• Universal 1-16 channel monitoring systems
• Online monitoring
• Create alarm conditions
• Recording
• Regulation and control of processes
• Monitoring of temperature, humidity, CO2 and other analog and two-state values

Traceable calibration certificate from the manufacturer with traceability in accordance with EN ISO/IEC 17025
Device enables:

- to measure and process 1 to 16 input signals
- to acquire autonomous time record of measured values
- create alarm states
- to perform other actions based on created alarms (audible, visual indication, controlling of relay outputs, sending SMS message, controlling of telephone dialer, sending of messages via several protocols of the Ethernet interface etc.)
- to monitor on-line measured values and states

Features:

- Monitoring system MS contains up to 16 inputs
  » MS6D: 16 universal software programmable inputs, see page 8
  » MS55D: modular 1 - 16 inputs, wide range of moduls on the page 9
- Memory for 480,000 readings, automatic data download is possible
- Logging interval from 1 sec to 24 hours, for each channel individually selectable
- Various recording options
- High system accuracy
- A virtual (calculated) channels on unused inputs
- Indication of alarms states

The table below shows the characteristic differences between the systems. The Monitoring System MS55D uses hardware modules, while MS6D, MS6R or MS6-Rack is equipped with 16 universal, software configurable inputs.

<table>
<thead>
<tr>
<th>main differences</th>
<th>MS6D</th>
<th>MS55D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inputs</td>
<td>16 software programmable inputs</td>
<td>1 - 16 hardware input modules</td>
</tr>
<tr>
<td>Maximum measured DC current</td>
<td>20 mA dc</td>
<td>5 A dc</td>
</tr>
<tr>
<td>Maximum measured DC voltage</td>
<td>10 V dc</td>
<td>75 V dc</td>
</tr>
<tr>
<td>Most sensitive measuring range of dc voltage</td>
<td>18 mV dc</td>
<td>100 mV dc</td>
</tr>
<tr>
<td>Maximum measured AC current</td>
<td>-</td>
<td>5 A ac</td>
</tr>
<tr>
<td>Maximum measured AC voltage</td>
<td>-</td>
<td>50 V ac</td>
</tr>
<tr>
<td>Input for measurement of frequency</td>
<td>-</td>
<td>0 to 5 kHz</td>
</tr>
<tr>
<td>Input for counting of pulses</td>
<td>-</td>
<td>Yes</td>
</tr>
</tbody>
</table>

MS6D and its variations

Each Monitoring System contains 16 software configurable inputs. See them on the page 8.

MS55D

The user can select the hardware modules to be fitted into the monitoring system MS. See the page 9.
Recording and online monitoring of temperature and humidity, leaks and smoke in data centers and server rooms.

Building and energy management. Completes temperature, humidity, pressure and CO2 monitoring. Recording of energy consumption.

Recording of, inter alia, pulse signals, pressures, temperatures, voltages and flows.

The registration and monitoring of processes, the registration of various parameters in test facilities.

Registration of temperatures, carbon dioxide (CO2) and other critical parameters in the context of GLP or GMP regulations.

Comet logger may be used in a wide range of applications, in clean and sterile environments as well as in the contaminated industrial environments. There is also the outdoor solution together with the watertight case. Below is an overview of some common applications.

**Food industry and supermarkets.** Registration and monitoring critical temperature with respect to HACCP regulations.

Recorded values are stored to a non volatile electronic memory and may be supplemented by the accompanying text - processes. Various options for data recording can be set up.

### Various options for data recording

In addition to continuous recording mode with a constant interval can also enjoy a variety of other options. You can record data with its own interval only when certain conditions are valid, which may depend on measured values, time or direct user intervention. For example, you can control recording via an external contact or it is possible to set faster sampling mode during alarm conditions.

### Processes

Process is the name of action recorded by data logger in time. User of data logger can enter from its keyboard to each input channel (except binary inputs) different previously preset names of processes and such way to distinguish in record, which action was performed at that time.

