

Devices for water service

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M4016 unit combines control automat, flow meter and telemetric station into one device

- 16 measuring recording channels
- 40 binary channels including moto-clock
- 1 textual channel for event recording
- 14 programmable binary outputs
- Up to 16 current outputs 4- 20mA
- Data memory for 300 000 items
- GSM/GPRS in-built module
- Support for transferred data on producer's server data hosting
- Data access through web browser
- High protection and massive design
- Reliable operation



Usage of M4016 control units

Registration and control unit M4016-G3, equipped with an in built GSM/GPRS modem, is determined for controlling and monitoring of waterworks technologies, sewage works and water-pumping stations etc.

- Unit is able to measure promptly with connected sensors, balance flows in an open profiles and in pipes
- Does monitoring of engine running and failures including moto-clock and sending warning SMS at failure.
- Controls monitored technology through 14-programmed binary outputs (relay).
- All measured items including event log are transferred regularly through GPRS on server in the Internet (dispatching site).

Ultrasonic US1200 sensors

This ultrasonic 1,2 m range water level sensor is together with M4016 unit designated for flow rate measuring in ČOV and everywhere else where its possible to calculate flow rate from measured water level. For flow rates' measuring is unit furnished with pre-set equations for Parshall's cables P1-P9 including combined and special cables for usual specific overflows.

US1200 sensor makes temperature compensation of measured distance, it has special numerical filter for measuring failures elimination. Communication with M4016 unit is carried out via RS485 bus or digital current loop DCL. Except of measured water level high values also air temperature or calculated actual flow rate might be transferred to the unit.

In case of need, its possible to switch on sensor on an internal temperation protecting against condensation and frosting of water vapour.

Ultrasonic water level sensor US1200 with holder for Parshall P3



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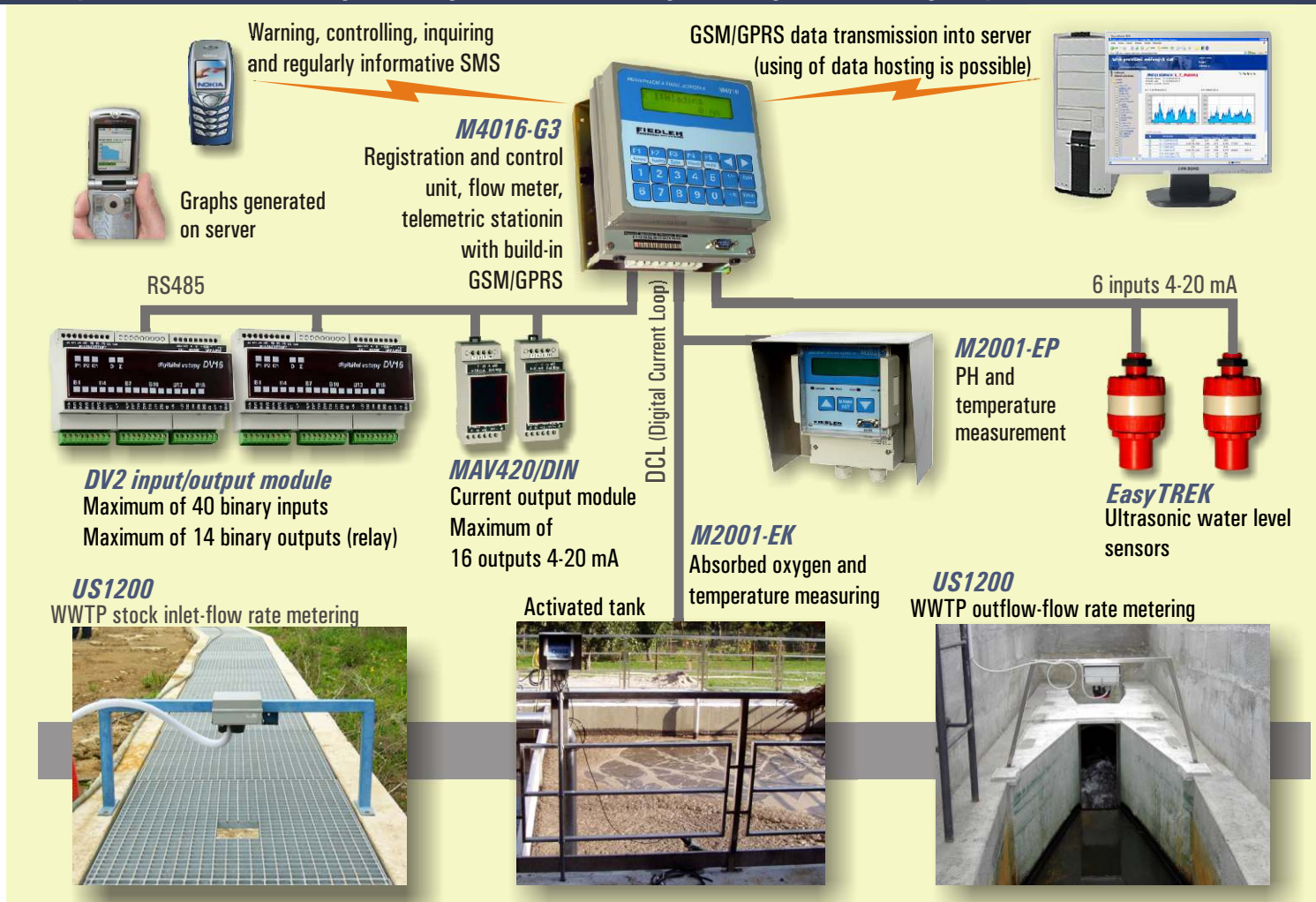
Binary inputs

