.MSR
ELECTRONIC

Ventilation and Smoke Extraction
in Parking Garages

Fixed gas alarm system

with integrated control system
for ventilation and smoke extraction
according to SIL

.MSR
SAFETY **FIRST**

Content

Fixed Gas Alarm Systems

Developed and manufactured for sustainable protection

MSR-Electronic develops and produces reliable gas alarm systems that permanently monitor the ambient air and thereby protect human life and values.

MSR-Electronic offers a broad spectrum of methods for the detection of gases. On this basis MSR-Electronic develops individual gas sensors and systems for many applications where toxic or combustible gas concentrations can form. The interaction of the components of MSR-Electronic enables fast and reliable monitoring. This not only limits possible sources of error, but also reduces the planning effort and installation costs.

The products of MSR-Electronic meet and even exceed the important European standard EN 50545.

Safety First: MSR-Electronic offers extended safety and observes more than the worldwide standards.

Risks in the Parking Garage

Separate control of gas alarm and ventilation

RISKS OF THE GAS WARNING SYSTEM

- Missing conformity to VDI 2053 / EN 50545-1 / EN 50271
- Missing monitoring of the warning devices for function and wire break

RISKS IN THE CONTROL CABINET

- No secured and monitored command/feedback chain to the fans/dampers
- Uncertain status information on fire alarm system and fire alarm tableaus

**Time consuming and complex planning
due to undefined specifications**

No functionality according to SIL

**Increased costs for planning, manufacturing,
ervices and life cycle**

Solution from MSR-Electronic

Joint control of gas alarm and ventilation

SOLUTIONS OF THE GAS WARNING SYSTEM

- Conform to VDI 2053 / EN 50545-1 / EN 50271
- Monitoring of warning devices for wire breakage and function

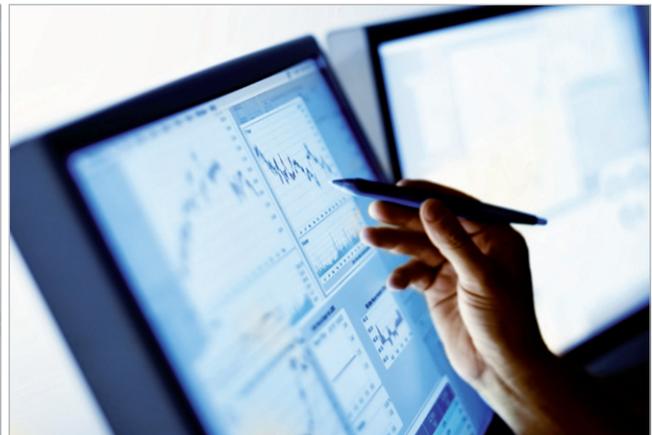**SOLUTIONS IN THE CONTROL CABINET**

- Defined and monitored status messages of all fans
- Safe and complete monitoring of the messages to the fire alarm system and fire alarm tableau

A certified system provider for gas warning and ventilation control according to SIL

Lowest error rate according to SIL2

Optimized planning costs and lower manufacturing and life cycle costs

Technical Elements

Modular for individual requirements

1 ## Gas warning system
Permanent monitoring of the air for CO / NO_x / LPG

2 ## Ventilation system
Supply/exhaust fans, jet fans

3 ## Control cabinet
Control and supply of the connected fans
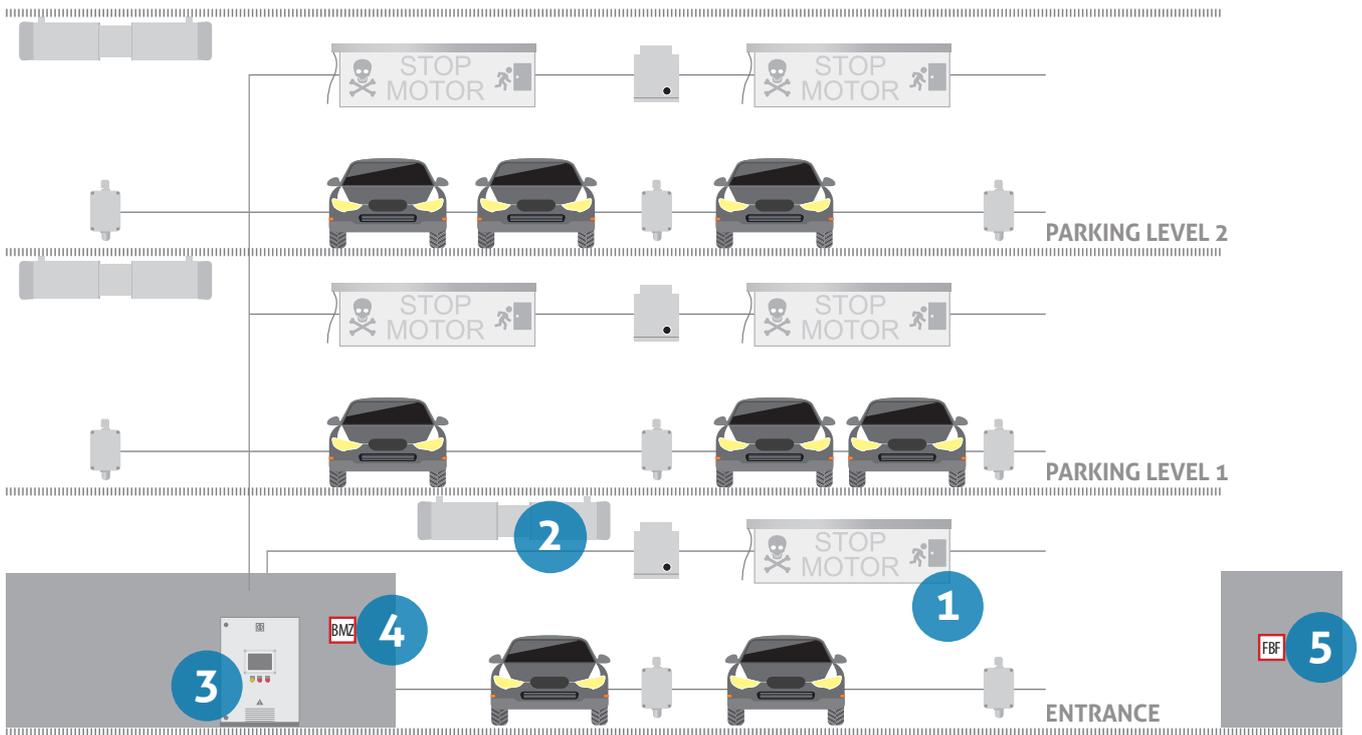
4 ## Fire alarm system/installation
Fire alarm center with fire detectors

