Applications

Monitoring & process control

Vibration measurement

Data acquisition & data logger

Test, trial & automation

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 ...even more solutions
Technology

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 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 9001:2008. 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.

ProfiSignal Basic
ProfiMessage
LogMessage
Expert Key 200M
Expert Key
ProfiSignal
ProfiSignal Go
Message Series
Expert Key 200P
Expert Key 200L
Expert Key 100C
ProfiSignal Klicks

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 require-ments 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 & data logger

Universal measurement and acqusition
Stand alone storage and monitoring
Galvanic isolation of I/Os

Applications

- Data acquisition via LAN / USB
- Universal data logger
- Online and offline data analysis
- Mobile data acquisition
- Decentralized data acquisition
- GPS data acquisition
- Fault data acquisition

Test, trial & automation

Measurement and automation
Precision measurement over long periods
Intuitive configuration and operation

Applications

- Series testing
- Endurance testing
- Automation of testing procedures
- Product testing
- Quality assurance
- Environmental simulation
- Service life testing
- Test stand automation

Vibration measurement

Vibration and process data in a single system

Secure monitoring and online diagnostics

Time signals, frequency spectra, characteristic values

Applications

- Bearing vibration measurement
- Shaft vibration measurement
- Gear box vibration measurement
- Combustion chamber vibration measurement
- Air gap measurement
- Combined process and vibration measurement
- Mobile vibration measurement

Monitoring & process control

Monitoring and alarm functions

Fault data acquisition and high-resolution diagnostics

Intelligent signal processing

Applications

- Decentralized data acquisition
- Process monitoring
- Data acquisition via PROFIBUS using PLC
- Fault data acquisition
- Monitoring and alarm functions
- Mobile measurement case
- Remote data transfer
- Clean room monitoring
- Volume and energy acquisition

Data acquisition and data logger

High quality, universal and complete

Virtually every branch of industry uses data acquisition and analysis as the basis for process optimization and decision-making. This demands high-quality systems. Delphin provides robust precision hardware with user-friendly software that is equipped with an extensive range of analysis and visualization functions.

Expert Key devices acquire and transmit measurement data to PCs for archiving and portrayal in trend diagrams. LogMessage data loggers acquire measurement data which they can then independently store, monitor and pre-process. ProfiMessage devices are designed for combined measurement and control tasks.

A special feature of Delphin hardware is that each channel can be configured individually. Different signal types can be acquired within a single device in time synchronization. All inputs and outputs as well as device interfaces and power supply units have full galvanic isolation. Galvanic isolation prevents earth loops from occurring and enables devices to acquire data from non-isolated sources.

Pressure · Temperature · Rotations · Vibrations · Flow · Digital I/O · Meter reading
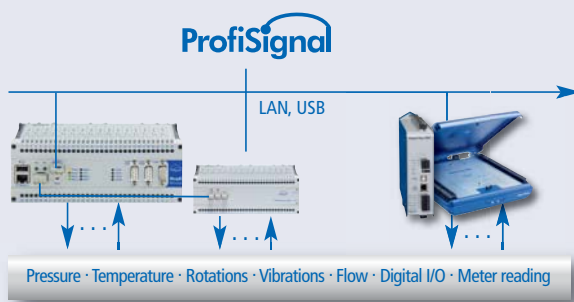
Monitoring and evaluating of measurement data takes place within the ProfiSignal, configuration-based PC software available in three versions: Go, Basic and Klicks. Acquired measurement data can be analyzed, visualized and archived. ProfiSignal is designed for simple and intuitive usage to enable cost and time efficient analysis. Although simple to use, ProfiSignal is also capable of performing complex data acquisition tasks.