- M4016 registration unit enables to monitor up to 40 binary signals. M4016 itself contains 8 binary inputs. It is possible to complete control system with other inputs. Completion is done through external input-output DV2 modules, where each module has 16 inputs and 6 outputs (relay).
- Binary input is activated by its connection with joint GND terminal by relay contact or by open collector at static sensors.
- Binary inputs on M4016 unit might process even pulse signals, for example from OPTO or from REED sensors during flow rate measuring by vane flow meter.
- Any change on binary inputs might evoke (immediately or with adjustable delay) closure/opening of binary output.
- Each change might be saved in M4016 unit including date and time with distinction in seconds. Actual states of binary inputs might be displayed periodically on display of the unit, including appropriate motoclock with saved items beginning from the first installation

Binary outputs

- For controlling of connected technology, 14 programmable binary outputs-relay are available. First or second relay (according to type of connected board) are in M4016 unit and other relay are added into system through external input-output DV2 module (6 relay in one module).
- It is possible to load relay in external modules with 230V/4(6)A power.
- It is possible to program each relay with one of seven modes.
 - Limit:** Switching according to actual value on controlling channel
 - Alarm:** Switching after appropriate measuring channel alarm activation
 - Sampler:** Pulse for flowing through of pre-set amount
 - Timer:** adjustable time ON/OFF in minutes
 - Switching clock:** 8 differently adjustable times ON/OFF
 - Logical condition:** Unit evaluates logical expression up to 8 components; these might be binary inputs or other relays
 - Double:** This function ensures regular changing of more pumps in a pit and skips over some of them in a case of failure.
- For easier Creation of more complicated control algorithms, 6 subsidiary virtual relays is available in relay.

Example of WWTP controlling including flow rate metering, warning SMS messages system and data transfer



Analogue inputs

M4016 unit does measuring of analogue signals. User can use from 2 up to 16 analogue inputs according to type of attached board. 6 current inputs 4-20mA are on DPD attached board (M4016-G unit). This board is standardly supplied. Another sensors might be attached through numeric DCL inputs or through RS485 interface. DPD-II attached board includes 3 voltage-resistant inputs. Pt100 temperature sensors might be attached directly to these inputs with four-wires. All measurements are done by accurate 24 bites AD converter.

Analogue outputs

M4016 unit might be completed with up to 16 MAV420/DIN external modules. This helps for frequency converter controlling or for data transfer. Each module includes one galvanic separated active current output 4-20mA. This output is controlled from M4016 unit according to actual value on assigned channel. Controlling commands are transferred to MAV420/DIN module through RS485 interface.