5 ## Fire brigade tableau/control panel
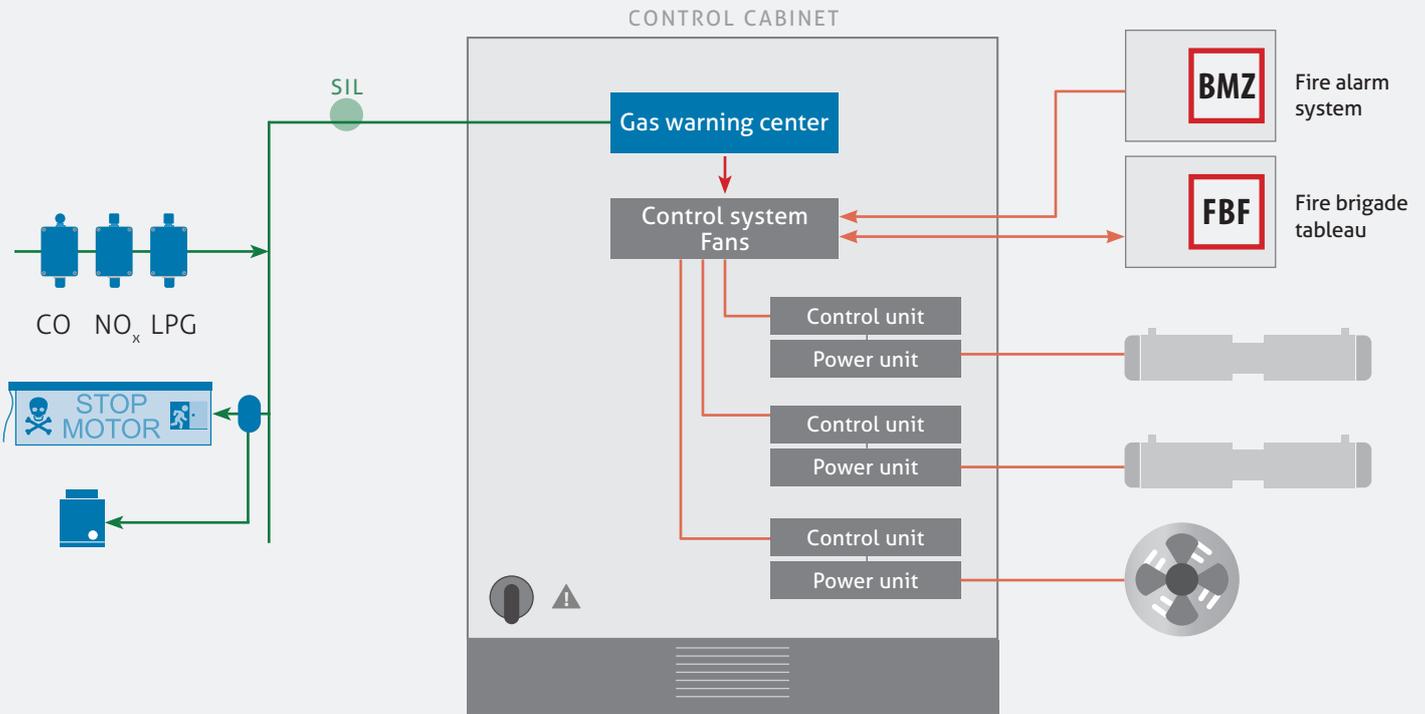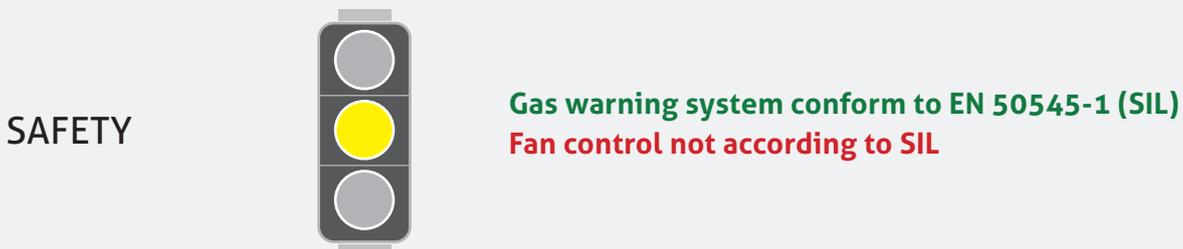Remote tableau for display and control of the smoke extraction ventilation

STOP MOTOR

STOP MOTOR

PARKING LEVEL 2

STOP MOTOR

STOP MOTOR

PARKING LEVEL 1

2

STOP MOTOR

1

BMZ 4

3

FBF 5

ENTRANCE

Rauchabzug

Rauchabzug

Control of Small Systems

SO FAR: Gas alarm and ventilation system

CONTROL CABINET

Gas warning center

Control system Fans

Control unit
Power unit

Control unit
Power unit

Control unit
Power unit

SIL

CO   NO$_x$ LPG

STOP MOTOR

BMZ — Fire alarm system

FBF — Fire brigade tableau

■ MSR-Electronic products

SIL
● Safe communication according to SIL

— Unsafe communication

COSTS

100 %
Hardware

100 %
Service

* Planning
* Commissioning

SAFETY

Gas warning system conform to EN 50545-1 (SIL)
Fan control not according to SIL

NOW: Gas alarm and ventilation system with extended safety

CONTROL CABINET

Gas warning center incl. control of fans

SIL

SIL

CO NOx LPG

STOP MOTOR

Motor-Module
Power unit

Motor-Module
Power unit

Motor-Module
Power unit

BMZ — Fire alarm system

FBF — Fire brigade tableau

■ MSR-Electronic products

SIL ● Safe communication according to SIL

COSTS

100 %

100 %

Hardware

Service
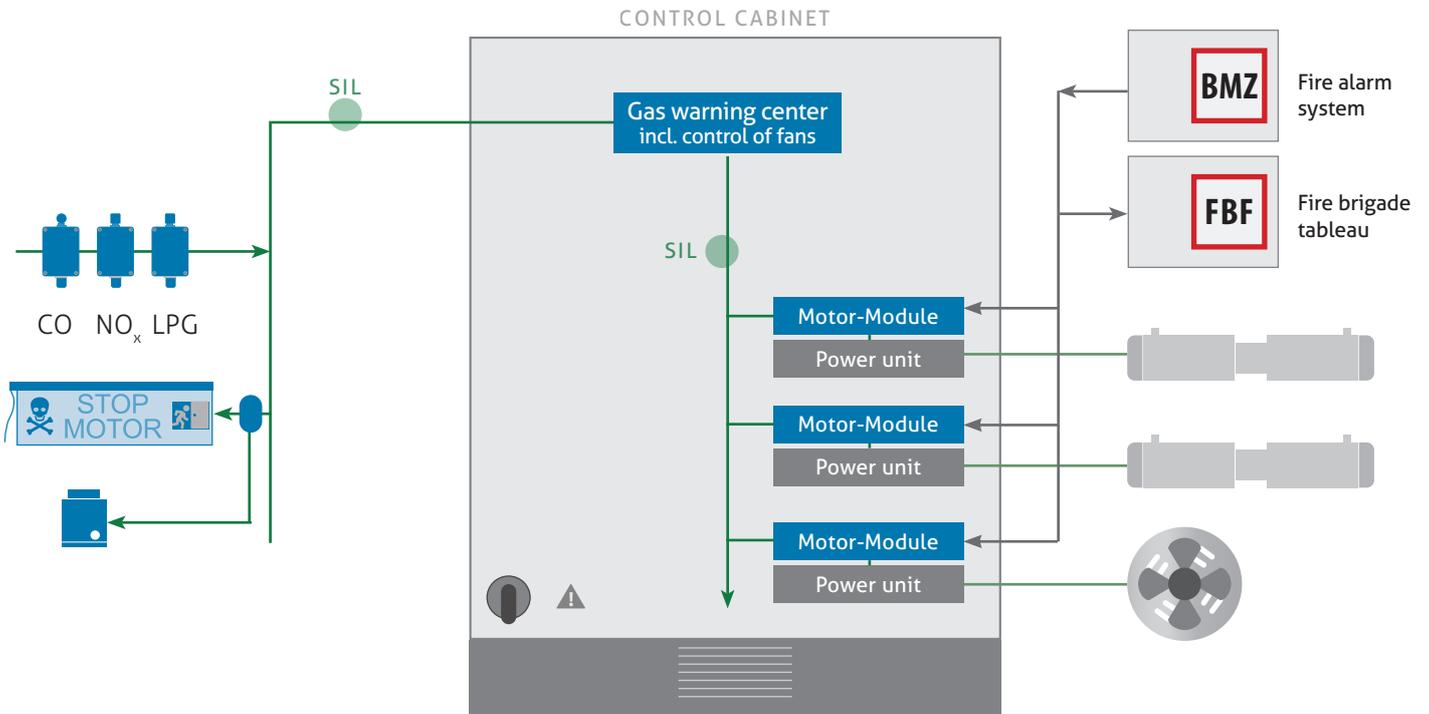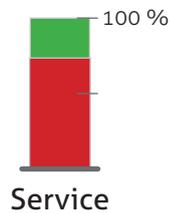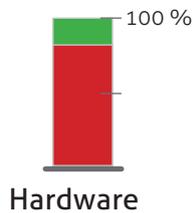
* Planning
* Commissioning

