

Multitec® BioControl



Multitec BioControl – Setup

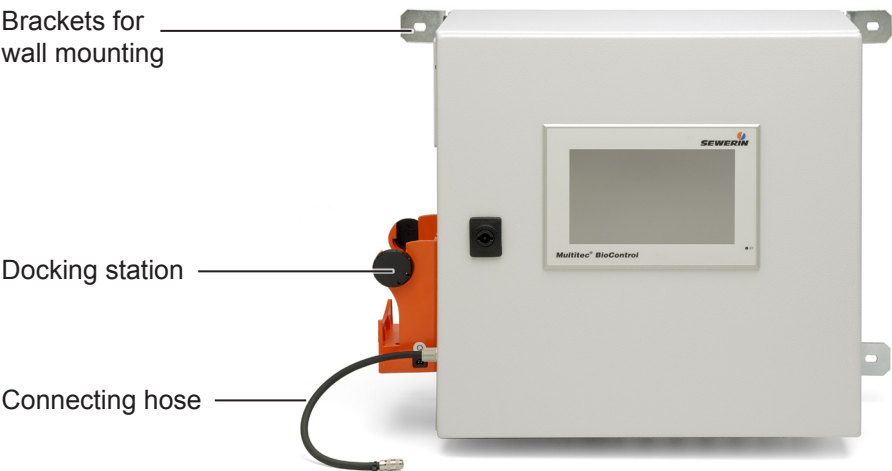


Fig. 1: **BioControl 4** (front view)

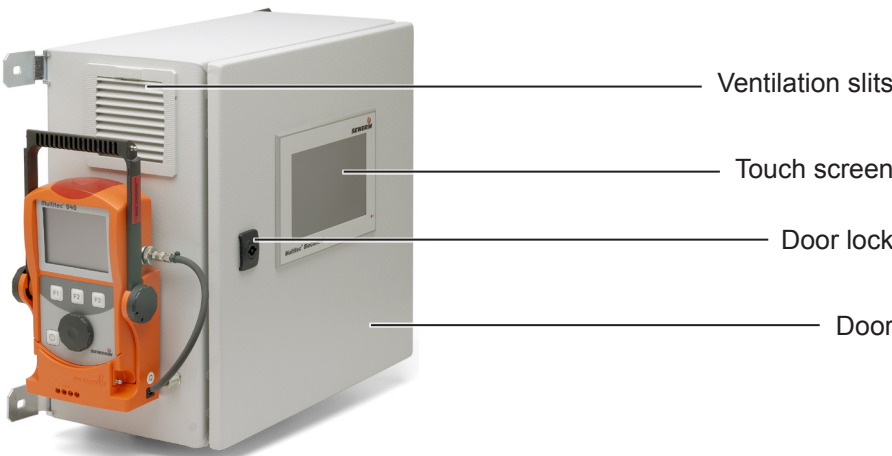


Fig. 2: **Multitec BioControl** with **BioControl 4** and **Multitec 540** gas measuring device

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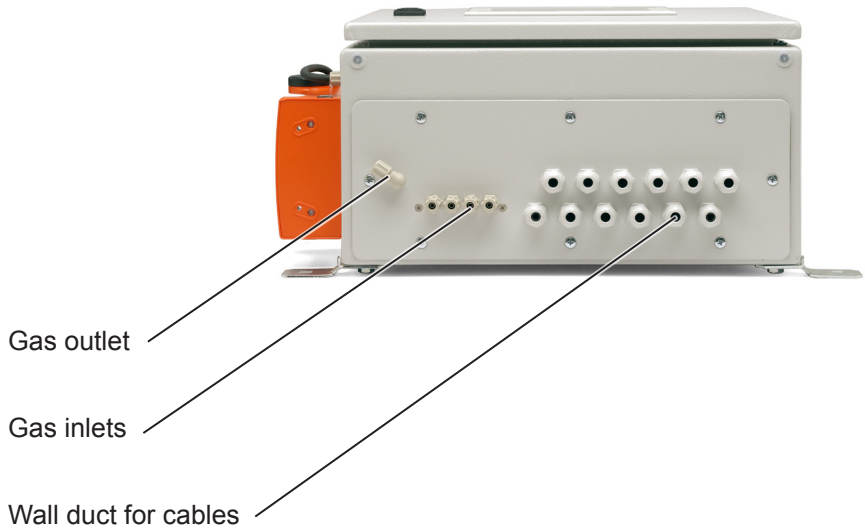


Fig. 3: **BioControl 4** – product variant for a maximum of four measuring locations
(view from underneath)

Information about this document

Warnings and notes in this document mean the following:



WARNING!

