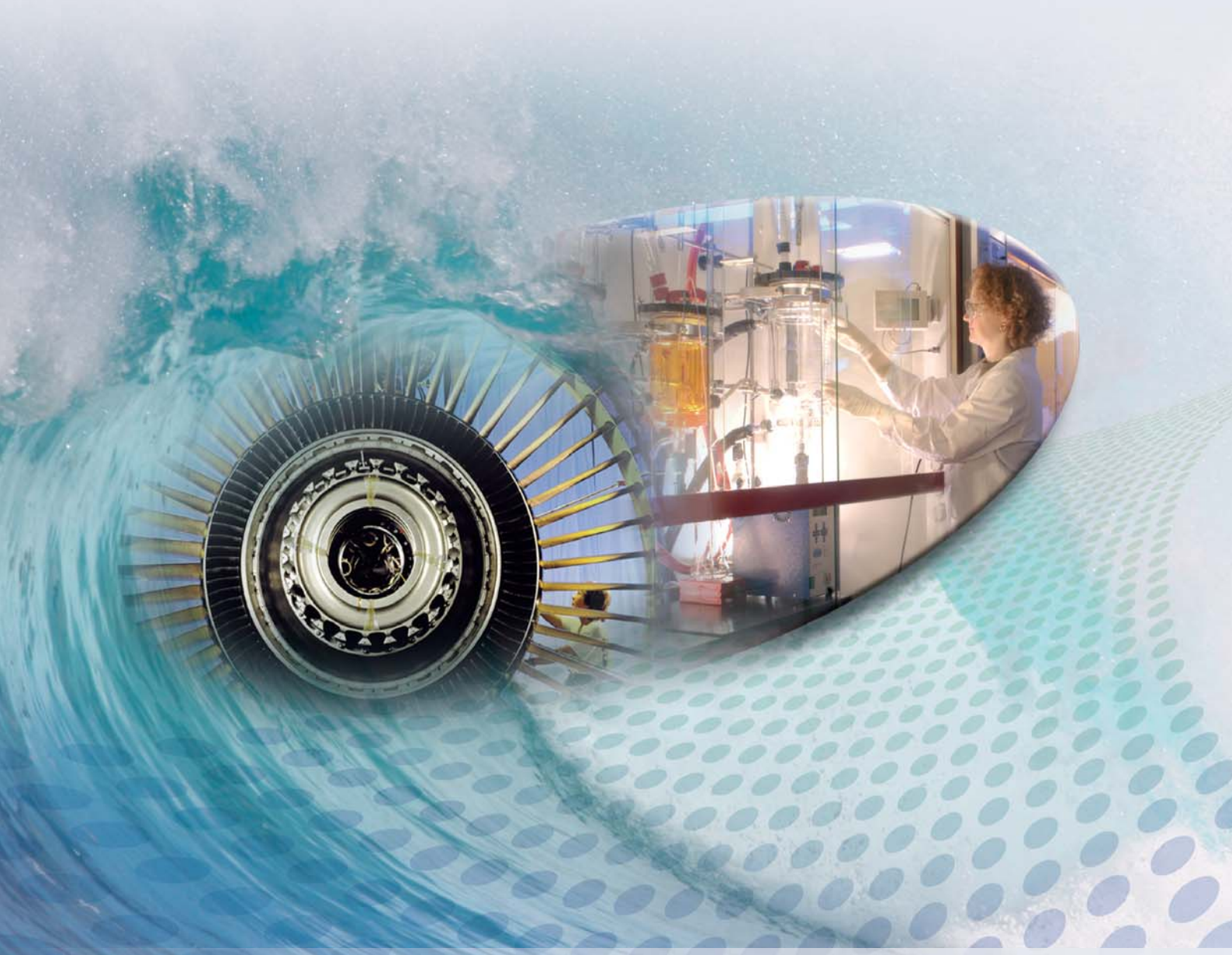
Message

ProfiSignal

APPLICATIONS

Tried and tested: EVEN MORE solutions



Delphin Technology

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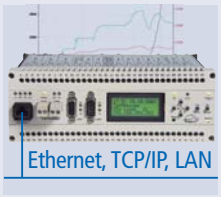

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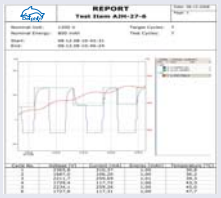

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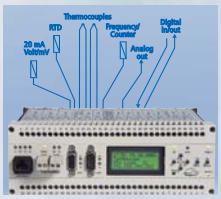
APPLICATIONS



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DELPHIN – 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 measurement 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 the 30 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 9001:2000. 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.

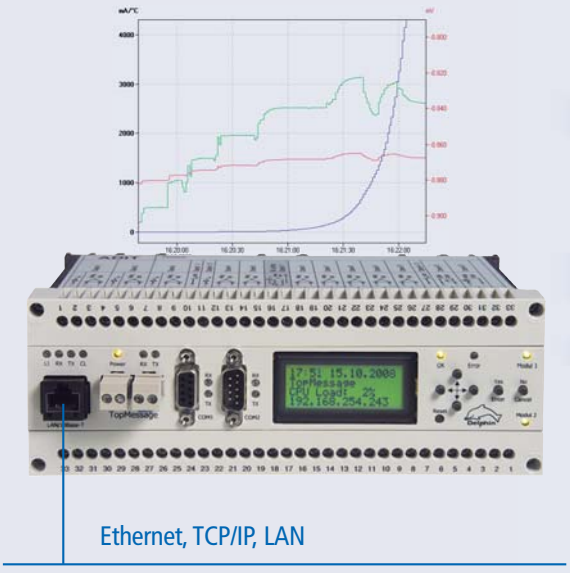
Our service packages guarantee customer support from the outset, either by hotline or on-site support when necessary.

Data acquisition and analysis

Practical and made for industry

Data acquisition is used in virtually all aspects of production, R&D and quality assurance. Data acquisition systems require easy operation, meaningful visualization and first-class analysis capabilities as well as continuous data recording, accuracy and integrated signal conditioning. Applications need to be not only local and stationary but also mobile and worldwide.

These demands are reliably met by high quality Message devices used in combination with the powerful ProfiSignal software. High speed data acquisition takes place centrally or decentrally and can be stored on a server or desktop PC. There is a continuous flow between online and offline data. Measurement data, from millisecond values through to annual averages, can be accessed from any location and visualized on any desktop PC. Test stands and experiments can also be monitored – process and vibration measurement data analyzed. Various diagram and chart types (e.g. Yt, Yx) enable processes to be optimally analyzed both online and offline.



Practical insights

Energy and process data acquisition via Ethernet in an industrial printing house.

In a large printing house, 30 Message devices acquire and process 1,200 different parameters such as pressures, temperatures, flows and energy data. This data provides a basis for accurate and automated monthly statements and process analyses. This is an impressive achievement – there are over 3,800 channels transmitting information across the network. Virtual channel processing, such as averaging, counters and limit value monitoring, takes place within the Message device itself. Process measurement data undergoes high resolution analysis at regular intervals and in the event of malfunctions.

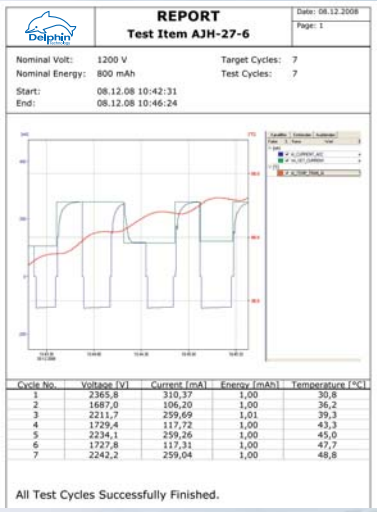
User benefits

- Cost and time savings due to intranet/internet utilization
- Configuration, visualization, analysis and operation from any PC
- Any number of measurement channels
- Galvanic isolation of inputs and outputs
- No requirement for a dedicated measurement data server
- Utilization of standard protocols and services
- Integrated password protection
- Data security and realtime capability
- Software channels for monitoring, control and alarm functions
- Compact, industrial-grade construction
- Definable events for triggering emails, text message, or fax

Quality assurance

Top standards of quality guaranteed

Quality control and quality assurance are often decisive in achieving economic success in today's world. Products, machines and individual processing procedures require continuous monitoring and documentation as part of the ISO 9001 system of certification or other systems of certification.



