

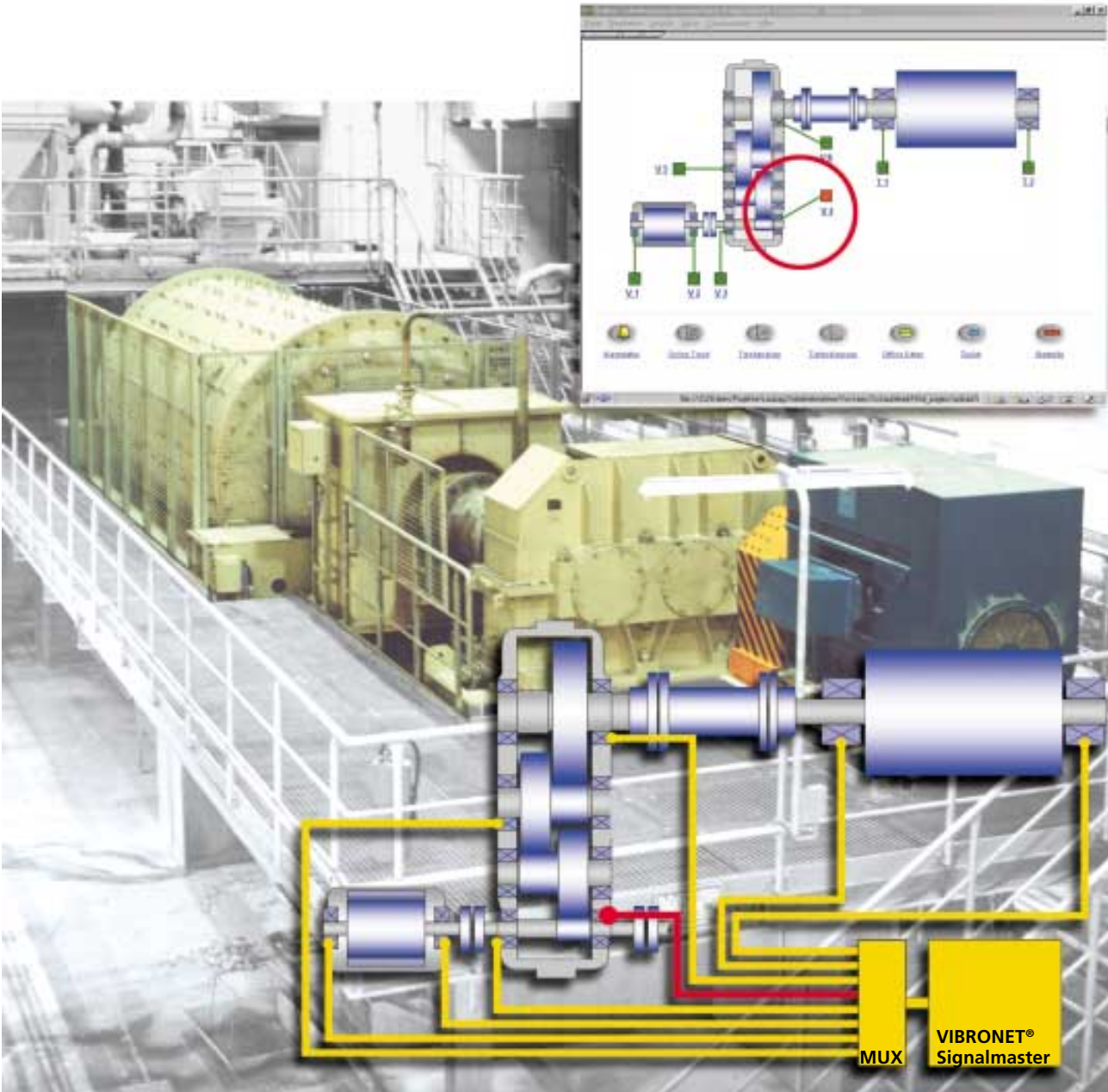
**NEW!** Now with  
Internet technology



Online Monitoring System

# VIBRONET® Sign@lmaster

## Machine condition monitoring & diagnosis



# VIBRONET® Sign@lmaster: Online monitoring using Internet technology

The continuous monitoring of machines and systems essential to production has become a significant competitive factor because of the growing pressure on costs. However, as a result of the increasing functionality and complexity of the systems, the capabilities of local diagnostic tools and specialist

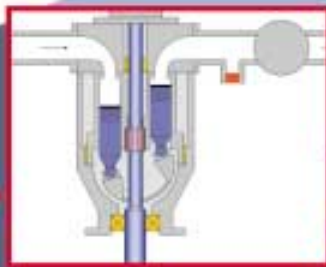
expertise on site are usually insufficient for the reliable identification of faults.