Risk of personal injury. Could result in serious injury or death.

Note:

Tips and important information.

Numbered lists (numbers, letters) are used for:

- Instructions that must be followed in a certain order

Lists with bullet points (point, dash) are used for:

- Lists
- Instructions that only involve one step

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1 Introduction

The **Multitec BioControl** is a combined measuring device. It consists of a fixed **BioControl** (e.g. **BioControl 4**) and a mobile gas measuring device (e.g. **Multitec 540**).

The **Multitec BioControl** is designed for the automatic measurement and monitoring of the gas volume* and composition of gases produced in biogas and sewage treatment plants and in landfill sites. The maximum number of measurement locations depends on the product variant.

The device measures the gas compositions at the individual measuring locations sequentially. The gas components measured depend on the technical options available with the mobile gas measuring device. The values are transmitted to the **BioControl** via an interface.

The mobile gas measuring device is usually docked to the **BioControl** via the docking station (stationary measurements).

As an option, mobile measurements can be taken at selected measuring locations. The gas measuring device is removed from the **BioControl** docking station to carry out the measurement. When it is replaced in the docking station, the calculated measurement values are transmitted to the **BioControl** and displayed.

Exact recording of the volume of raw biogas is also possible with the **Multitec BioControl**.

Note:

These instructions only describe the assembly and installation of the **BioControl** fixed installation.

- Information regarding the operation of the **BioControl** fixed installation can be found in the “**Multitec BioControl** Operating instructions.”
- The description of the mobile gas measuring devices can be found in the corresponding operating instructions.

These instructions are written for those who will assemble and install the **Multitec BioControl**. The electrical installation must only be carried out by authorised technicians.

*only BioControl 4 and BioControl 8

2 Notes on handling the product

2.1 Warranty

The following instructions must be complied with in order for any warranty to be applicable regarding functionality and safe operation of this equipment.

- The product must be commissioned by an authorised technician. Only after this commissioning may the user operate it.
- Use the product only as intended.
- Repairs and maintenance must only be carried out by specialist technicians or other suitably trained personnel. Only spare parts approved by Hermann Sewerin GmbH may be used when performing repairs.
- Changes or modifications to this product may only be carried out with the approval of Hermann Sewerin GmbH.
- Use only Hermann Sewerin GmbH accessories for the product.

Hermann Sewerin GmbH shall not be liable for damages resulting from the non-observance of this information. The warranty conditions of the General Terms and Conditions (AGB) of Hermann Sewerin GmbH are not broadened by this information.

In addition to the warnings and other information in these Operating Instructions, always observe the generally applicable safety and accident prevention regulations.

The manufacturer reserves the right to make technical changes.

2.2 Intended use

The quality and volume* of biogas, sewer gas and landfill gas can be determined with the **Multitec BioControl** combined measuring device.

Prior to initial use, the **Multitec BioControl** must be assembled, installed and commissioned by an authorised technician. Both stationary and mobile measurements can be performed with the mobile gas measuring device.

The **Multitec BioControl** is intended for use by small and commercial operations as well as for industrial applications.

*only BioControl 4 and BioControl 8

The product does not have certification from an official agency and cannot, therefore, be used such that end customers are charged.

2.3 General safety information

This product was manufactured in accordance with all binding legal and safety regulations. It corresponds to the state of the art and complies with conformity requirements. The product is safe to operate when used in accordance with the instructions provided.

However, if you handle the product improperly or not as intended, the product may present a risk to persons and property. For this reason, observe the following safety information without fail.