### In case of power failure

In the event of a power failure, the backed up datalogger will continue to measure. Recorded data contains date and time of power failure. If the data logger is connected to GSM modem, the operator is immediately aware of difficulties.

### Alerts via SMS texts

All data loggers are equipped with RS232 interface. GSM modem (GPRS router) can be connected to that port for transmitting alarm SMS texts. Up to four phone numbers can be set. Using text messages can also read the current values.

### Communication through GSM modem, GPRS / EDGE router

Modems can be used to set up a monitoring system MS, reading the recorded data, reading the current values and to communicate via SMS messages. The offered modems have been thoroughly tested to ensure maximum reliability.

**Alerts via:**

- Integrated buzzer
- External siren or lights
- Email messages
- SMS texts via connected GPRS modem or router
- Telephone dialer

**Relay on**

Monitoring system MS activates selected relays (integrated relay ALARM OUT or external relay module) depending on alarm states. You can combine up to 16 switching external relay depending on arisen conditions. One of these conditions can be controlled via SMS messages.

### Email messages

Because of Ethernet interface you can expand communication possibilities of measuring system MS. Then alarm emails are sent directly to your email inbox. You can also read the current data via web browser.

### Maximum connectable voltage on relay and current

1A/24Vac

**Output signal:**

5V/4.8V max. current 50 mA
Monitoring system MS may be configured for almost any desired measurement application. Sensors can be wired to datalogger in star-like connection as well as in serial. Combination of both is also possible. The monitoring system MS is characterized by a wide range of communication interfaces such as the RS232, RS485, USB, Ethernet and GSM or GPRS modem. Thanks to Wi-Fi routers several measuring systems MS can be wirelessly connected to a network.

**Common connectivity options**

- If you need more than 16 input channels

In the event that the number of 16 channels is insufficient, then it is possible to connect several units among themselves via RS485 or via the Ethernet network. A unique RS485 or IP address is assigned to each unit. However the distance between data loggers MS connected together via RS485 should not exceed 1200 meters.

- Maximum length of the entire cabling is 1200m and maximum 32 data loggers can be connected
- Maximum communication speed of 115200Bd (download of full memory in 4min 30s)
- Communication takes place through the software for data logger
- Communication and sending alarm messages by means of several network protocols is enabled (web, SNMP, SMTP, SysLog, SOAP, ModBus)
- Each data logger has its IP address (support DHCP)
Parameters of configurable inputs MS6D

Each Monitoring System contains 16 software configurable inputs from user PC. The modular design gives you the freedom to start with several input modules and to expand the system later on.

