vibration measurement

Delphin's vibration measurement is intended for users tasked with vibration monitoring, analysis and fault diagnostics. The technology provides many benefits from its simple usability, return on investment and options to integrate vibration monitoring into process monitoring systems.

The major functions are performed using the Expert Vibro devices thereby avoiding the reliance on error-prone PCs and data networks. Delphin's Expert Vibro combines complex functions and requirements with flexibility and user friendliness through universal vibration inputs and 24 bit high resolution and synchronous sampling rates of up to 50 kHz per channel.

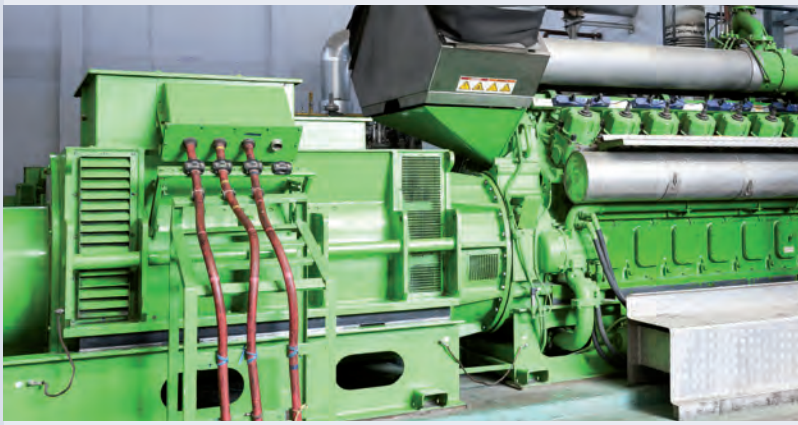
ProfiSignal's Vibro option enables the online/offline portrayal of spectra, cascade, time-signal and orbit diagrams. Vibration signals are directly processed into meaningful characteristic values and FFTs. Alarm functions monitor characteristic values and transmit alarms when required in the event of faults.

Further applications are available online under:

www.delphin.com

Machine vibration measurement

Unintended and high-level vibrations in machinery and test stand applications result in uneconomical operation and potential damage. Using Expert Vibro devices, different types of vibration sensor undergo unfiltered processing within frequency spectra ranging from 0 to 20.000 Hz. Excitation frequencies can then be determined to enable process optimisation. The Expert Vibro devices are capable of continuously acquiring and monitoring the levels of damaging frequencies and can operate fully independently due to their integrated internal data loggers. Visualisation takes place using the ProfiSignal software with data being portrayed in cascade, FFT or trend diagrams..

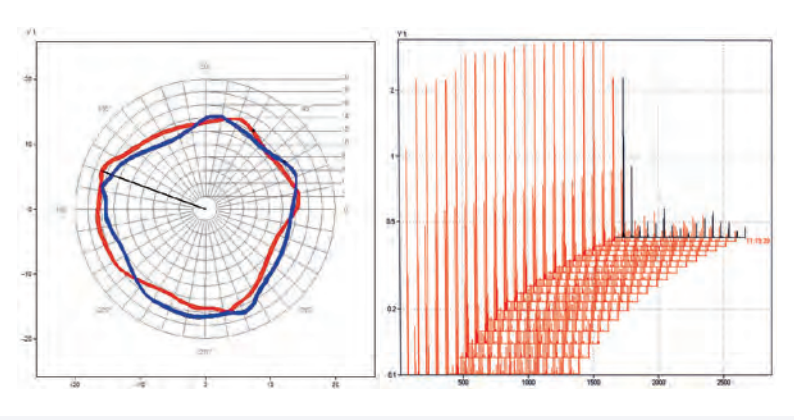


Application features

- Connectivity for any type of vibration sensor (mV, mA, IEPE)
- Process and vibration measurement within a single device
- FFT analysis within the device itself along with frequency-band analysis
- Monitoring of vibration levels and intelligent data logger within the device
- Visualisation and analysis using time signal, trend, FFT cascade and orbit diagrams

Vibration analysis (FFT/characteristic values)

Vibrations are generally caused by faults and therefore need to be avoided. Machinery can suffer damage through vibrations with a negative influence on product quality. Vibrations can be perceived as noise, wobbling, shaking or whistling. The source of the vibrations requires identifying and rectifying. The Expert Vibro device is ideal for such tasks. Its universal inputs enable the connection of any type of sensor signal. Signal analysis takes place online using high-resolution spectra or characteristic-value computations. Characteristic values possess all the relevant information about the energy content of vibrations. Whenever vibrations occur, the independently operating Expert Vibro records all relevant data.



