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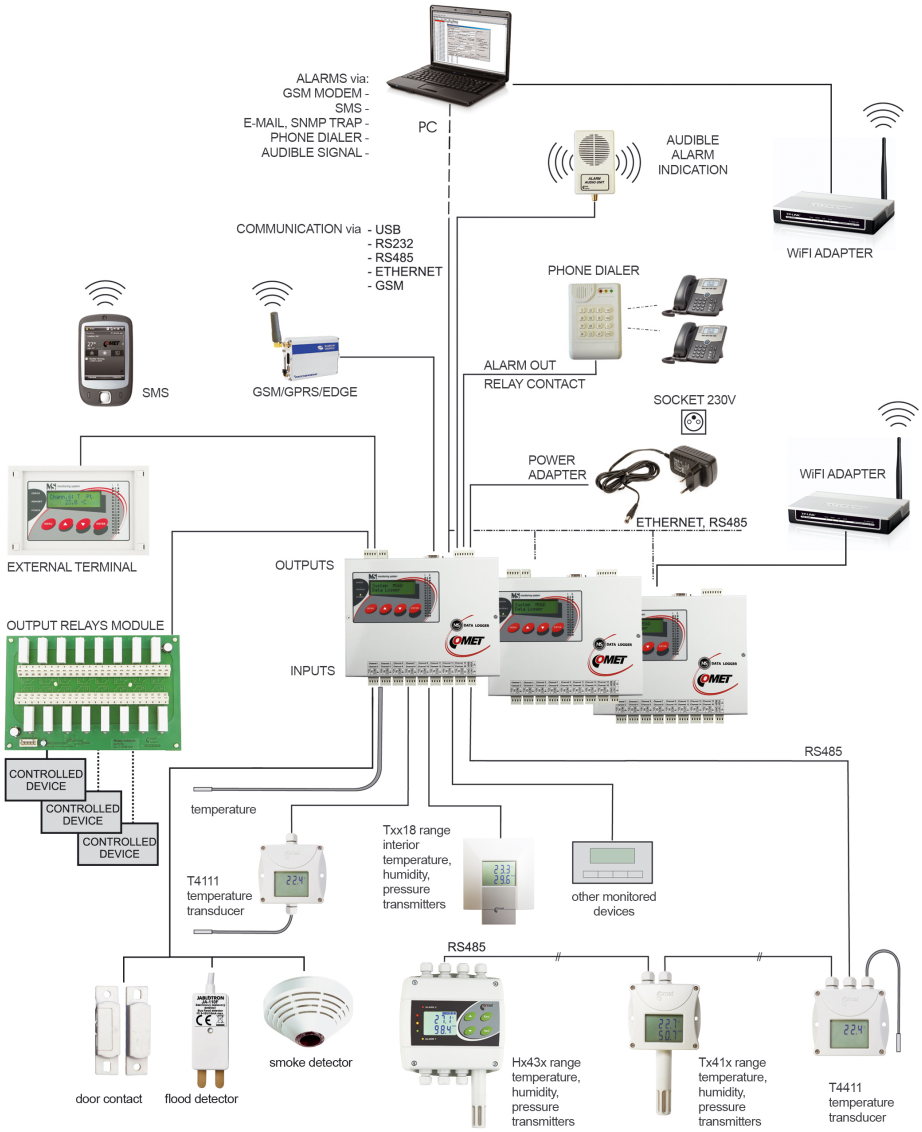
MS6R data logger

code: MS6R
The complete solution for monitoring of temperature, humidity and other values. For desktop use with rubber feet - see Optional accessories. For mounting to 19" rack - one rack unit 1U.

Data loggers are designed for measuring, recording, evaluation and subsequent processing of input electrical signals, which are subject to relatively slow changes (> 1s). In conjunction with the appropriate sensors and transducers are suitable for monitoring physical quantities.

The device **includes traceable calibration certificate** with declared metrological traceability of etalons is based on requirements of **EN ISO / IEC 17025**. The calibration sheet is always loaded as modules.
If the defined required configuration of inputs by, calibration certificate proves calibration inputs according to the required configuration - more than one range for each of the 16 inputs.