SAFETY

Gas warning system conform to EN 50545-1 (SIL)
Fan control according to SIL

Control of Large Systems

SO FAR: **Gas alarm and ventilation system**

CONTROL CABINET

Gas warning center

Logic / PLC

Control unit
Power unit

Control unit
Power unit

Control unit
Power unit

BMZ — Fire alarm system

FBF — Fire brigade tableau

CO NOₓ LPG

STOP MOTOR

SIL

- ■ MSR-Electronic products
- SIL ● Safe communication according to SIL
- —— Unsafe communication

COSTS

100 % Hardware

100 % Service
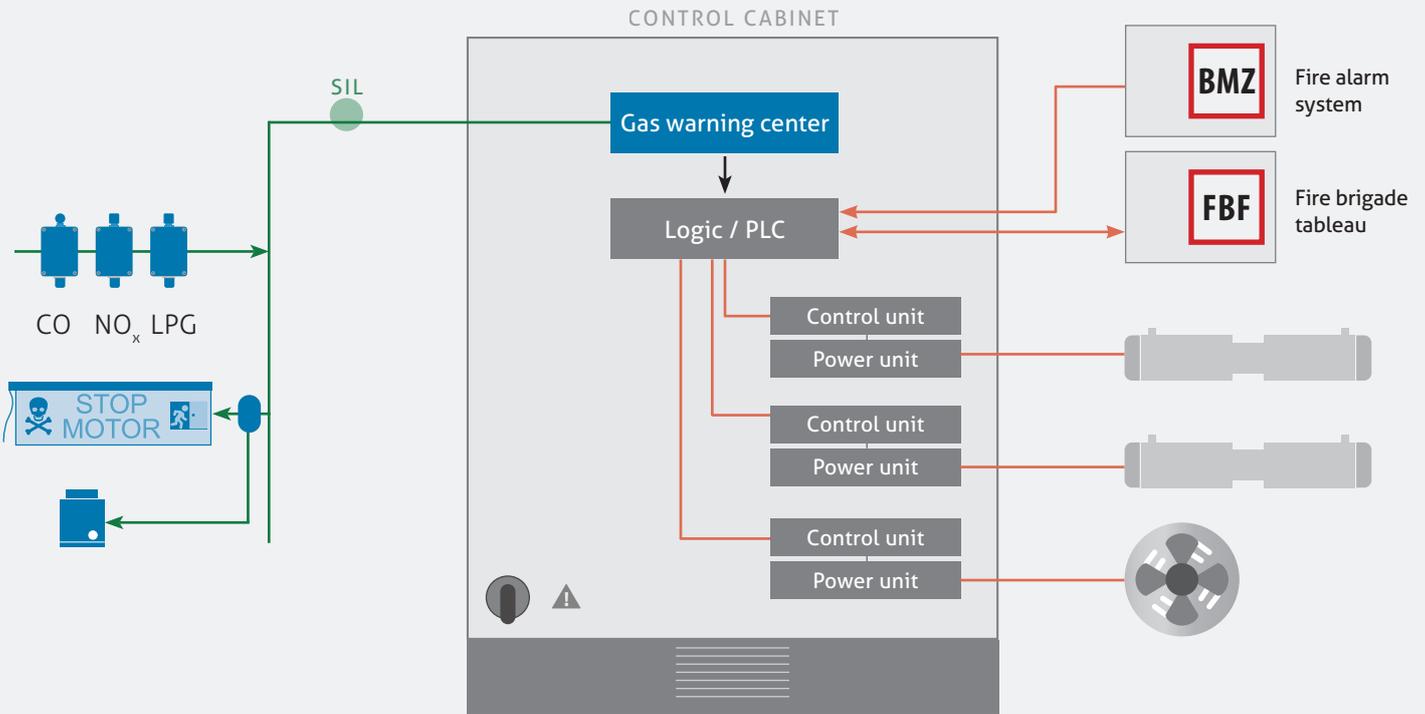
* Planning
* Programming
* Commissioning

SAFETY

Gas warning system conform to EN 50545-1 (SIL)
Fan control not according to SIL

NOW: Gas alarm and ventilation system with extended safety

CONTROL CABINET

SIL

Gas warning center
incl. control of fans

SIL

Logic module

SIL

Motor-Module
Power unit

Motor-Module
Power unit

Motor-Module
Power unit

CO   NOx   LPG

STOP MOTOR

BMZ — Fire alarm system

FBF — Fire brigade tableau

■ MSR-Electronic products

SIL
● Safe communication according to SIL

COSTS

100 %
Hardware

100 %
Service
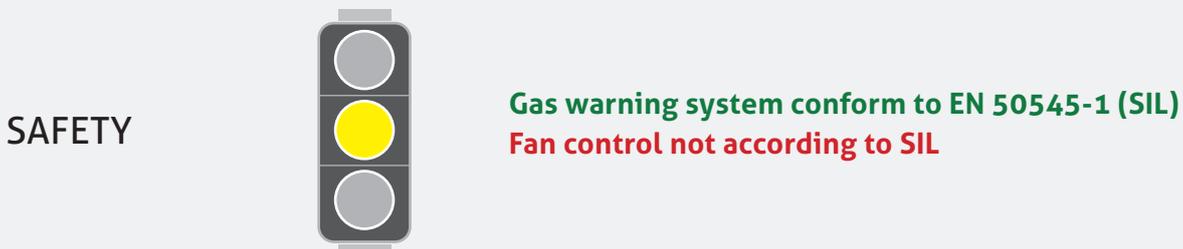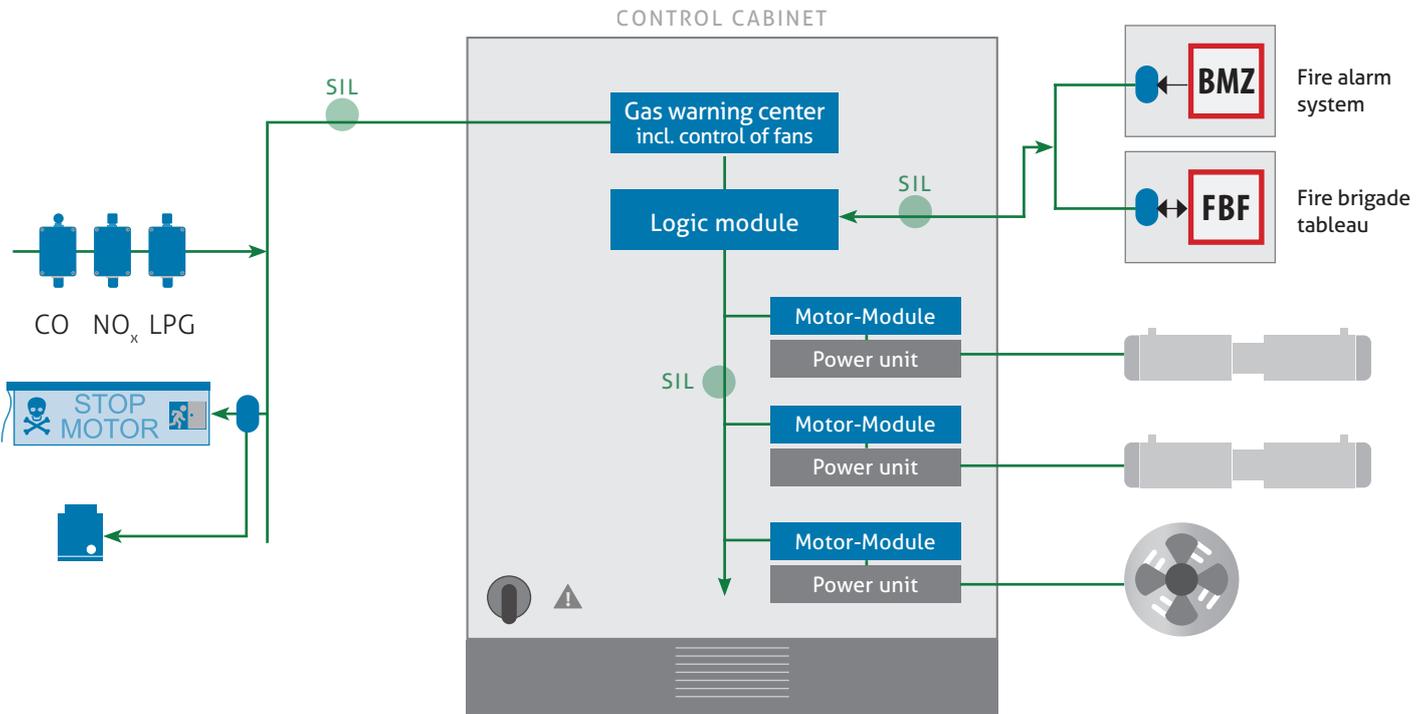
* Planning
* Parameterization
* Commissioning