The use of innovative telediagnostic systems enables operators to cope with these new requirements by calling up outside expert knowledge with a simple click of the mouse.

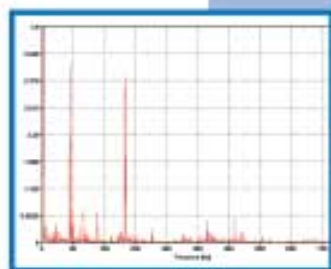
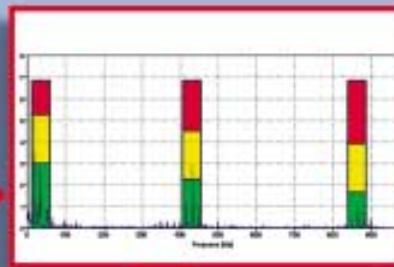
**Aggregate**



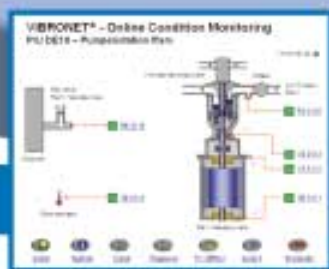
**Change in condition**



**Condition monitoring**



**Diagnostic expert**



**Telediagnosis**



**Alarm indication  
by eMail / SMS**

VIBRONET® Signalmaster is the first worldwide tele-diagnosis system that is completely based on Internet technology.

The system can be easily integrated into any existing network (Intranet / Internet) and can be accessed by several users at the same time. As all the functions are centralized, no special PC software is required by the user - a conventional browser is sufficient. The graphically designed user-interface displays the monitored system in the required

amount of detail. Just like a home page on the Internet, the operator clicks on the start page and then moves to the measuring location, and checks the trend data or starts a diagnostic measurement.

In the case of problems or specific events, the system itself decides whether to inform the maintenance technician of the alarm status by SMS, or to send him the relevant measured data by eMail, or whether to intervene directly in the control of the machine.



**Power plant technology**

**Petrochemical industry**

**Offshore technology**

**Conveyer engineering**

**Wind power**

**Process industries**

**Mining industry**

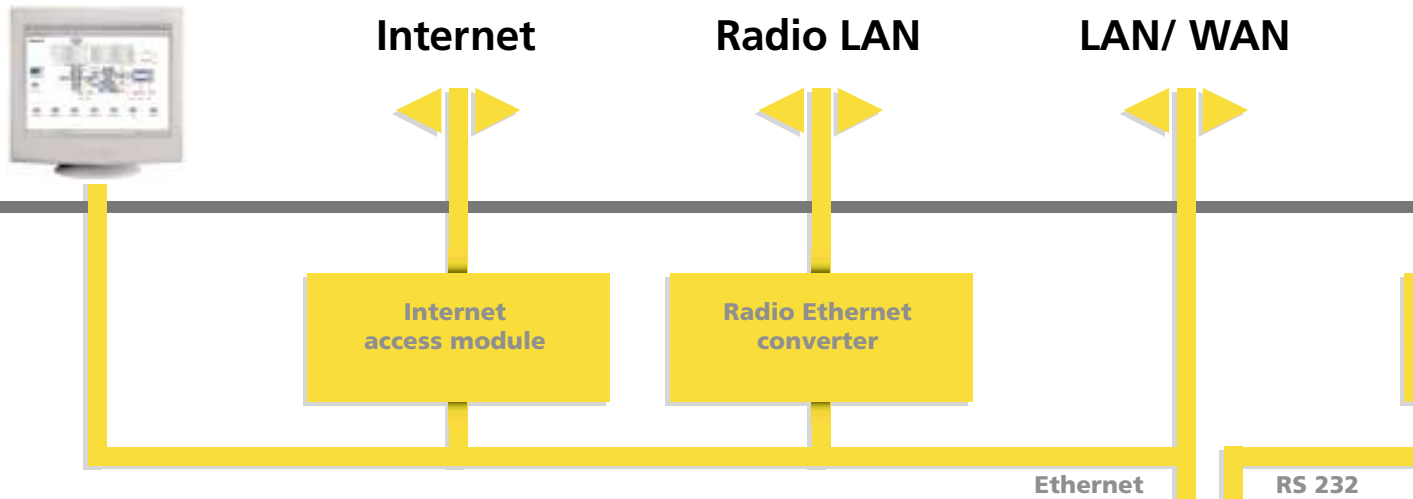
**Cement industry**

**Ventilation technology**



**Condition monitoring**  
**Alarm indication**  
**Machine diagnosis**

# VIBRONET® Sign@lmaster: Hardware, system



## VIBRONET® Signalmaster

- Online condition monitoring
- Signal analysis
- Recording of transient signals
- Online classification
- Digital signal processing
- Control