Application features

- Universal inputs with galvanic isolation (mA, mV, thermocouples, RTD, frequencies, pulses, vibrations ...)
- Control and automation via analog and digital outputs
- Data logger and password protection for high-level data security
- High-speed acquisition with potential isolation
- Many options for visualization via trends and displays
- Intuitive software for measurement data analysis
- Configuration, visualization, analysis and operation from any PC
- Decentralized data acquisition as stand-alone or PC-supported systems
- Mobile data-acquisition hardware
- Monitoring and alarm notification (text messaging, email, digital output)
- Data transfer via Ethernet, internet, intranet, UMTS / LTE or USB

An example

Energy and process data acquisition via Ethernet in an industrial printing company
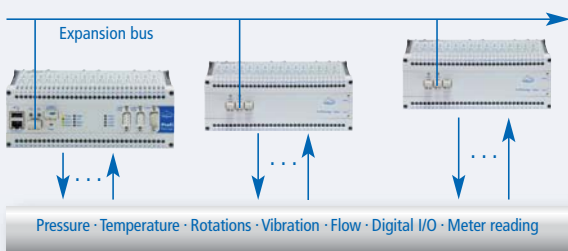
In a large print company, 30 Message devices acquire and process 1,200 different parameters such as pressures, temperatures, flows and energy data. This data enables the automated production of accurate monthly statements and process analyses. This is an impressive achievement – more than 3,800 channels transmit information across the network. A Message device independently uses software channels for counter and averaging functions, and monitors threshold values. High resolution analysis is performed on the process data at regular intervals and in the event of malfunctions.

Measurement data analysis
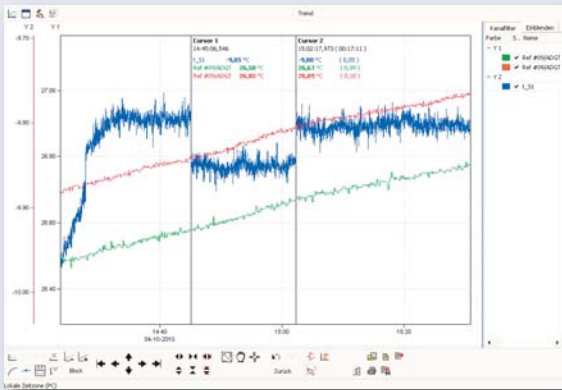
ProfiSignal is a software for data acquisition and analysis and is designed for day-to-day operation on any process. Online and offline data can be analyzed and processed simultaneously. Online and offline modes can be switched at the click of a mouse. Measurement data continues to be acquired and saved in the background. Analysis can be performed using a wide range of trend and characteristic value portrayals. ProfiSignal is compatible with Expert Key and Message devices and its range of interfaces and export functions enable hardware-software integration.
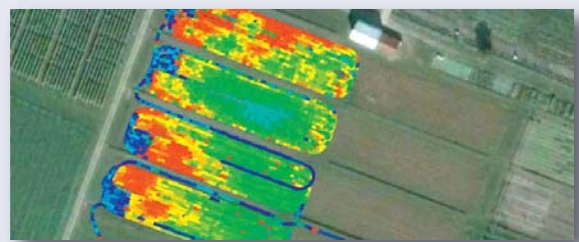
Mobile data acquisition

The mobile measurement case is robust and modular and is used in many different applications. Users place very different demands on such systems. Delphin is able to provide modular systems to meet these demands.

Mobile measurement cases can operate as stand-alone systems directly at the plant and machinery. Remote monitoring is optional via UMTS or internet. The cases are being used to service plant and machinery, to support system start-ups and to perform fault diagnostics.

Decentralized data acquisition

Plant and machinery that make up a process are usually located across several different sites. Data acquisition for such processes is often performed decentrally. Message hardware and ProfiSignal software are ideal for decentralized data acquisition. The systems can be locally installed and connected via Ethernet or CAN-Bus. Data storage can be performed both centrally and decentrally.

GPS data acquisition

GPS-signal acquisition is an additional function of Delphin's data logger. GPS signals are received and transmitted via a serial cable to provide the location of the measurement data being acquired. Evaluation is performed via KML files and Google Earth™.

Test, trial and automation

Independent operation

Message and Expert hardware can be combined with ProfiSignal Klicks software to provide systems for testing and inspection in laboratories, production facilities and experimental environments. Systems can cover the full automation of plant and machinery.

ProfiSignal Klicks uses an intuitive programming method to enable the quick production of automated procedures. A module chart provides a structured overview of procedures.

Delphin's Message devices perform automated procedures and offer high flexibility as well as data security. Measurement data is acquired at high resolution and precision. Automated procedures can be performed at the product development stage, e.g. environment simulation and endurance testing, or for quality assurance purposes.