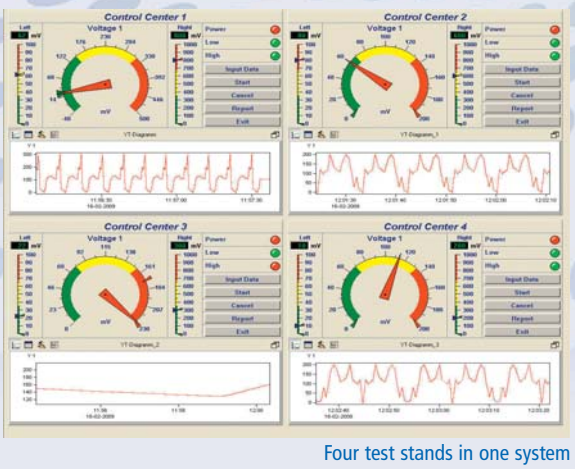
REPORT
Test Item AJH-27-6

Nominal Volt: 1200 V
Nominal Energy: 800 mAh
Target Cycles: 7
Test Cycles: 7
Start: 08.12.08 10:42:31
End: 08.12.08 10:46:24

Cycle No.	Voltage [V]	Current [mA]	Energy [mAh]	Temperature [°C]
1	2365,8	310,37	1,00	30,8
2	1687,0	106,20	1,00	36,2
3	2211,7	259,69	1,01	39,3
4	1729,4	117,72	1,00	43,3
5	2234,1	259,26	1,00	45,0
6	1727,8	117,31	1,00	47,7
7	2242,2	259,04	1,00	48,8

All Test Cycles Successfully Finished.

ProfiSignal and Message devices enable product, plant and process data to be reliably acquired, archived and visualized. This measurement technology also ensures precise and detailed monitoring of production processes. User defined, automated protocols and reports can be generated at anytime with measurement data being recorded in SQL databases.



Four test stands in one system

User benefits

- Quality assurance, sequence of event analysis, machinery diagnosis, vibration analysis and process monitoring all in one system
- Increased product quality and processing stability
- Increased production efficiency due to early detection of machine faults
- Alarms in the event of malfunctioning
- Automated generation of test reports according to quality assurance standards
- Easy integration into company data network
- Easy operation from any desktop PC
- Scalable, modular and extendable system
- Exact measurements, from millisecond values through to annual averages
- Simultaneous evaluation and display of offline and online data
- Data transfer to SQL databases for internal quality assurance system

Practical insights

Quality assurance in magnet production

The manufacture of permanent magnets requires the following processes: Powder preparation, pressing, sintering and finishing. Any reworking using diamond-tipped tools is very extensive and costly. By using ProfiSignal, highest quality standards were maintained and improvements in manufacturing tolerances were achieved by recording and monitoring process parameters such as weights, component sizes and pressing forces at the initial stages of processing. Previous wastage of 25% could be significantly reduced by utilizing ProfiSignal.

Test stand automation

Improving efficiency

The testing requirements on technical products are constantly growing. Lead times to product launches are getting shorter and product liability legislation is becoming stricter. This all contributes to the need for improved efficiency in product testing. The solution is effective test stand automation.

ProfiSignal and Message devices are important time and cost saving tools for the realization of testing and automation requirements in any field of activity. In contrast to traditional automation systems, ProfiSignal can be used to meet any requirement. Recipe selection, input of test parameters, automated test and processing procedures, analysis and reporting features – ProfiSignal unifies these separate functions into one system.

The hardware and software products have complete compatibility and users are able to easily generate their own applications. There is no requirement for external software developers or IT specialists, system uptime is increased and the maintenance and service of testing systems is significantly easier.

User benefits

- Complete solutions with just one software and hardware package
- Cost and time savings by using ready-made modules
- Users able to generate own automation procedures
- No learning of a programming language
- Script language Klicks "Programming by Selection" and avoids input errors
- More than one test stand within one system (multi-application)
- A combination of different procedures simplifies testing
- Importing of testing parameters and exporting of results via ODBC/SQL
- Able to connect to external hardware
- Formula editor for online computations and automated evaluation
- Comprehensive reporting functions for ProfiSignal Viewer
- Integrated DLL interface
- Easy maintenance/ service of testing applications

Connecting hardware to test stands

Message devices provide the hardware interface to the test stand. These devices are used to connect sensors, e.g. temperature, pressure measurement transducers, and flow meters. They also have the necessary processing and control functions due to their analog and digital outputs. The DataService Configurator enables channels to be configured and named directly according to the process. This means the system can be adapted simply and logically to any test stand setup. Monitoring and checking procedures are performed directly within the Message device enabling them to function independently from PCs and networks.

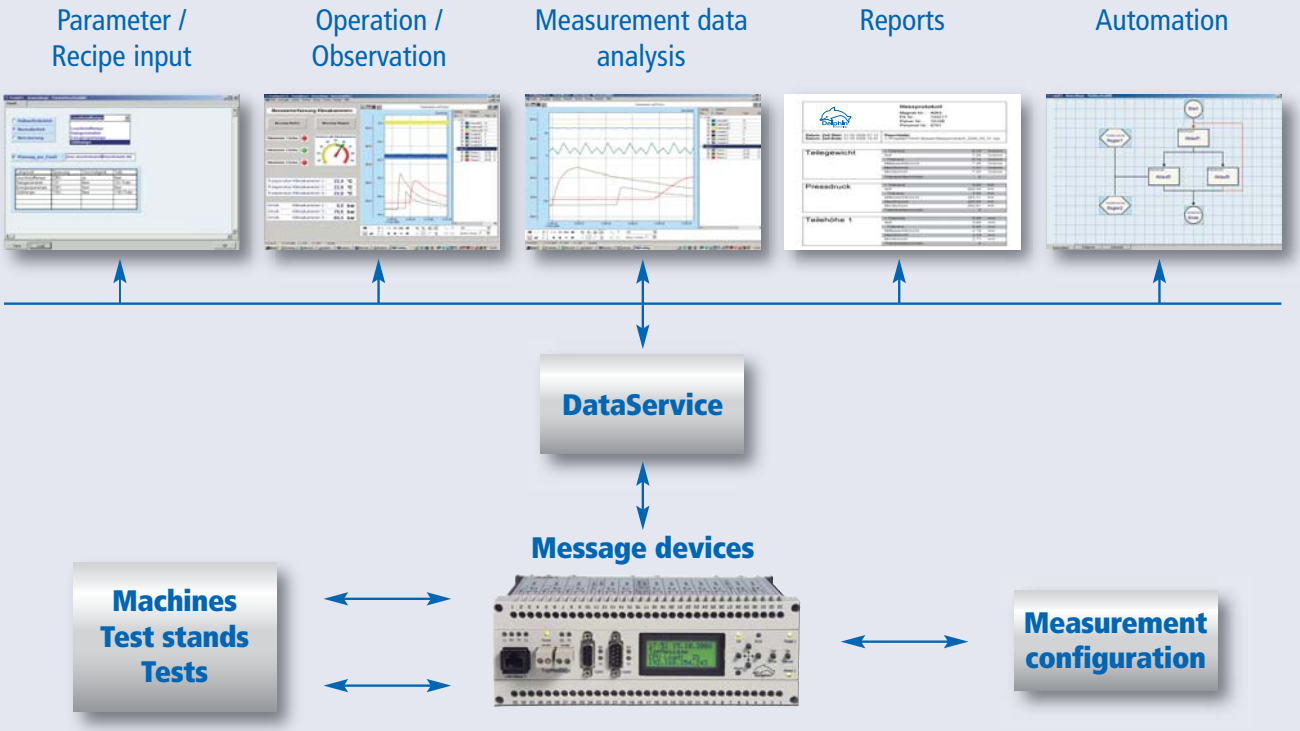
Software for hands-on people

Test stand automation is usually understood as automation of testing procedures as well as processing of relevant measurement data. To achieve this, ProfiSignal is equipped with ready-made modules:

