

Monitoring system with data logger MS55D



- Server rooms, data centers
- Food and beverages industry
- Pharmaceutical industry
- Blood stations, pharmacies
- Horticulture and cultivation of plants
- HVAC - heating, ventilation, air conditioning
- Building automation
- Research and development
- Laboratories



Data logger MS55D replaces data loggers MS5D, MS5.

The reason of replacement is to offer system to user, which works from the user point identically as MS6 system, but it is equipped with input modules known from MS5 data loggers.

MS55D data loggers support all advantages of MS6 data loggers including faster communication protocol.

MS55D is designed to applications, where universal inputs of MS6 do not offer required parameters.

Sixteen-channel data loggers are designed for recording of values from transducers of variety of quantities, alarm state indication, and process control.

Data logger with transducers configured accordingly to client order can measure analog signals, frequency, count impulses, evaluate two-state quantities and read data from devices compatible with Modbus RTU and ADAM Advantech protocol. Input signals are connected to removable terminal block located on the logger upper side.

Analyzing of the record is enabled after data download to the personal computer by means of the included program via USB, RS232, Ethernet or GSM modem. Local or remote online data presentation is also enabled.

Data logger enables to:

- Acquire data online by means of the Ethernet interface. Communication via: SNMP, SOAP, internet www pages.
- Get information from data logger by means of the SMS messages - actual values, alarms, memory occupation and others - as response to SMS request from the user and after alarm creation at the logger. Data logger should be connected via GSM modem supporting SMS.
- Configure individually each input channel for measurement, alarm evaluation and data logging, including individual data logging interval for each input.
- Program individually each input channel different modes of record (continuous record, time dependent record, record only if specified logic conditions are matched, record triggered by external signal, etc.).
- Set up to four different logic conditions for each channel to active alarm. Each condition compares measured values from inputs with set limits. It is possible to set hysteresis and delay of condition validity.
- Assign to each input channel name of actual recorded process to identify monitored object (e.g. type of monitored product). It is enabled to select this name from data logger keyboard during the operation.
- Indicate alarm state after matching defined combination up to four alarms from any inputs.
- Store several configuration profiles (all logger parameters setting) for different measuring tasks and select profiles from logger keyboard.
- Connect several data loggers via RS485 bus or Ethernet network.

Monitoring system with data logger MS55D

PROGRAM FOR PERSONAL COMPUTER

Setting of all system parameters and the stored data processing is performed by the PC software for Windows.

- **Included software** - freeware is possible to download free from www.cometsystem.cz. It enables to communicate with logger through a serial RS232 link or through an RS485 network (long distance or several networked loggers), via USB, by means of modems (line or GSM) or via optional Ethernet interface. It also enables to configure the logger, read recorded values and display actual values of the inputs. It is possible to view and print recorded values in numeric format and export to dbf format for consequent analysis in any data processor (e.g. MS Excel). Free program version does not work with graphs.
- **DBM MS Logger Program** - low cost database program enables i.a.:
 - To view selected channels from any Comet logger together with selected channels of other Comet loggers.
 - Measurement from different Comet devices is possible to combine in one table or graph.
 - To choose any time interval for analysis.
 - Print, export to PDF - table and graph.
 Other freeware needed for operation: database server Microsoft SQL or MySQL.
- **Optional software SWR006** for Windows is also available - more information on page 35

