

MEC^{flex}

Volume and Energy Conversion



livinggas.

metreg 
Metreg Technologies GmbH

Volume and Energy Conversion

The METREG electronic corrector device family (MEC^{flex}) offers solutions from standard to complex applications. The MEC^{flex} type volume correctors are battery-operated volume correctors for various applications. They can be deployed in hazardous areas with explosive atmospheres according to Ex zone 1 or 2. The volume corrector can optionally be powered by an external, intrinsically safe power supply. The MEC^{flex} is a reliable solution for applications requiring basic telemetry functions as well as for billing purposes.

The MEC^{flex} type volume corrector has full functionality and performance capability in relation to the actual corrector functions as defined in EN12405. The MEC^{flex} can be optionally with a GSM/GPRS modem. This GSM/GPRS modem enables the MEC^{flex} to transfer data from Ex-zone 1 or Ex-zone 2.

In its most variable, high performance configuration of the MEC^{flex} corrector family, the MEC^{flex} can simultaneously process two measuring streams pursuant to MID approval.

MEC^{flexS}

Applications

Battery powered gas volume conversion device with option of external power supply. It provides for a full solution for custody transfer measuring and telemetric data collecting.

Main features

- High performance valuable product
- Basic telemetric functions
- Battery lifetime more than 6 years
- Typical error under reference conditions < 0.15 % of measured value
- Graphical LCD display with backlighting.
Possibility to connect 2nd pressure or temperature sensor
- Basic parameters setting via keypad
- Large capacity of different type of archives
- Designed for hazardous area ZONE 1 and ZONE 2
- Microsoft Windows compatible software
- Remote reading option

Basic description

MEC^{flexS} is designed for converting of gas volume in operating conditions to gas volume in standard conditions according to statutory equations acc. to EN 12405. For that purpose it reads pulses from gas meter and measures gas temperature and pressure.

The gas volume corrector can be used as PTZ, PT, TZ or T type corrector. The device supports the algorithms for calculation of compressibility factors according to the standards AGA 8-92DC, AGA NX-19 mod, AGA 8-G1, AGA 8-G2, SGERG-88 or fixed factor calculations.

The basic concept of the device is selected to operate as a single channel corrector. The device configuration also enables measuring and monitoring other factors or signals.



MEC^{flexS} gas volume corrector is designed on the latest microprocessor technology which enables measuring of pressure and temperature using analog transducers. The device provides large capacity archives and enables flexibly to change the period of data recording.

As a standard function the device offers generating of digital output pulses which respond to operating and standard volume and an alarm signal. Protection of data is secured either by hardware switch or by using programmable passwords.

MEC^{flexS} is designed for full solutions based on a flexible modular system. The device is battery power supplied with option of external power supply. All required actual and calculated values are presented on the back lighted graphical LCD display by use of the 6-button keypad. It is also possible to set all basic parameters through the keypad. Communication with external supervisory of billing system can be realized through the serial interface RS-232/RS-485 or infrared head.

Power supply

The device operates on the inbuilt lithium battery for 6 years in defined operating conditions. It is possible to use the pulse outputs with battery power supply. In case of request for operation mode with increased consumption, an external power supply with intrinsically safe sources can be used (JBZ-02, DATCOM-K3/K4).

Communication

- **Communication with external supervisory or billing systems**

For connection with an external supervisory or billing systems the RS-232, RS-485 serial interface or infrared optical port can be used. Communication can be realized through a PSTN modem, GSM or GPRS modem or with a radio-modem. TCP/IP protocol is also supported. The device is equipped with communication protocols METREG version 2, MODBUS[™] and CTR. Other protocols can be used on request.

- **Communication with a GSM or GPRS modem**

For the purpose of remote data or station diagnostics with an installed modem, the possibility to monitor the GSM/GPRS connection itself and to analyze the signals and their strength is installed.

Software

For parameter setting and communication with the device and basic data administration TELVES software is supplied. This software is a highly sophisticated tool which allows easy configuration and maintenance of the device.

