

Repeater TGÜ-BR 2.6 for car park monitoring devices



- Power supply and Bus multiplication for connecting additional gas sensors with Modbus technology
- Up to 100 measuring points for CO, NO₂, LPG, CH₄
- 4 galvanically isolated channels
- No influence of the channels among themselves in case of short circuit in the Modbus
- High output power

Technische Daten

Housing:	ABS plastic
Dimensions:	219 x 185 x 94 mm (L x W x D)
Protection class:	IP 65
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:	6 x M16 x 1.5
Connection:	spring clips 0.5 – 1.5 mm ²
Weight:	1.2 kg
Guidelines:	
- EMC directives:	EN 61000-6-2 EN 61000-6-3
- Low voltage directive:	EN 61010-1 VDI 2053
Data communication:	
To the sensors	via 4 galvanic isolated RS485 interfaces Modbus RTU (for cable lengths, see page 4)
to the control center or zone device:	RS485 Modbus RTU
Measuring head:	CO, NO ₂ , LPG, methane description on page 4

System description

The TGÜ-BR 2.6, as an extension to the BM2.6 control center or a BS 2.6 zone device, offers an increase in the number of connected sensors.

The device can be connected anywhere with a Modbus cable to the control center or zone device. The TGÜ-BR 2.6 has a 24 V DC, 60-70 W power supply and 5 RS-485 Modbus RTU channels.

Channels 2 to 5 are galvanically isolated from each other. Channel 1 is the master channel. This channel gets its information directly from the control center or the zone device, and is to be considered a connected sensor in terms of wiring. Channels 2, 3, 4, 5 are slave channels for connecting other sensors.

Each channel is closed with a 120 Ω resistance in-circuit. The 24 V power supply supplies all connected sensors, for which the slave channels are each fused with a quick-acting 0.7 A micro-fuse.

The main task of the device is power supply for the sensors, the bidirectional transmission of the Bus communication across all channels and the decoupling of the channels in case of failure.

Possible short circuits that occur in the channels do not affect communication on the other channels.

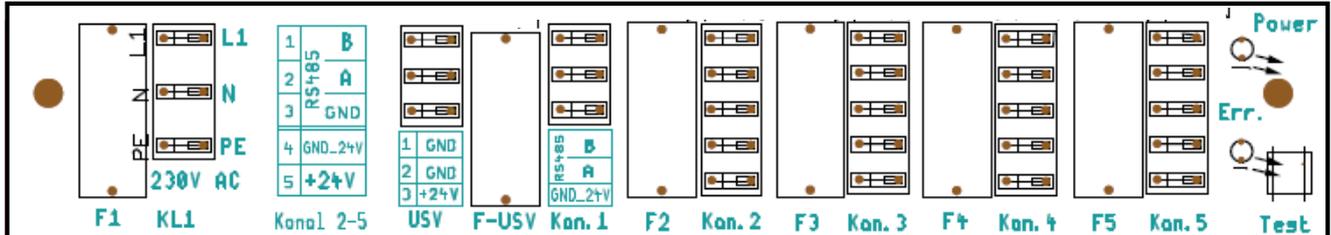
Different types of gas sensors can be connected simultaneously.

160 CO/NO₂ measuring heads or 28 DUO measuring heads can (theoretically) be directly connected.

Supply voltage is 230 V AC. The connection of an additional uninterruptible power supply (UPS) of 24 V DC is provided.

Connecting diagram for 230 V AC mains connection

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.



Connecting diagram for 230 V AC mains connection

The 230 V AC connection for supplying the devices is fused within the device with a 2.5 A delay fuse via F1.

230 V AC																				
PE	N	L1																		

DC-UPS Connection (USV)

The UPS 24 V DC supply voltage is 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.

230 V AC			USV																	
PE	N	L1	GND	GND	+ 24 V															
			1	2	3															

UPS

Master channel 1 (Modbus input)

Master channel 1 for connection to the Modbus of the control center or a zone unit.

Connecting the 24 V DC power supply from the Modbus is not required.