Features



Data Logger enables to:

- **16 software programmable inputs**
- Measure and process 1 to 16 input variables
- Each of the 16 channels offers the virtual channel (countable)
- Acquire autonomous recording of measured values
- Create alarm conditions
- Based on the created alarms perform other actions (acoustic, optical signaling, control relay outputs, sending SMS messages, handling telephone dialer, messaging using different protocols Ethernet interface, etc.)
- On-line monitoring of measured values and states

Each from 16 Channels offers:

- independent hysteresis, delay
- setting up 4 conditions for an alarm

Alarms by:

- GSM modem
- Emails
- Phone dialer
- Integrated buzzer
- External siren or light
- Relay

Applications:

- Food and beverages industry (HACCP)
- Server rooms, data centers
- Server rooms, data centers
- Pharmaceutical industry (GMP)
- Blood stations, pharmacies
- Horticulture and cultivation of plants
- HVAC - heating, ventilation, air conditioning, cooling
- Building and energy management
  Building automation
- Research and development
- Laboratories (GLP)

Types of Data Logger Inputs

Measured values		Range	Accuracy	Note
current	DC	4 to 20 mA	±0.1% FS (±0.02mA)	it is possible to connect pasive sensors (powered by monitoring system) or active sensor with its own power supply. Input resistance about 110 Ohms.
voltage	DC	-10V to +10V	±0.1% FS (±10 mV)	input resistance about 10MOhms
		-1V to +1V	±0.1% FS (±1 mV)	
		-100mV to +100mV	±0.1% FS (±100 uV)	
		-18mV to +18mV	±0,1% FS (±18 uV)	
resistance	two-wire resistance measurement	0 to 300 Ohms	±0.1% FS (±0.3 Ohm)	measuring current approximately 0.8 mA @ 50ms pulse
		0 to 3000 Ohms	±0.1% FS (±3 Ohm	measuring voltage approximately 0.5mA @ 50ms pulse
		0 to 10000 Ohms	±0.1% FS (±10 Ohm)	measuring current approximately 0.1mA @ 50ms pulse

temperature probes Pt and Ni	Ni1000	-50°C to +250°C	±0.2°C (-50°C to 100°C)	Ni1000/6180 ppm, two-wire connection
			±0.2% MH (100°C to 250°C)	measuring current approximately 0.5mA @ 50ms pulse
	Pt100	-200°C to +600°C	±0.2°C (-200°C to+100°C)	Pt100/3850 ppm, two-wire connection
			±0.2% MH (+100°C to +600°C)	measuring current approximately 0.8mA @ 50ms pulse
	Pt1000	-200°C to +600°C	±0.2°C (-200°C to+100°C)	Pt1000/3850 ppm, two-wire connection
			±0.2% MH (+100°C to +600°C)	measuring current about 0.5mA @ 50ms pulse
thermistor	NTC with selectable formula	up to maximum thermistor resistance 11000 Ohms	according to the used resistance range (see measurement of resistance)	the same characteristics for all connected thermistors
				default settings: R25=2252Ω, R80=282.7Ω
thermocouple	K (NiCr-Ni)	-200°C to 1300°C	±0.3% MH +1.5°C	linearized, with cold junction compensation, datalogger must be placed in recommendend working position
	T (Cu-CuNi)	-200°C to 400°C		
	J (Fe-Co)	-200°C to 750°C		
	S (Pt10%Rh-Pt)	0 to 1700°C		
	N (NiCrSi-NiSiMg)	-200°C to 1300°C		
	B (Pt30%Rh-Pt)	100°C to 1800°C	±0.3% MH+1.0°C (300°C to 1800°C)	linearized without cold junction compensation
binary signal	potential-less contact	binary signal		input voltage for state "L" (IN-COM) < 0.8 V
				input voltage for state "H" (IN-COM) > 2 V
	open collector			resistance of closed contact for state "L" (IN-COM) < 1 kOhms
	voltage levels			resistance of closed contact for state "H" (IN-COM) > 10 kOhms
				minimum duration for sensing of change: 200ms
RS485	input for serial signal RS485	on request		input serves for reading from devices supporting protocol ModBus RTU or Advantech
				connected to terminals next to terminals for channel 15 and 16
				input can work with 16 devices
				Galvanically isolated.

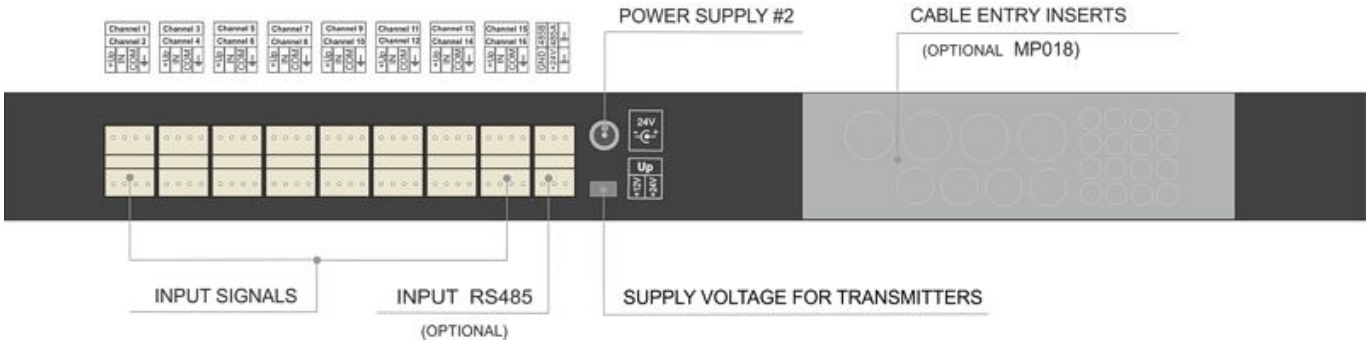


Figure: inputs panel with a voltage selector 12Vdc/24 to power the connected sensors.
Serial input RS485IN a surcharge.