ProfiSignal modules

- **Parameter / Recipe input:**
  Input of header information, recipes and other data relevant to the product/process being tested
- **Operation / Observation:**
  Process viewing for operation and observation
- **Measurement data analysis:**
  Evaluation of acquired measurement data
- **Reports / Protocols:**
  Documentation and dissemination of test results
- **Automation:**
  Generation of automation tasks using structure charts and the Klicks script language

ProfiSignal Klicks



Practical insights

Test stand automation in a heating plant

Resource shortages, rising fuel costs and the increasing demands on emissions mean that there are a whole range of testing requirements on heating plants, particularly concerning burners, boilers, heat exchangers and hot water tanks. A leading manufacturer of heating systems therefore had their test stands equipped entirely with ProfiSignal and Message devices.

As well as automating testing procedures, ProfiSignal can also be used for one-off, special tests. The ease of generating applications means ProfiSignal can easily be adapted to any requirement. This is of major benefit to the user and simplifies the operation, maintenance and development of testing procedures.

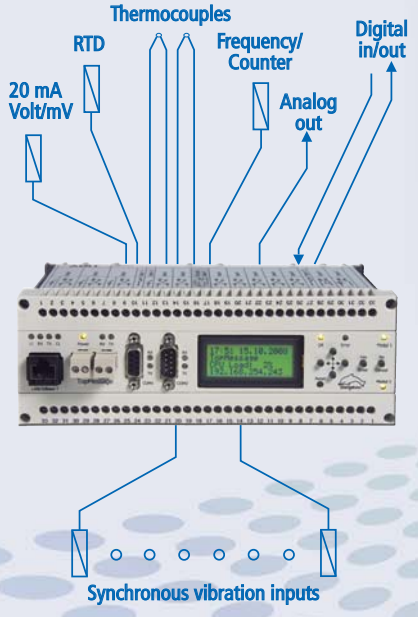
Vibration measurement

Reducing costs

Vibrations are often indicators of problems within plant and machinery. Such problems could eventually lead to a complete shutdown of a process. Vibration monitoring and diagnosis enables early detection of imminent problems and helps in predicting damage before it actually occurs. Message devices and ProfiSignal software enable shutdown times and maintenance costs to be significantly reduced. The hardware and software also contain functions for specific analyses and for diagnosing damage. Such functions far exceed the capabilities of traditional monitoring systems.

Intelligent preprocessing with Message devices

Message devices can acquire vibration signals such as speed, acceleration and displacement as well as typical measurement values such as pressure, temperature, flow and rotation. Vibration data is recorded and compressed directly within the Message devices as meaningful characteristic values and FFTs. Alarm functions monitor characteristic values and in the event of a malfunction can transmit alarms as text messages, faxes, emails, or can trigger digital outputs.

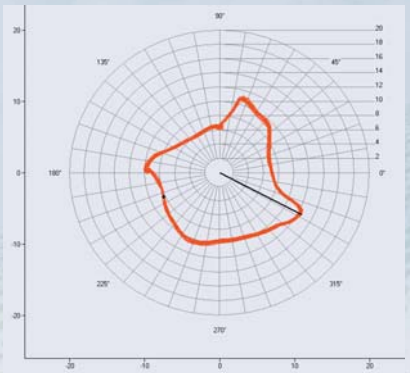


User benefits

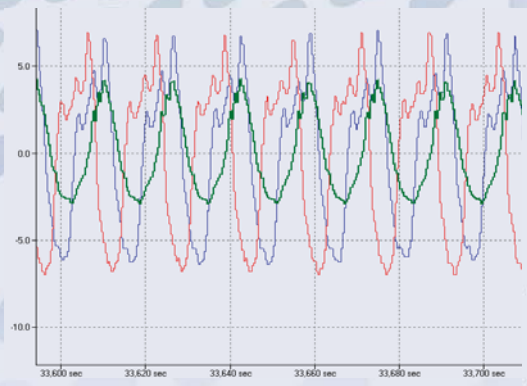
- Synchronous acquisition of vibration signals and process measurement values
- DSP supported signal processing, setting characteristic values (peak-peak, gap), Order analysis
- Monitoring / alarm (text message, email, fax), reporting to main control systems
- Analysis of online / offline measurement data at a desktop PC
- Evaluation using orbit-, FFT-, cascade- and Yt-diagrams
- Calculation of envelope spectrum and vibration speed
- High powered vibration diagnosis system with stand-alone, long-term data recording capability due to integrated data memory
- Easy adaptation to existing monitoring systems
- Universal connection to acceleration, speed, and distance sensors
- Compact design and compact channel feeds enabling easy installation within cabinets

User friendly analysis using ProfiSignal

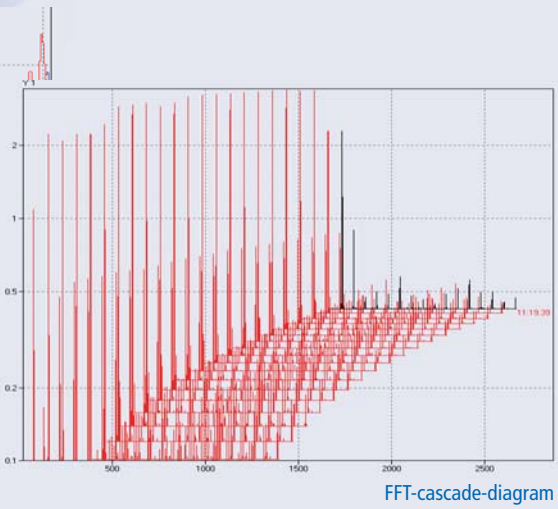
ProfiSignal provides well designed diagram and analysis functions as well as process visualization. Optional modules are available for alarm functions and vibration diagnosis. A report generator provides individual documentation of the vibration data, which can be portrayed in FFT- or cascade-diagrams. Orbit- and Yt-diagrams enable the portrayal of kinetic shaft orbits.



Orbit-diagram



Time-signal-diagram



FFT-cascade-diagram

Overview of the vibration module

Input / outputs per module

- 8 parallel analog inputs
- Synchronous sampling, flexible triggering
- 160 KHz sampling rate, anti-alias-filter
- 4 digital inputs, potential isolation, 2 inputs with frequency counters, 3.5 V high-level
- 4 digital outputs, potential isolation, switching voltage max. 50 V, 2.5 A

FFT / frequency spectrum

- Flexible parametering of frequency range, line numbers and frequency resolution
- FFT algorithms for 1024, 2048, or 4096 points, or with 400, 800, or 1600 lines
- Standard 'Hanning' and 'Flat Top' window functions
- Averaging of frequency spectrums

Characteristic values

- Arithmetical average, TRMS
- Peak-Peak, min / max values
- Amplitude / frequency of the main frequency
- Amplitude / phasing of synchronous shaft frequency and dual-shaft synchronous frequency
- Selective frequency band evaluation

