



Zone monitoring device TGÜ-BS 2.6 (Slave) for car parks



Technical data

Housing:	ABS plastic
Dimensions:	265 x 234 x 141 mm (L x W x D)
Protection class:	IP 65
Alarm relays:	4 switching relays 250 V/2.5 A
-	for fan 1, fan 2
	horn, warning light
	1 switching relay 24 V DC / 1 A for
	device error message
Supply voltage:	230 V AC 50/60Hz
Ambient temperature:	0 °C up to + 40 °C
Optional UPS:	24 V DC (60 min.)
Cable entry point:	9 x M16 x 1.5
	1 x M25 x 1.5
Connection:	spring clips $0.5 - 1.5 \text{ mm}^2$
Weight:	1.8 kg
Guidelines	1,6 Kg
- FMC directives:	EN 61000-6-2
Line directives.	EN 61000-6-3
- Low voltage directive:	EN 61010-1
Low voltage uncerve.	
Data communication	VDI 2035
- To the sensors	VIa 2 X RS 485 Interfaces, Modbus RTU
	(for cable lengths, see page5)
- to the master device	via 2 LAN interfaces RJ45
	and in WWW
Measuring head:	CO, NO ₂ , LPG, methane
	description on page 2

- Gas zone device with bus technology
- Up to 100 measuring points for CO, NO₂, LPG, CH₄
- Additional measuring points with repeater
- Additional zone expansion possible
- 4 floating alarm relays
- 2 LAN (Ethernet) interface to the World Wide Web and for communication within the plant
- ID address

System description

The TGÜ-BM 2.6 is, as an extension to the BM 2.6 control center, a bus-compatible measurement and control system used to monitor the air for toxic carbon monoxide, nitrogen dioxide or propane concentrations in underground car parks or similar enclosed spaces in which motor vehicles with internal combustion engines are operated.

Different types of gas sensors can be connected simultaneously.

50 CO/NO₂ measuring heads or 12 DUO measuring heads can be directly connected. If the required number of sensors is greater than this amount, a repeater is connected to the Modbus cable. This increases the number of possible sensors to 100 CO/NO₂ sensors or 40 DUO sensors.

1 alarm zone is integrated. The zone device is connected via the Ethernet interface with the control center.

A CAT5E crossover cable must be used for direct connection to the control center (BM 2.6) or to another zone unit (BS 2.6).

The zone unit has no control element. The organization and control of the entire system is done via the control center. The interfaces to fans, transparent warning lights and horns, as well as the sensors, are arranged in the control center. At each zone unit an expansion of the number of sensors via the repeater (TGÜ-BR 2.6) is also possible. The connection between control unit and sensor is done using four wires, 2 for the supply and 2 for data transmission. Data transfer to the gas sensors is digital. Communication takes place via one (or two) RS-485 Bus segments. Modbus RTU is used as a communication protocol.

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System description

The zone device cyclically queries the gas sensors, stores the instantaneous values and passes the information on to the control center for further processing. In this way even buses and sensors are monitored. Malfunctions are signaled.

The measuring signals of the gas sensor heads are digitized in the sensor electronics. The measurement data is temperature compensated, scaled and evaluated according to the set alarm thresholds.

In case the preset thresholds are exceeded, control commands for fans and transparent warning lights are passed via relay.

All of the zone device's functions can be processed via the control center:

5 variable thresholds regarding average time, delay time and hysteresis can be set independently from each other.

For test purposes it is possible to simulate the alarm thresholds with an integrated virtual sensor.

Parametrization of the TGÜ is carried out via the control center's operating menu with display and rotating pushbutton.

The handling of the parameters via a web interface is based on the structure of the display menus.

The clear text display in the control center's LCD is selectable in German, English and Dutch.

Access to the main menu (on the TGÜ-BM 2.6) is passwordprotected to prevent improper use. The unit status is signaled simultaneously to the LCD display via 9 LEDs.

Communications within the entire system take place via the 2 built-in Ethernet interfaces. A Web connection is also possible.

The calibration of the connected gas sensors is carried out at the sensors with a manual control unit. Supply voltage is 230 V AC, the connection of an additional uninterruptible power supply (UPS) of 24 V DC is provided.

Sensors to be connected to the TGÜ-BS 2.6

Carbon monoxide CO Nitrogen dioxide NO_2 Propane (LPG) C_3H_8 Natural gas (methane) CH_4 Combi CO/LPG Typ GMF 4.E.CO.08.MOD Typ GMF 4.E.NO2.03.MOD Typ GMF 4.P.C3H8.30.MOD Typ GMF 4.P.CH4.30.MOD Typ GMF DUO.E/P.CO/LPG.MOD Data sheet No.: 38100 Data sheet No.: 38101 Data sheet No.: 38102 Data sheet No.: 38103 Data sheet No.: 38104

Note: All sensors are also possible in a version with housing type 5. See data sheet 38106/38107.





