

MMPS is a new modular, **diagnostic, measuring and control system** permitting

- ♦ to **measure** all standard **physical quantities** important for the specification of machine status including rapid processes analysis (FTT vibration analysis etc.)
- ♦ to create the **distributed measuring systems** (switchboards) and networks
- ♦ to **evaluate machines status and transmit** this information by communication buses and networks (also INTERNET and GSM)
- ♦ to **stop** automatically the **monitored devices** in emergency conditions
- ♦ to **avoid** the unexcepted machine **damages and emergencies** by the permanent monitoring of machine status
- ♦ to **archive** the operation and failure **values**

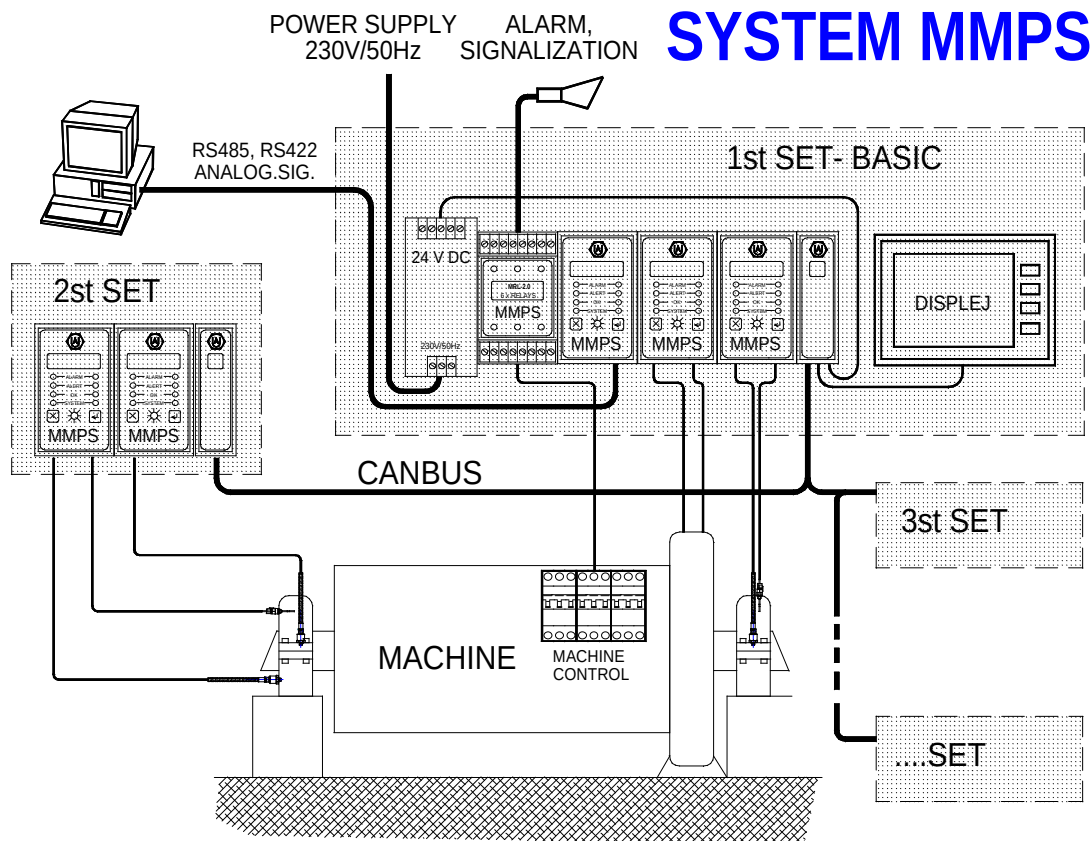


MMPS system conception

The modular MMPS system consists of one or more MMPS sets mutually connected by the communication bus and supply wires of low power voltage. Some sets have the supply module usually supplying the whole MMPS system from the permanent energy source (mains 230V/50Hz, 24V DC). According to the space separation of individual sets can be also used modules for the communication bus separation and reinforcement.

MMPS set

The MMPS set consists of the MMPS modules. All modules in the set are connected by the CAN standard communication bus. This modules set is connected by the flat cable, finished by the bus module. In one set can be placed up to 16 MMPS modules and max. number of modules in MMPS system is 255. There must be fulfilled both above mentioned conditions for the sets number (teoretically 1-255 sets).



MMPS module

The basic function element of MMPS diagnostic system is *MMPS module* in DIN bar version, which can contain two independent channels. Every MMPS module has its own processor conducting the complete transfer and information processing from/to channels into the digital version and via communication bus CAN transfers this information to another modules in the set. This way is every MMPS module a part of communication network and all information transferred from/to the module are only digital.

MMPS module has on its front panel indicators of module or channels status and control buttons. Necessary modules with optional channels types are parallel-connected as required and create the local set containing up to 16 MMPS modules.

This local set has at its command 16x2 channels and can create the independent machine operation monitor with evaluation of machine status with many inputs for measured quantities, with analog, relay or communication outputs, occasionally with connection of operator panel for data display and possibility of diagnostic system user's customization.

In case of the system has the higher number of sets, the need of transfers of higher number of analog or status quantities via independent wires to the central unit is eliminated, so the complications with difficult connection and system debugging are eliminated too.

Channel of module

In every module, there can be built-in two independent channels in almost arbitrary combination. As required the MMPS set configuration, both of the two channels can be configured as input, output, communication or special one.

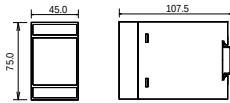
Input channel of MMPS module – it measures or alternatively processes signals from sensors connected to channel input. Connecting terminals of sensors are galvanically separated from module processor, communication bus and mutually between channels.

Output channel of MMPS module – according the type it provides analog signals (current 0(4)-20mA, voltage 0-2,5(10)V), or status information (classic relay, SSR relay, switching transistors). Output terminals are also galvanically separated.

Communication channel of MMPS module permits the communication of MMPS via another industrial communication bus. Standards RS232, RS422 and RS485 are supported with standard communication protocols, the special communication protocol can be customized. One of types of communication channel with RS232C is usually used for connection of operator panel, another for connection of modem or GSM modem (cellular phone), another as Ethernet interface for connection into Intranet/Internet network.

Special channel can contain the combination of inputs, outputs and electronics for connection non-standard peripheries. One of the special channels is the one containing FLASH RAM card of high capability (tens of MBs) together with the real time circuit for the permanent archiving of information measured by system.

Parameters

MMPS system		MMPS module	
Number of modules in 1 system:	1-255	Number of channels:	2
Number of modules in 1 set:	1-16	Operation temperature:	-25 to 55 °C
Number of sets in system:	1-255	Sealing:	IP 20
Power supply:	230V / 50Hz, 24V DC	Construction:	on the DIN bar 35 mm
Communication in system:	CanOpen		
Set of modules			
Box, set configuration:	industrial, ABS or PC plastic, or in customer's switchboard		

System inputs and outputs possibilities

Input channels	Output channels
UIx, IIx, RIx – voltage, current, resistance (from sensors with normalized output) VAx, VRx – absolute, relative vibration LAx – status of bearings abrasion TPx, TTx – temperatures (Pt thermometers, thermocouples) MTx – tensiometer bridge (power, flexure, extension) DRx – shafts relative extension POx – PTC thermistor protections DIx – status and pulse inputs	UOx – voltage output 0-1V (0-10V) IOx – current output 4-20mA (0-20mA) REx – relay outputs RTx – semiconductor switching elements
	Communication
	CMx – RS485, RS422, RS232 lines K Dx – operator panel KEx – ethernet KMx – modem, GSM