TECHNICAL PARAMETERS

Memory type:	internal SRAM, backed-up by Lithium battery
Total memory capacity:	2MB (up to 480 000 values)
Data logging modes:	noncyclic - logging stops after filling the memory cyclic - after filling memory oldest data is overwritten by new
Data logging interval:	adjustable individually for all input channels from 1 second to 24 hours
Real time clock:	year, leap year, month, day, hour, minute, second, backed-up by Lithium battery
Input measured values (1 to 16 inputs):	fixed by installed input modules for each channel (see table) in accordance with client's order
AD converter (analog channels):	resolution 16 bits, conversion duration approximately 60ms/channel
Supported interface for communication with computer:	RS232, cable up to 15 m. Enables direct connection with the PC or via GSM modem, including sending/reception of SMS messages - included USB interface - included RS485 - cable up to 1200 m, galvanically isolated, enables to connect several data loggers to one communication line - included Ethernet interface LAN - communication via: SNMP, SOAP, www pages - optionally
Communication speed:	9600, 19200, 57600, 115200 Bd
Outputs for alarm indication:	Red LED at the side of the case, 32 LEDs Relay max. 8A/250Vac, switching-over contact Voltage signal 0V/4.8V, maximum current 50mA. Alarm SMS messages E-mails, SNMP traps - see optional accessory
Power:	9 to 30Vdc, 24Vdc recommended
Operating temperature range:	0 to +50°C
Dimensions including connectors:	215 x 225 x 60 mm
Protection:	IP20
Warranty:	2 years



Power and communication connectors, alarm outputs

Included Accessories:

Traceable calibration certificate from the manufacturer with declared metrological ethalon traceability in accordance with EN ISO/IEC 17025. Included is also 2 meter RS232 communication cable, 1.8 meter USB cable and free program for Windows. Program enables to control all logger functions and view and print the record.