Product testing involves product data acquisition, test stand automation and the reporting and evaluation of test results. These functions can be performed with the user-friendly ProfiSignal software. ProfiSignal enables automated procedures ranging from parameter input through to inspection documentation. An integrated SQL and ODBC interface connects databases for automatic parameter input and the export of result data.

Application features

- Automation and data acquisition using a single hardware device
- Fully compatible hardware and software
- Easy to generate automated testing and evaluation procedures
- Any number of testing procedures can be run parallel and independently from one another
- Alarms via text messaging / email / output for threshold overrun or system malfunction
- Test stand automation without PLC or programming expertise
- Unified system for testing and quality assurance at the product development phase
- Project management, engineering, system installation & training according to individual customer requirements

An example

Test stand automation at a heating plant

Resource shortages, rising fuel costs and increasing regulations on emissions require extensive test procedures on heating systems, particularly burners, boilers, heat exchangers and hot water tanks. A leading manufacturer of heating systems therefore had its test stands equipped entirely with ProfiSignal and Message devices.

Test stand automation

Test stand automation requires the automation of testing procedures and the processing and evaluating of input and measurement data. ProfiSignal combines all the requirements for recipe selection, test parameter input, automation of test and processing runs and the automation of evaluation and report output. Automated procedures can either be developed by the users themselves or by the Delphin application development team. Automation increases test stand availability and simplifies maintenance and housekeeping procedures.

Environmental simulation

Environmental simulation involves testing procedures that examine under simulated conditions.

● Testing UV resistance, IP rating and climate chamber testing
● Testing cooling compressors under simulated conditions for winter and summer
● Testing ventilators for endurance according to predefined temperature and humidity profiles

Delphin hardware is simple to adapt and is a reliable tool for endurance testing.

Laboratory data acquisition

Laboratory and research organisations require flexibility, usability and reliability in their data acquisition and automation systems. Delphin hardware have universal analog inputs and a range of analog and digital outputs for managing and controlling trials and experiments. They have serial ports to enable the easy connection of weighing machines, stirrers and other laboratory equipment. The ProfiSignal Klicks software is available for generating automated trial and laboratory procedures. These automated procedures do not require programming expertise.

Product testing

Product testing is essential to guarantee and document quality. The requirements on product testing are becoming increasingly stringent due to product liability legislation. Lead times from product development to product launch require measuring and testing systems that are flexible and efficient. Delphin's application development team delivers fully operational test stands for product testing, e.g. for household appliance testing, engine and pump testing, super charger and drive system testing, and switch testing.

Vibration measurement

Acquisition, storage and monitoring

Delphin supply hardware and software for monitoring and evaluating vibrations. Message devices are in operation around the world to monitor vibrations in hydro-power plants and air gaps in generators. Message devices are also being used for fault diagnostics in marine engines and bearings. They also monitor combustion chamber and gas turbine vibrations. Message devices are also being deployed around the world in mobile measurement cases or flexibly integrated into test stand systems.

Message devices enable vibration and process data to be acquired, saved and monitored within a single system. The ProfiSignal software portrays data in trends, and analyzes and processes data for alarm functions. ProfiSignal's Vibro option has been designed especially for vibration technology and enables the portrayal of FFT and orbit diagrams.

Delphin's vibration measurement products provide many functions even in their basic versions. A modular design enables adaptation to any size of machine and facility. Message devices acquire vibration signals such as velocity, speed and direction as well as typical measurement data such as pressure, temperature, flow and rotation.
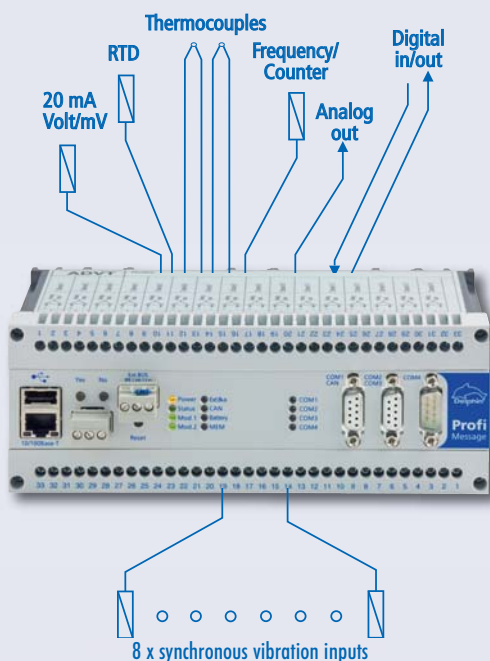
Application features