SAFETY

Gas warning system conform to EN 50545-1 (SIL)
Fan control according to SIL

Communication

For PolyGard®2-ES products
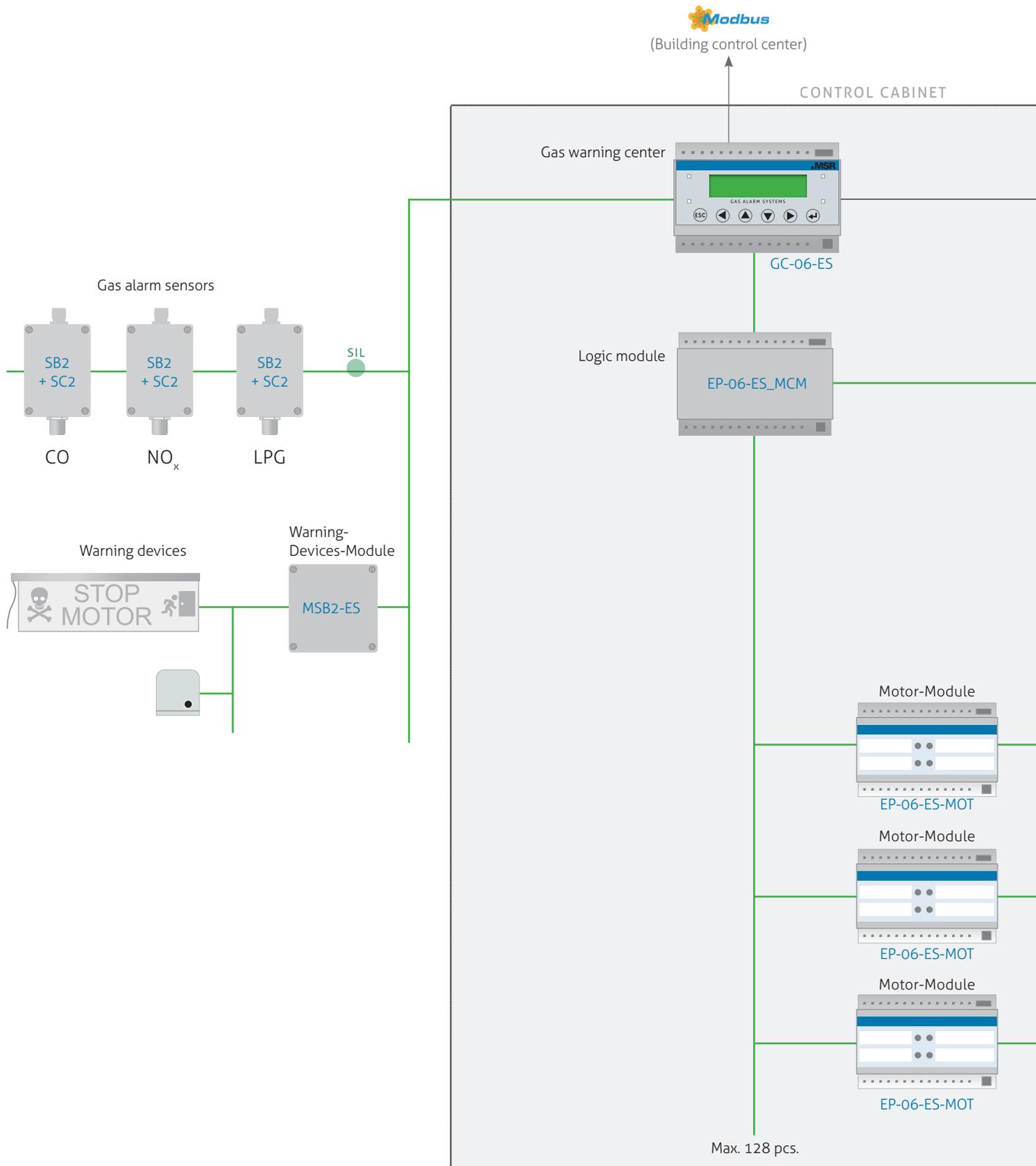
Modbus
(Building control center)

CONTROL CABINET

Gas warning center

GC-06-ES

Gas alarm sensors

SB2 + SC2	SB2 + SC2	SB2 + SC2
CO	NOx	LPG

SIL

Logic module

EP-06-ES_MCM

Warning devices

STOP MOTOR

Warning-Devices-Module

MSB2-ES

Motor-Module

EP-06-ES-MOT

Motor-Module

EP-06-ES-MOT

Motor-Module

EP-06-ES-MOT

Max. 128 pcs.