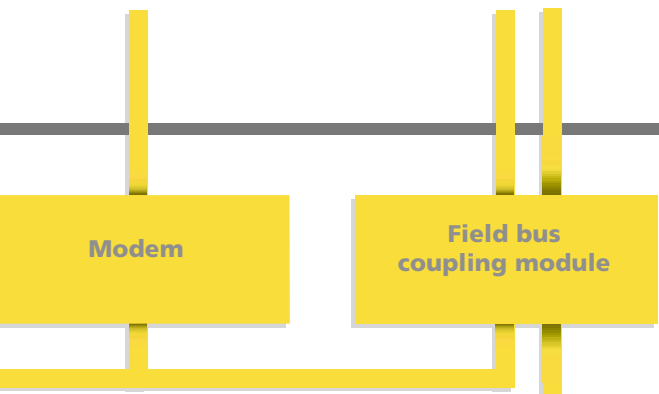
VIBRONET® Signalmaster

VIBRONET® Signalmaster is the central component of the monitoring system. It records, processes, stores and visualizes measurement data and communicates with the outside world via the standard interfaces integrated in the system. A fast, compact system is the result of multiplexers with coupling via the system bus. On the other hand, field multiplexers enable the economical installation of extensively branched monitoring systems with cable lengths of up to 800 meters. Almost any type of transducer can be integrated for recording measured values. Intrinsically safe installations are available as an option.

# components and interfaces

Telephone

PLC



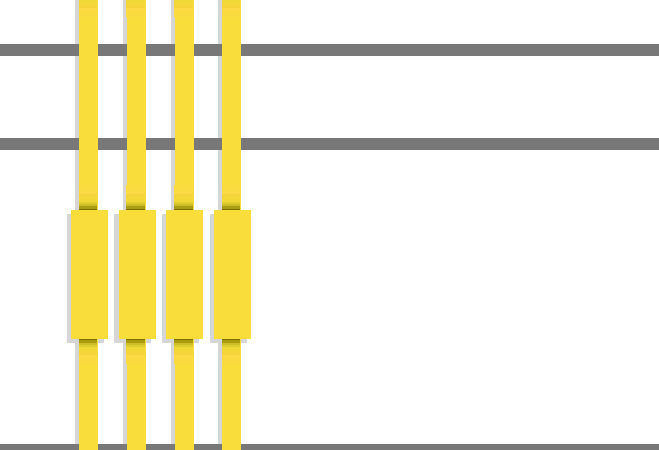
**Communication module**

- Integrated Ethernet interface for Internet access or router
- Modem (analog, ISDN, GSM)
- Field bus coupling (Modbus, Profibus, InterBus S, etc.)
- Radio Ethernet



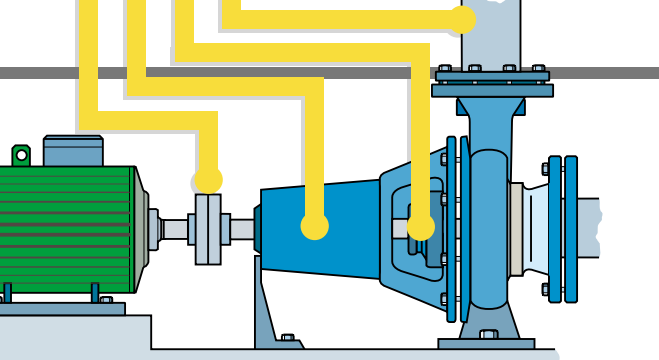
**In- and output expansions**

- Fast analog multiplexer with bus coupling for installation in switching cabinet
- Field multiplexer for installation in widespread systems
- Digital I/O module
- Modules for signal processing



**Installation accessories**

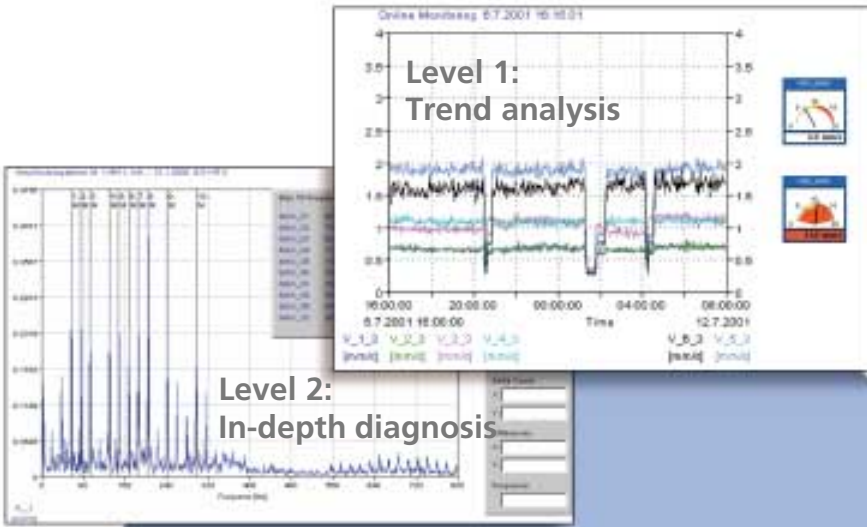
- Cable, protective tubing
- Sensor interfaces
- Connection box
- Suitable for use in industrial and mining environments