- In the setup area, smoking and open flames are prohibited.
- Do not modify the installation yourself. The **Multitec BioControl** may only be used in the manner approved in the commissioning process. Subsequent modifications to the installation and configuration must always be carried out by an authorised technician.
- The gas must always be able to flow freely in the gas hoses. Gas hoses may not be bent into kinks, accidentally disconnected or otherwise subjected to mechanical stress.
- Prevent aggressive substances (e.g. acids) from coming into contact with the touch screen. Protect the touch screen from mechanical damage.
- Ensure compliance with the permissible operating temperatures. Otherwise, there is a risk that the sensitive touch screen film may warp, and as a result, the touch screen may no longer be fully functional.
- Ensure that the ventilation slits on both sides of the housing are always freely accessible. Do not cover the ventilation slits with pieces of clothing or similar items.

3 Product description

3.1 BioControl product variants

The following product variants of the **BioControl** are available:

- **BioControl 1**
- **BioControl 2**
- **BioControl 4**
- **BioControl 8**

The number at the end of the product name indicates the maximum number of measuring locations that can be connected to the **BioControl** as part of the installation.

The product variants do not differ with respect to operation.

Test gas measurements cannot be performed with the **Multitec BioControl 1**.

3.2 Setup

For overviews including all part names for the **BioControl**, see the front cover flap (fig. 1 to fig. 3).

3.3 Gas flow in the combined measuring device

The entire gas volume of the system does not flow through the **Multitec BioControl**, just the volume required for the measurements.

In the **BioControl** the incoming flow of the gas is controlled by solenoid valves.

To perform a measurement, the gas is suctioned in by the mobile gas measuring device via a connecting hose. Following the measurement, the gas is exhausted using a pump with higher output (excess flow principle) and is diluted with air.

The **Multitec BioControl** is always tightly sealed.

4 Assembly and installation

4.1 Wall-mounting the BioControl

The **BioControl** must be attached to a wall.

Note:

SEWERIN recommends that the **BioControl** be mounted at eye level in order to operate the device well.

4.1.1 Requirements

- The space in which the device is to be mounted must be frost-free and well ventilated and must be located outside of designated explosion zones.
- The device is attached to a wall in a horizontal position. Four brackets are used to affix the device.
- The device requires room on all sides to prevent heat from building up and so that the paths for the cables and gas hoses are not blocked. Ensure compliance with the following spacing requirements:

Left:	15 cm	Top:	50 cm
Right:	10 cm	Bottom:	50 cm

4.1.2 Assembly (mounting)

1. Determine the desired mounting position.
2. Mark the attachment holes. The dimensions can be found in the illustrations in section 5.2.
3. Bore the four holes required.
4. Screw the **BioControl** onto the wall.

Select the required mounting materials based on the existing base surface. The mounting materials are not included in the scope of delivery.

4.2 Mounting the gas hoses

A measuring gas hose must be connected for each planned measuring location. An exhaust gas hose must be connected for all of the measuring locations taken together.

Fig. 3 in the front cover flap shows the gas inlets and gas outlet, using the **BioControl 4** as an example.



Fig. 4: Sample installation – **BioControl 4** with one measurement location connected

The measuring gas hose that enters from upper left is equipped with an in-line detonation arrester, a water extractor and a hydrophobic filter (from left). The transparent exhaust gas hose runs upward behind the device (cannot be seen in the photo).

4.2.1 Requirements

Measuring gas hoses

- The number of measuring gas hoses to be connected depends on the:
 - Product variant
 - Number of planned measuring locations
- The measuring gas hoses must have a length of at least 6 m before connecting with the gas inlets. This does not apply for the motor as a measuring location.

SEWERIN can provide suitable PE hoses (internal diameter of 4 mm).

- All measuring gas hoses must be laid with a continuous gradient of at least 1–3%. They must not sag.

If a continuous gradient for laying the hoses is not available between the measuring location and the device, a water extractor (see accessories) must be installed at the deepest point.