Vibration measurement

Shaft vibration

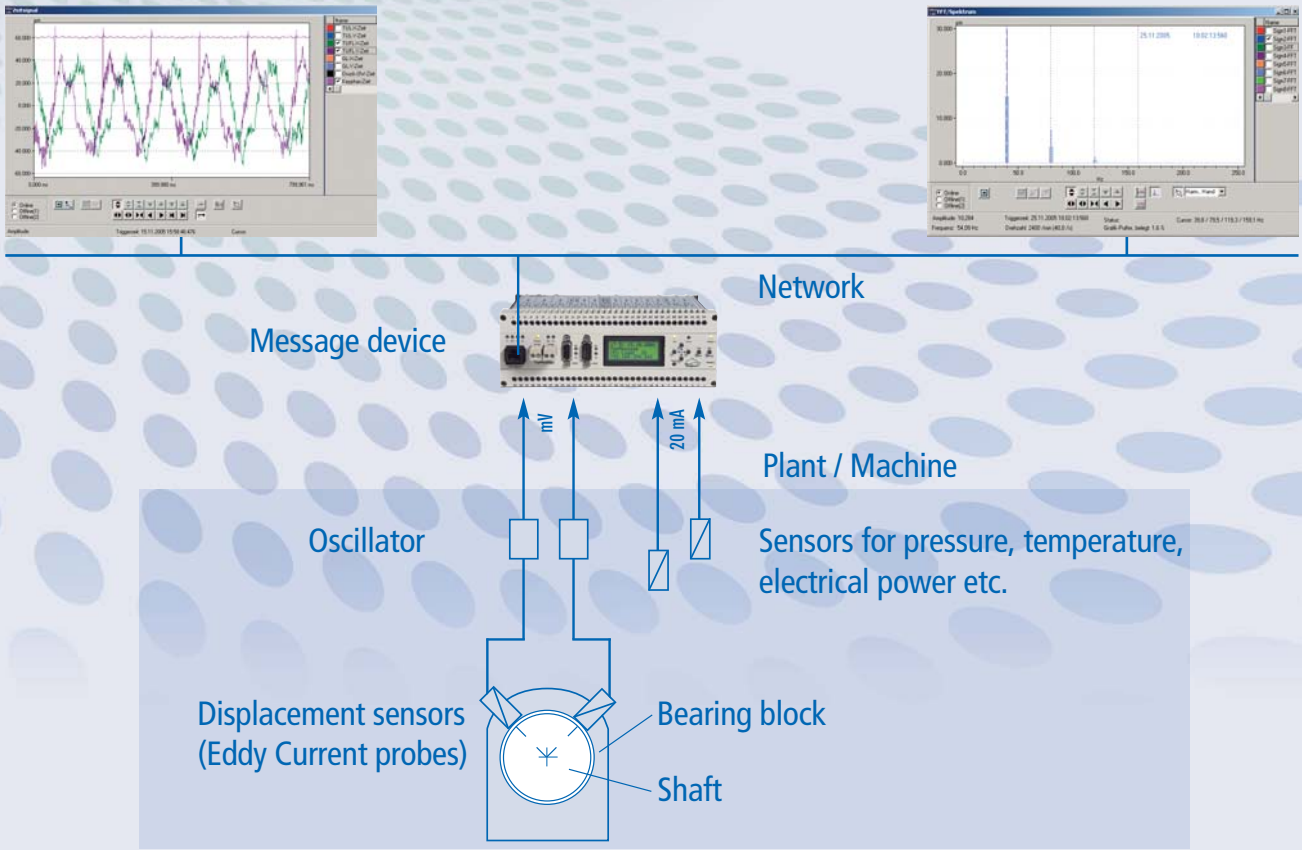
Measurement, recording and monitoring of the static and dynamic movement of journal bearinged, rotating shafts (relating fixed bearing housing): Turbines, compressors, super-chargers, large ventilators etc.

Practical insights

- Shaft vibration diagnosis in gas turbines, compressors and motors
- Monitoring shaft vibrations in steam turbines and hydroelectric turbines

Range of functions

- Evaluation of peak to peak S_{pp} and maximum deflection S_{max} according to VDI2059
- Sensor wire-breakage monitoring
- Monitoring of static shaft position
- Monitoring of dynamic shaft vibration
- FFT analysis within device / frequency band monitoring
- Speed measurement and triggering via key phasor from rotating shaft
- Process and vibration measurement within one device
- Intelligent recording within device
- Visualization and analysis in ProfiSignal using time domain signal-, trend-, FFT-spectrum-, FFT-cascade-, and orbit-diagrams



Bearing vibration

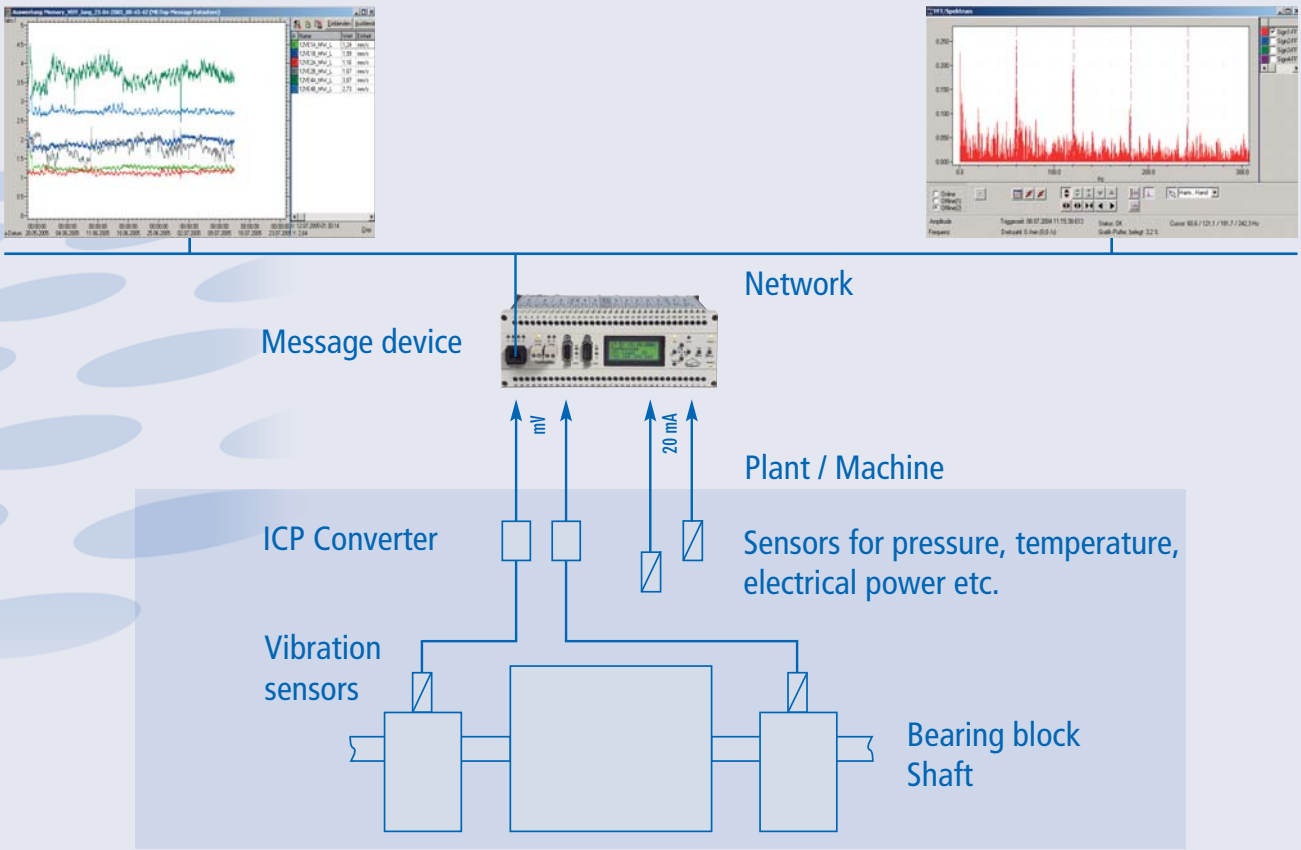
Measurement, recording and monitoring of absolute bearing vibration on machines with roller bearinged, rotating components. Electric motors, pumps etc.