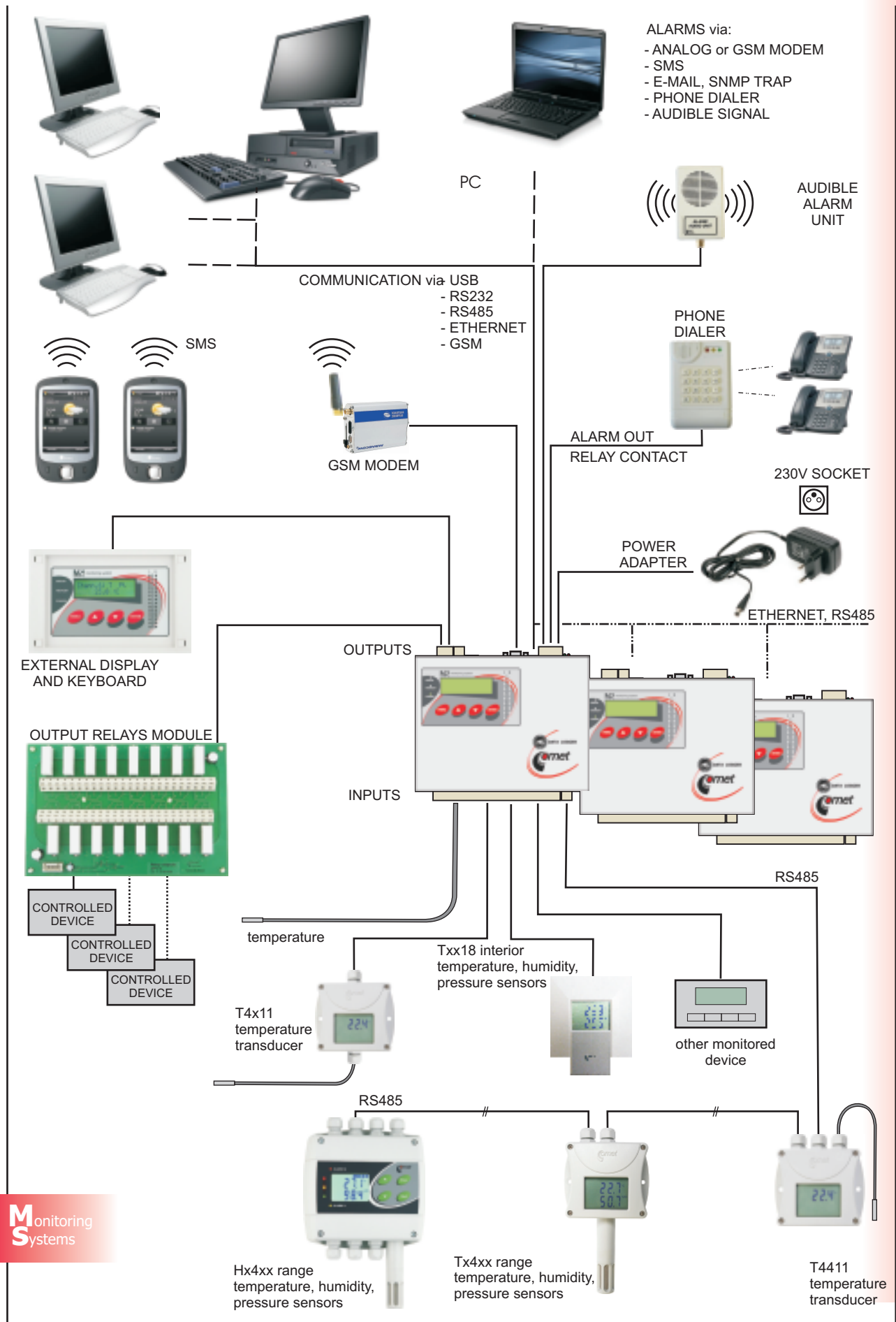
TABLE OF INPUTS

TYPE	MEASURED VALUE	ACCURACY	NOTE
A0	dc current 4 to 20 mA	±0.1% FS	With source approximately 21V for two-wire transducers with current loop (e.g. temperature and humidity transducers Comet). Only galvanically not isolated.
A1*	dc current 4 to 20 mA	±0.1% FS	for passive sensing of current
B0*	dc current 0 to 20 mA	±0.1% FS	
B1*	dc current 0 to 1A	±0.1% FS	
B2*	dc current 0 to 5A	±0.1% FS	
C0	ac current 0 to 20mA	±1% FS	galvanically isolated
C1	ac current 0 to 1A	±1% FS	galvanically isolated
C2	ac current 0 to 5A	±1% FS	galvanically isolated
D0*	dc voltage 0 to 100mV	±0.1% FS	
D1*	dc voltage 0 to 1V	±0.1% FS	
D2*	dc voltage 0 to 10V	±0.1% FS	
D5*	dc voltage -10 to +10V	±0.1% FS (±20mV)	
D4*	dc voltage +75V	±0.1% FS	
E0	ac voltage 0 to 100mV	±1% FS	galvanically isolated
E1	ac voltage 0 to 1V	±1% FS	galvanically isolated
E2	ac voltage 0 to 10V	±1% FS	galvanically isolated
E4	ac voltage 0 to 50V	±1% FS	galvanically isolated
F*	measurement of resistance	±0.1% FS	two-wire connection
J*	input for Nickel RTD temperature sensor Ni1000, 6180 ppm/°C, range -50 to +250°C	-50 to 100°C ±0.2°C 100 to 250°C ±0.2% from reading	two-wire connection
K*	input for Platinum RTD temperature sensor Pt100, range -140 to +600°C	-140 to +100°C ±0.2°C 100 to 600°C ±0.2% from reading	two-wire connection
K1*	input for Platinum RTD temperature sensor Pt1000, range -140 to +600°C	-140 to +100°C ±0.2°C 100 to 600°C ±0.2% from reading	two-wire connection available also with sensors and transmitters
K3	precise input for RTD temperature sensor Pt1000, range -10 to +50°C	±0.06°C	Two-wire connection. Only galvanically not isolated. Available also with sensors.
N*	thermocouple K (NiCr-Ni) range -70 to +1300°C	±(0.3% + 1.5°C) from reading	linearized, cold junction compensation
T*	thermocouple T (Cu-CuNi) range -200 to +400°C	±(0.3% + 1.5°C) from reading	linearized, cold junction compensation
O*	thermocouple J (Fe-Co) range -200 to +750°C	±(0.3% + 1.5°C) from reading	linearized, cold junction compensation
P*	thermocouple S (Pt10%Rh-Pt), range 0 to +1700°C	±(0.3% + 1.5°C) from reading from +200 to +1700°C	linearized, cold junction compensation
Q*	thermocouple B (Pt30%Rh-Pt), range +100 to +1800°C	±(0.3% + 1°C) from reading from	
S*	binary input for potential-less contact	Maximum resistance of closed contact: 1000 ohms minimum duration for recording: 200ms	
S1	binary voltage input	Voltage for „switched ON“ state: 3 to 30Vdc, input current in the „switched ON“ state: 1 to 9mA - depending on the applied voltage, minimum duration for indication of change: 200ms, galvanically isolated.	
CTU	counter input for voltage signal	Voltage for „HIGH“ state (for counter status change): 3 to 24Vdc, maximum pulse frequency 5kHz, backed-up operation, galvanically isolated.	
CTK	counter input for potential-less contact and open collector	Maximum pulse frequency 5kHz, programmable filter of pulse open collector ringing, backed-up operation during power mains failure, maximum resistance of closed contact: 10 kohms, minimum resistance of open contact: 250 kohms, galvanically unisolated.	
FU	input for measurement of frequency voltage signal	0 to 5kHz, resolution 1Hz, accuracy ±(0.2% from reading + 1Hz), input voltage for state "H": 3 to 24Vdc, input current in state "H": approximately 7mA, minimum duration of input impuls: 30us, galvanically isolated.	
FK	input for measurement of frequency contact switching	0 to 5kHz, resolution 1Hz, accuracy ±(0.2% from reading + 1Hz), maximum resistance of closed contact: 10 kohms, minimum resistance of open contact: 250 kohms, minimum duration of input pulse: 30us, galvanically unisolated.	
RP	input for serial signal RS485 for devices	E. g. measurement from Comet transmitters Tx4x4 with RS485 digital output. Galvanically isolated. Maximum speed 115200Bd.	