Temperature sensor

- PT-1000 probe
- standard cable length 120 mm, diameter 5.7 mm
- two-wire cable length up to 10 m
- accuracy: <0.1 % from measured value
- possibility to add another temperature transducer (EDT 34)

Pressure transducer

- internal or external pressure transducer
- cable length up to 5 m
- silicon piezoresistive sensor
- connection - thread M12 x 1.5 (ERMETO)
- accuracy: <0.25 % from measured value
- possibility to add another pressure transducer (EDT 23)

Digital inputs

4 digital inputs (configurable as):

- LF input
- HF input (NAMUR)
- binary input or tamper LF input
- binary input NAMUR
- encoder NAMUR or SCR+
- LF input pulse frequency: max. 10Hz
- LF pulses: reed contact or Wiegand
- HF input pulse frequency: max. 5 kHz - external power supply required
- HF pulses: NAMUR (DIN 19234)

Digital outputs

4 digital outputs (configurable as):

- pulse output (primary volume, standard volume, odorization control, etc.),
programmable pulse 0.1 sec to 25 sec
- binary output (alarm, etc.)
- analog output - realized through CL-1 module (4-20mA)

Compressibility formulas

- AGA-8 92DC
- AGA-8 G1
- AGA NX-19 mod
- AGA-8 G2
- SGERG-88
- fixed

Data protection

Data are protected by:

- Password
- Switch, which is placed inside of the device

Communication interface

- RS-232 / RS-485 serial interface
- Optical interface (IEC 62056-21:2002)

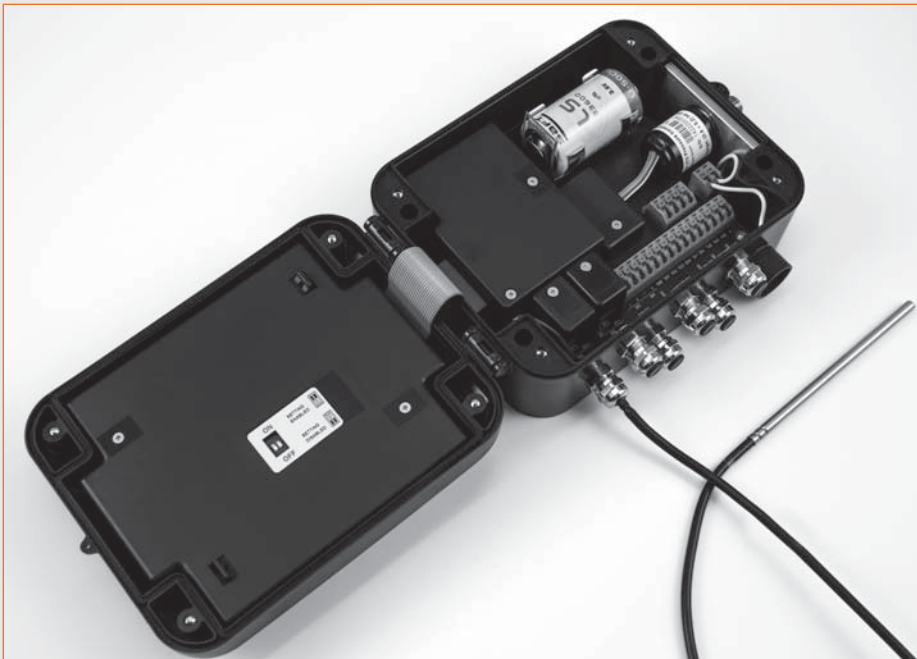
Display and keypad

- clear graphical LCD display with backlighting (Backlighting also in battery mode), operated by 6-button keypad
- display of measured current values and pre-set parameters
- possibility to set basic parameters through keypad

Error conditions

The device indicates and stores different error conditions which can be set as alarm status:

- disturbance/malfunction of gas meter
- full audit log
- low capacity of battery warning
- exceeding of measured range of pressure and temperature
- exceeding of upper limit of flow rate



Memory

- memory type: FLASH, 1MB
- data(hourly) archive: flexible length - depending on configuration (average 8 month), programmable period: 1 - 60 min
- daily archive: 400 records
- status archive: over 500 records, contains formation and extinction of errors, date and time
- monthly archive: 25 records
- audit log: over 500 records, contains the changes of parameters