- One water extractor per measuring gas hose must be installed near the gas inlet.
- One hydrophobic filter per measuring gas hose must be installed between the water extractor and the gas inlet.
- SEWERIN recommends installing one in-line detonation arrester per measuring gas hose.
- Appropriate measures must be taken to protect measuring gas hoses from damage from external influences. These include, for example, protection from frost and rodents.

Exhaust gas hose

- The exhaust gas hose does not need to be laid on a gradient.
- The exhaust gas hose must be laid such that it runs outside.
 - There must not be any ignition sources where the gas escapes.
 - If the exhaust gas hose extends through an external wall to run outside, it must have a large diameter in the area near the wall and must run through the wall on a gradient (fig. 5).

SEWERIN can provide a suitable wall duct as an accessory.

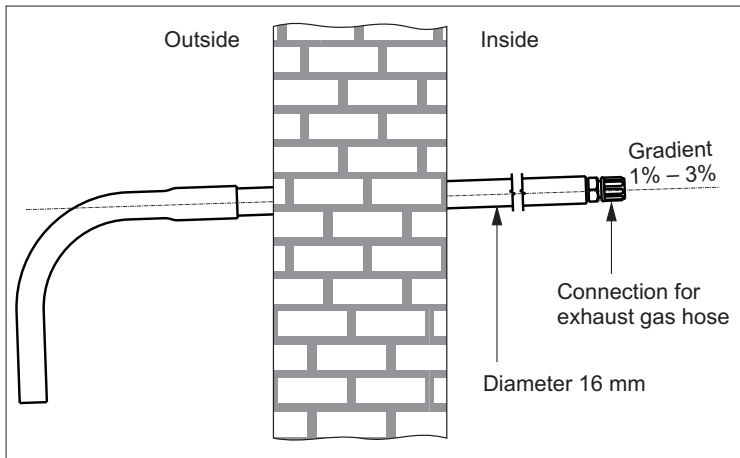


Fig. 5: Wall duct – installation in an external wall (diagram)

Measuring location for test gas measurements

- A separate measuring location is required for test gas measurements. This location cannot be used for normal measurements. Detailed information about measuring locations for test gas measurements can be found in the **Multitec BioControl** Operating Instructions.

Additional protection from moisture penetration

- For very moist biogas, SEWERIN also recommends the installation of a measuring gas cooler near the measuring location.

4.2.2 Assembly

1. Connect a measuring gas hose to an intended measuring location.
2. Lay the measuring gas hose from the measurement location to the **BioControl**. Secure the measuring gas hose tightly so that it cannot slip during operation.

Observe the information on laying the hoses in section 4.2.1.

3. Near the gas inlet, provide the measuring gas hose with a water extractor, a hydrophobic filter and, if necessary, an in-line detonation arrester.
4. Mount the parts in the sequence shown in fig. 4.
5. Seal the threaded connections on the water extractor and the in-line detonation arrester with Teflon tape.
6. Insert the free end of the measuring gas hose into a gas inlet of the **BioControl**.
7. Secure the measuring gas hose at the gas inlet with the union nut of the PG screw connection.
8. Repeat steps 1 through 5 for all intended measuring locations.
9. Insert one end of the exhaust gas hose into the gas outlet of the **BioControl**.
10. Secure the exhaust gas hose at the gas outlet with the union nut of the PG screw connection.
11. Run the free end of the exhaust gas hose outside.
12. Observe the specifications in section 4.1.2, particularly fig. 5, if the exhaust gas hose extends through an external wall to run outside.

4.3 Electrical installation



WARNING!

The electrical installation must only be carried out by authorised technicians.

Fig. 3 in the front cover flap shows the duct for the cables, using the **BioControl 4** as an example.

BioControl 1/4/8

The device operates at low voltage (24 V). The power is supplied from a supply unit on the top-hat rail.

An applied low voltage of 18 – 30 V is sufficient for correct functioning. Stabilised voltage is not required because the voltage in the device is stabilised with an upstream DC/DC transformer.



WARNING! Danger of electrical shock!