- Powerful functions for online vibration monitoring and damage diagnostics
- Adaptable to existing monitoring systems
- Vibration analysis and monitoring in a single system
- Simultaneous acquisition of vibration and process measurement data
- Data logger memory for independent and long-term machine data acquisition
- Universal connection to velocity, speed and distance sensors
- Compact design and compact channel feeds
- Synchronous and parallel acquisition of up to 16 vibration signals
- Digital signal processing (DSP)
- FFT calculation and monitoring directly within Message device
- Determining of characteristic values (PeakPeak, Gap ...)

Examples

- Shaft vibration diagnosis in gas turbines, super chargers and drive systems
- Monitoring shaft vibrations in steam turbines and hydroelectric turbines
- Bearing vibration transmissibility in electric motors and roller plant
- Roller bearing diagnostics in print machinery (envelope spectrum) and centrifuges
- Monitoring / analysis of machine vibration

Shaft vibration

A single Message device is capable of acquiring, analysing and monitoring up to 16 synchronous shaft vibration sensors. Both static and dynamic movement is measured for rotary, journal-bearinged shafts in relation to fixed bearing housings. Radial shaft position and rotation can also be acquired via a KeyPhasor reference on the shaft. Phase information can be calculated from the shaft position. The Message device is capable of calculating FFT spectrums and characteristic values (e.g. smax or PeakPeak) directly from the measured time signals.

Combustion chamber vibration
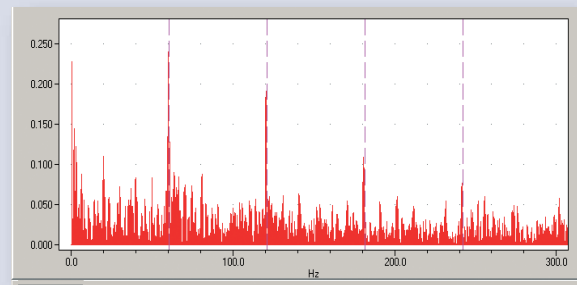
Dynamic pressure vibrations are being monitored in the combustion chambers of gas turbines. Multiple sensors deliver pressure vibrations that have been acquired using Message devices. Vital information for machine security and analysis is encrypted within pressure vibrations. Narrow-band characteristic values are determined and monitored from an FFT spectra. Message devices immediately calculate the TRMS value for each frequency band. TRMS values can then be monitored and in the event of an alarm, messages can be sent via PROFIBUS to the control system or digital outputs can be switched.

Air gap measurement

Message devices perform non-contact monitoring for critical minimum air gaps on generators. Slim distance sensors are installed at the stator. The rotor generates an equidistant signal for each rotor pole passage. The Message device records the time signal from each installed air gap sensor at each rotor turn. Synchronous triggering takes place via a digital rotation pulse. Message devices automatically determine the minimum air gap and chronological pole position, convertible into phase information in the 0 … 360° range.

Bearing vibration

Diagnostic procedures on bearing systems are an essential part of modern systems of preventative maintenance. A distinction can be made between diagnostic procedures and qualitative (envelope spectra) & quantitative (vibration velocity) procedures. Delphin's Message devices are suitable for both. They can compute envelope spectra from velocity sensor time signals, and thereby provide detailed information on the condition of a bearing. ProfiSignal's Vibro option portrays and evaluates the envelope spectra.

Monitoring and process control

Interfaces for direct measurement

The main requirements of a process monitoring system include: a clear overview of processes; notification of process changes; and reporting and alarm functions. Process data acquisition is fundamental to monitoring systems. The first step requires the bringing together of process systems and product data into a single system.

Message and Expert devices are the interfaces between process systems and PCs. Sensors can be directly connected via analog and digital inputs/outputs and PROFIBUS or Modbus interfaces. These sensors then enable the measurement of temperatures, pressures, humidity, strain-gauge information, vibrations, pulses etc. as well as from field bus systems.