**Transducers**

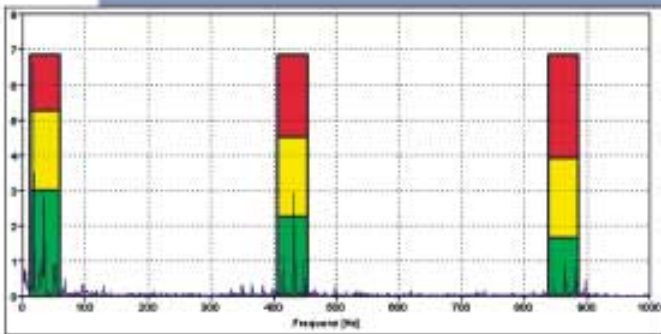
- Accelerometer (Line Drive®, ICP®)
- Vibration displacement transducer
- Temperatur sensor
- RPM transducer
- 4-20 mA and 0...10 V signals
- Physical transducers with current or voltage signal

# VIBRONET® Sign@lmaster Software



Visualization and telediagnosis  
using Internet technology

Frequency-selective band  
monitoring  
Automated diagnosis



Recording of transient  
events



Application  
program

Spectral kit\*

Event  
recorder kit\*

Firmware

Measurement  
processing, storage

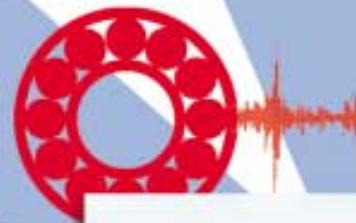
Trend memory

Signal memory

\*Optional

Communication  
Internet technology

Integrated  
Web server



ation using  
hology



## Rapid alarm indication by eMail or SMS

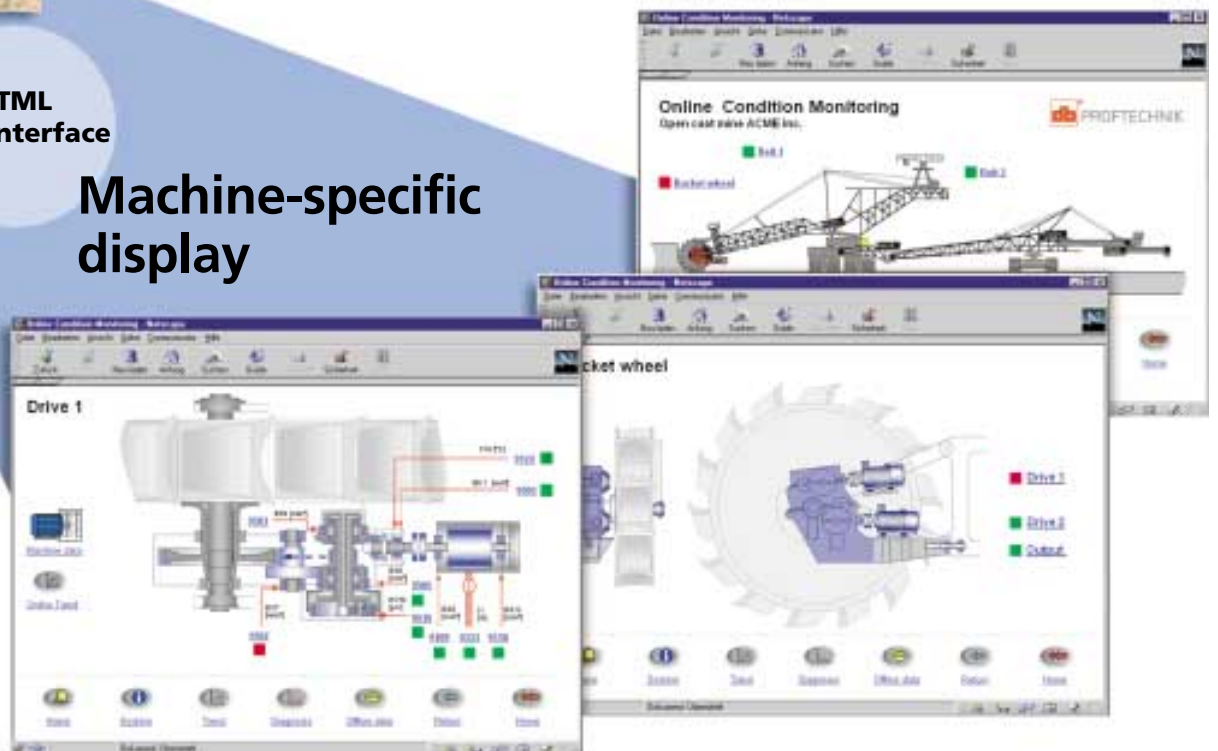
Integrated  
eMail client\*



HTML  
user interface

## Machine-specific display

orage



The realtime multitasking operating system coordinates the interplay of application programs, data processing, data storage, communication and system monitoring. The stored-programmable operation control enables optimum adaptation to a variety of monitoring tasks. For more complex diagnostic tasks, optional modules are available for the automated monitoring of frequency bands and single events.

A standard Internet browser is sufficient to call up the current status of the system or for the offline analysis of stored data. The easy-to-use HTML pages show the sensor arrangement on the machine. The current status is displayed by the constantly updated instrument and traffic light symbols that immediately show 'red' if the measured values become too high - an essential requirement for system monitoring and telediagnosis.

OMNITREND® is an optionally available PC software that is used for the longterm archiving of trend and signal data. Extensive tools for trend evaluation and signal analysis enable more far-reaching statements on the lifetime of the systems being monitored and on the necessary maintenance measures.

# VIBRONET® Sign@lmaster: Typical installation

VIBRONET® Signalmaster is a system with a modular structure that can also be very easily adapted to the respective monitoring task thanks to its open programming environment. It is suitable for both OEM solutions for the monitoring of compact individual aggregates as well as for the monitoring of entire systems. Due to its network ability, any number of VIBRONET® Signalmasters can be integrated to form a networked condition monitoring system and, thus, entire sections of production plants can be monitored.

Already installed VIBRONET® Signalmaster systems can be extended as a result of the system modularity. Remote access via a data network or modem enables economical system maintenance and tele-monitoring.

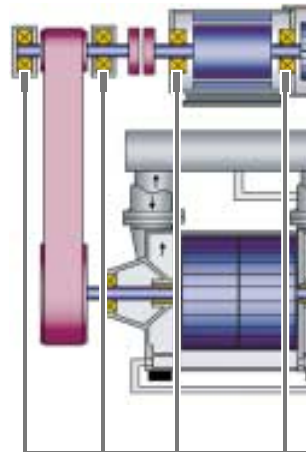
## Type A:

- **Compact individual aggregates**
- **Maximum of 6 sensors**
- **Individual cabling**
- **Rapid recording of measured values**
- **OEM solution**



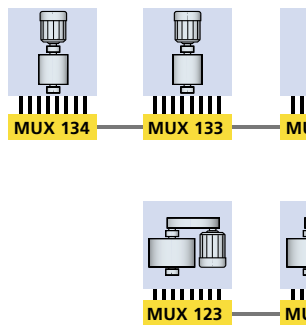
## Type B:

- **Complex individual aggregates/ smaller aggregate groups**
- **Maximum of 37 sensors**
- **Individual cabling**
- **Shorter lengths of cable**
- **Rapid recording of measured values**