Technical specification

| | |
|--|---|
| Housing | UV stabilized polycarbonate |
| Dimensions (w x h x d) | 193 x 160 x 73 mm |
| Weight | 1.2 kg |
| Protection class | IP 66 (EN 60529) |
| Working temperature | -25°C to +70°C |
| Control panel | 6 button keypad |
| Display | graphical LCD display with backlighting (also in battery mode), 128 x 64 pixels |
| Power supply | lithium battery, operating time more than 6 years in defined condition with option of intrinsic safe power supply (JBZ-02) |
| Type of battery | SAFT standard lithium battery (D size, 3.6V/17Ah) |
| Measuring temperature range | -25°C to +60°C |
| Measuring pressure ranges (bar, absolute) | |
| MID certified | <ul style="list-style-type: none"> • standard ranges 0.8 - 2.5; 0.8 - 5.2; 2 - 10; 4 - 20; 7 - 35; 14 - 70 • enhanced ranges 0.8 - 10; 4 - 70 |
| without MID | <ul style="list-style-type: none"> • standard ranges 0.8 - 10; 0.8 - 20; 0.8 - 35; 0.8 - 70 |
| Accuracy | <0.5 % from measured value (MID) <0.15 % typically from measured value |
| Communication interface | RS-232 / RS-485 serial interface optical interface (IEC 62056-21:2002) GSM/GPRS modem (AMR ^{flexS}) |
| Communication speed | RS232/RS485: 9.6 - 57.6 kbit/sec optical interface: 9.6 - 38.4 kbit/sec |
| Digital inputs | 4 digital inputs (configurable as LF, HF or binary) |
| Digital outputs | 4 digital outputs (configurable as pulse or binary output) |
| Analog outputs | up to 4 analog outputs by using external CL1 module; 4-20mA |

Approvals

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|--|--|
| Approved according to the European metrology standard | TCM 143/09-4664 EN 12405-01 and 2004/22/EC (MID) |
| ATEX approval for installation into hazardous area | FTZÙ 14 ATEX 0136X (Directive 94/9/EC) |
| Classification (according to EN 60 079-0, EN 60 079-11) | |
| MEC^{flexS} | II 1G Ex ia IIC T4/T3 Ga (ZONE 0) |
| Accessories | |
| Standard delivery | user's manual |
| Optional accessories | |
| Installation material | thermowell, mounting kit, three-way tap (type DN 3 PN 100) |
| Power supply | intrinsically safe power supply JBZ-02 |
| Module of current loop | CL-1 (4 - 20mA) |
| Separation and communication modules | DATCOM-K3, DATCOM-K4 |
| Digital transducers | pressure transmitter EDT 23, temperature transmitter EDT 34 |
| Optical probes | infrared head HIE-03 (RS-232), infrared head HIE-04 (USB) |
| GSM/GPRS communicators | AMR ^{flexS} , AMR ^{flexM} , AMR ^{flexV/M/S} |
| Expansion module for digital transducer connection | Expansion module RS-485 |
| SCR+ encoder expansion module | Expansion module for connection of SCR+ encoder |
| Device variants | |
| MEC^{flexS} | standard |

Applications

Battery powered gas volume conversion device with integrated GSM/GPRS modem. The optimal solution for custody transfer measurement.



Main features

- Single channel gas volume conversion device
- Integrated GSM/GPRS modem
- ATEX approved for hazardous area ZONE1 and ZONE2
- Battery lifetime more than 5 years
- Typical error under reference conditions < 0.15 % of measured value
- Graphical backlit LCD display
- Remote firmware update
- Optional P or T transducer for monitoring purposes
- Compliant with MID according EN12405
- Microsoft Windows compatible service and communication software

Basic description

MEC^{flexM} compact volume conversion device with integrated GSM/GPRS modem is based on modern components ensuring accurate calculation of volume and measurement of pressure and temperature with high accuracy. MEC^{flexM} is designed for converting of gas volume under operating conditions into gas volume in standard conditions according to statutory equations acc. to EN 12405. For that purpose, it reads pulses from the gas meter, measures gas temperature and pressure.

MEC^{flexM} belongs to the new generation of electronic volume conversion devices and it is designed on the latest microprocessor technology. The device provides large capacity archives and enables flexibly to change period of data recording.