						Kanal 1 RS 485														
						B	A	GND_24 V												

Channel 1

Measuring sensor Modbus connection

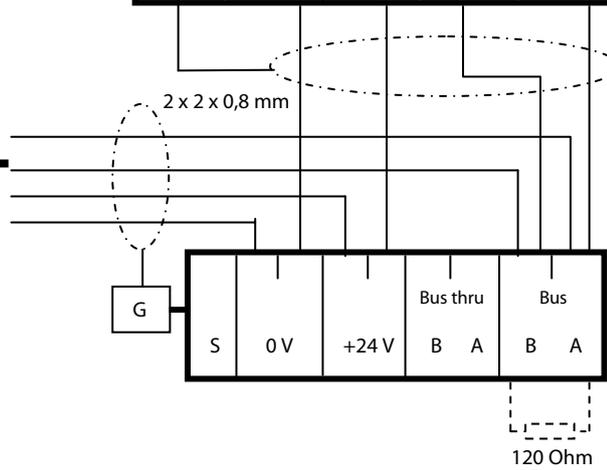
Measuring channels 2, 3, 4, 5 are each protected with a 0.7 A quick-acting fuse via fuses F2, F3, F4, F5

Wiring the sensors

Kanal 2, 3, 4, 5 RS 485				
GND	GND_24	+24 V	B	A
3	4	5	1	2

Additional sensors

To avoid reflections when using long cable lengths, the communication lines A+B must be provided with a terminating resistor of 120 ohm at both ends.



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

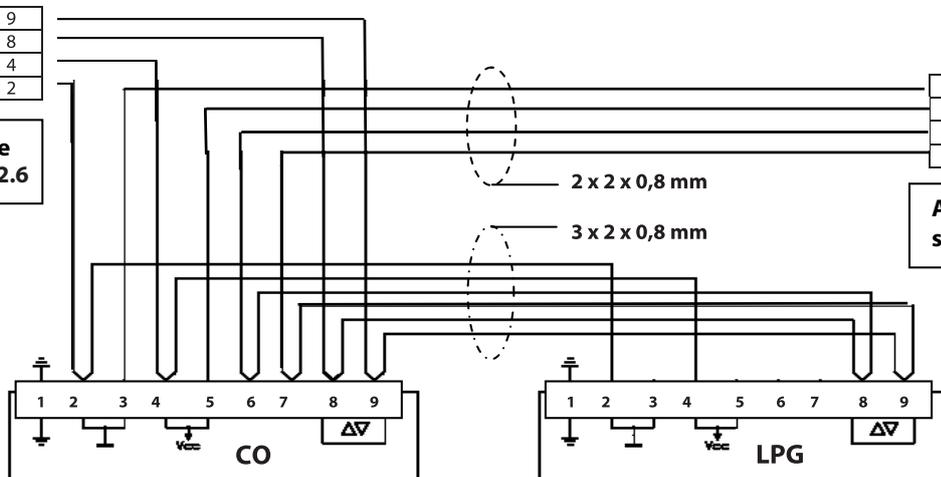
Bus A	9
Bus B	8
+24 V	4
GND_24	2

From the
TGÜ BR 2.6

3	GND_24
5	+24 V
8	Bus B
9	Bus A

Additional
sensors

1. S (shield) connected to the housing
2. 0 V (GND_24)
3. 0 V (GND_24)
4. +24 V
5. +24 V
6. Bus_thru (B)
7. Bus_truh (A)
8. Bus B
9. Bus A



Measuring sensor type	Wiring: JY (St) Y 2 x 2 x 0.8 mm ²		BUS 2 + 3 + 4 + 5	
	per BUS 2...3...4...5		Max. length / m	# of sensors
	Max. length / m	# of sensors		
GMF 4.E.CO.08.MOD	500	25	2000	100
GMF 4.E.CNO2.03.MOD	500	25	2000	100
GMF 4.P.C3H8.30.MOD	160	8	640	32
GMF 4.P.CH4.30.MOD	160	8	640	32
GMF DUO.E/P.CO/LPG.MOD	140	7	560	28

Technical guidelines must be considered when wiring the Modbus.

Bus cable

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

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.

Sensors to be connected to the TGÜ-BS2.6

Carbon monoxide CO	Typ GMF 4.E.CO.08.MOD	Data sheet No.: 38100
Nitrogen dioxide NO ₂	Typ GMF 4.E.NO2.03.MOD	Data sheet No.: 38101
Propane (LPG) C ₃ H ₈	Typ GMF 4.P.C3H8.30.MOD	Data sheet No.: 38102
Natural gas (methane) CH ₄	Typ GMF 4.P.CH4.30.MOD	Data sheet No.: 38103
Combi CO/LPG	Typ GMF DUO.E/P.CO/LPG.MOD	Data sheet No.: 38104

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



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