Connection board

Work on electrical systems or equipment must be carried out only by a qualified electrician or by instructed personnel under the direction and supervision of a qualified electrician according to electrotechnical regulations.



230 V AC Mains connection

The 230 V AC connection for supplying devices is carried out as a 3 x 3 block.

2	30 V A	C								
PE	Ν	L								

DC-UPS Connection (USV)

Important: The UPS 24 V DC supply voltage must be protected with a 2.5 A delay fuse!

If a decentralized UPS is used (e.g. 2410-12 from Schneider), a failure of the 230 V AC supply can be used for alarming by means of a contact output on this UPS.

2	30 V A	١C	USV								
PE	Ν	L	PE	0 V	+24 V						

UPS

Alarm output

The contacts for the relay outputs (K6, K5, K4, K3) are marked in the dead state, contact load for K6, K5, K4, K3: 240 V / 2.5 A.

Optocoupler output K2 (through-connected in "go state"), limit values for the optocoupler: 24 V DC/100 mA/150 mW, not short-circuit proof, no inverse-polarity protection.

WT (K6)		Hupe (K5)			Vent.2 (K4)			Ve	ent.1 (K3)			GLT	(K2)	
NC	С	NO	NC	С	NO	NC	С	NO	NC C NO				out	0 V	
Warning light			_	Horn		_	Fan 2		_	Fan 1	I	_		E	BMS

Note: The DI 1 – DI 4 digital inputs and the GSM (K1) output are not included in the BS 2.6 Slave.





Measuring sensor Modbus connection

2 Modbus outputs (internally wired in parallel)





Wiring for GMF DUO.E/P.CO/LPG. MOD



Measuring sensor type		Wiring: JY (St) \					
	BUS	51	BUS	5 2	BUS 1 + BUS 2		
	Max. length/m	# of sensors	Max. length/m	# of sensors	Max. length / m	# of sensors	
GMF 4.E.CO.08.MOD	500	25	500	25	1000	50	
GMF 4.E.CNO2.03.MOD	500	25	500	25	1000	50	
GMF 4.P.C3H8.30.MOD	200	10	200	10	300	15	
GMF 4.P.CH4.30.MOD	200	10	200	10	300	15	
GMF DUO.E/P.CO/LPG.MOD	180	9	180	9	240	12	

When wiring the Modbus (EN 50173) the technical guidelines must be considered.

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Bus cable

Only wiring cables which comply with the recommendations of the EIA 485 guidelines may be used for the Modbus.

A maximum of 50 Modbus sensors can be connected to a TGÜ. If more devices are connected to a TGÜ, multiple segments must be connected through repeaters.

The bus cable must be laid at a distance of at least 20 cm from other lines. It should be installed in a separate, conductive and grounded cable trunking.

It is important to ensure that no potential differences between devices can occur on the Modbus (perform equipotential bonding).

If cable lengths of 1000 m are exceeded (CO sensors) a repeater must be interconnected. The cable shield must be connected to the sensor in the housing (ground screws are available). In the TGÜ the cable shield is to be contacted to the terminal GND_485.

Ensure EMC-compliant wiring:

Signal and bus lines are susceptible to interference. Motor cables tend to be prone to disruptions. Lines that are susceptible to interference and prone to disruption should be placed at the greatest possible distance from one another. The interference immunity of signal and bus cables increases when the cables are laid close to the ground potential. If possible, avoid long wires and make sure that they are installed in areas of less interference. Avoid long parallel segments of cable that are either susceptible or prone to interference

Ethernet interface

The device has 2 LAN (Ethernet/Cat5/RJ 45 sockets) interfaces for connecting the zone devices (BS2.6) with each other, to the master (BM2.6) and for connecting the system into a network (LAN/WAN).

							LAN	
							Port 1	Port 2

Through this connection, contact to other zone devices (TGÜ-BS2.6), to the Master (TGÜ-BM2.6) and to the Web is established.

The dialogues between the TGÜ-BM2.6, the zone devices and the Web takes place in parallel over different protocols. Each TGÜ-BS 2.6 has its own MAC (ID) address.

The TGÜ-BM 2.6 can be configured in a password-protected sub-program:

- IP address
- NetMask
- Gateway





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