STOP
MOTOR

BMZ

FBF

Display

SIL

Fire-Alarm-Module

EP-06-ES-FDM

BMZ

Fire alarm system

Fire-Control-Module

EP-06-ES-FCM

FBF

Fire brigade tableau

Power unit

Jet fan

Power unit

Jet fan

Power unit
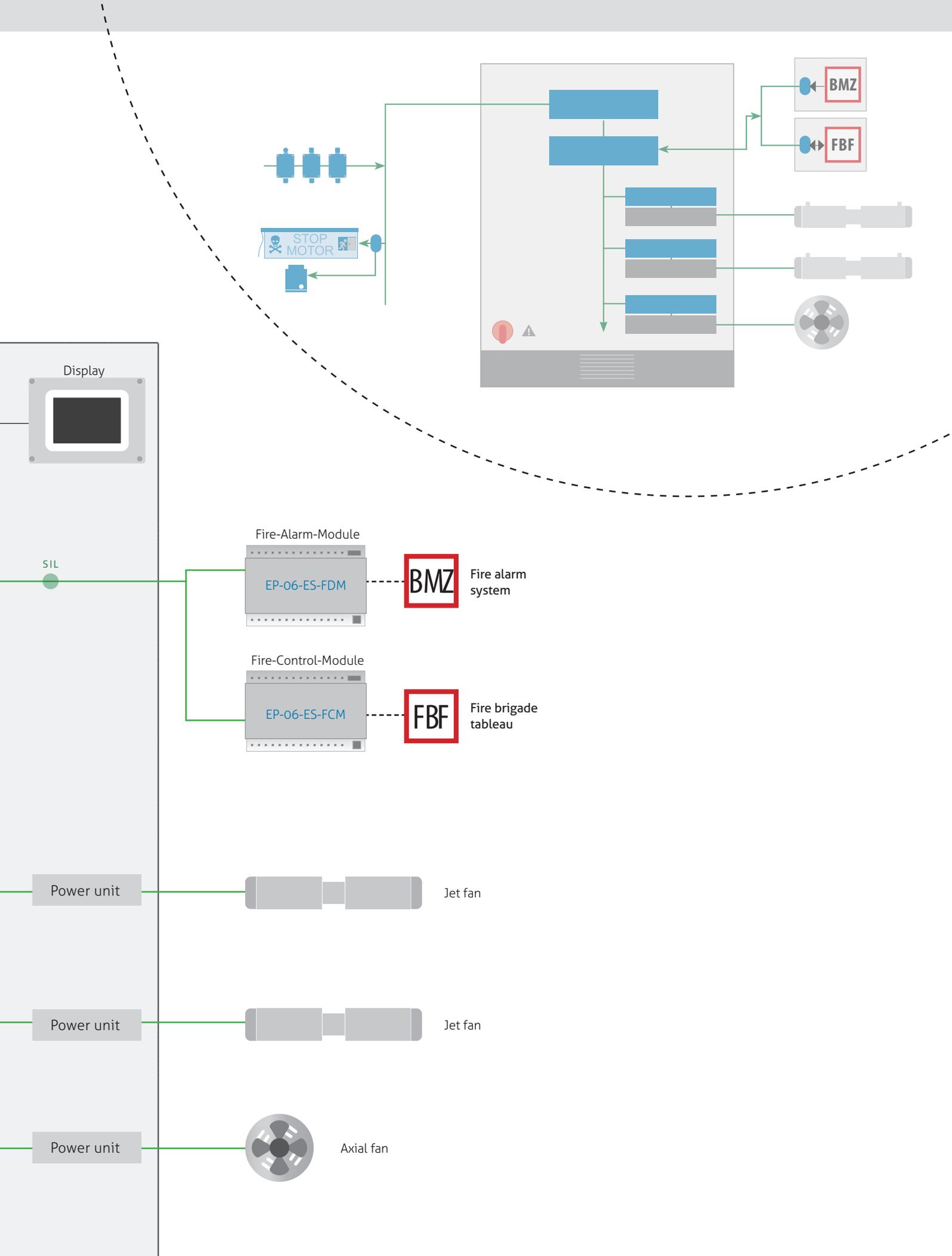
Axial fan

Communication

For PolyGard®2-ES products with cold smoke extraction

Modbus
(Building control center)

CONTROL CABINET

Gas warning center

GC-06-ES

SIL

Jet fan / EC

MSB2-ES

CO   NO$_x$ LPG

Jet fan / EC

MSB2-ES

CO   NO$_x$ LPG

EP-Module EP-06

Motor-Module EP-06-ES-MOT

SIL

Warning devices

Warning-
Devices-Module

STOP
MOTOR

MSB2-ES

Up to 96 digital
measuring points

Up to 7 EO-06-Modules

Display

Power unit
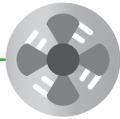
Power unit

Power unit
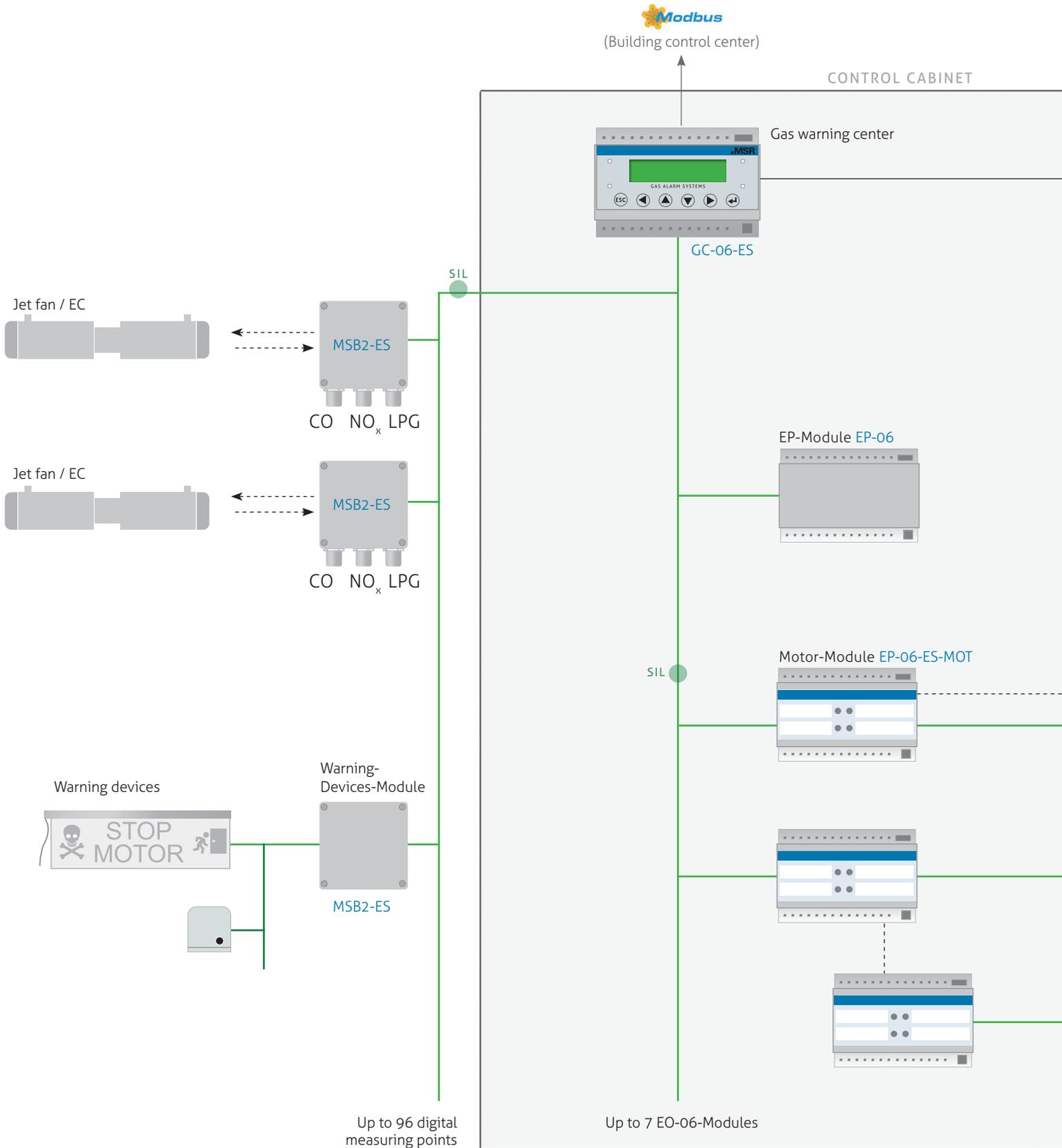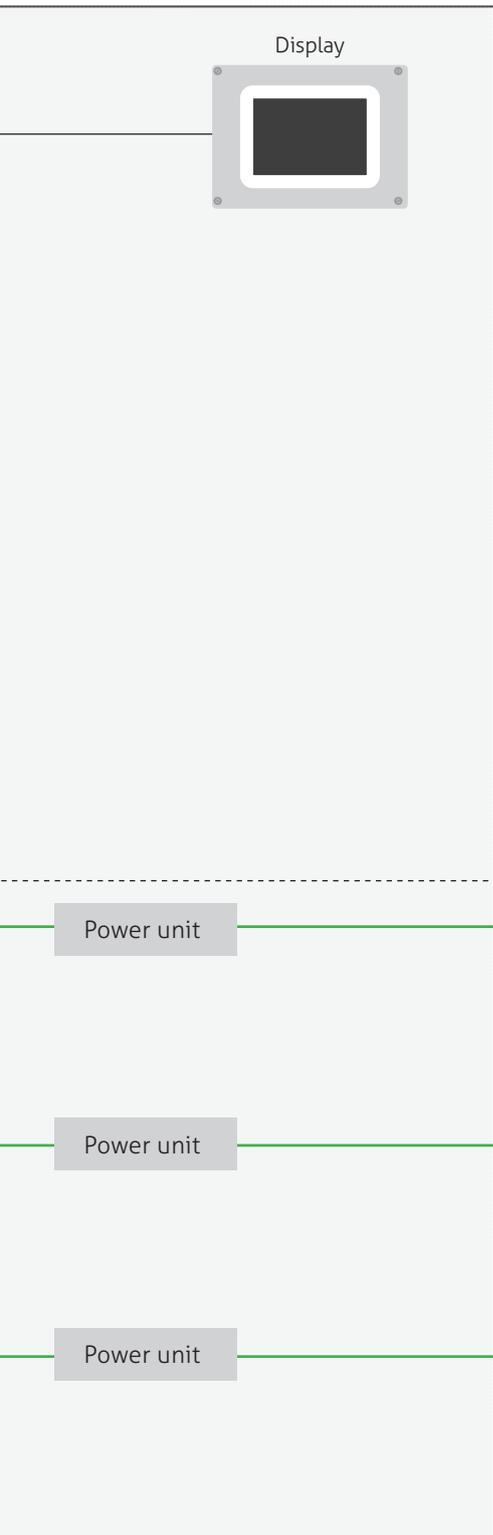
BMZ FBF