Parameters of inputs MS55D

<table>
<thead>
<tr>
<th>Measured values</th>
<th>Module type</th>
<th>Range</th>
<th>Accuracy</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC</td>
<td>A1</td>
<td>0 to 20 mA</td>
<td>±0.1 % FS</td>
<td>with source approximately 2 V for two-wire transducers with current loop (e.g., temperature and humidity transducers) (Current)</td>
</tr>
<tr>
<td>DC</td>
<td>B1</td>
<td>0 to 20mA</td>
<td>±0.1 % FS</td>
<td>only galv. not isolated (Current)</td>
</tr>
<tr>
<td>AC</td>
<td>C1</td>
<td>0 to 20 mA</td>
<td>±1.1 % FS</td>
<td>galvanic isolated, sinusoidal signal at a frequency of 50 Hz (Current)</td>
</tr>
<tr>
<td>AC</td>
<td>D1</td>
<td>0 to 1 V</td>
<td>±0.1 % FS</td>
<td>input resistance Rin by type 700 kOhms to 10 Mohms (Current)</td>
</tr>
<tr>
<td>AC</td>
<td>D2</td>
<td>0 to 10 V</td>
<td>±0.1 % FS</td>
<td>input resistance Rin by type 700 kOhms to 10 Mohms (Current)</td>
</tr>
<tr>
<td>AC</td>
<td>E1</td>
<td>0 to 1 V</td>
<td>±1 % FS</td>
<td>only galv. isolated, sinusoidal signal at a frequency of 50 Hz (Current)</td>
</tr>
<tr>
<td>AC</td>
<td>E2</td>
<td>0 to 10 V</td>
<td>±1 % FS</td>
<td>only galv. isolated, sinusoidal signal at a frequency of 50 Hz (Current)</td>
</tr>
<tr>
<td>DC</td>
<td>F1</td>
<td>0 to 20 mA</td>
<td>±0.1 % FS</td>
<td>with source approximately 2 V for two-wire transducers with current loop (e.g., temperature and humidity transducers) (Current)</td>
</tr>
<tr>
<td>AC</td>
<td>G1</td>
<td>0 to 20 mA</td>
<td>±1.1 % FS</td>
<td>galvanic isolated, sinusoidal signal at a frequency of 50 Hz (Current)</td>
</tr>
<tr>
<td>AC</td>
<td>G2</td>
<td>0 to 1 V</td>
<td>±0.1 % FS</td>
<td>input resistance Rin by type 700 kOhms to 10 Mohms (Current)</td>
</tr>
<tr>
<td>AC</td>
<td>H1</td>
<td>0 to 10 V</td>
<td>±0.1 % FS</td>
<td>input resistance Rin by type 700 kOhms to 10 Mohms (Current)</td>
</tr>
<tr>
<td>AC</td>
<td>I1</td>
<td>0 to 1 V</td>
<td>±1 % FS</td>
<td>only galv. isolated, sinusoidal signal at a frequency of 50 Hz (Current)</td>
</tr>
<tr>
<td>AC</td>
<td>I2</td>
<td>0 to 10 V</td>
<td>±1 % FS</td>
<td>only galv. isolated, sinusoidal signal at a frequency of 50 Hz (Current)</td>
</tr>
</tbody>
</table>

Note: The inputs are not galvanically isolated (except RS485 input). If you need galvanically isolated inputs then you can choose from a wide range of input modules for monitoring system MS55D. FS means (full scale) and MV (measured Value).
Clear presentation of measured data

For a clear reading and processing the collected data is available user-friendly software which consists two parts - communication and analysis that allows you to work with spreadsheets and graphs.

Software interface is intuitive and easy to use thanks to software wizard. It ensures easy operation even for beginner who starts working with monitoring system MS. Software is Compatible with Windows®.

Features:
- Clear presentation of measured data in tables and charts
- Easy export to MsExcel® files or PDF
- Software allows to control all MS functions, settings of alarms, browsing and printing of recorded data in tables or charts

Export

Easy export of measured data to XLS or DBF files. Export of measured data can be fully automatized. Software allows communication with MS monitoring systems via RS232, RS485, USB, via GSM modem or via Ethernet.

Statistic

Maximal or minimal value, average, deviation, number of stored values, all these can be easily and clearly shown in table mode.

Data

Autodownload

Recording system MS is able to automatically send the measured data to a computer via the selected communication interface - USB, RS485, Ethernet or GSM modem connected to RS232.

Frequency of automatic reading can be set. This feature is available even if more MS systems is connected together.

Real time monitoring with software

Monitoring system MS allows to monitor all monitored sites in real time. Charts, tables, alarms can be displayed in „DISPLAY“ mode. This mode can be shared on multiple computers.

Data processing via web interface

Current data can be displayed in web browser using HTML pages. Process of measuring can be simultaneously monitored by several user groups (techniques, management, etc.). Device must be connected to the Internet/Intranet.

Autodownload settings

settings of communication

settings of autodownload

display mode

web display mode

data displayed by web browser

Table of measured values

chart of readings

statistic data

Table of measured values
Comet Database - system for data acquisition and analysis

For users of monitoring system MS is available software solution for data collection to one central database. It is based on MS SQL or MySQL. Software system is suitable for users who want to analyze data from multiple loggers MS or other products of Comet System.