Practical insights

- Bearing vibration analysis in electric motors and roller plant
- Roller bearing diagnosis in print machinery (envelope spectrum) and centrifuge
- Monitoring/analysis of machinery vibrations in roller plant

Range of functions

- Evaluation of vibration strength V_{eff} according to DIN ISO 10816
- FFT analysis within device / frequency band monitoring
- Evaluation of bearing damage diagnosis using envelope curve frequency spectrum
- Monitoring of vibration levels
- Process and vibration measurement within one device
- Progressive recording within device
- Visualization and analysis in ProfiSignal using time domain signal-, trend-, FFT-spectrum-, FFT-cascade-, orbit- and polar-diagrams
- Direct calculation of envelope spectrum



Monitoring and alarm functions

Independent and secure monitoring

A major requirement in maintaining production targets is the continuous availability of plant and machinery. A modern data acquisition system must therefore also provide monitoring and alarm functions. Continuous monitoring is also necessary in areas such as building management systems, in laboratories and in plant and mechanical engineering. ProfiSignal and Message devices provide comprehensive, modular, and scalable systems that meet these requirements and at the highest levels of precision and reliability.

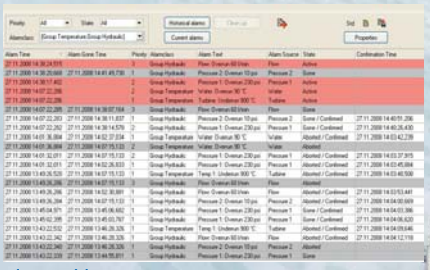
Practical insights

Process monitoring of a production plant for fertilizer products

Manufacturing primary products such as urea and ammonia for plant nutrients requires the monitoring of a range of process and machine data. Message devices and ProfiSignal acquire and monitor data here from well over 1,000 hardware and software channels. The system was extended for continuous vibration monitoring and can record and monitor turbine and compressor data from synthetic gas production. Machine uptime and the early detection of faults has been significantly improved through the use of Delphin products.

User benefits

- Data acquisition, process / vibration monitoring and alarm functions in one system
- Increased product quality and processing stability
- Increased plant and machinery uptime through the early detection of irregularities in process and machine parameters
- Alarm / report functions via email, fax, and text messages in the event of malfunctions
- Automatic generation of current / historical alarm overviews
- Utilization of existing company data networks
- Multi-user and multi-workstation capability
- Simple user management for hardware and software security
- Scalable, modular and extendable system
- Connects to control systems via a range of interfaces, e.g. OPC-Server/Client, ProfiBus, ModBus TCP/RTU
- Data transfer to SQL databases



Alarm table

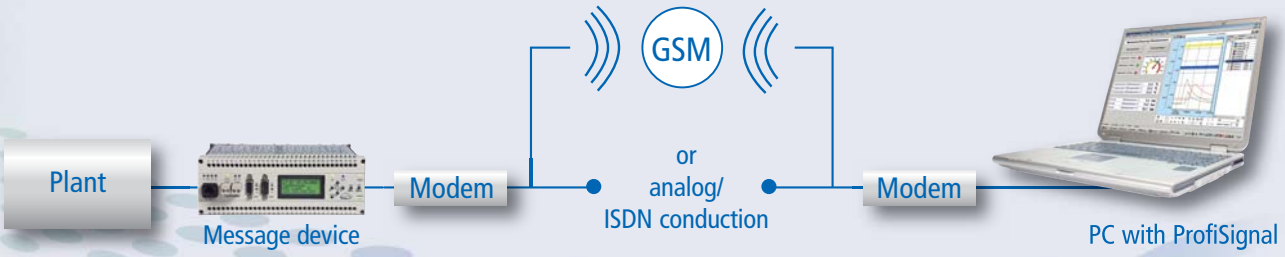
Remote Monitoring

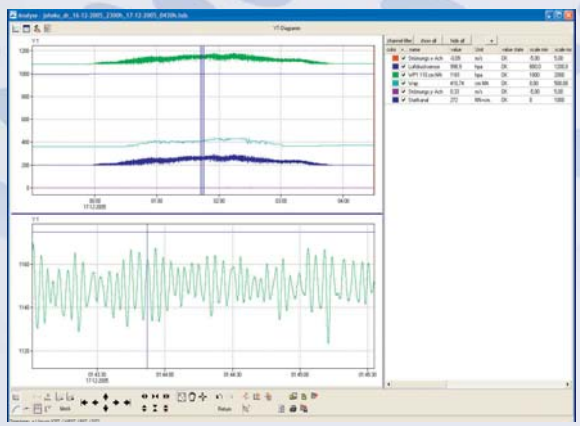
Monitoring and controlling remote processes

The remote monitoring of plant, machinery or field trials is gaining in importance. To achieve fast response times in the event of a malfunction requires continuous access to machine and process data. Measurement data is initially recorded locally within a data logger and then transmitted to a central PC. One of the benefits of this measurement system is that the user is notified by email, text message or fax when limit values have been exceeded. A further enhancement is the ProfiSignal alarm management module. Remote processes can be observed and operated. Data read from the Message devices can also be analyzed offline using ProfiSignal. Plant and machinery uptime is increased while maintenance costs are decreased.

User benefits

- Remote access to process data for monitoring and control
- Easy installation / configuration of the components
- Industrial grade construction
- High measurement precision and fast signal sampling
- Integrated logic and monitoring functions
- Alarm via email, text message or fax
- Online and offline process analysis
- Cost savings through remote access





Measuring wave surges at a dike

Practical insights

Remote monitoring for coastal protection

To determine the ideal profile of coastal dikes, data from storm surges needs to be acquired and transmitted. Measurement of wave surges takes place using sensors that have been installed at set distances along the dike. Message devices, with differential inputs and galvanic isolation, ensure continuous field operation. The decentralized devices are equipped with GSM modems. This avoids costly journeys to field locations, e.g. to the offshore island of Pellworm.

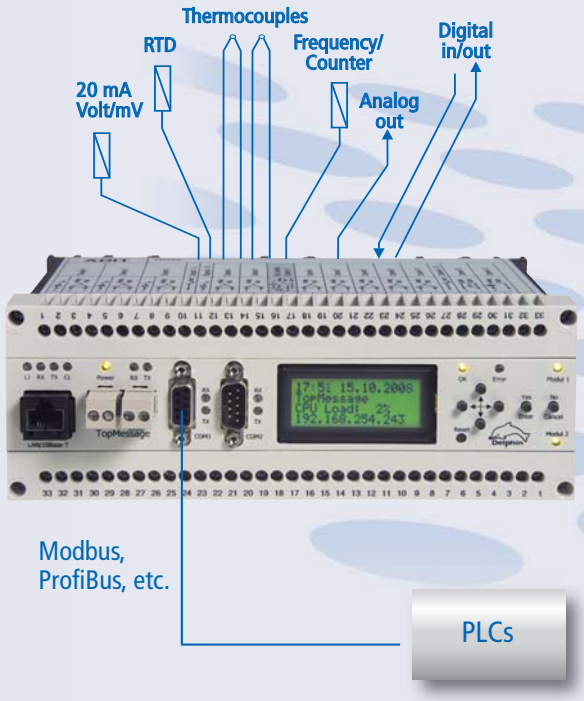
Data logger

Data logger for sensors and PLC signals

Independently functioning data loggers are being used in a diverse range of applications. Important factors include continuous data recording, integrated signal conditioning, earth loop avoidance and potential isolation.

Using the latest measurement technology, Message devices meet these requirements and are able to record data from sensors or PLCs. The 1 GB data memory can store up to 128 million measurement values, including time stamps. The memory can be read at any time using the ProfiSignal visualization and analysis software.

Message devices can record data from any analog or digital sensor as well as from PLCs. This ensures unified data recording to databases. Inputs are galvanically isolated. There are interface options such as RS232/422/485 or ProfiBus DP Slave. The Modbus RTU/TCP protocol is also supported.



