

# VibroSPY - industrial monitoring system

## General characteristics

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**VibroSPY** is a system designed for network remote working and equipped with LAN interface, which allows to collect data from various sensing elements placed at any distance to each other. The device is equipped with software allowing to define the network of monitored objects, collect measurement data related to operation of machines, measure any physical quantities and match relevant technical documentation with them.

The monitoring system may be equipped with an unlimited number of **VibroSPY** devices, each of them is able to work according to an individual measurement schedule. All monitoring devices are connected to Ethernet, which facilitates the installation of the system on various objects. There are wire and wireless (**Wi-Fi**) network access points allowing to construct the monitoring network in various environmental conditions. **VibroSPY** allows to connect any types of sensing elements with an analog output, **ICP sensors** and sensors with a current loop output. Utilized sensors may be sensors of various physical quantities such as **vibration acceleration, temperature, humidity, gas density**, etc.

A single **VibroSPY** device has 4 analog inputs, 4 programmable digital inputs and 4 programmable relay outputs. Analog inputs allow to measure any physical quantities, digital inputs allow to generate complex measurement sequences, whereas relay outputs may be controlled when setpoints are exceeded on a given channel. Programmable digital inputs allow to, inter alia, measure the speed of rotors, working times of machines and to gain many other measurement combinations characteristic of various measurement conditions. It is also possible to register video image from particular measurement environment, to archive and collect it on computer disc, which allows to make a thorough cause and effect analysis of a breakdown.

Connection to Ethernet network provides remote access to measurement data for certain users. This property allows to remote-track any machine park or monitored objects located in distant towns and countries.

## Gallery

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## Characteristics of the instrument

- 16 bit measurement resolution
- range of sampling frequencies: 5Hz - 200kHz
- analog bandwidth: 100kHz
- quick LAN interface (100Mb)
- 4 universal analog channels
- 4 programmable digital channels
- 4 programmable relay channels (max. current: 5A/250V AC, 5A/30V DC)
- possibility of working via RS-485 interface
- diodes that independently signal the condition of each channel, i.e. OK, WARNING, ERROR - measurement and registration of vibrations and temperature from any objects
- setting critical setpoints of the measured quantities, upon the exceeding of which the system may notify of a problem or perform a reaction programmed for a given event
- single- or two-plane in place balancing of rotating elements
- measurement of other physical quantities, such as humidity, gas density, etc.
- possibility of remote work and control of machine parks in factories located at any distance from one another
- possibility of adding any number of devices to the measurement network
- possibility of connecting any LAN interface devices to **VibroSPY** system
- easy-to-use application software
- solid metal casing
- possibility of placing in hermetic, water-proof casing
- fastening on DIN mount
- current consumption ~300mA
- power supply 24V

## The concept of the system

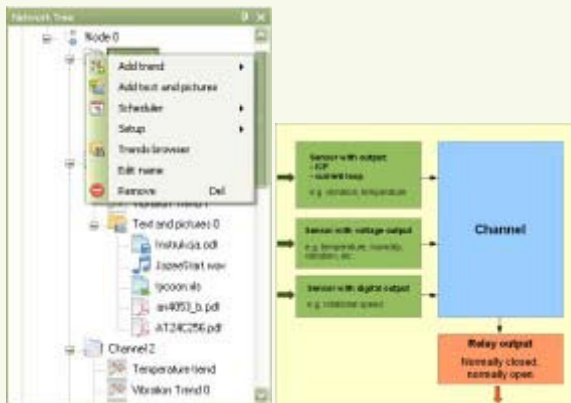


The system's main function consists in collecting measurement data from vibration sensors located in any industrial environment, at any distance from one another. The device's quick reaction after admissible setpoints have been violated secures the facility against

potential consequences of the breakdown.

VibroSPY is based on conventional Ethernet network, which makes it very easy to expand, and the universality of analog inputs extends the scope of applications and, at the same time, allows to measure any physical quantity. Collecting measurement data related to operation of any devices allows to predict the moment of their renovation and, consequently, to secure them against unexpected shutdown.

## Defining the network of monitored objects

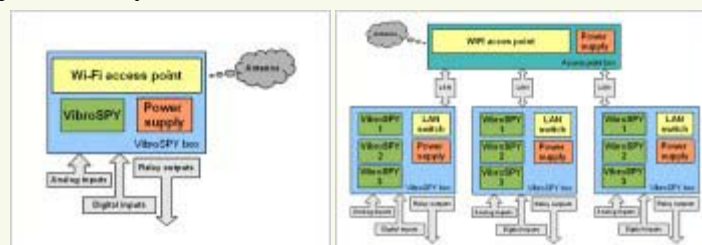


The network of monitored industrial facilities may be defined in a user-friendly manner. The network structure is based on a system of nodes such as the company, building, channel, documentation, etc. The above-mentioned defining manner allows to clearly design particular nodes of the network, provides easy access to measurement data, technical documentation, and allows to easily define the reason of the problem that occurred during work of a particular machine. Modes such as the company or building allow to create space topography of the machine park, while the channel allows to define any number of trends per a particular measurement sensor.

VibroSPY has 4 measurement channels. There are 2 analog inputs, 1 digital input and 1 relay output connected with each measurement channel, according to the [following diagram](#)

## Freedom of configuration

VibroSPY is equipped with Ethernet communication interface, thanks to which it is possible to use all its advantages when creating the measurement network both for small (one module) and big objects (many modules connected in a network).



## Defining trend diagrams

In case of monitoring vibrations the trend reflects the changes of vibrations of the machine in the defined frequency band related to the time domain. Vibrations of particular

parts of the machine are within defined frequency bands. If one knows these frequency ranges for a particular device, it is possible to impose admissible vibration levels corresponding to particular elements. Admissible band vibration levels are counted as the RMS value. For a particular diagram it is possible to define any values of critical levels and the moment of registration of measurement data. Exceeding critical setpoints will make a defined LED diode light and control the relay output. The reading from the vibration sensor may be observed in the time domain or in the form of an amplitude spectrum in the frequency domain. Apart from collection of data as planned, the mechanism allows to take certain steps aimed to prevent a breakdown.



## Data acquisition process control



The *Process control* window is used for an easy control of the data acquisition process. From this window an operator may easily interpret the measurement results, change channel configuration, quickly find the cause of the defect, control the entire acquisition process and, consequently and react quickly enough.

## Sensor data base



There may be various sensors connected to VibroSPY. In the event of vibrations, we may connect acceleration sensors, speed sensors and vibrating element hashing sensors by entering to each sensor sensitivity and work frequency range. Temperature sensors and other sensors

may be also defined in the base.