- Disconnect the power supply before beginning cabling work.
 - Ensure that the power supply remains disconnected during the entire time that cabling work is performed.
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- Connect the system to the power supply in accordance with the wiring diagrams (section 5.3).

BioControl 2

The **BioControl 2** is connected to the power supply using the corresponding mains plug.

All product variants

- Earth the housing of the **BioControl**.
The **BioControl 2** comes with an earth cable.
- Also earth the following connection cables, if present:
 - to the flowmeter
 - to the communication interface

5 Appendix

5.1 Technical data

5.1.1 BioControl 1, BioControl 4, BioControl 8

Device data

Dimensions (W × D × H):	520 × 205 × 425 mm
Weight:	15 kg
Product variants	BioControl 1 (1 gas connection) BioControl 4 (4 gas connections) BioControl 8 (8 gas connections)

Features

Gas connections	1, 4 or 8 per gas connection: – 1 input for flow (4 – 20 mA) – 1 input for temperature (4 – 20 mA)
Display	7 inch touch screen, 256 colours, 800 × 480 pixels
Ports	– 1 × Ethernet (Modbus TCP) – 2 × RS-485 (Modbus RTU) – 2 × RS-232 – 1 × USB, expandable – on BioControl 4 and BioControl 8: 4 × analogue (0/4 – 20 mA) – optional: PROFIBUS
Data memory	USB stick: 2 GB Flash memory, can be expanded to 16 GB

Permitted operating conditions

Operating temperature	+5 – +40 °C
Storage temperature	-10 – +50 °C
Humidity	Environment: < 85 % r.h., non-condensing Gas: See data sheet for the mobile gas measuring device
Pressure at gas inlet	±100 mbar relative (depending on mobile gas measuring device)
Permitted operating environments	In frost-free, sufficiently ventilated space
Non-permitted operating environments	In potentially explosive zones
Operating position	Wall mount (hanging)

Power supply

Operating voltage	24V DC (max. 2A), no stabilisation required
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Data transmission

Communication	CAN bus between mobile gas measuring device and BioControl
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Gas types

Standard	Depending on mobile gas measuring device
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Resolution of the gases in the combined measuring device

CH ₄	0.1 % vol.
CO ₂	0.1 % vol.
O ₂	0.1 % vol.
H ₂ S	2 ppm

Additional data

Attachment option	Brackets for wall mounting
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5.1.2 BioControl 2

Device data

Dimensions (W x D x H)	270 × 160 × 300 mm
Weight	6.5 kg

Features

Gas connections	2
Display	4.3 inch touch screen, 256 colours
Ports	– 1 × Ethernet (Modbus TCP) – 1 × USB – optional: PROFIBUS
Data memory	USB stick: 2 GB Flash memory, can be expanded to 16 GB

Operating conditions

Operating temperature	+5 °C – +40 °C
Storage temperature	-10 °C – +50 °C

Humidity	Environment: < 85 % r.h., non-condensing Gas: See data sheet for the mobile gas measuring device
Pressure at gas inlet	±100 mbar relative (depending on mobile gas measuring device)
Permitted operating environments	In frost-free, sufficiently ventilated space
Non-permitted operating environments	In potentially explosive zones
Operating position	Wall mount (hanging)

Power supply

Power supply	External 230 V~ via SEWERIN BioControl mains adapter
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Data transmission

Communication	CAN bus between mobile gas measuring device and BioControl
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Gas types

Standard	Depending on mobile gas measuring device
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Resolution of the gases in the combined measuring device