Measurement data that has been recorded by Delphin hardware can then be processed and analyzed by a PC. Alternatively, the data can be preprocessed, monitored and saved directly within the device itself. Message devices are able to compute flows and averages as well as complex analysis logarithms and logic procedures. Options range from basic limit value monitoring through to the generation of batch alarms.

Preprocessed data can be saved to a central server or local PC where it can be accessed by authorized personnel via intranet and internet connections. Online and archived data can be quickly displayed within a range of diagram types and then analyzed and exported without affecting ongoing measurement and data acquisition.

Application features

- Data acquisition, process / vibration monitoring and alarm functions in a single 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 messaging in the event of system malfunctions
- Automatic generation of current / historical alarm overviews
- Utilization of existing local area networks
- Multi-user and multi-workstation capability
- Easy to set up user management system for hardware and software security
- Scalable and modular system that is easy to upgrade
- Connects to control systems via a range of interfaces, e.g. OPC server/ client, PROFIBUS, ModBus TCP/RTU
- Data transfer to SQL databases

An example

Process monitoring of a production plant for fertilizer products

To manufacture primary ingredients 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 from well over 1,000 hardware and software channels. The system has been upgraded to continuously monitor vibrations. It also records and monitors turbine and compressor data from synthetic gas production. Using Delphin products has significantly improved machine uptime and the early detection of faults.

Process data acquisition via field bus

Sensors and actuators are networked out in the field. A suitable data logger is often necessary when an error occurs or when measurement data is to be analyzed. Measurement data can be independently acquired and saved within Message devices via PROFIBUS, Modbus or CAN. PC support is unnecessary. An internal data storage capability holds up to 1 billion time-stamped data records. In addition, field bus data, mV/mA signals and temperatures (RTD-sensors and thermocouples) can be acquired and saved via direct connection to the Message devices.

Clean room monitoring

Process data is being acquired in accordance with FDA 21 CFR Part 11. This requires secure data acquisition and systems for alarm and user management. All process data is securely stored as tamper-proof. User access, parameter input and configuration changes are logged to an audit trail. Delphin products for "Part 11" applications:

- Hardware for data acquisition, storage and monitoring
- Software for monitoring, visualization and archiving
- Validation services (IQ, OD, DQ)
- Training, installation, calibration
- Servicing and maintenance

Remote monitoring

The remote monitoring of machinery and equipment is today a standard function. To achieve fast response times in the event of malfunctions requires continuous access to data. Measurement data is acquired locally within a data logger and automatically transmitted to a central server. A special feature is the email, text message or fax notification when limit values have been exceeded. ProfiSignal's AlarmManagement module is available for processing alarms at a PC. Remote processes can be observed and operated.

Fault diagnostics

Fault diagnostic systems require measurement data to be detailed and of a high resolution. Message devices are capable of continuously storing data within a ring buffer and recording data, with pre and post histories, according to specific events. Depending on the I/O modules being used, the integrated Message devices can record analog, digital or vibration measurement data. Thermocouples, mA-/mV signals, RTD and vibration sensors can be individually connected using plugs, sockets, clamps or 4mm safety lab plugs. Mobile fault diagnostic cases are built according to individual customer requirements and are made from an especially robust material suitable for extreme mechanical and climatic conditions.

Expert Key

Complete data acquisition system

Expert Key devices acquire and monitor measurement data and automate test and inspection procedures. The devices are supplied as complete systems including ProfiSignal Go – professional software for the online or offline monitoring and analysis of measurement data. Expert Key devices are available in laboratory (L), industrial (C), test (P,T) and mobile (M) versions. These are universal measurement systems that can be quickly deployed in fixed or mobile installations. Expert Key systems are compact and provide a wide range of analog and digital inputs/outputs with plug-in connections. They are also equipped with two types of interface: USB and LAN. Expert Key devices are suitable for fast system set-up and mobile measurement using a laptop and the ProfiSignal Go software. They are equally suited to permanent installations using cabinet systems.