Comet Database offers:

- data stored in one place and accessible with Comet Database Viewer
- to present data in table and graph
- to print and export data
- alarms via SMS texts and emails
- acoustic and visual signalization of alarms
- compatibility with all Comet System devices and 3rd party devices

Comet Database contains many useful tools for data analysis - graphs, tables, statistics etc. Comet database also offers advanced features - secured access to data, accounts administration, remote monitoring, error diagnostic, database backup etc.

When do you need Comet Database?

- for 24 hours supervision
- as the storage place for your data
- for simple and clear access to your measured values
- as the storage place for all devices Comet System
- for alarm SMS texts and e-mails

Required software for running Comet Database?

Optional software SWR006 + Comet Database

Analytical software SWR006 see page 10-11

Comet Database Viewer

Each purchased Comet Database already contains one licence of Database Viewer. This low cost browser enables to several clients to view database from different places on network/internet. Another viewer licences can be purchased separately for other users of Comet Database. It is possible to assign limited rights for either read or write, or even administration rights for configuration.

GSM modem

24h supervision

Alarm SMS text

Remote access to Comet Database

MS Monitoring system

Online

Web Sensors

Online

Sensors RS485/232

Online
Optional accessories for monitoring system MS

**Sensors / transmitters / probes**

Comet System produces a wide range of sensors which are compatible with monitoring system MS. There exist two ways of connection and their combination. Analog Sensors with 4-20mA, 0-10V output are wired to datalogger in star-like connection and their combination. Analog sensors 4-20 mA, 0-10 V

Digital sensors and regulators with RS485 output

<table>
<thead>
<tr>
<th>Output</th>
<th>4-20 mA</th>
<th>0-10 V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>T8148</td>
<td>T8248</td>
</tr>
</tbody>
</table>

**Temperature and humidity transmitter**

<table>
<thead>
<tr>
<th>Output</th>
<th>4-20 mA</th>
<th>0-10 V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>T3110</td>
<td>T0210</td>
</tr>
</tbody>
</table>

**Temperature and humidity transmitter with external probe**

<table>
<thead>
<tr>
<th>Output</th>
<th>4-20 mA</th>
<th>0-10 V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>T3111</td>
<td>T0211</td>
</tr>
</tbody>
</table>

**Communication, converters**

**RS485 DIN** - Galvanically isolated input for serial RS485 signal (for MS6D).

Input is designed for reading from devices supporting protocol Modbus RTU or Advantech. RS485 DIN port is equipped additionally.

**MP030** - RS232 connector with terminals RS232 connector with terminals for RS232 interface connection by means of terminals, not by D-Sub connector.

**MP021** - Converter RS232/RS485
 Converter RS485/RS232 for serial port COMs at the PC side, including ac/dc adapter and terminator T485. This converter is suitable in the case when the monitoring system MS is away from the computer by more than 10 meters.

**MP022** - Converter USB/RS485
 Converter for USB port at the PC side, including terminator T485. Powered from computer USB interface. Using this converter is suitable in the case when the monitoring system MS is away from the computer by more than 10 meters.

**M1061** - RP input module for datalogger  MS55D for serial signal RS485
 It is necessary to connect to one RP module only devices communicating with the same communication speed and the same communication protocol. Data logger can contain several RP modules. Protocols Modbus RTU or Advantech are supported.

**MP042** - Ethernet communication port
 Ethernet interface expands communication possibilities of measuring system MS. Communication via SNMP, SOAP, web pages, Modbus TCP. In case of limits exceeding alarming events will be activated and warning e-mail or SNMP trap will be sent to specified addresses.

**MP023** - Converter RS485 to Ethernet
 Designed for several data loggers connected via RS485 network for connection to the computer via Ethernet. Including ac/dc adapter and terminator T485.