Axial fan

Jet fan

Jet fan

The Central-Module

PolyGard®2 GC-06-ES

Measuring, warning and controlling system for toxic, combustible gases and vapors.

Features and benefits of the Central-Module
- Can monitor and evaluate up to 100 sensors, 96 of which PolyGard®2 digital and/or four analog (4-20 mA) sensors
- A separate relay is integrated for fault signal
- Integrated overload and polarity protection
- Easy and convenient commissioning
- Four alarm relays with potential-free changeover contact and two with analog outputs (4-20 mA) for connection to the PolyGard®2 gas controller GC-06
- ES version for use in combination with the motor management
- Conform to VDI 2053/EN 50545-1

Features and benefits of ventilation
- Control per drive: OFF/ON or OFF - stage 1 - stage 2, fire and reverse operation
- Control of up to 7 zones
- Direct connection to the Motor-Modules via sensor bus
- Connection of fire alarm system/fire detector
- Connection of fire brigade tableau
- Easy parameterization

The System-Module
PolyGard®2 EP-06-ES-MCM

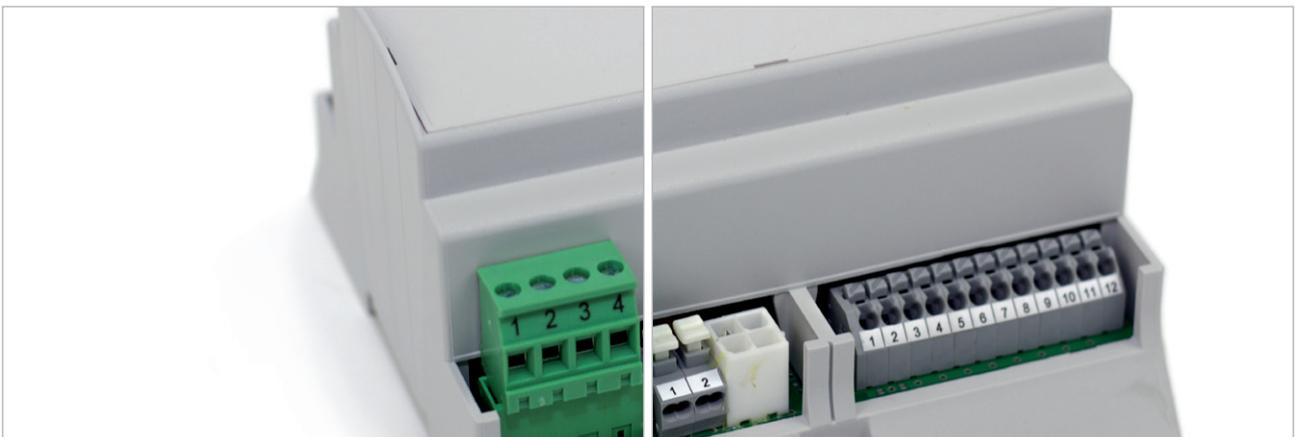**Features and benefits of the System-Module**
- Up to 128 MOT Motor-Modules with max. 14 zones
- Control per drive: OFF/ON or OFF - stage 1 - stage 2, fire and reverse operation
- Integrated gas/fan control (free matrix)
- Total current measurement of the fans per zone
- Energy management
- Easy to integrate into the gas alarm management system and highly user-friendly
- Option: Display DEM-06-ES for monitoring motor conditions (up to 128 conditions)
- Easy parameterization
- Detects all deviations
- Management of up to 128 modules in complex systems
- More cost-effective maintenance due to automatic test cycles of all devices

Features and benefits of the fire alarm system
- Processing of fire alarm signals and scenarios
- Safe SIL Bus

Features and benefits of the fire brigade tableau
- Direct processing of fire brigade tableau signals
- Safe SIL bus

The Motor-Module

PolyGard®2 EP-06-ES-MOT

Features and benefits of the Motor-Module

- Control of two 2-stage, four 1-stage or of one to four continuously variable motors
- Stand-Alone or in an ES system network
- Fire alarm connection, SIL communication
- Modular function, standardized
- Can be used for all common motor variants
  - Star/triangle
  - Dahlander
  - Separate winding
  - Frequency converter/EC
  - Soft starter
  - Reversible
- Up to 128 MOT Motor-Modules with max. 14 zones

Features and benefits of the GC-Module/stand-alone

- Control of two 2-stage, four 1-stage or of one to four continuously variable motors
- Up to 7 zones directly on the bus (with several modules)
- Forwarding to motor duplication
- Fire alarm connection, SIL communication
- Modular function, standardized

The Fire-Control-Module

PolyGard®2 EP-06-ES-FCM

Features and benefits of the Fire-Control-Module

- Operation in the ES system network
- Control and monitoring of operating devices
- Safety-oriented control
- Input fire alarm system for fan/motor management
- Smoke extraction input on/off (requirement fire brigade tableau)
- Processing switch on/off automatic per zone
- Processing 3 pcs. message green/yellow/red
- 24 V DC operating voltage
- Serial RS-485 interface with protocol for ES system
- Connection socket for service tool
- One relay output max. 250 V/3 A (changeover contact) potential-free (fault signal)
- Software and hardware according to SIL2 compliant development process
- Internal function monitoring with integrated hardware watchdog
- Digital and safe SIL2 communication

The Fire-Alarm-Module

PolyGard®2 EP-06-ES-FDM

Features and benefits of the Fire-Alarm-Module

- Operation in the ES system network
- 24 V DC operating voltage
- Serial RS-485 interface with protocol for ES system
- Connection socket for service tool
- One relay output max. 250 V/3 A (changeover contact) potential-free (fault signal)
- Software and hardware according to SIL2 compliant development process
- Internal function monitoring with integrated hardware watchdog
- Connection of up to 8 fire zones
- Digital and safe SIL 2 communication
- Collects fire alarms
- Flexible in use
- Can be used centrally in the control cabinet or decentrally