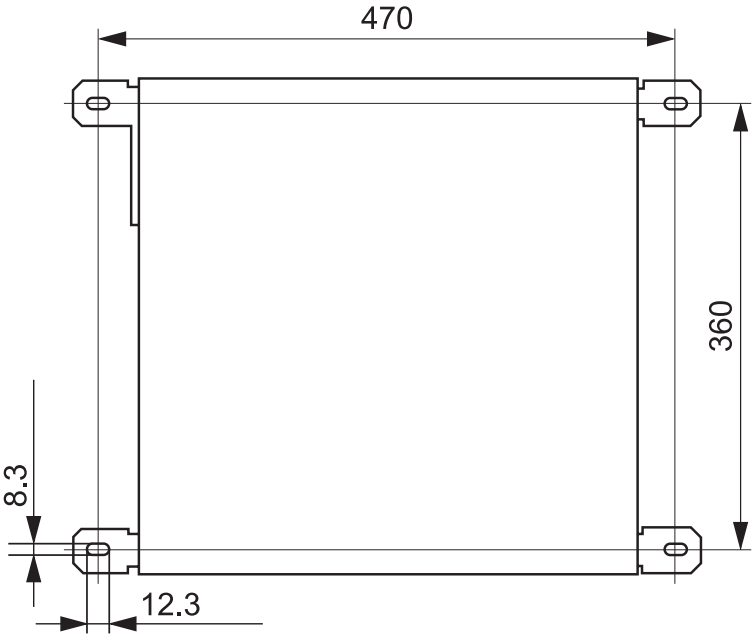
CH ₄	0.1 % vol.
CO ₂	0.1 % vol.
O ₂	0.1 % vol.
H ₂ S	2 ppm

Additional data

Attachment option	Brackets for wall mounting
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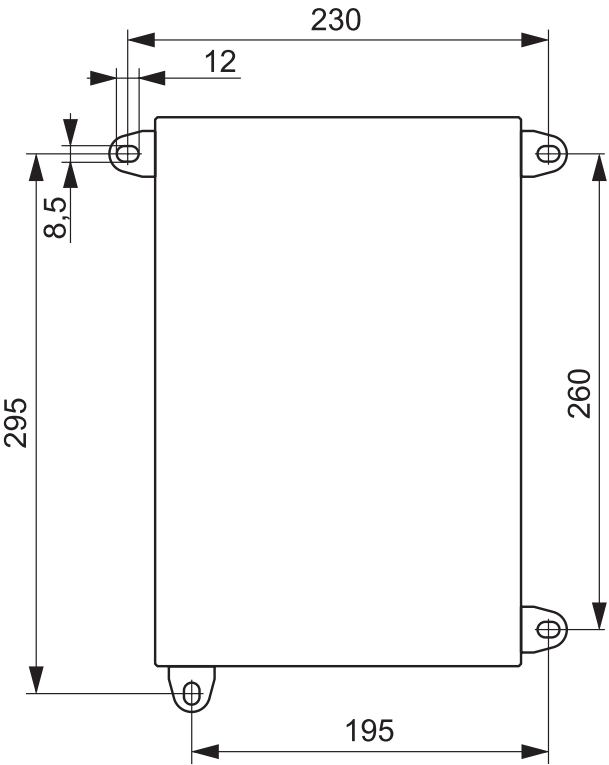
5.2 Hole dimensions for wall mounting

5.2.1 BioControl 1, BioControl 4, BioControl 8



(figures in mm)