The device supports various algorithms for compressibility calculation. As a standard function the device offers generating of output digital pulses which respond to primary and standard volume and flow, alarm signals or other items or signals selected by service software. Protection of data is secured either by hardware switch or by using programmable passwords.

MEC^{flexM} is battery power supplied with the possibility to connect an external power source. All required actual and calculated values are presented on back lighted graphical LCD display by using the 6 button keypad. It is possible to set all basic parameters through the keypad. Communication with an external supervisory or billing system can be realized via the serial interface RS232/RS485, optical port or via integrated GSM/GPRS modem.

Key features

- One channel gas volume conversion device
- Possibility to connect additional P or T transducer
- Option of external power supply for the modem (MPU^{flexM})
- Remote download of the firmware
- Embedded GSM/GPRS modem
- Compact dimensions
- 4 digital inputs
- 4 digital outputs
- Long battery life

Connectivity

- serial interface RS 232, RS 485
- optical interface IEC 62056-21:2002
- dual (quad) band GSM/GPRS modem TCP/IP protocol is supported.
The device is equipped with communication protocols METREG version 2, CTR and MODBUS®. Other protocols can be used on request

Telemetry features

Device is equipped with functions which are standard for telemetric systems. It enables monitoring excesses of set limits, sending alarms to control centre and others.

Software

For parameter setting and communication with the device and basic data administration TELVES software is supplied. This software is a highly sophisticated tool which allows easy configuration and maintenance of the device.

Temperature sensor

- Pt-1000 probe
- Length 120 mm, Ø 5.7 mm
- Two-wire, cable length: 2.5 m (up to 10 m)
- Accuracy: <0.1% from measured value

Pressure transducer

- Internal or external pressure transducer
- Cable length: 2.5 m (up to 5 m)
- Silicon piezoresistive sensor
- Connection - thread M12 x 1,5 (ERMETO)
- Accuracy: <0.25 % of measured value Accuracy of measurement
- Maximum error: < 0.5 % of measured value
- Typical error: < 0.15 % of measured value

Digital inputs

4 digital inputs (configurable as):

- LF input (max. 10 Hz, reed contact or Wiegand)
- HF input (NAMUR - DIN 19234, max. 5kHz - with external power supply)
- binary input or anti-tamper LF input
- binary input NAMUR
- encoder NAMUR or SCR+

Digital outputs

4 digital outputs (configurable as):

- Pulse output (operating volume, standard volume, odorization control), programmable pulse 0.1 sec to 25 sec
- Binary output (alarm etc.)
- Analog output - realized through CL-1 module (4 - 20 mA)

Compressibility formulas

- AGA-8 92DC
- AGA 8-G1
- AGA NX-19mod
- AGA 8-G2
- SGERG-88
- Fixed
- GOST NX-19mod

Display and keypad

- graphical backlit LCD display (backlit also in battery mode), operated by 6-button keypad
- Display of measured current values and pre-set parameters
- Possibility to configure basic parameters through keypad

Error conditions

The device indicates and stores different error conditions which can be set as alarm status, e.g.:

- Disturbance/malfunction of gas meter
- Full audit log
- Low capacity of battery warning (3 months in advance)

Memory

- Memory type: FLASH, 1MB
- Data(hourly) archive: flexible length - depending on configuration (average 8 month), programmable period 1 - 60 min
- Daily archive: 400 records
- Status archive: over 500 records, contains formation and extinction of errors, date and time
- Monthly archive: 25 records
- Audit log: over 500 records, contains changes of parameters

Data protection

- Password system
- Switch, inside the device
- Encryption

Communication interface

- Optical interface (IEC 62056-21:2002)
- GSM/GPRS modem
- Serial line RS232, RS485
- Exceeding of measured range of pressure and temperature
- Exceeding of upper limit of flow rate