Notes: Inputs marked (*) are not galvanically isolated and have common ground. These inputs are available also as galvanic isolated. Galvanic isolated analog inputs are marked with letter G following the name of input type (e.g. input for passive measurement of current 4-20mA - type A1 - with galvanic isolation is marked A1G). Galvanic isolation is not designed as safety protection.

Architecture of monitoring system with data loggers MS

- ALARMS via:
- ANALOG or GSM MODEM
 - SMS
 - E-MAIL, SNMP TRAP
 - PHONE DIALER
 - AUDIBLE SIGNAL



Features of optional Ethernet interface of monitoring system MS



Ethernet interface

Data logger is designed for connection to standard computer network. The 10 and 100Mb/s Ethernet is supported. No need to build new data lines. Thanks this installation cost are essentially reduced and instant easy start of monitoring system operation is enabled.



Fast data download

Record download speed was increased four-times from previous MS5 data logger generation.



E-mail

Data logger sends warning emails up to three different addresses. E-mail is immediately sent after alarm state of monitored technological process appears. User is also informed on error states of device itself (measuring channel error, fulfilling of internal memory, self-test error). SMTP servers requiring authentication are also supported.



Secured WEB server

WWW server is built in the device. Here it is possible to monitor actual values, alarm states and information on data logger. Also access password for www pages can be entered. WWW pages are user modifiable. Free SDK description is available to create own www pages. WWW remote conditions



Control of remote

condition and relays is enabled also via www interface.



SOAP protocol

Protocol designed for data logger integration to own www infrastructure.

Available actual values can be captured by www server (Apache, IIS) and processed by the user. Communication protocol SOAP version 1.1. is supported. By means of this protocol data logger sends actual values in preset intervals to specified server.



Modbus TCP protocol

Enables to read actually measured values by means of industrial standard

Modbus. Data is available in several formats. Protocol is suitable for implementing of MS data logger to SCADA system.



XML file

Actual values can be downloaded to XML file.