Application features

- Acquisition of vibrations using any type of sensor
- Simultaneous acquisition of binary or analog process signals
- Vibration analysis using frequency analysis
- Calculation of characteristic values such as vibration velocity
- Long-term data acquisition for detecting sporadic vibration events

Shaft vibration measurement

Up to 16 shaft vibrations can be synchronously acquired, analysed and monitored. Both static shaft positioning and dynamic shaft vibrations can be determined from the bearing casings. Radial shaft positioning and rotation speeds are also acquired via a KeyPhasor™ on the shaft. Phase information can be calculated from the shaft position. From the measured time signal, the Expert Vibro device can directly calculate spectra and characteristic values such as s_{max} or peak-peak. The data can then be independently recorded or transmitted via Ethernet or PROFIBUS-DP to a central system or PC. Using ProfiSignal's Vibro software option, measurement data can be portrayed and evaluated in orbit, polar, bode or FFT diagrams.

Application features

- Evaluation of peak to peak spp and maximum deflection s_{max}
- Monitoring of static shaft positioning and dynamic shaft vibrations
- Frequency/amplitude spectra calculation online within the Expert Vibro device
- A single device with up to four different triggers for rotation speeds
- Visualisation and analysis using time signal, trend, spectra, cascade and orbit diagrams

Vibration measurement

Pressure vibration monitoring

In addition to conventional vibration measurements, monitoring can also be performed on dynamic pressure vibrations in the combustion chambers of gas turbines. Temperature resistant pressure sensors are installed within the chambers to measure dynamic pressure vibrations using Expert Vibro devices. Dynamic pressure vibrations contain information relevant to machine safety and analysis. Narrow-band characteristic values are determined and monitored from FFT analyses of the pressure signals. The Expert Vibro device directly determines and monitors TRMS values for each frequency band. In the event of an alarm, the central system is notified via PROFIBUS, or a digital output can be triggered. Spectra are portrayed in a spectrogram via ProfiSignal.

Acquisition of vibration and process data

Process measurement technology usually involves the acquisition of mA or mV sensor signals with limited temporal resolution. The demands are higher when acquiring transient events or vibrations. Data acquisition rates are much higher and a more sophisticated evaluation is required. Systems from different suppliers are therefore necessary with subsequent problems of compatibility. However, with its ProfiMessage series, Delphin offers systems ideal for measuring standard type signals. In combination with Expert Vibro devices, all data can be acquired, computed and monitored within a single system. The measurement data are all based on the same time scale and so are directly comparable with each other.

Application features

- Compact and inexpensive monitoring solutions for combustion chamber vibrations
- Independent device with a 16 GB data logger memory
- Universal inputs suitable for pressure sensors
- Calculation of narrow-band characteristic values
- Calculation of TRMS characteristic values

Application features

- Acquisition of mV, mA and IEPE signals within a single system
- No interface problems due to single system design
- Affordable integration of vibration measurements into process measurement systems
- ProfiSignal software suited to evaluating and monitoring all measurement data
- Secure, relational data storage

Vibration test stands

Vibrations tests are carried out in the development of many products. Test samples are mounted on shakers and shaken and rattled according to requirements. Vibration measurements are taken at the shaker itself and at the test sample. Vibrations patterns at the test sample are referenced back to the shaker and frequencies, phase shifts and amplitudes undergo measurement. Expert Vibro is especially suited to such tasks. 8 or 16 synchronous inputs enable processing of all the required measurements. The device is also able to simultaneously control the shaker and provide set-point values. Digital outputs monitor characteristic values and can be used for switching procedures in the event of an alarm.

Application features

- Synchronous acquisition of vibrations at test stands
- Management of set-point data at test stands via bus or analog outputs
- Monitoring of measurement data with automatic shutdown
- Simultaneous acquisition of vibrations, voltages, currents and temperatures

Transmission testing

Transmission test stands of varying complexity and size are equipped with Delphin products for measurement and automation technology. Measurement procedures can then be implemented for specific requirements during product development and manufacture. A special feature is the single system's ability to acquire vibration data at casings, bearings and shafts as well as to process data such as oil pressures, volume flows, bearing temperatures, torques and rotation speeds. Synchronous acquisition of all data is therefore guaranteed. A fully integrated system requiring no expensive interfaces is possible. The system is equipped with options for automation, analysis and evaluation which can be performed directly at the process using the Expert Vibro and ProfiMessage devices, and at a PC using the ProfiSignal software.

Application features

- Process and vibration measurement data within a single system
- Monitoring of limit values and alarms without the need for PC support
- Individualised systems based on standard components
- Just one Expert Vibro can acquire up to 8 shafts with differing rotation speeds

Delphin Technology

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