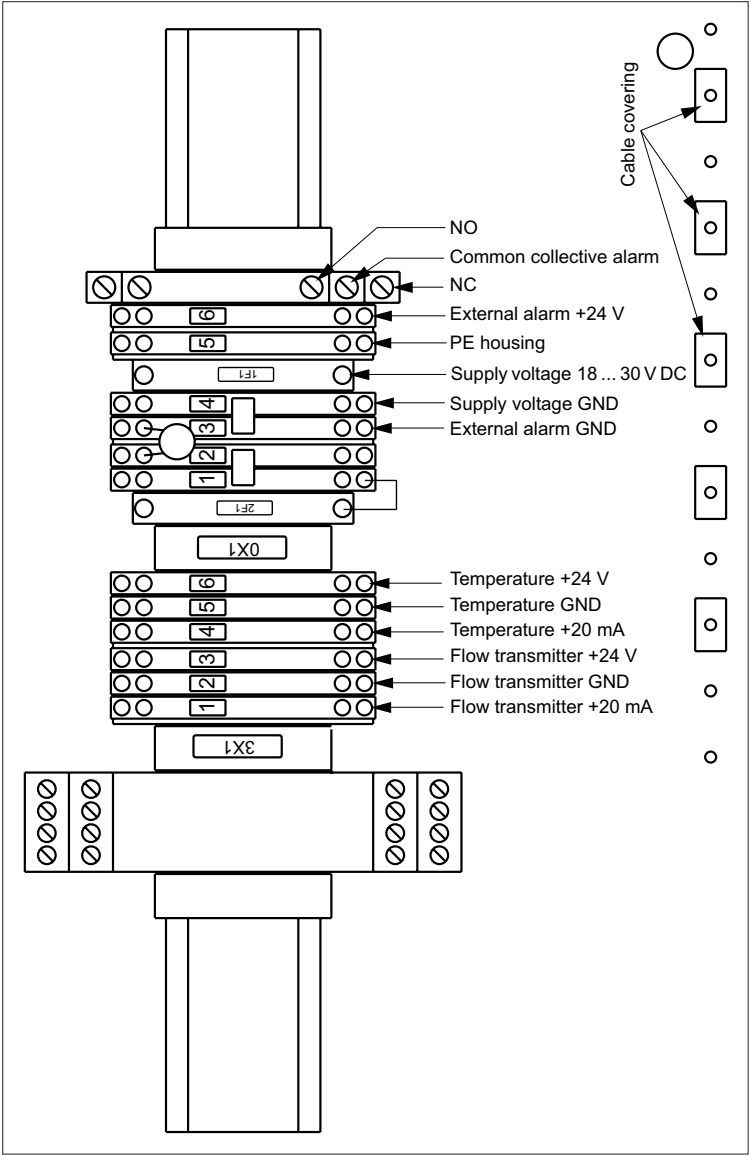
5.2.2 BioControl 2



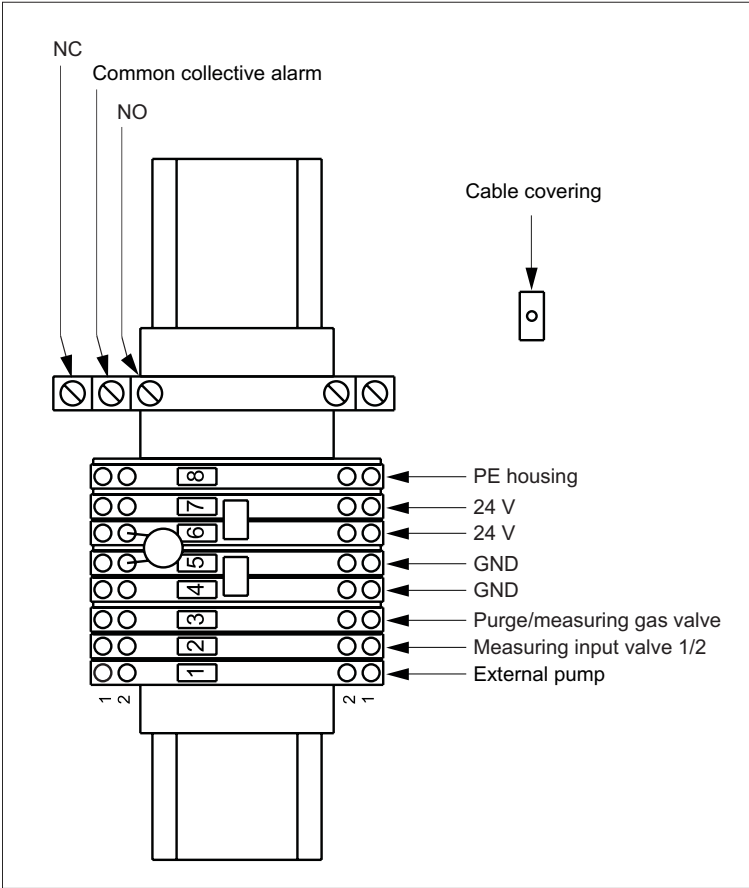
(figures in mm)