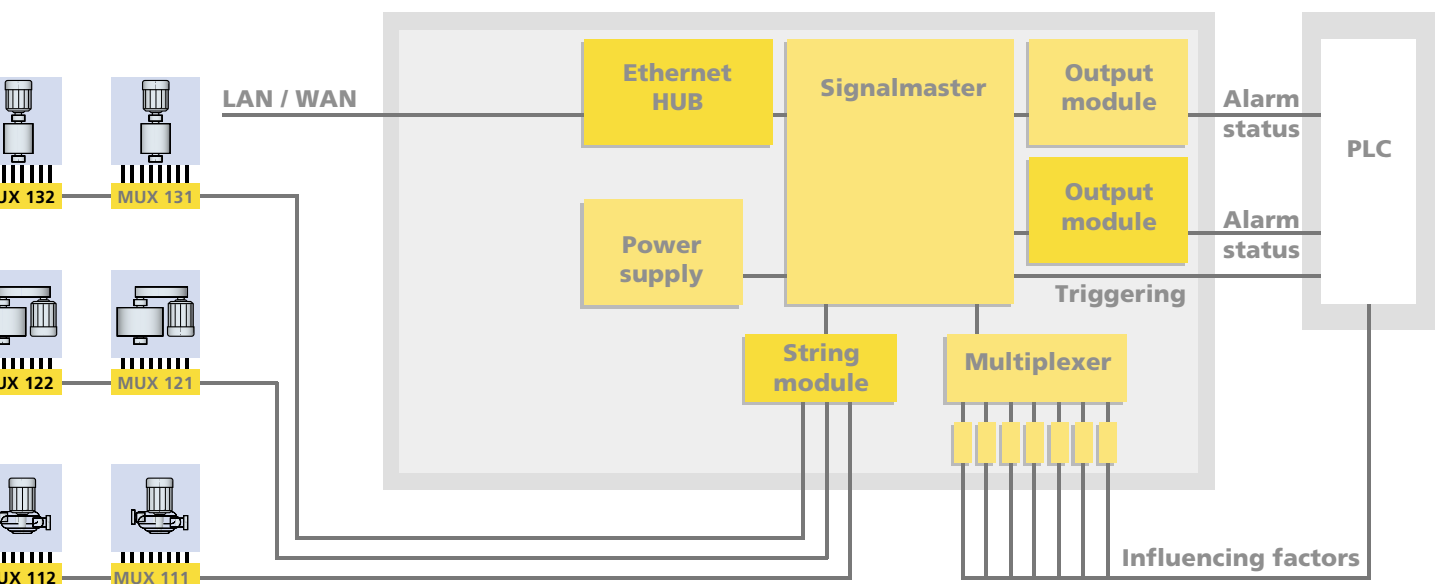
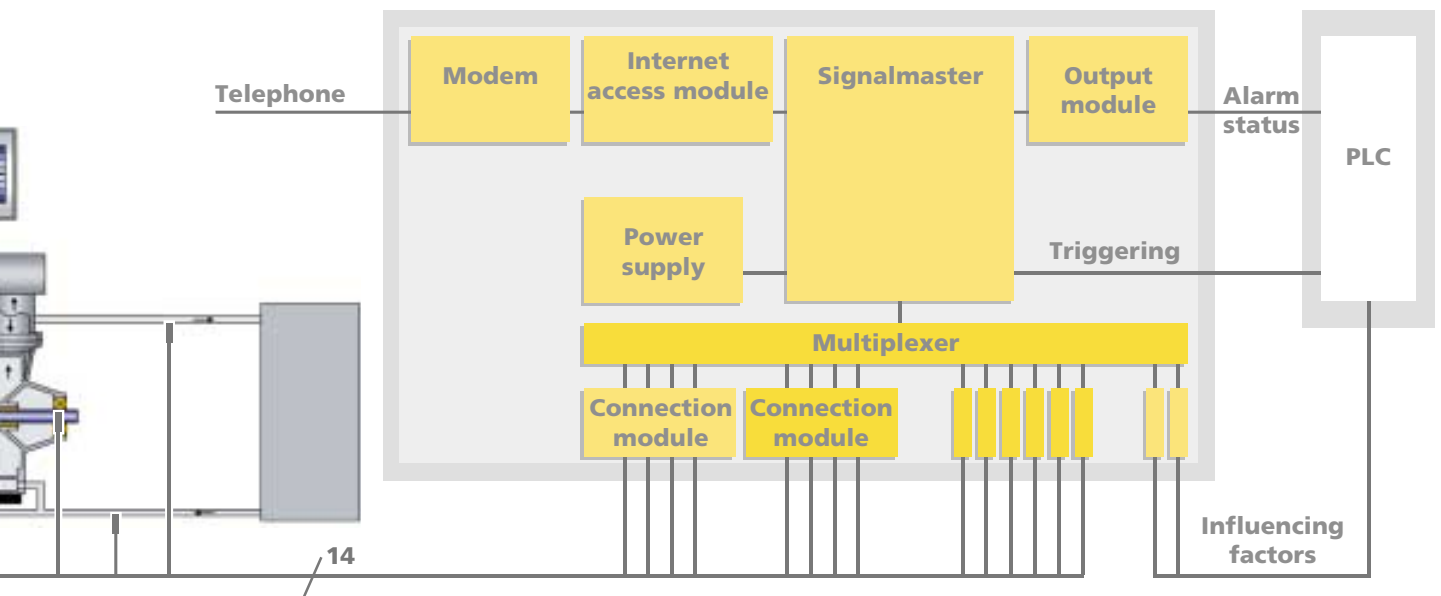