Technical specification

| | |
|--|---|
| Housing | UV stabilized polycarbonate |
| Dimensions (w x h x d) | 225 x 220 x 82 mm |
| Weight | 2.4 kg |
| Protection class | IP 65 (EN 60529) |
| Working temperature | -25°C to +70°C |
| Control panel | 6 button keypad |
| Display | graphical backlit LCD display (also in battery mode), 128 x 64 pixels |
| Power supply | 2 lithium battery packs, operating time more than 5 years in defined condition with option of intrinsic safe power supply (JBZ02) |
| Measuring temperature range | -25°C to +60°C |
| Measuring pressure ranges (bar, absolute) | |
| MID certified | <ul style="list-style-type: none"> • standard ranges 0.8 - 2.5; 0.8 - 5.2; 2 - 10; 4 - 20; 7 - 35; 14 - 70 • enhanced ranges 0.8 - 10; 4 - 70 |
| without MID | <ul style="list-style-type: none"> • standard ranges 0.8 - 20; 0.8 - 35; 0.8 - 70 |
| Accuracy | <0.5 % of measured value (MID) <0.15 % typically of measured value |
| Communication interface | RS-232 / RS-485 serial interface optical interface (IEC 62056-21:2002) GSM/GPRS modem |
| Communication speed | RS232/RS485: 9.6 - 57.6 kbit/sec optical interface: 9.6 - 38.4 kbit/sec |
| Digital inputs | 4 digital inputs (configurable as LF or binary) |
| Digital outputs | 4 digital outputs (configurable as pulse or binary output) |
| Analog outputs | 4 digital outputs (configurable as pulse or binary output) |

Approvals

| | |
|--|--|
| Approved according to the European metrology standard | TCM 143/11 - 4848 EN 12405-01 and 2004/22/EC (MID) |
| ATEX approval for installation into hazardous area | FTZÜ 14 ATEX 0137X |
| Classification (according to EN 60 079-0, EN 60 079-11) | ZONE 1, ZONE 2 |
| Accessories | |
| Standard delivery | user's manual TELVES - service and data collection software |
| Optional accessories | |
| Installation material | thermowell, mounting kit, three-way valve (type DN 3 PN 100) |
| Power supply | intrinsically safe power supply JBZ-02, MPU ^{flexM} |
| Module of current loop | CL-1 (4 - 20mA) |
| Separation and communication modules | DATCOM-K3, DATCOM-K4 |
| Digital transducers | pressure transmitter EDT 23, temperature transmitter EDT 34 |
| Optical probes | infrared head HIE-03 (RS-232), infrared head HIE-04 (USB) |
| Expansion module for digital transducer connection | expansion module RS-485 |

Applications

Battery powered gas volume conversion device with integrated GSM/GPRS modem suited for complex solutions for custody transfer measurement and telemetric data collection.

Main features

- Single or dual channel gas volume conversion device
- Integrated GSM/GPRS modem
- Designed for hazardous area ZONE1 and ZONE2
- Battery lifetime up to 10 years
- Typical error under reference conditions < 0.15 % of measured value
- Graphical LCD display with backlighting
- Possibility to connect 3rd pressure and temperature sensor
- Analog inputs
- Telemetry features
- Microsoft Windows compatible software



Basic description

MEC^{flexV} is designed for conversion of gas volume under operating conditions into gas volume in standard conditions according to statutory equations acc. to EN 12405 . For that purpose, it reads pulses from the gas meter, measures gas temperature and pressure. The gas volume corrector can be used as a PTZ, PT, TZ or T type corrector. The device supports the algorithms for compressibility factor calculation according to standards AGA 8-92DC, AGA NX-19 mod, AGA 8-G1, AGA 8-G2, SGERG-88 or fixed factor calculations.

The mechanical concept of the device is designed to operate as a single or dual channel with possibility to add another non-metrological channel. It means that in full version MEC^{flexV} can handle three measuring channels. The device configuration also enables measuring and monitoring other quantities. An integrated GSM/GPRS modem is providing transfer of collected data to the external supervisory or billing system via a cellular network. MEC^{flexV} is also equipped with up to 4 analog inputs, 8 digital inputs and 4 digital outputs.

MEC^{flexV} belongs to a new generation of electronic volume conversion devices and it is designed based on the latest microprocessor technology. The device provides large capacity archives and enables flexibly to change period of data recording. As a standard function the device offers generation of digital output pulses which respond to the operating and standard volume and alarm signal. Protection of data is secured either by hardware switch or by using programmable passwords.