5.3 **Wiring diagrams**

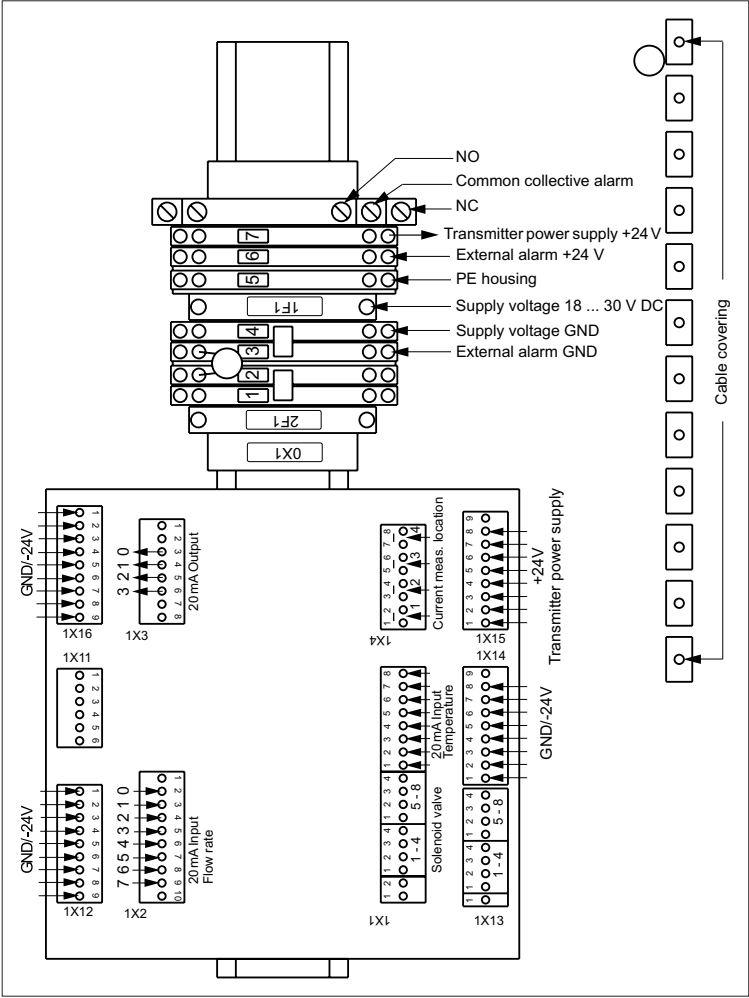
5.3.1 **BioControl 1**



5.3.2 BioControl 2



5.3.3 BioControl 4, BioControl 8



5.4 Accessories and consumables

Accessories

Part	Order number
Gas sample connection installation set	MG05-Z1000
Wall duct for measuring gas removal	MG05-Z1200
Assembly plate with holes for 4 water extractors or for 3 water extractors and 1 pressure regulator	9200-0010
Flow rate and temperature transmitter	9072-0001
Peltier measuring gas cooler	MG03-Z1000
Water extractor installation set	MG05-Z2000
Gas sample hose with hydrophobic filter	MG05-Z1100
In-line detonation arrester	MG03-Z0300
Mains adapter	LD24-10000
SPE BioControl test set	PP01-10301
Wall holder for test gas bottle	MG05-Z1500
Pressure regulator set for test gas bottle 1.5 l	MG05-Z1800
Pressure regulator for test gas can 1 l	MG05-Z1900

Consumables

Part	Order number
Hydrophobic filter	2491-0050
Air filter	02493-0001
Test gas Bio IR, test gas bottle 1.5 l, non-returnable	ZT50-10000
Test gas Bio IR, test gas can 1 l, non-returnable	ZT49-10000

Other accessories and consumables are available for the product. Please contact our SEWERIN sales department for further information.

5.5 Advice on disposal

The European Waste Catalogue (EWC) governs the disposal of appliances and accessories.

Description of waste	Allocated EWC waste code
Device	16 02 13

End-of-life equipment

Used equipment can be returned to Hermann Sewerin GmbH. We will arrange for the equipment to be disposed of appropriately by certified specialist contractors free of charge.



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