Practical insights

Data loggers in cooling test chambers

A Message device independently records interior temperatures, humidity and exterior temperatures from five measurement points within a cooling test chamber. An average room temperature is calculated from the 5 temperature measurements, and then monitored. With the aid of a software channel, an alarm signal will be triggered if the temperature exceeds –8 °C. The Message device begins working as soon as the cooling test chamber has been switched on.

User benefits

- Independent, stand-alone operation requiring no PC support
- Each channel can be separately configured as mV-/V-, mA-, thermocouple or RTD input
- Galvanic isolation, earth loop safe
- Complete potential isolation, differential inputs
- Internal signal conditioning
- Easy connection to PC via Ethernet TCP/IP
- Up to 1,000 channels per device
- Scalable, modular and extendable system
- 1 GB data memory for up to 128 million measurement values including time stamps
- Memory groups for triggers
- High measurement precision with 24 bit A/D converter
- Connection of external devices /sensors, and controller via RS232/422/485 ports, ProfiBus DP, Modbus
- Wide power supply range 12-36 V AC/DC

Mobile data acquisition

Mobile data acquisition and fault analysis

Mobile measurement cases are available to commissioning engineers and service technicians to enable them to perform analyses on plant and machinery at any time and at any location. They are built according to the specific requirements of users. The cases are made from an especially robust material to enable them cope with extreme mechanical and climatic conditions.

Users appreciate mobile measurement cases for their detailed, high resolution measurement data that can be used in fault analysis. The data is processed using a ring memory that continuously records pre and post event data. Measurement data can be accessed at any time by radio, internet or intranet.

Depending on the I/O modules being used, integrated Message devices can record analog, digital or vibration measurement data. Thermocouples, mA-/mV-signals, RTD and vibration sensors can be individually attached using plugs, sockets, clamps or 4 mm safety lab plugs.

User benefits

- Independent and stand-alone logger and monitoring functions
- Protection against unauthorized access and environmental factors due to sealed operational set up
- Robust construction enables global transport and deployment
- High time-resolution measurements for detailed analysis
- Integrated signal conditioning
- Earth loop safe
- Individual plugs / clamps for perfect sensor connection
- Event-triggered memory for pre and post event measurement data
- Simultaneous acquisition of vibration and process data
- Remote connection via radio or internet / intranet

Practical insights

Mobile measurement case for servicing tasks

The mobile measurement case is being used for fault analysis in machinery belonging to a building panel manufacturer. The measurement case can acquire, record and monitor up to 20 analog signals. These can be mV, mA or signals from thermocouples or RTD sensors. The measurement case successfully helped in detecting and correcting heat deviations in heating devices. This significantly increased production quality.

Endurance testing

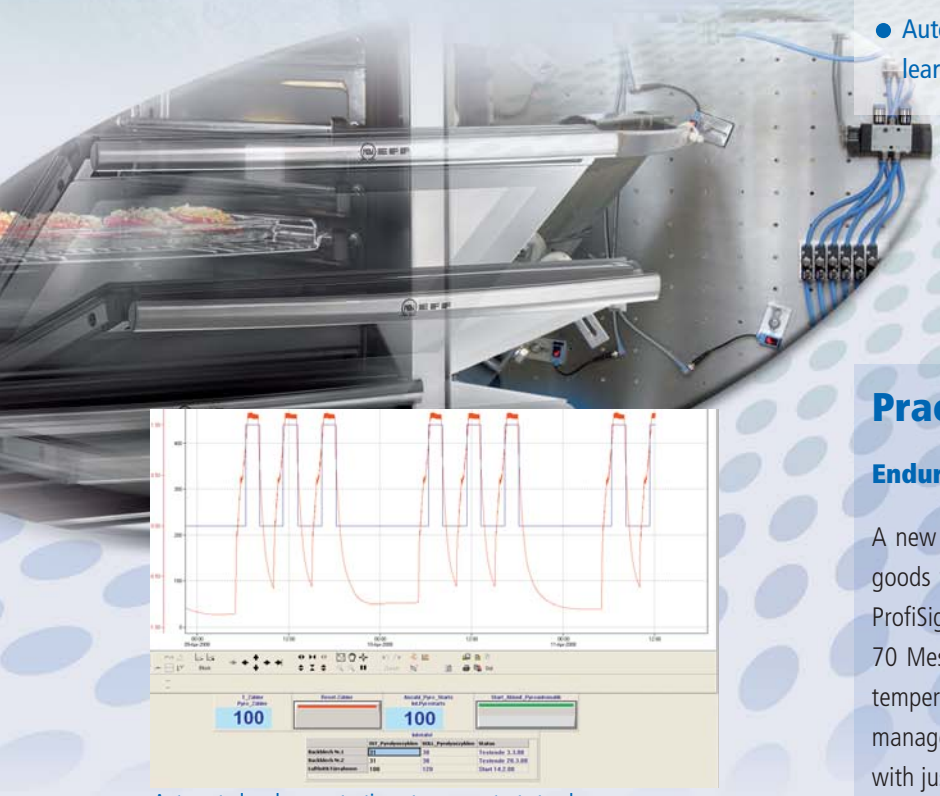
Long term dependability

First class products are distinguished by high quality and long service lifetimes. Endurance tests are therefore essential to determine reliability. Endurance testing requires around the clock data acquisition, control and processing. Thousands of hours of continuous operation are necessary.

Message devices and ProfiSignal provide systems of data archiving that meet endurance testing's high demands of flexibility, usability and reliability. The same type of analog input can be used to connect either mA-signals, mV-signals, thermocouples or RTD sensors. Analog and digital outputs are available for managing trials and experiments and for simulating test samples and normal operating conditions. Data archiving and management is performed by ProfiSignal's DataService. Data is transferred, online or at scheduled time intervals, to a PC or server and securely archived there.

User benefits

- Testing management and data acquisition within one system
- Data acquisition takes place within device. PC support is therefore not essential
- Continuous archiving of measurement data using integrated scheduler
- Multi-application capability – many different testing procedures can be run parallel and independently from one another
- Serial ports for connecting weighing machines, specialized measuring equipment etc.
- Simple and low cost networking of test stands through Ethernet TCP/IP
- Alarm function in the event of a shutdown or the exceeding of limit values
- Reliability through industrial grade quality
- Easily extendable at any time
- Test sample setup performed by user
- Automation without PLC knowledge or need to learn a programming language



Automated endurance testing at an oven test stand

Practical insights

Endurance testing of household equipment

A new laboratory for testing the reliability of household goods was equipped entirely with Message devices and ProfiSignal. Over 3,000 hardware channels, allocated to 70 Message devices, are available for the acquisition of temperatures and other measurement data as well as the management and control of test samples. This system with just three people are able to operate 56 test stands.

Environment simulation

Data acquisition under any conditions

Environment simulation involves examining the interplay between products and environment. This is associated with endurance and type testing under simulated environmental conditions.

Examples:

- Testing lamps and their components:
  Testing UV resistance / IP rating of vehicle components
- Ventilation systems:
  Fuel tank systems in climatic chambers simulating annual seasons
- Testing cooling compressors in simulated winter and summer conditions
- Endurance testing of ventilators in climatic chambers with set temperature and humidity levels

Message devices are simple to adapt to any product and any simulated condition. This is due to their integrated signal conditioning via direct connection of thermocouples, RTD sensors or mV-/ mA-signals to the analog inputs. The devices can perform long term endurance testing as well as short term testing.