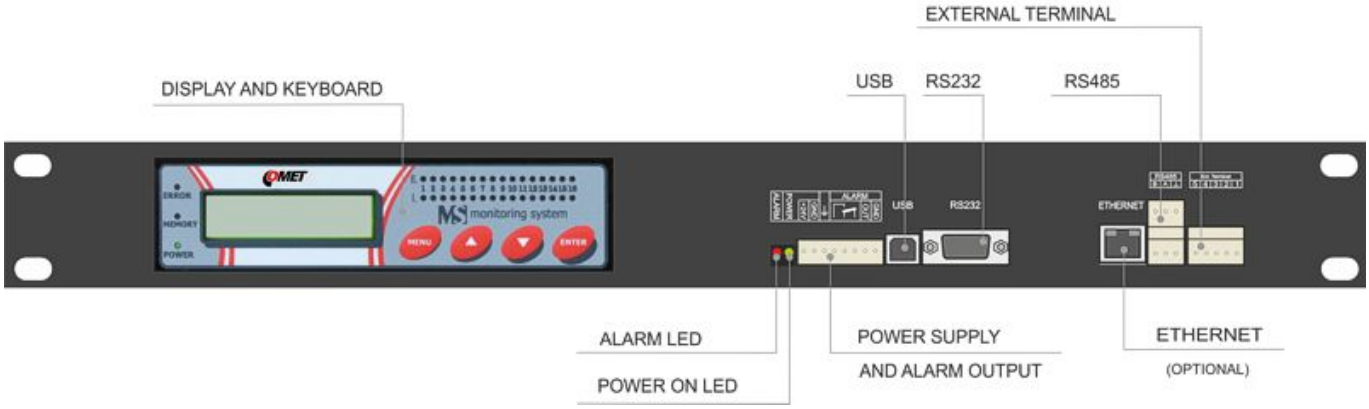


Figure: communication interface, alarm outputs, connection of power. Ethernet interface is optional.

Features of Ethernet Interface:

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.

Modbus 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.

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.

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

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.

Syslog protocol
Syslog message is sent after alarm state or data logger error appears. Syslog is compatible with RFC5424.

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 autentization are also supported.

XML file
Actual values can be downloaded to XML file. This option is suitable for data logger integration to SCADA systems.

Data logger display
Network parameters can be set directly from data logger display. It is possible to change IP address, subnetwork mask and initial gate.

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.

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

Database system
Prepared for connection to database system including online values transfer.

WWW remote conditions
Control of remote condition and relays is enabled also via www interface.

Included in Delivery:

- Data logger including the battery
- Traceable calibration certificate. Calibration certificate contains calibration of 16 inputs 4-20mA, if it is not defined required configuration of inputs by the user. If required configuration of inputs is defined by the user, calibration certificate proves calibration of inputs in accordance with this required configuration - maximum one range for each of 16 inputs.
- Calibration of other ranges is optional.
- USB communication cable
- Basic manual
- Free basic Windows software is ready to download at folder Download

Differences in Features of Data Loggers MS6D and MS55D

	MS55D	MS6xx
inputs	1 - 16 hardware input modules	16 software programmable inputs
maximum measured DC current	5A dc	20mA dc
maximum measured DC voltage	75V dc	10V dc
most sensitive measuring range of dc voltage	100mV dc	18mV dc
maximum measured ac current	5A ac	-
maximum measured ac voltage	50V ac	-
input for measurement of frequency	0 to 5 kHz	-
input for counting of pulses	yes	-

possibility of galvanical isolation of inputs	yes	only serial input RS485IN
rack version	-	yes

Technical Data

Technical parameters	Value
Total memory capacity	2MB (up to 480 000 values)
Memory type	internal SRAM, backed-up by Lithium battery
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
Resolution of the AD converter (analog channels)	16 bits, conversion duration approximately 60ms/channel
Communication speed	9600, 19200, 57600, 115200 Bd, 230400* Bd (* applicable for USB, Ethernet)
Power	24Vdc, consumption of data logger itself approximately 80 mA
Operating temperature range	0 to +50°C
Dimensions including connectors	483 x 230 x 44 mm (W x D x H) - one rack unit 1U
Dimensions without rack holders	225 x 230 x 44 mm (W x D x H) - one rack unit 1U
Protection	IP20
Weight	approximately 800 g
Warranty	3 years