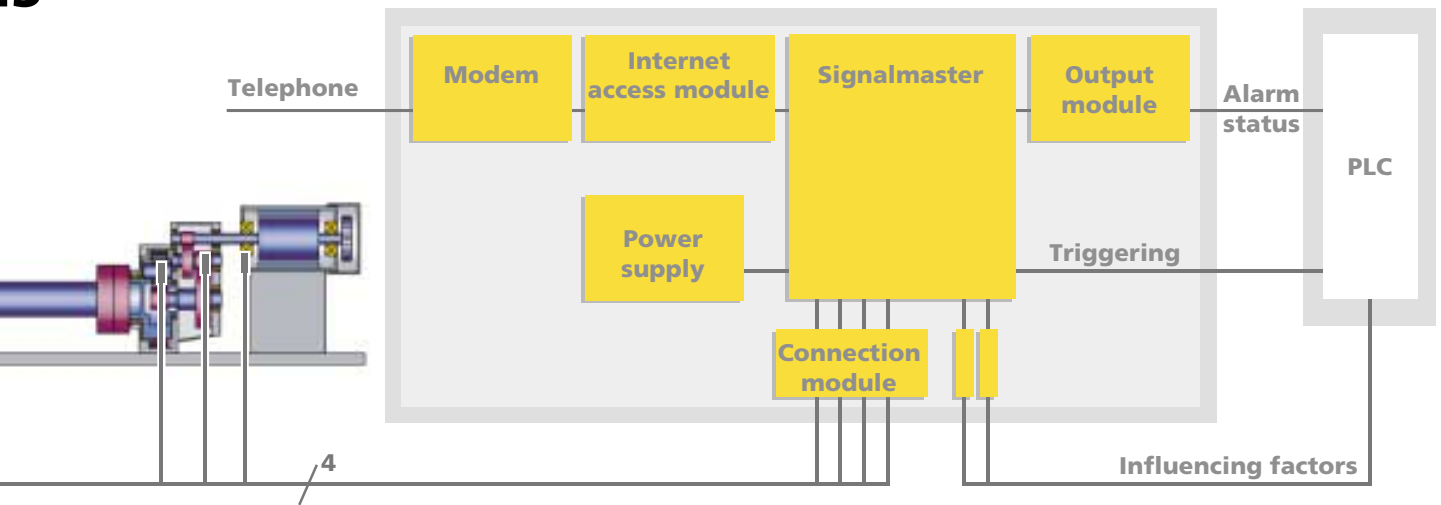