The Warning-Devices-Module

PolyGard®2 MSB2-ES

Features and benefits of the Warning-Devices-Module

- Internal function monitoring with integrated hardware watchdog
- Soft- and hardware according to SIL2 compliant development process
- Modular technology (pluggable and exchangeable)
- Serial RS-485 interface (SIL2) with protocol for DGC-06_ES
- Analog output (4-20 mA) with selective signal output for special status, fault, etc.
- Two digital inputs
- Two alarm relays with changeover contact, potential-free max. 240 V AC, 5 A, control locally or via DGC-06_ES
- Fault signal relay with change-over contact, potential-free max. 240 V AC, 5A, also configurable as alarm relay
- Monitoring of the connected type-tested warning devices for function and wire break with error detection < 1 min
- Connection socket for service tool
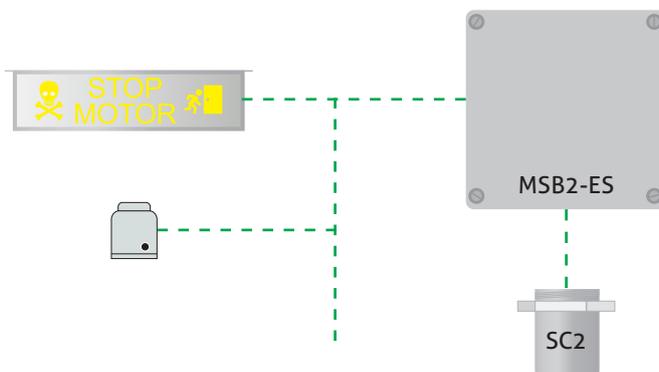
The Sensor-Boards

PolyGard®2 SB2

Features and benefits of the Sensor-Boards

- With RS-485 interface
- Up to three different sensor cartridges of type SC2 can be connected via the local bus
- Ensures the power supply of the sensor cartridges SC2
- Provides the measured values of the sensor cartridges for digital communication
- RS-485 fieldbus interface with DGC-06 protocol
- Direct connection to superordinate building control systems (Modbus, BacNet, etc.)
- Digital processing of measured values
- Internal function monitoring with integrated hardware watchdog
- Measured values in the sensor cartridge SC2,
  therefore easy change uncalibrated <> calibrated
- Up to 3 different sensor cartridges
- Sensor cartridge can be mounted separately via Remote-Board (RB2)
- Software according to SIL2 compliant development process
- Modular technology (pluggable and exchangeable)

For the connection of up to 3 different sensor cartridges
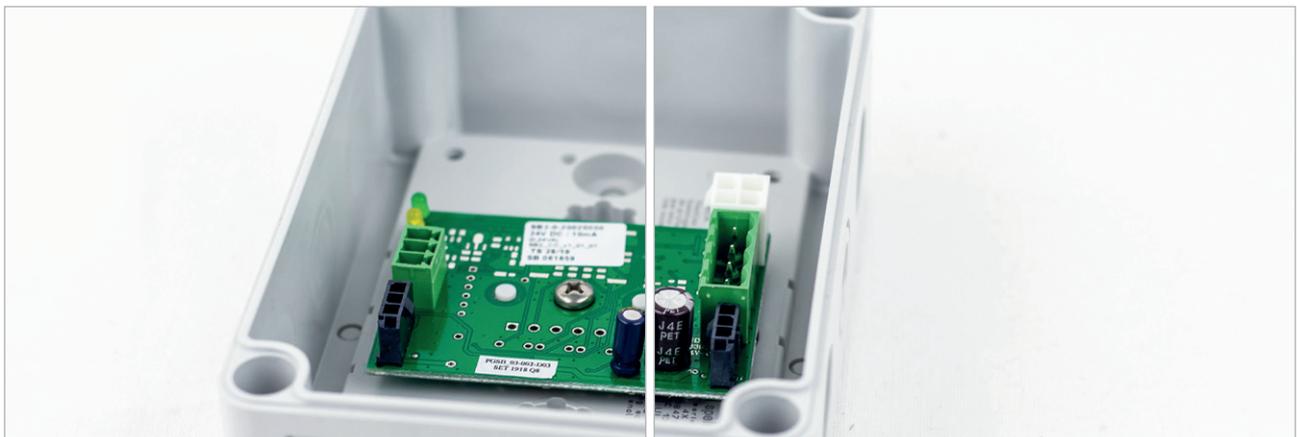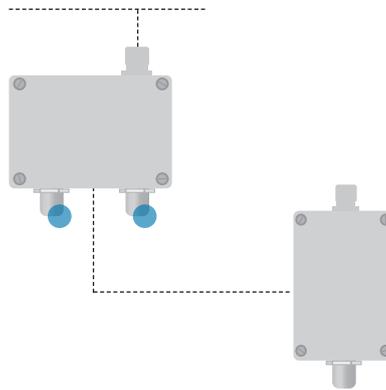
The Sensor Cartridges

PolyGard®2 SC2

Features and benefits of the sensor cartridges

- Sensor with digitized measured value processing and temperature compensation for continuous monitoring of ambient air for gases and vapors
- Comfortable calibration routine with selective access release
- One standard analog output, 4-20 mA (MC2) or one RS-485 interface
- Sensor changing system X-Change Technology
- Exchangeable cartridge X-Change Technology
- Flexible installation, mounting without housing possible (only for MC2)
- Flush mountable
- 4-20 mA / 2-10 V (only for MC2)
- No further specialized company necessary

PolyGard®2 components with sensor cartridge SC2 X-Change Technology
Communication: L-Bus
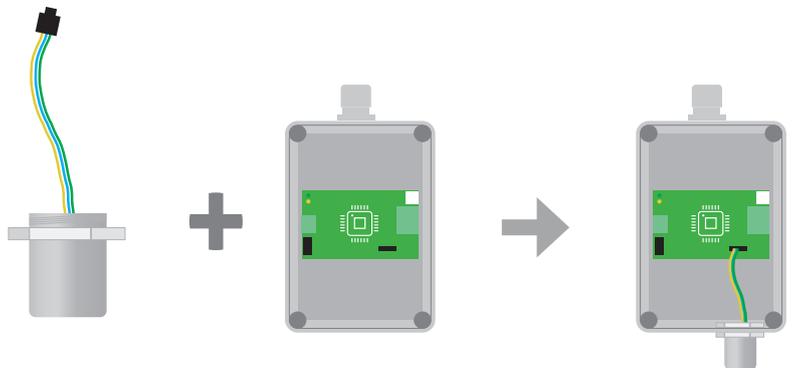
The Warning Devices

PolyGard®2 WT

Robust, maintenance-free and energy-saving LED technology for static or flashing control.

Due to the flat construction in the solid aluminum profile and the low weight, a simple one-man assembly is possible. The electrical connection is made without opening the warning sign in the supplied WT box.

Warning sign
The sign is used for optical warning of a dangerous gas concentration or a malfunction of the ventilation system in underground garages, tunnels, car workshops, loading zones as well as in all areas where optical warning of a dangerous gas concentration or other dangers is necessary.

Flashing light
The xenon flashing light is made of a solid plastic (ABS) and is conform to EN 50545-1. Universally applicable xenon flashing light for fire alarm and safety technology according to VdS guidelines.

Warning Horn
The warning horn consists of a solid housing, e.g. made of plastic (ABS) and is conform to EN 50545-1. Universally applicable warning tone siren with 32 adjustable tones, including DIN tone for fire alarm and safety technology according to VdS guidelines.

Warning horn/flashing light combination
The warning horn/flashing light combination is made of solid plastic (ABS) and is conform to EN 50545-1. Universally applicable warning siren with integrated xenon flashing light for acoustic as well as optical warning with separate control.

OFF CAR - LEAVE CA

EN - GARAGE VE

HOCH - MOT

AB

R

STO

MOTO

HOW TO: The Video World

MSR-Explanatory Videos on YouTube

Explore the MSR-Electronic product world digitally.