**Other accessories for installation and mounting can be found on our website.**

**Sensors / transmitters / probes**

Other types of industrial and interior sensors, including regulators and probes can be found on our website www.cometsystem.cz

**GPRS/Wi-Fi communication**

**GPRS/EDGE router - MP052**
 Router is intended for MS6D, MS6R, MS6-Rack and MS55D which are equipped with an Ethernet interface MP042. Using GPRS / EDGE router can be recommended as a reliable, fast and low operating cost solution compared to using a dial-up connection with a modem GSKT-M.

**MP050**
 Relays module is designed for mounting into MS6-Rack. It contains 16 mains relays maximum voltage 50 V AC/75 VDC with switching-over contacts. A connection cable and blind plug are supplied.

**Power and backup adapters**

**A1904** Universal ac/dc adapter 24 Vdc/1 A for connection to terminals, switch-mode.

**A5259** Universal linear ac/dc adapter 230 V-50 Hz/ 21 Vdc/0.5 A - for connection to terminals.

**A5948** Power supply 230V-50Hz/21Vdc/0.5A for DIN rail 25mm, dual terminals 2Wb, switch-mode, including DIN rail of 100mm length.

**A5963** Backup power supply A5963 with battery A7963 - model MINI-BAT/240/1.3AH. Power supply is designed for mounting to 35 mm DIN.

**A6963** It is necessary to buy two pieces of batteries A7966 12 V 1.5 Ah for this backup power supply. Not suitable for installation into closed switchboard.

**MP015** Terminal with dual line alphanumeric LCD and control buttons, audio alarm indication and 32 alarm LEDs - for panel mounting or mounting to a case lid. Identical functions as built-in terminal of MS data logger. Maximum cable length to data logger 50m. It is necessary to order the MP017 connection cable to data logger (length of cable 60cm, 5m, 10m).

**MP032** Built in a IP54 protection case, including 2m cable with covered terminals.

**Software Comet Database offers more tools for data management and alerts.**

**A solution for extreme conditions**

- up to IP65

**MP048** MS55 data logger in IP54 protection case with connected terminal at the lid.

**MP055** MS55 data logger in IP54 protection case with connected terminal at the lid.

**MP033** Case with IP54 protection with wall holders and MS data logger holders - no cutout in the lid.

**Note:** Dimensions of all cases is 270 x 570 x 140 mm. The relay board MP018 can be placed inside.

**External terminal**

**MP016** Terminal with dual line alphanumeric LCD and control buttons, audio alarm indication and 32 alarm LEDs - for panel mounting or mounting to a case lid. Identical functions as built-in terminal of MS data logger. Maximum cable length to data logger 50m. It is necessary to order the MP017 connection cable to data logger (length of cable 60cm, 5m, 10m).

**www.cometsystem.cz**
### General parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material of housing</td>
<td>metal</td>
</tr>
<tr>
<td>Operating conditions</td>
<td>0 to 50 °C</td>
</tr>
<tr>
<td>Clock</td>
<td>backed-up real-time clock</td>
</tr>
<tr>
<td>Protection</td>
<td>IP20</td>
</tr>
<tr>
<td>Connectors</td>
<td>standard Wago plug terminals (detachable)</td>
</tr>
<tr>
<td>Power</td>
<td>24 Vdc, consumption of data logger itself</td>
</tr>
<tr>
<td></td>
<td>approximately 80 mA</td>
</tr>
<tr>
<td>Dimension of MS6D</td>
<td>215 x 225 x 44 mm</td>
</tr>
<tr>
<td>Dimension of MS6 - Rack</td>
<td>483 x 190 x 44 mm</td>
</tr>
<tr>
<td>Dimension of MS6R</td>
<td>225 x 230 x 44 mm</td>
</tr>
<tr>
<td>Dimension of MS55D</td>
<td>215 x 225 x 60 mm</td>
</tr>
</tbody>
</table>

**Catalogue:** COMET EN - Monitoring Systems 10/2015