## Type C:

- **Many individual aggregates in widespread systems**
- **Maximum of 108 sensors (LineDrive)**
- **Measured value recording in multiplexed operation**
- **Greater lengths of cable**
- **Low installation expense (single-string architecture)**



MS



# VIBRONET® Sign@lmaster: Complete system for

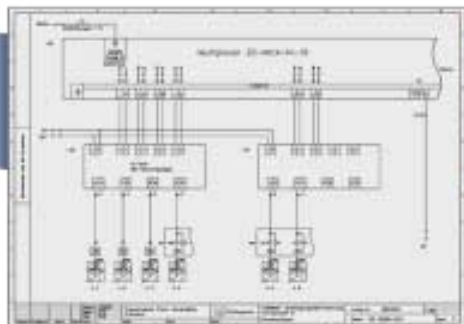


MUX

VIBRONET®  
Signalmaster

## Project planning

- System engineering
- Application-specific adaptation
- System connection
- Wiring diagrams
- Installation diagrams
- System configuration
- System documentation



## Switching cabinet installation

- Wall cabinets for smaller systems
- Upright cabinets for large monitoring systems
- Installation in 19" racks
- Full delivery
- Final inspection and function checks



## Installation

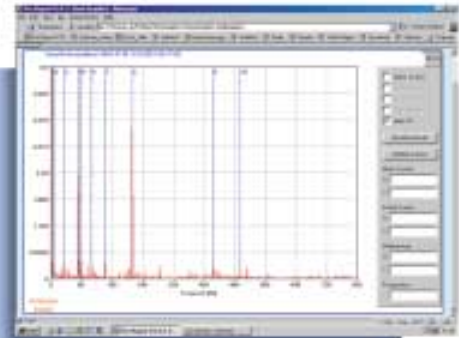
- Many years of experience
- Sensor installation
- Installation of the control cabinet, connecting the network
- Complete or partial installation on site
- Leading installation companies
- Installation check



# from a single source

## Telemonitoring service

- Telediagnosis by specialists
- System analysis
- Diagnostic reports
- Maintenance recommendations
- Data storage and maintenance



## System maintenance

- Update and upgrade of hardware and software
- System optimization
- Database maintenance
- Function check and system calibration



## Commissioning

- On-site commissioning
- Adaptation of limit settings
- Interface configuration
- Function check and acceptance



experience  
n, cable laying,  
e switching cab-  
up the system  
installations

on  
s



If you want to spend more time taking care of the smooth running of your machines and systems, and less on the installation and maintenance of a condition monitoring system, simply leave this to the online specialists of PRÜFTECHNIK AG. Naturally, you decide whether to make use of the complete range of services from project planning to commissioning, or to carry out individual tasks yourself.

And if you want, we can continue to support the system afterwards. Our diagnostic experts will provide you with regular reports on your systems and make appropriate maintenance recommendations. An increase in system availability or an improvement of production quality is the guaranteed result.