This option is suitable for data logger integration to SCADA systems.



SNMP Trap

SNMP Traps are sent after alarm state or device error appears.



SNMPv1 protocol

Actually measured values can be acquired by means of SNMPv1 protocol. MIB tables are available for free.

Designed especially for IT applications and use in "managed" computer networks.



Syslog protocol

Syslog message is sent after alarm state or data logger error appears.

Syslog is compatible with RFC5424.



Data logger display

Basic network parameters can be set directly from data logger display. It is possible to change IP address, subnet mask and initial gate.


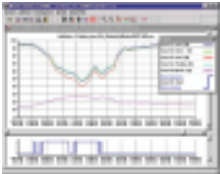






Database system







Prepared for connection to database system including online values transfer.

Monitoring system MSx - optional accessories

Common optional accessories for data loggers MS6 and MS55

Software:		
	<p>DBM</p>	<p>DBM MS Logger Program for work with data from Comet MSx loggers. This database program enables i.a.:</p> <ul style="list-style-type: none"> - To view selected channels from any Comet logger together with selected channels of other Comet loggers. - Measurement from different Comet devices is possible to combine in one table or graph. - To choose any time interval for analysis. - Print, export to PDF - table and graph. <p>Other freeware needed for operation: database server Microsoft SQL or MySQL. For database viewing by other users at the network it is necessary to buy proper number of licences of DBV Database Viewer.</p>
	<p>SWR006</p>	<p>Optional software for Windows - comfort graphic environment data acquisition, including online graph, automatic data download, remote Display mode on Internet/Ethernet network, storing data on the network, administration of users and passwords and many others ..</p>
<p>Optional input for serial RS485 signal:</p> 	<p>RS485IN</p> <p>only MS6</p>	<p>E.g. data acquisition from temperature humidity pressure sensors Tx41x, Hx43x. Input is designed for reading from devices supporting protocol ModBus RTU or Advantech. Signal is connected to MS6 terminals right from terminals for channel 15 and 16. Input can work wit up to 16 devices. Maximum speed 115200Bd. Galvanically isolated.</p>
<p>Accessories for data logger mounting:</p> 	<p>MP013</p>	<p>Universal metal wall holders for data logger wall mounting. Package contains a pair of holders and 4 screws.</p>
	<p>MP012</p>	<p>Holder for data logger mounting to DIN 35mm rail. Package contains the holder and 6 screws.</p>
	<p>MP041</p> <p>only MS6</p>	<p>Only for data logger MS6R. Four rubber feet with screws for desktop use of data logger MS6R.</p>

Monitoring system MSx - optional accessories










Power supplies:		
	A1759	Universal ac/dc adapter 230V-50Hz/21Vdc/1A.
	A1940	Universal ac/dc adapter 230V-50Hz/24Vdc/1A/24W for socket plug-in, switch-mode.
	A5948	Power supply 230V-50Hz/24Vdc/2,5A for DIN rail 35mm, dual terminals 24Vdc, switch-mode, including DIN rail of 100mm length.
Backup power supplies:		
	A6963 supply A7963 battery	<p>Backup power supply A6963, model MINI-DC-UPS/24DC/2 with battery A7963, model MINI-BAT/24DC/1.3AH, manufacturer Phoenix Contact.</p> <p>Power supply is designed for mounting to 35mm DIN rail in data logger case MP033 and MP034.</p> <p>It contains two modules - UPS and battery.</p> <p>Power supply is delivered uninstalled in original manufacturer packaging.</p> <p>Backup power supply is able to supply data logger system with 200 mA consumption at least 3 hours, data logger system with 500 mA consumption at least 2 hours, data logger system with 1A consumption at least one hour.</p> <p>Discharged accumulators are recharged to full capacity in approximately 3 hours.</p> <p>System enables to inform user on switch-over to battery operation.</p> <p>More details are in Manual Appendixes.</p> <p>For mounting to MP033 or MP034 case please order: 1pc A6963, 1pc A7963, 1pc MP035 rail.</p>
	MP035	DIN rail 35mm of 226mm length with screws for mounting of A6963 power supply with A7963 battery to MP033 or MP034 case.
	A6966 supply A7966 battery	<p>Backup power supply A6966, model AWZ224, manufacturer Pulsar sp.j., Poland.</p> <p>To this power supply it is necessary to buy two lead accumulators A7966 12V/7Ah in hermetical maintenance-free type of construction, e.g. type ELNIKA 12V/7.2Ah.</p> <p>Power supply is designed for mounting to vertical inflammable wall with sufficient air flow. Its protection rate is IP20. It is not designed for mounting to closed switchboard.</p> <p>This backup power supply is able to supply data logger with transmitters of current consumption 200mA for approximately 35 hours. Discharged accumulators are recharged to full capacity in approximately 14 hours.</p> <p>System enables to inform user on switch-over to battery operation.</p> <p>More details are in Manual Appendixes.</p> <p>Please order: 1pc A6966, 2pcs A7966.</p>