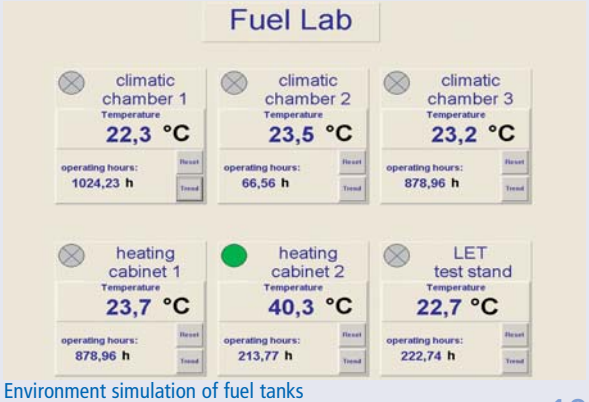
Practical insights

A system for rating the cooling compressors of refrigerators

A leading manufacturer of cooling compressors operates an applications laboratory to provide accurate customer information on compressor components. To test the appropriateness of compressors for end products, cooling and freezer equipment are subjected to real environmental and usage conditions within climatic chambers. Applications generated by ProfiSignal automate the testing procedures and evaluate the measurement data according to predetermined guidelines.

User benefits

- Cost and time savings in test sample conditioning
- Automated procedures in evaluating test results
- Highly flexible through integrated signal conditioning and universal analog inputs
- Stand-alone, PC independent
- Data acquisition and test sample control and management
- Continuous data archiving, visualization and analysis for any time period
- Modular, scalable, and adaptable to any task through simple configuration
- High measurement accuracy
- Configuration, visualization, analysis and operation from any PC
- A range of interfaces for attaching external hardware, e.g. gas analysis equipment



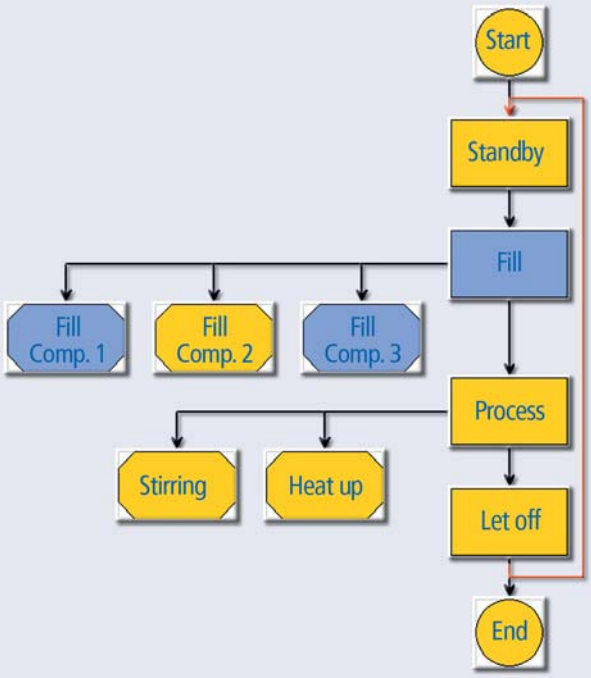
Environment simulation of fuel tanks

Laboratory data acquisition

Laboratory data acquisition and automation

There is usually a major requirement from laboratory and research organizations for flexibility, usability and reliability in their data acquisition and automation tasks. Message devices have universal usage because an mA- or mV-signal, thermocouple, or RTD sensor can be attached to the same type of analog input. Selecting the type of connection required is performed simply at a PC workstation.

For managing and controlling trials and experiments, the measurement system is equipped with a range of analog and digital outputs. Weighing machines, stirrers and other laboratory equipment can easily be connected via a serial port. ProfiSignal Klicks is available for generating automated trial and laboratory procedures. Even users with little IT expertise can quickly and easily generate the required procedures.



Practical insights

Laboratory data acquisition in pharmaceutical research

In a pharmaceutical laboratory, new and varied experiments are carried out on a daily basis at 24 different workstations. Each workstation is equipped with a Delphin system. Tasks range from simple data acquisition through to procedure automation and monitoring functions.

User benefits

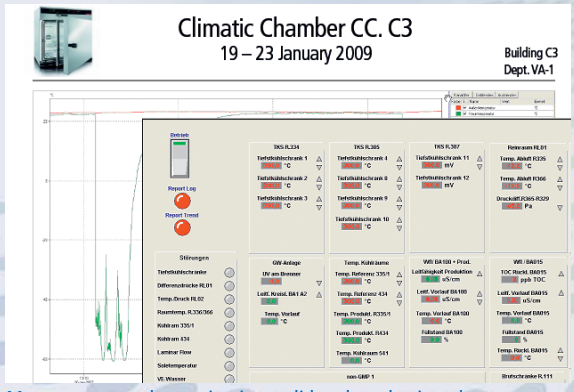
- Cost and time savings for trial and experiment tasks
- High flexibility due to modular, mobile and compact design
- Universal usage
- High measurement accuracy
- Integrated signal conditioning
- Galvanic and differential isolation of channels – no earth loops
- Intuitive, easy to learn software for analysis and configuration
- Serial ports for attaching laboratory equipment
- Adaptable to laboratory conditions (e.g. lab plugs)
- Easy integration into company data network
- Configuration, visualization, analysis and operation from any PC

FDA 21 CFR part 11

Secure data archiving

GMP (Good Manufacturing Practice) guidelines apply to the manufacture of pharmaceuticals with FDA 21 CFR part 11 (FDA = Food & Drug Administration) giving particular attention to documentation. ProfiSignal provides data archiving that is secure against manipulation. Everything it records is valid as printed documentation. The information required for validation, IQ (installation qualification) and OQ (operational qualification), can be supplied using Delphin products.

Major features here are easy to use management tools with user rights system and an audit trail that logs into encrypted files all relevant data access. There are also the measurement data databases that archive data in a condensed, binary format. An integrated data memory ensures 100 percent data security in the event of a network or PC failure.



Measurement and reporting in a validated production plant

User benefits

- Simple user management for hardware and software security
- Integration of user-defined access rights and obligatory password amendment at set time intervals (optional)
- Audit trail
- Archiving of action protocols
- Recording in measurement files, databases and stand-alone within internal data memories
- Encrypted and manipulation-safe data through plausibility and manipulation checks
- Alarm and notification procedures by email, fax, text message
- Visualization, analysis of online / offline data
- High measurement precision at fast signal sampling rates
- Universal, galvanic isolated analog and digital inputs
- ISO 9001 certified

Practical insights

FDA compliant documentation in the pharmaceutical industry

Pharmaceutical substances are stored in climate chambers and deep freezers to test their long-term stability. Ambient conditions are measured, archived and documented. Operating parameters, e.g. limit values, can only be changed by users who have logged in and supplied a password. This gives them the relevant access rights. Any changes made are logged to an audit trail along with old and new values and reasons for the amendment. Automatically generated protocols are generated weekly for alarm events and monthly for system changes. All digital documents are processed in redundant storage.

Message devices

Modular, practical, scalable

Message devices are data acquisition, monitoring and automation devices in one. They work decentrally and have a modular design. Following configuration using a PC, Message devices can function independently and stand-alone. They can be easily integrated into existing company networks via an Ethernet interface.

The device's inputs and outputs have universal usage (mA, mV, thermocouple, RTD sensor), high resolution, long term stability and potential isolation. Earth loop problems belong to the past. Message devices are equipped with many practical functions and have a wide range of I/O modules.