## Technical data:

### Analog inputs

VIB 5.802 / 5.801:  
6 differential inputs (3 of them simultaneous) or  
2 differential and 8 ground-referenced inputs (can be freely combined)  
VIB 5.902 / 5.901:  
6 differential inputs (1 of them simultaneous) or 12 ground-referenced inputs

### Measurement ranges, analog input

$\pm 10$  V,  $\pm 1$  V,  $\pm 100$  mV,  $\pm 10$  mV

### Dynamics / Resolution

96 dB / 16 bit

### Accuracy, analog input

0.05% of input signal

### Common mode rejection

> 115 dB at a gain of 60 dB

### Temperature coefficient, analog input

20 ppm / K

### Signal coupling

DC (AC/DC on the differential inputs)

### Input protective circuit

Simultaneous differential input:  $\pm 30$  V  
Differential input:  $\pm 13$  V  
Digital input: + 7 V

### Sampling frequency of analog inputs

153.6 / 76.8 / 38.4 / 19.2 / 9.6 kHz  
SW down sampling: 4.8 / 2.4 / 1.2 / 0.6 / 0.3 / 0.15 kHz

### Frequency range

48 kHz to 48 Hz, divided into 11 ranges

### Antialiasing

Dynamic adaptation

### Phase offset, simultaneous analog inputs

< 0.05 %

### Crosstalk between analog inputs

> 100 dB

### Dynamic amplitude error

< -0.1 dB (up to 50% of the maximum signal frequency)  
< -0.5 dB (up to 75% of the maximum signal frequency)  
< -1.0 dB (up to 80% of the maximum signal frequency)  
< -2.5 dB (up to 100% of the maximum signal frequency)

### Frequency resolution

400, 800, 1600, 3200, 6400, 12800 lines

### Envelope curve

Digital input filter, selectable

### Counter inputs

Number: 2  
Input level: TTL, lo active (closer)  
Max. counter freq.: 100 Hz

### Digital key phaser input

TTL level

### Digital inputs/outputs

4, input: TTL, output: 5V, 5 mA

### Digital outputs

4 outputs, 5V, 5 mA

### FET switching output

12 V DC, 1A, switchable

### Sensor supply outputs

3 current sources, 2 mA fixed, ICP<sup>®</sup> compatible, Accuracy: 0.2%

### Expanded number of channels

Possible via external multiplexers

### Types of operation

Frequency analysis, transient memory, on-line classification, trending

### Measurement functions

Time signal, spectrum, simple integration of the spectrum, envelope curve, orbit, shock pulse (bearing condition), vibration acceleration (RMS), vibration velocity (RMS)

### RAM capacity

8 MB (optionally 20 MB)

### Flash memory capacity

16 MB (optionally 24 or 48 MB)

### Ethernet interface

Number: 1, data rate: 10 Mbit

### RS232 interface

Number: 2, data rate: 38.4 kbit

### Power supply

5,25 V ( $\pm 3\%$ ) / 3 A and  
12 V ( $\pm 5\%$ ) / 1,2 A

### Relative humidity

10% to 100%, dew forming allowed

### Operating temperature

-20°C to +70°C / -4°F to +158°F

### Shock load capacity

30g

### Vibration load capacity

2g constant acceleration in the range of 10 to 150 Hz

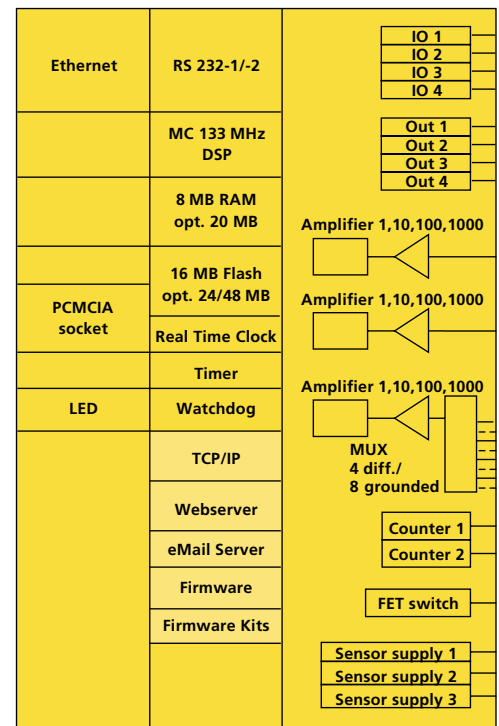
### Dimensions

Approx. 260 x 130 x 150 mm (LxWxH)  
Approx 10 1/4 x 5 1/8 x 5 7/8 inch (LxWxH)

### Total weight

Approx. 2.2 kg / 5 lb.

### VIBRONET<sup>®</sup> Signalmaster Structure



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