Monitoring system MSx

- optional accessories






Optional internal equipment:		
	MP042	<p>Built-in LAN interface for online MS data logger connection to Ethernet (Internet) network. In case of limits exceeding alarm is activated and warning e-mail or SNMP trap are sent to specified addresses.</p> <p>Actually measured values can be read by standard communication protocols: www, XML, SNMP, SOAP, Modbus TCP.</p>
External communication converters:		
	MP021	<p>Converter RS485/RS232 for serial port COMx at the PC side, including ac/dc adapter and terminator T485.</p>
	MP022	<p>Converter USB/RS485 for USB port at the PC side, including terminator T485. Powered from computer USB interface.</p>
MP023	<p>Converter Ethernet/RS485 including ac/dc adapter and terminator T485. Designed for several data loggers connected via RS485 network for connection to the computer via Ethernet.</p>	
Accessories for ALARM OUT output:		
	MP026	<p>External audio indication unit. Enables to signal alarm state acoustically at the location up to 50m from data logger. Audio unit is connected to data logger by a cable (not included).</p>
Output relays module:		
	MP018	<p>Output relays module with interconnection cable. It contains 16 mains relays 250V/8A with switching-over contacts. Each relay can be controlled based on alarm creation at different input channels accordingly to setting of user program. Any relay can be assigned to any alarm at any input. Output relays are designed for external devices control (switching of heating, cooling, ventilation, distant alarm etc.). It is necessary to order connection cable to data logger MP017, optionally other accessories.</p>

Monitoring system MSx - optional accessories

	<p>MP017</p>	<p>Connection cable for terminal with display and output relays module - cable length approximately 60cm. Longer cable lengths available - maximum 2m for relay module, maximum 50m for the terminal with display.</p>
	<p>MP019</p>	<p>Holder for relay module mounting to DIN 35mm rail. Package contains the holder and 6 plastic rivets.</p>
	<p>MP020</p>	<p>DIN rail for relay module with elevated consoles for mounting to the MP033, MP034 case. Rail enables to raise the relay module enables to lead cables to data logger under the module.</p>
<p>Terminals with display:</p>		
	<p>MP016</p>	<p>Terminal with dual line alphanumeric LCD and control buttons and 32 alarm LEDs - for panel mounting or mounting to a case lid. Identical functions as built-in terminal of MS5D data logger. It is possible to build in with IP54 protection. Maximum cable length to data logger 50m. It is necessary to order the MP017 connection cable to data logger.</p>
	<p>MP017 MP017-5 MP017-10</p>	<p>Connection cable for terminal with display and output relays module - cable length approximately 60cm. Longer cable lengths available - maximum 2m for relay module, maximum 50m for the terminal with display. Connection cable for terminal with display - cable length 5m. Connection cable for terminal with display - cable length 10m.</p>
	<p>MP032</p>	<p>External terminal with dual line alphanumeric LCD, control buttons, 32 alarm LEDs and audio alarm indication. Built in a IP54 protection case, including 2m cable with covered terminals. Identical functions as built-in terminal of MS5D data logger. Maximum cable length to data logger 50m.</p>
<p>GSM modem and accessories:</p>		
	<p>MP009</p>	<p>GSM modem WaveCom Fastrack Supreme, without accessories.</p>
	<p>MP009/1</p>	<p>Antenna for GSM modem WaveCom Fastrack, right-angled.</p>
	<p>MP009/2</p>	<p>Communication cable for GSM modem Fastrack.</p>
	<p>MP009/3</p>	<p>Ac/dc adapter 230V/12V for GSM modem Fastrack.</p>