LogMessage

Stand alone and intelligent

LogMessage is an stand alone operating data logger for acquiring, monitoring, calculating and logging measurement data. It is equipped with a large data memory for storing up to 350 million measurement values. The LogMessage's analog inputs are differentially and galvanically isolated from each other as well as from the power supply. Earth loops and non-isolated sensors therefore present no problems. Each analog input is universal and can be used for thermocouples, RTD sensors, voltage or current signals. Channels are configured using the DataService / Configurator software. The devices are supplied as complete systems with the ProfiSignal Go software. The serial ports are available for remote communication via a modem or for data exchange with other serial equipment. When used in combination with a modem, alarms can be sent via text messaging. By operating the LogMessage device within a network, measurement data can be transmitted online and processed using the ProfiSignal Go software.

ProfiMessage

Modular and secure

ProfiMessage is a modular system for data acquisition and for the monitoring and automating of machinery, plant and test stands. ProfiMessage devices can be adapted to any application by using master and slave units and a range of I/O modules. ProfiMessage is ideal for fast, precise and galvanically isolated data acquisition, as well as for the intelligent preprocessing and monitoring of data. ProfiMessage can be used in applications ranging from the monitoring of industrial processes, plant and clean rooms through to the data acquisition of laboratory and the automation of test stand automation. ProfiMessage devices have universal connectivity for any type process. They are also equipped with flexible I/O modules and diverse field bus interfaces. ProfiMessage devices are extremely easy to connect to existing PLC control systems for data exchange purposes. Measurement data is acquired at an extremely high level of time resolution. This makes the data ideal for fault diagnostic and analysis systems. The compact devices can store data independently without the need for PC support. An internal up to 32 GB data memory is capable of recording several billion measurement values.

ProfiSignal Go
data acquisition / analysis

USB   LAN

Input signals

Thermocouples

Voltage (mV, V)

RTD

Current (mA)

Digital / Frequency IN

Expert Key 100L
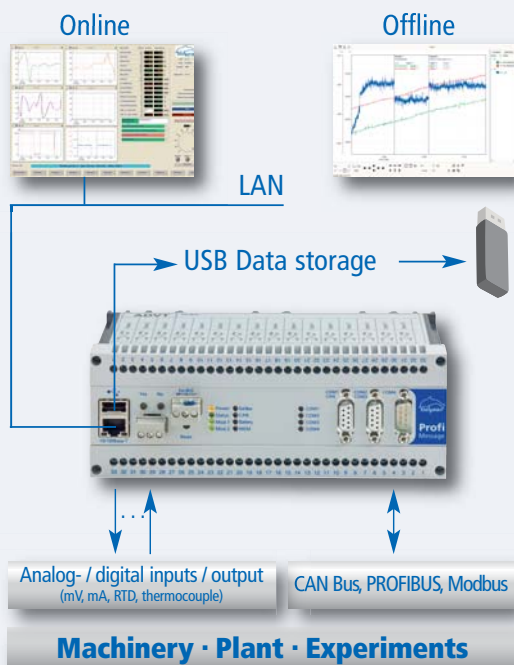
Output signals

PWM

Digital OUT

Current (mA)

Applications using Expert Key

- Mobile and fixed systems for acquiring measurement and process data
- Process visualization, analysis and automation
- Research and development
- Laboratory automation
- Testing technology and test stand automation
- Servicing information and fault diagnostics
- Testing and product inspection

Thermocouples

RTD   Frequency/Counter   Digital in/out

20 mA Volt/mV   Analog out
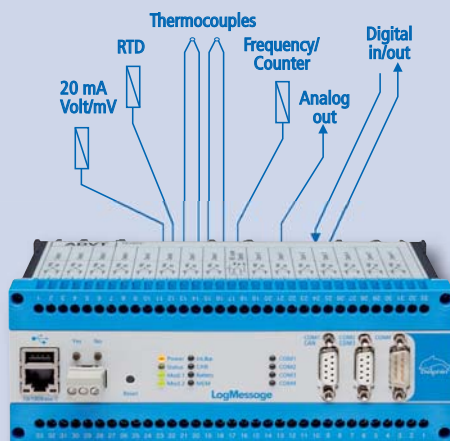
LogMessage

Applications using LogMessage

- Data logger
- Measuring energy efficiency
- Testing and product inspection
- Remote data transfer via GSM / UMTS / LTE
- Testing technology and test stand automation
- Servicing information and fault diagnostics
- GPS logging
- Stand alone high-speed applications