MEC^{flexV} is designed for complex solutions based on a flexible modular system. MEC^{flexV} is battery power supplied with an option of external power feeding. All required actual and calculated values are presented on a backlit graphical LCD display by operating the 6-button keypad. It is also possible to set all basic parameters through the keypad. Communication with the external supervisory or billing system can be realized via the serial interface RS-232/RS-485, infra-red head or via integrated GSM/GPRS modem.

Key features

- One or dual channel gas volume conversion device
- Up to 8 digital inputs (EXT2 variant)
- 4 digital outputs
- Up to 4 analog inputs (4 - 20 mA) with EXT2 variant
- possibility to add another temperature and pressure sensors for monitoring purposes
- Optionally MEC^{flexV} can be equipped with GSM/GPRS modem

Power supply

The device operates from inbuilt lithium batteries for up to 10 years in defined operating conditions. It is possible to use pulse outputs during battery power supply. In case of request for operation mode with increased consumption, external power supply with intrinsically safe sources can be used (JBZ-02, MPU^{flexM}, DATCOM-K3/K4).

Communication with external supervisory or billing systems

For connection with an external supervisory or billing systems the RS-232 or RS-485 interface, infrared optical port or integrated GSM/GPRS modem can be used. The TCP/IP protocol is also supported. The device is equipped with communication protocols METREG version 2, MODBUS and CTR. Other protocols can be used on request.

Telemetry

The device is equipped with functions which are standard for telemetric systems. It enables the MEC^{flexV} to monitor excesses of set limits, sending alarms to the control center, operation of modem and others.

Software

For setting, communication with the device and basic data administration Telves software is supplied. This software is a highly sophisticated tool which allows you easy parameterization and maintenance of the device.

Temperature sensors

- Pt-1000 probe
- Length 120 mm, Ø 5.7 mm
- Two-wire cable length up to 10 m
- Accuracy: <0.1% of measured value
- Possibility to add another temperature transducer (EDT 34)

Pressure transducers

- Internal or external pressure transducers
- Possibility to add another pressure transducer (EDT 23)
- Cable length up to 5 m
- Silicon piezoresistive sensor
- Connection - thread M12 x 1,5 (ERMETO)
- Accuracy: <0.25 % of measured value

Accuracy of measurement

- Maximum error: < 0.5 % of measured value
- Typical error: < 0.15 % of measured value

Digital inputs

up to 8 digital inputs (configurable as):

- LF input (max. 10 Hz, reed contact or Wiegand)
- HF input (NAMUR - DIN 19234, max. 5kHz - with external power supply)
- binary input or tamper LF input
- binary input NAMUR
- encoder NAMUR or SCR+

Digital outputs

4 digital outputs (configurable as)

- Pulse output (operating volume, standard volume, odorization control, etc.), programmable pulse 0.1 sec to 25 sec
- Binary output (alarm etc.)
- Analog output - realized through CL-1 module (4 - 20 mA)

Analog inputs

up to 4 analog inputs 4 - 20 mA

- MEC^{flexV} EXT1 and EXT2 only

Display and keypad

- clear graphical LCD display with backlighting (Backlighting also in battery mode), operated by 6-button keypad
- Display of measured current values and pre-set parameters
- Possibility to set basic parameters through keypad

Error conditions

The device indicates and stores different error conditions which can be set as alarm status:

- Disturbance/malfunction of gas meter
- Full audit log
- Low capacity of battery warning (10% of remaining capacity)
- Exceeding of measured range of pressure and temperature
- Exceeding of upper limit of flow rate

Compressibility formulas

- AGA-8 92DC
- AGA 8-G1
- AGA NX-19 mod
- AGA 8-G2
- SGERG-88
- fixed factor

Data protection

Data are protected by:

- Password
- Switch, which is placed inside of the device

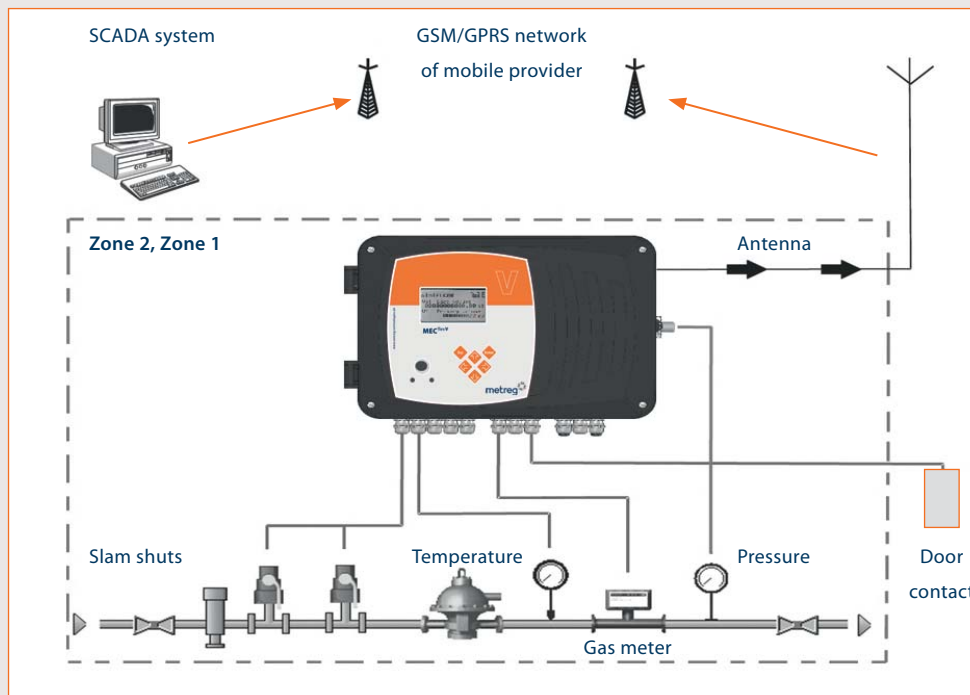
Communication interface

- RS-232 / RS-485 serial interface
- Optical interface (IEC 62056-21:2002)
- GSM/GPRS modem

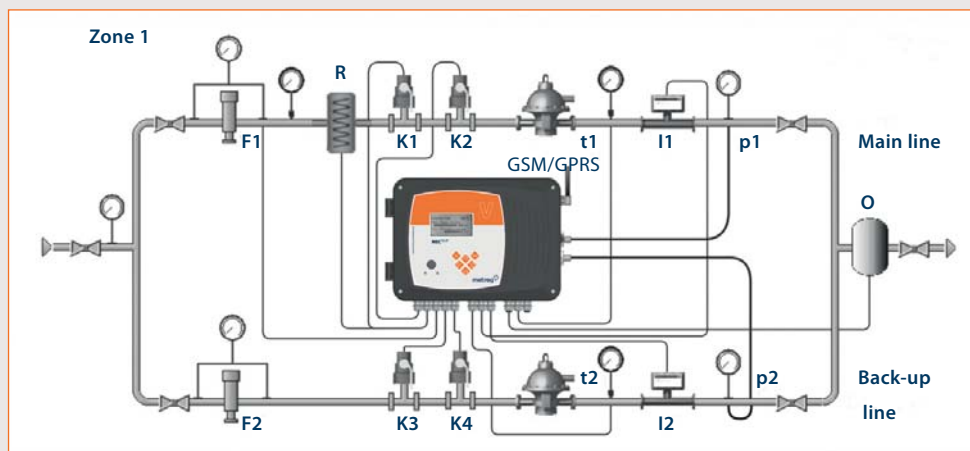
Memory

- Memory type: FLASH, 1MB
- Data(hourly) archive: flexible length - depending on configuration (average 8 month), programmable period 1 - 60 min
- Daily archive: 400 records
- Status archive: over 500 records, contains formation and extinction of errors, date and time.
- Monthly archive: 25 records
- Audit log: over 500 records, contains changes of parameters.