Monitoring system MSx

- optional accessories

Covers, cables and other accessories:		
	<p>MP027</p>	<p>Covers of data logger terminals (pair). Designed for aesthetic covering of cables connected to terminals and connectors. Magnetic fixing to data logger.</p>
	<p>MP030</p>	<p>RS232 connector with terminals for RS232 interface connection by means of terminals, not by D-Sub connector.</p>
 <p>Assemblies in case with higher IP protection:</p>	<p>MP031</p>	<p>Screwdriver for easy connection of cables to WAGO terminals.</p>
	<p>MP033</p>	<p>Case with IP65 protection with wall holders and data logger holders - no cutout in the lid. Dimensions 270 x 570 x 140 mm.</p>
	<p>MP048</p> <p>MP049</p>	<p>Data logger MS6D in IP54 protection case with connected terminal with display built in the lid. Dimensions 270 x 570 x 140 mm.</p> <p>Data logger MS55D in IP54 protection case with connected terminal with display built in the lid. Dimensions 270 x 570 x 140 mm.</p>

Monitoring system MSx - optional accessories

Temperature - humidity transmitters and probes:		
	Px1xx Txxxx Hx43x	Industrial and interior transmitters for monitoring of temperature, humidity atmospheric pressure - see next chapter.
	Pt1000 probes	Temperature probes with Pt1000 RTD sensor without connector - there is a symbol /0 behind probe name. Recommended is watertight probe Pt1000TR160/0 on the shielded PVC cable 2 x 0.14mm ² . Specify required cable length 1, 2, 5, 10, 15 or 20 meters. Enclosure diameter 6mm, length 20mm. Diameter of the cable 3.5mm.
	MP047	Universal holder for probes for easy mounting to rack 19" (probes not included)
Two-state detectors connectable to binary inputs:		
	SP008	AC voltage presence sensor, connectable to binary inputs of MS5, MS6.
	SA200A	Magnetic door contact, connectable to binary inputs of MS5, MS6, without cable.
	SA200A-2 SA200A-5 SA200A-10 SA200A-20 SA200A-30	Magnetic door contact, connectable to binary inputs of MS5, MS6 with cable lengths 2, 5, 10, 20, 30 meters.
	LD12 only MS6	Water leakage detector, two-state output, connectable to MS6 inputs. With 3 meters cable. Powered from MS6 12Vdc terminals.
	SD280 only MS6	Optical smoke detector, relay output, connectable to MS6 inputs, powered from MS6 12Vdc terminals. The SD280 detector combines an optical smoke sensor with a heat sensor. Both sensors have their outgoing signals processed digitally, resulting in higher false alarm immunity.
	JS20 only MS6	P.I.R. motion detector is for interior protection. It detects object movement having a human body temperature. The JS-20 distinguishes itself with excellent RF immunity. The signal from the sensor is electronically analyzed. This ensures that the detector provides excellent sensitivity and false alarms are basically eliminated. The detection analysis rate can be adjusted to increase its immunity if the JS20 is installed in a problem location. It can be mounted on a flat wall or in a corner. Connectable to MS6 inputs, powered from MS6 12Vdc terminals.