Online   Offline

LAN

USB Data storage

Profi Message

Analog- / digital inputs / output
(mV, mA, RTD, thermocouple)   CAN Bus, PROFIBUS, Modbus

Machinery · Plant · Experiments
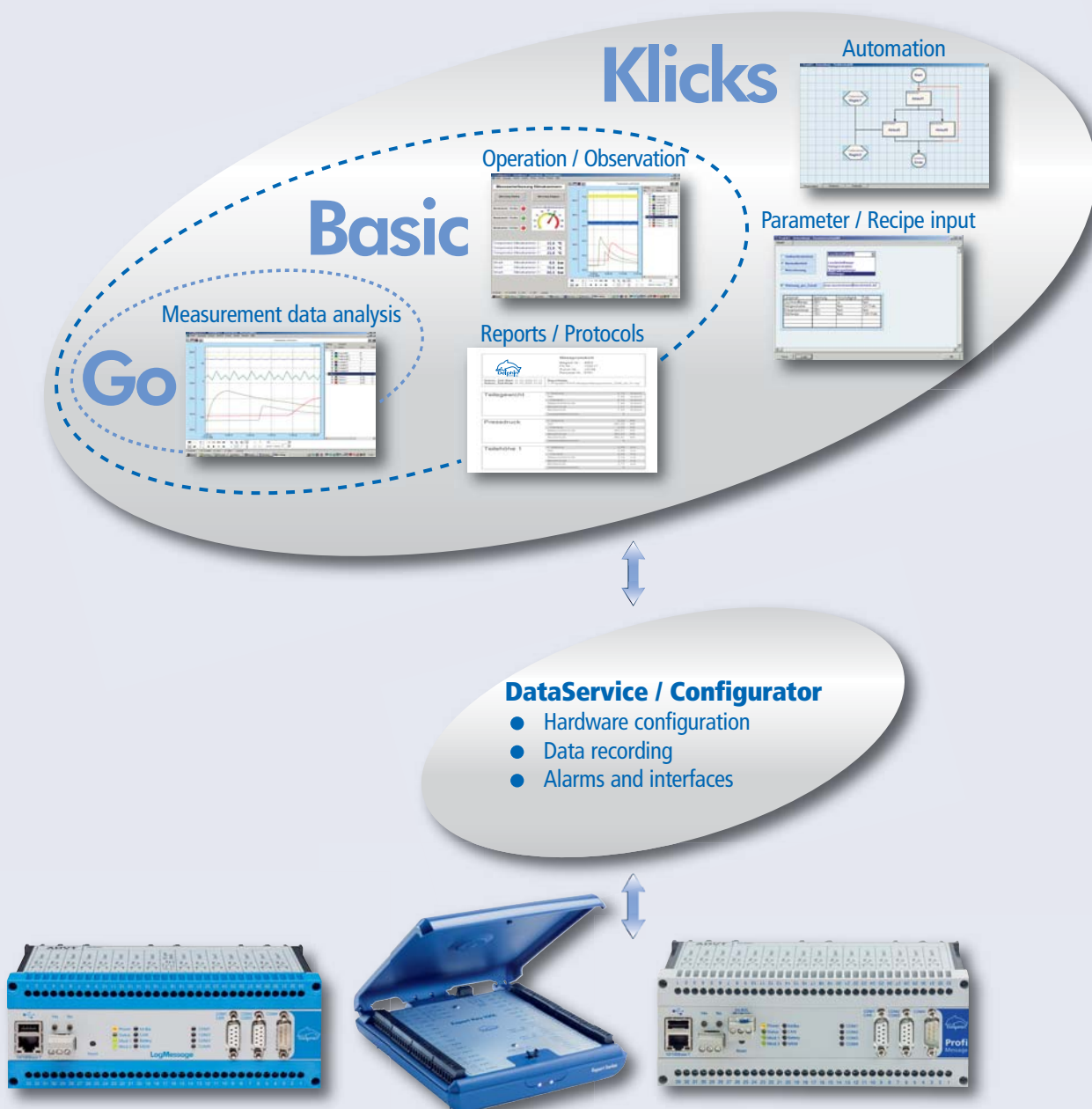
Applications using ProfiMessage