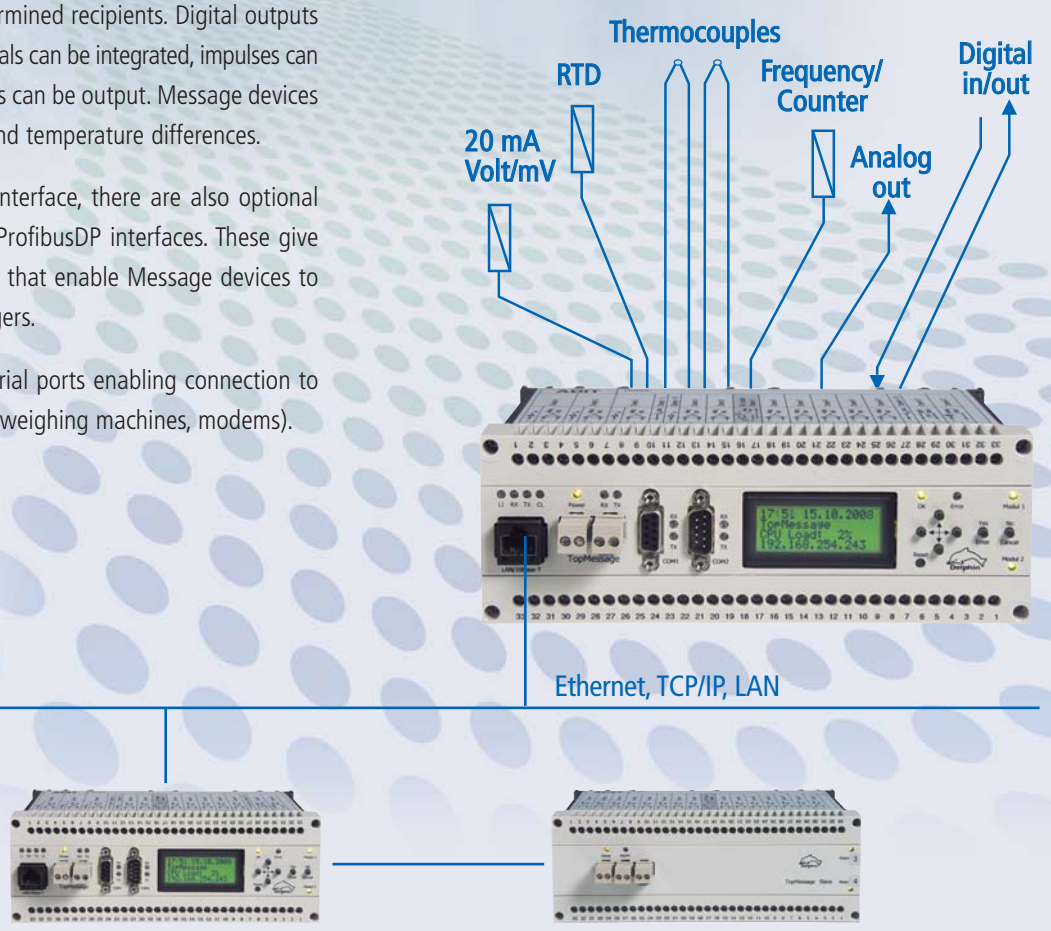
Their integrated software channels mean many different types of applications can be realized. For example, in the event of limit values being exceeded, alarms can be automatically sent to predetermined recipients. Digital outputs can be switched, flow signals can be integrated, impulses can be counted and set values can be output. Message devices can calculate averages and temperature differences.

As well as an Ethernet interface, there are also optional Modbus (RTU/TCP) and ProfibusDP interfaces. These give access to PLC controllers that enable Message devices to operate as PLC data loggers.

There are also several serial ports enabling connection to external equipment (e.g. weighing machines, modems).

User benefits

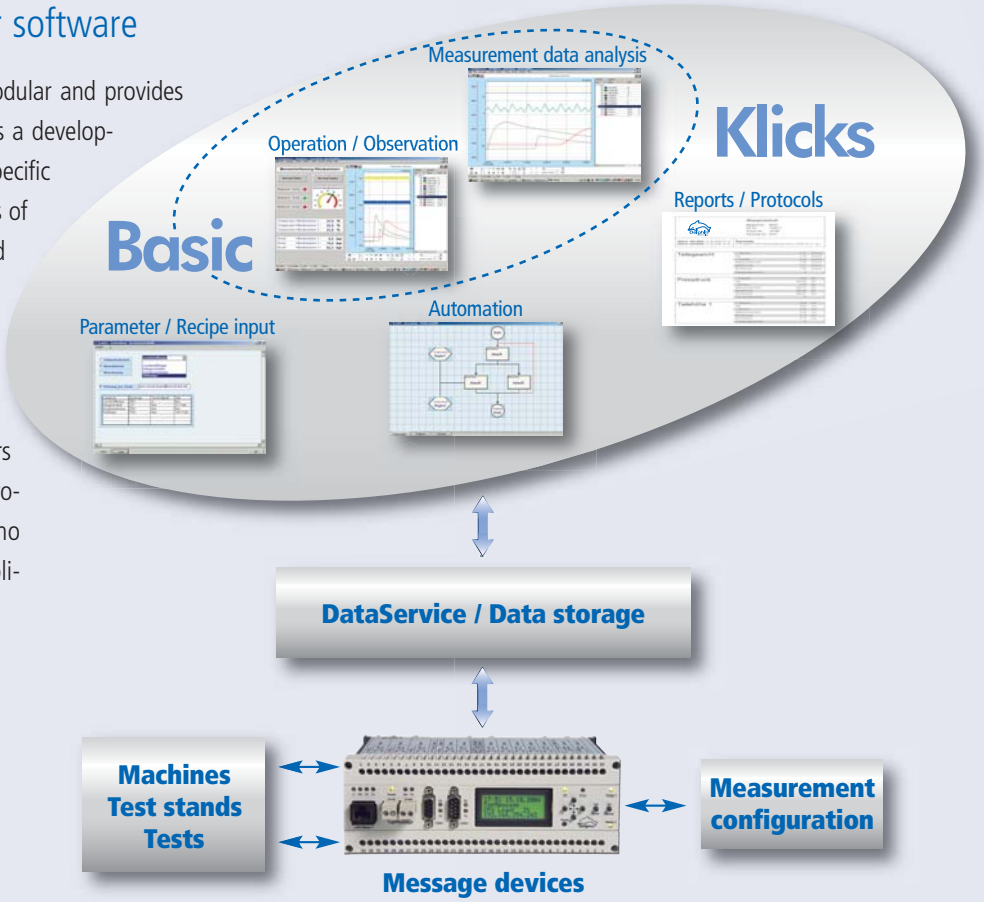
- Utilization of existing company network
- Integrated data memory – enabling stand-alone operation
- Signal conditioning within device
- Complete potential isolation
- Universal inputs and outputs
- Software channels for preprocessing and control
- Connection of external hardware (serial, ProfiBus, Modbus interfaces)
- Configuration by PC
- Message devices are already being used in thousands of applications worldwide



ProfiSignal

User friendly, modular software

ProfiSignal is software that is modular and provides structured process overviews. It is a developmental tool for generating user-specific applications with just a few clicks of the mouse. ProfiSignal is supplied in Basic and Klicks versions. Klicks contains all the functions included in ProfiSignal Basic. The software has been developed especially for technicians, engineers and scientists who have no programming knowledge but who want to generate their own applications.



Overview of the ProfiSignal modules

ProfiSignal Basic

- Data acquisition
- Visualization
- Analysis & diagnosis
- Archiving
- Documentation

ProfiSignal Klicks

- Automation
- Parameter input
- Reports

ProfiSignal Klicks uses a structure diagram and script language to generate procedures and control operations.

ProfiSignal options

A range of additional modules are available for ProfiSignal Basic and Klicks:

- **Vibro option:** FFT-, cascade- and orbit-diagrams (used with the AMDT-module)
- **AlarmManagement option:** Alarm lists, password protection, priority scheduling, remote alarms
- **SQL option:** Connection to databases (e.g. test sample databases)
- **OPC option:** Server / client connection of external hardware
- **OCX option:** Interface for external software

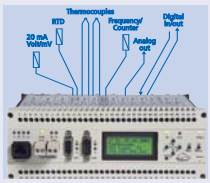
DELPHIN product range

ProfiSignal Basic

Measurement, evaluation, monitoring,
operation, observation

ProfiSignal Klicks

Measurement, evaluation, monitoring, operation,
observation, automation, parameter / recipe input, reports



Message devices

Measurement, storage, control, monitoring

Control cabinets

For industrial applications

Mobile measurement case

Field trials, servicing

Laboratory devices

For tests, Research and Development

Services

Project planning, application development, installation,
calibration, service hotline, training, and more...

ISO 9001
zertificated

CE

Layout: TTM (Overath), 04/09

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