Example of application



Example of using MEC^{flexV} for monitoring single stage dual stream measurement and regulation station



Legend:

- p: pressure transducers
- t: temperature transducers
- I: gas meter pulses
- K: fast safety valves
- F: filter clogging
- O: odorization
- R: preheating

Technical specification

| | |
|--|--|
| Housing | UV stabilized polycarbonate |
| Dimensions (w x h x d) | 307 x 222 x 87 mm |
| Weight | 2.2 kg |
| Protection class | IP 65 (EN 60529) |
| Working temperature | 25°C to +70°C (EXT1); -25°C to +60°C (GSM, GSM EXT1) |
| Control panel | 6 button keypad |
| Display | graphical LCD display with backlighting (also in battery mode), 128 x 64 pixels |
| Power supply | 2 lithium battery packs; operating time of the modem battery is up to 10 years and for EVC battery up to 6 years in defined conditions |
| Measuring temperature range | -25°C to +60°C |
| Measuring pressure ranges (bar, absolute) | |
| MID certified | <ul style="list-style-type: none"> • standard ranges 0.8 - 5.2; 2 - 10; 4 - 20; 7 - 35; 14 - 70 • enhanced ranges 0.8 - 10; 4 - 70 |
| without MID | <ul style="list-style-type: none"> • standard ranges 0.8 - 5.2; 0.8 - 10; 0.8 - 20; 0.8 - 35; 0.8 - 70 |
| Accuracy | <0.5 % of measured value (MID) <0.15 % typically of measured value |
| Communication interface | RS-232 / RS-485 serial interface optical interface (IEC 62056-21:2002) GSM/GPRS modem |
| Communication speed | RS232/RS485: 9.6 - 57.6 kbit/sec optical interface (IEC 62056-21:2002): 9.6 - 38.4 kbit/sec |
| Digital inputs | up to 8 digital inputs (configurable as LF, HF or binary) |
| Digital outputs | 4 digital outputs (configurable as pulse or binary output) |
| Analog inputs | up to 4 analog inputs; 4-20mA (MEC ^{flexV} var. EXT1 and EXT2) |
| Analog outputs | up to 4 analog inputs; 4-20mA (MEC ^{flexV} var. EXT1 and EXT2) |

Approvals

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|--|---|
| Approved according to the European metrology standard | EN 12405-01 and 2004/22/EC (MID) TCM 143/10-4722 |
| ATEX approval for installation into hazardous area | FTZÜ 14 ATEX 0135X |
| Classification (according to EN 60 079-0, EN 60 079-11) | II 1G Ex ia IIC T4/T3 (MEC ^{flexV} EXT1) II 1G Ex ia IIA T3 (MEC ^{flexV} GSM, MEC ^{flexV} GSM EXT1) |
| Accessories | user's manual |
| Standard delivery | TELVES - service and data collection software |
| Optional accessories | |
| Installation material | thermowell, mounting kit, three-way tap (type DN 3 PN 100) |
| Power supply | intrinsically safe power supply JBZ-02 |
| Module of current loop | CL-1 (4 - 20mA) |
| Separation and communication modules | DATCOM-K3, DATCOM-K4 |
| Digital transducers | pressure transmitter EDT 23, temperature transmitter EDT 34 |
| Optical probes | infrared head HIE-03 (RS-232), infrared head HIE-04 (USB) |
| Expansion module for digital transducer connection | expansion module RS-485 |

| Variants | Digital inputs (LF/HF, binary) | Digital outputs (LF, binary) | Analog inputs (4 - 20mA) | Maximum metrolog. channels | Maximum transducers | GSM/GPRS modem |
|--------------------------------|-----------------------------------|---------------------------------|-----------------------------|-------------------------------|------------------------|-------------------|
| MEC ^{flexV} GSM * | 4 | 4 | - | 1 | 2 | yes |
| MEC ^{flexV} EXT1 | 6 | 4 | 2 | 2 | 6 | - |
| MEC ^{flexV} GSM EXT1* | 6 | 4 | 2 | 2 | 6 | yes |
| MEC ^{flexV} EXT2 | 8 | 4 | 4 | 2 | 4 | - |
| MEC ^{flexV} GSM EXT2* | 8 | 4 | 4 | 2 | 4 | yes |

* All GSM variants are also available in GSM2 version which is a variant with possibility to power the GSM/GPRS modem externally via MPU^{flexM} power supply.



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