- Modular data acquisition and monitoring
- Fault data acquisition and damage diagnostics
- Acquisition, processing and recording of PLC and fieldbus signals
- Process data acquisition and preprocessing
- Remote monitoring device for machinery and plant
- Automation device for experiments and test stands
- Monitoring device for process and vibration signals

ProfiSignal – Software for measurement

Complete system

ProfiSignal is a complete software system for data acquisition, analysis, visualisation and automation. The software is very user-friendly and combines professional functionality with easy operation. ProfiSignal provides a clear and logical overview of all measurement systems: whether for single or multi-thousand channel applications.

For new users, ProfiSignal is quick to learn. ProfiSignal is modular, scalable and available in three versions: Go, Basic and Klicks. Each version has backward compatibility for operability, data files and application projects.
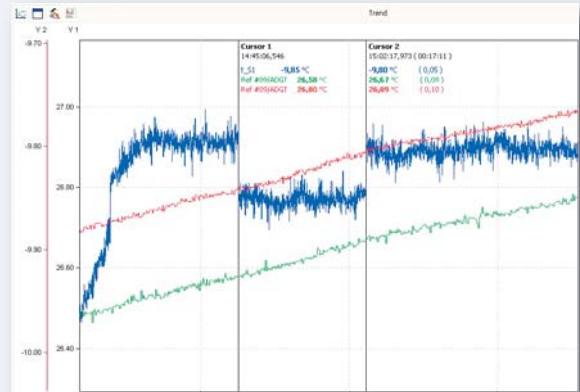
Klicks

Automation

Basic

Operation / Observation

Parameter / Recipe input

Measurement data analysis

Go

Reports / Protocols

DataService / Configurator
- Hardware configuration
- Data recording
- Alarms and interfaces

and test engineering

ProfiSignal Go

ProfiSignal Go is a runtime system enabling measurement data to be displayed and analyzed in just three steps. The Go version is able to analyze large volumes of offline and online data.

- Data acqusition and recording
- Data analysis and calculation
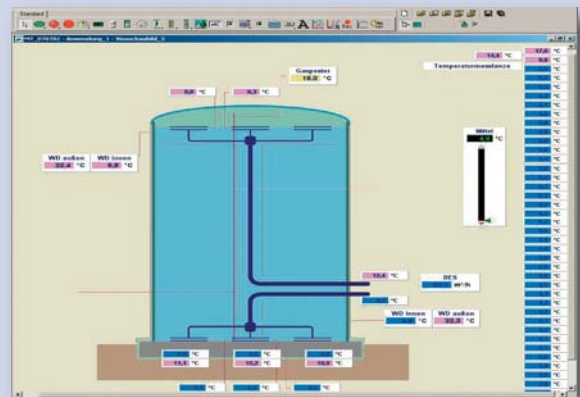- Online and offline trends
- Data export and print outs

ProfiSignal Go trend

ProfiSignal Basic

ProfiSignal Basic, like ProfiSignal Klicks, is a developmental system for generating custom systems with visualization and trend functions.

- Operation and observation
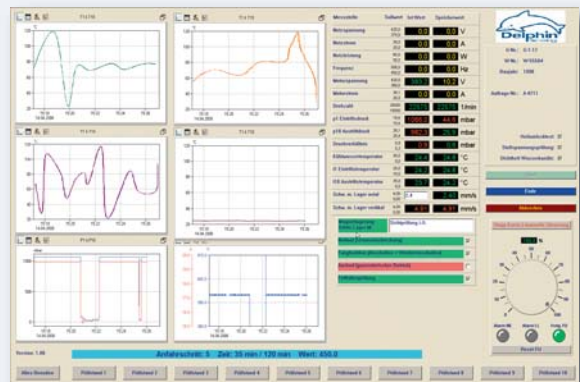- Process visualization
- Report generation

ProfiSignal Basic diagram

ProfiSignal Klicks

ProfiSignal Klicks is software for test automation and the programming of control systems.

- Automating test stands and process control systems
- Automating evaluation and analysis functions
- Generating parameter graphs

ProfiSignal Klicks diagram

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ISO 9001
certified ‎ C E

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