How-to is the keyword on YouTube. MSR explanatory videos provide brief and concise information on important details for the commissioning of selected products. Knowledge can thus be conveyed quickly. Basically, e-learning is location-independent. Usually only a laptop, tablet or smartphone and an Internet connection are required. Complex things simply explained.

MSR-Electronic YouTube Channel

Commissioning
Warning and Sensor Board WSB2

Recalibration
MSR sensors with Service Tool STL06

Commissioning
Multi Sensor Controller MSC2

X-Change technology
Simple exchange process PolyXeta®2 sensor cartridge

Commissioning
PolyXeta®2

X-Change technology
Simple exchange process PolyGard®2 sensor cartridge

Recalibration
MSR sensors with display version

MSR-Electronic
Fixed gas alarm systems,
Made in Germany

Linked **in**.

**Network with MSR-Group at www.linkedin.com and
receive regular news from MSR-Electronic.**

Controller Series DGC-06-ES

Item No.	Description
DGC-06-ES	
	96 + 4MP / 230 V, 4 relays, 3-row housing
	UPS with 2.2 Ah battery, incl. charger
	UPS with 7.2 Ah battery, incl. charger
	UPS without battery, incl. battery charger 24 V DC 8.4 A
OPTIONS	
	Cable entry from below
	Cable entry from above and below
	Housing can be locked

Modules Series Extended Safety

Item No.	Description
	Sensor-Board series MSB2-ES
	Motor-Module
	System-Module
	Gas-Controller
	Fire-Control-Module
	Fire-Alarm-Module
	Phase-Insulation-Module
	Display-Module

Modules, Interfaces, Couplers

Item No.	Description
DGC-06-ES	
	Gas-Controller-Module
	Gas-Controller-Module door mounting
	Mains fault flashing light
	Extension module address 1-7, incl. repeater
	1 pc. DGC-06 amplifier
	Repeater with 24 V (plastic housing)
	Repeater with 230 V (plastic housing)
	RS-485/BacNet
	RS-485/Modbus
	Data logger incl. USB stick
	Monitoring of external warning devices
OPTIONS	
	Cable entry from below
	Cable entry from above and below
	Housing can be locked
	Mains fault flashing light

Sensor-Board-Series SB2

Item No.	Description
STANDARD	
	SB2 in A-housing, 24 V DC, RS-485 with DGC-06 protocol
	RB2 remote board 24V DC L-bus
	RB2 remote board 24V DC L-bus, without housing
OPTIONS	
	C-housing
	Modbus
	D-bus (3-cable)
	Warning unit (acoustic / optical warning)
	Display and keyboard
	ATEX housing
	Stainless steel housing
	Tool for opening stainless steel housing
	UL / CSA 61010-1 (only housing type A & C)
WARNING AND SENSOR BOARD WSB2	
	Warning and Sensor Board WSB2, 2 relays
	Warning and Sensor Board WSB2, no relay
OPTIONS	
	C-housing
	E-housing
	N-housing
	Modbus
	Analog output and RS-485 with DGC-06 protocol
	90-240 V / 15 VA
	Warning unit (acoustic/optical warning)
	Display and keyboard
	3 x SC2 slot (not with housing type N)
	2 x SC2 slot & remote input (not with housing type N)
	2 x SC2 slot for same gas type (not in housing type N)
	UL/CSA 61010-1 (only housing type A, C, E)
	Digital input with acknowledgement button on housing

Digital Sensor Cartridge SC2

Item No.	Description
EL. CHEMICAL SENSOR	
	Carbon monoxide
	Carbon monoxide
	Carbon monoxide
	Carbon monoxide
	Carbon monoxide
	Nitrogen dioxide
	Nitrogen dioxide
	Nitrogen dioxide
	Nitrogen dioxide
	Liquid gas
ACCESSORIES	
	Air duct set
	Gas feed set MC2, SC2
	Calibration adapter MC2, SC2, X-Change with SplashGuard
	SplashGuard
OPTIONS	
	Plastic housing
	Stainless steel housing
	Cable extension / m

PolyGard Control Box and Tools

Item No.	Description
PGCP	
	PolyGard Control box, 7", without power supply, without housing
	PolyGard Control box, 15", without power supply, without housing
	PolyGard Control box, 7", with power supply and housing
	PolyGard Control box, 15", with power supply and housing
PGCC GAS	
	Software for visualization of GC-06 data, adapter required
TCP/IP COUPLER	
	ModBus-TCP/IP coupler
STL06 - SERVICE TOOL	
	Partner tool for display, calibration, addressing and parameter changes
	System tool for display, calibration, addressing and parameter changes (ordered by the partner for end customers)
	Tool for the product series µGard2 (MC2) for display and calibration
PCE06 - EASYCONFIG	
	Partner tool for display, calibration, addressing, parameter changes and history
	Partner tool for display, calibration, addressing, parameter changes and history (ordered by the partner for end customers)
	Tool for the product series µGard2 (MC2) for display and calibration
CONVERTER AND ADAPTER FOR STL06 + PCE06	
	Adapter for STL06-PGX2 and PCE06-PGX2 tool for communication with product series µGard2 (MC2)
	Adapter for STL06-PGX2 and PCE06-PGX2 tool for communication with product series PX2
CREDITS	
	Credits (100 pcs.) for PCE06-xxx, STL06-xxx
VISUALIZATION	
	Visualization software

Warning Devices

Item No.	Description
	Flashing light
	Warning horn, 24 VDC
	Warning horn, 230 VDC
	Warning horn/flashing light combination, 24 VDC
	Warning horn/flashing light combination, 24 VDC + button
	Warning horn/flashing light combination, 230 VAC
	LED warning sign D3 - EN 50545-1
	LED warning sign G1 - VDI 2053 GAS ALARM
	LED warning sign A1 - standard Austria ENTRANCE
	LED warning sign A2 - standard Austria MOTOR
	LED warning sign A3 - standard Austria ENTRANCE
	LED warning sign C1
	LED warning sign E1
	LED warning sign F1
	LED warning sign N30
	LED warning sign with special labeling
	LED warning sign
	Warning sign
OPTIONS	
	Warning sign in IP54
	Special labeling from the customer in capital letters
	Power supply 24 VAC/DC, with horn
	Power supply 230 VAC
	Power supply 230 VAC, with horn
	Extended safety, necessary for ES function monitoring

MSR-Group
Everything under one roof

The MSR-Group unites three innovative companies from the electronics sector. Whether gas alarm systems, parking guidance systems or sensors for building automation – the products can be found in many commercial and industrial applications, such as parking garages, cold rooms, biogas plants or offices.
www.msr-group.eu

MSR-Electronic GmbH

For reliable gas monitoring and detection of gas leaks, MSR-Electronic offers: fixed gas warning systems with exchangeable sensor cartridges, controllers and warning devices for buildings, industrial plants, shipping and analysis.

www.msr-electronic.de

MSR-Traffic GmbH

MSR-Traffic GmbH stands for intelligent indoor and outdoor parking guidance systems. With wireless magnetic field sensors for outdoor use and smart cities as well as ultrasonic sensors for indoor use (underground car parks and parking garages), MSR-Traffic develops dynamic signposts for every parking system.

www.msr-traffic.de

MSR-International

With its own subsidiaries and sales in over 80 countries, MSR is available to meet the needs of customers worldwide.

You will always find the right contact person in your area.

www.msr-electronic.de/msr-partner

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GROUP

.MSR

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PERFECT SOLUTIONS FOR GAS ALARM SYSTEMS

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MSR-Electronic YouTube Channel

MSR-Group News

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www.msr-electronic.de

MSR-Electronic

IMAGE FILM

■ All Products
■ Made
■ in Germany

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www.msr-group.eu