



### I/O module, IP20

- Configurable input and output modules for analogue and digital signals
- Integrated diagnostic possibilities such as wire break, short circuit detection
- Installation and disassembly without tools
- Colour-coded push-in connectors to avoid wiring errors
- Available modules: 8-channel DI, 8-channel DO, 4-channel AI, 4-channel AO, 8-channel DO – Liquid Dosing Open Loop

Product variants described in the data sheet may differ from the product presentation and description.

#### Can be combined with

|   |   |   |
|---|---|---|
|   | <b>Type ME43</b><br>Fieldbus gateway  | ▶ |
|  | <b>Type 8741</b><br>Mass flow controller (MFC)/mass flow meter (MFM) for gases  | ▶ |
|  | <b>Type 8652</b><br>AirLINE – the valve island optimised for process automation | ▶ |
|  | <b>Type 8316</b><br>Pressure measuring device                                   | ▶ |
|  | <b>Type 6027</b><br>Direct-acting 2/2-way plunger valve                         | ▶ |

#### Type description

Bürkert I/O modules Type ME44 for extending the fieldbus gateway Type ME43 are used both to capture sensor signals and to specify set-point values or switching operations.

The analogue modules import analogue sensor signals (e.g. from pressure transmitters) or specify analogue set-point values (e.g. for a flow controller). The further processing of input signals, e.g. via a fieldbus to a higher field level, or the targeted output of set-point signals is configured via the fieldbus gateway Type ME43.

The digital modules can be used for the feedback of switches or the output of switching signals. Once again, a configuration for Type ME43 specifies how these inputs and outputs are processed or controlled.

The I/O modules Type ME44 are plugged onto a so-called backplane, which in turn is connected to the gateway Type ME43. Up to 9 Type ME44 modules can be connected via 3 backplanes to one gateway Type ME43. Type ME43 and Type ME44 modules are part of the Bürkert EDIP (Efficient Device Integration Platform) concept. They facilitate the integration of field level devices (e.g. valves or sensors) in the higher control level. All I/Os of the modules comply with IEC 61131 - 2.

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## 1. General technical data

### 1.1. I/O module

| Product properties  |   |
|---|---|
| Dimensions  | Further information can be found in chapter <b>"3. Dimensions"</b> on page 7. |
| Weight  | 0.3 kg  |
| Material  |   |
| Body  | PC (polycarbonate)  |
| Status display  | RGB LED according to NAMUR NE107, one status LED per channel                  |
| Approvals and conformities  |   |
| Further information can be found in chapter <b>"2. Approvals and conformities"</b> on page 6. |   |
| Environment and installation  |   |
| Ambient temperature   | -20 °C...+60 °C   |
| Storage temperature   | -30 °C...+80 °C   |
| Degree of protection  | IP20 according to EN 60529 / IEC 60529  |
| Height above sea level  | Maximum 2000 m  |

### 1.2. 4AI module (analogue input module)

| Product properties                             |  |
|--|--|
| Configurable input (AI as DI)                  | AI can also be used as DI (configuration <b>via software Bürkert Communicator Type 8920</b> ▶)   |
| Diagnostics                                    | Detection of error conditions (at 3.5 mA and 22 mA according to NAMUR NE43)<br>Detection of an interruption in current input (open loop) |
| Safety   | Reverse polarity protection, protection against overvoltage (up to at least ± 30 V)  |
| Electrical data                                |  |
| Electrical variant                             | Current input or voltage input   |
| Operating voltage                              | 24 V DC ± 10 % (via backplane BPX3)  |
| Permissible conductor connection cross-section | 0.20...1.5 mm <sup>2</sup> / AWG 16...24   |
| Operating mode                                 | 0...20 mA<br>4...20 mA<br>0...10 V<br>0...5 V<br>0...2 V   |
| Accuracy                                       | ± 0.1 % Full Scale Range (FSR)<br><br>Temperature coefficient:<br>Current input: ± 35 ppm FSR/K<br>Voltage input: ± 40 ppm FSR/K         |
| Input impedance                                | Current measurement at 25 °C ≤ 110 Ω<br>Voltage measurement at 25 °C ≥ 115 kΩ  |
| Maximum sensor supply                          | 50 mA per channel  |
| Maximum AUX power consumption                  | 4 × 50 mA (for sensor supply)  |
| Maximum current of module                      | 25 mA  |
| Galvanic isolation                             | For system bus on backplane, no separation between the inputs, all channels have a common reference potential.                           |

### 1.3. 4AO module (analogue output module)

| Product properties                 |   |
|------------------------------------|---|
| Diagnostics                        | Short-circuit detection for voltage output (maximum 16 mA)<br>Detection of an interruption in current input (open loop) |
| Safety                             | Protection against overvoltage (up to at least $\pm 30$ V)  |
| Electrical data                    |   |
| Electrical variant                 | Current output or voltage output  |
| Operating voltage                  | 24 V DC $\pm 10\%$ (via backplane BPX3)   |
| Conductor connection cross-section | 0.20...1.5 mm <sup>2</sup> / AWG 16...24  |
| Operating mode                     | 0...20 mA<br>4...20 mA<br>0...10 V<br>0...5 V<br>0...2 V  |
| Loop impedance                     | < 900 $\Omega$ for current output   |
| Accuracy                           | $\pm 0.1\%$ FSR<br>Temperature coefficient: 14 ppm FSR/K<br>Zero-scale error: + 0.22 % FSR                              |
| Maximum module current consumption | 30 mA   |
| Maximum current per output channel | 50 mA at 900 $\Omega$ load and current output (with smaller load the current also decreases)                            |
| Galvanic isolation                 | For system bus on backplane, no separation between the inputs, all channels have a common reference potential.          |

### 1.4. 8DI module (digital input module)

| Product properties                            |  |
|---|--|
| Diagnostics                                   | Open-circuit detection with 2-wire sensors, short-circuit detection with 3-wire sensors                    |
| Safety  | Protection against overvoltage (up to at least $\pm 30$ V)   |
| Electrical data                               |  |
| Electrical variant                            | 2-wire sensor, 3-wire sensor, mechanical limit switches (all inputs can be configured as frequency inputs) |
| Operating voltage                             | 24 V DC $\pm 10\%$ (via backplane BPX3)  |
| Conductor connection cross-section            | 0.20...1.5 mm <sup>2</sup> / AWG 16...24   |
| Switching threshold                           | $V_{OFF} = 0...5$ V<br>$V_{ON} = 10...30$ V  |
| Input current of $V_{ON}$ , typically 24 V DC | Maximum 5.7 mA per channel   |
| Input type                                    | Type1 and Type3 according to IEC 61131 - 2   |
| Number of frequency inputs                    | 8  |
| Frequency input                               | Maximum up to 2.5 kHz  |
| Input impedance                               | > 4 k $\Omega$   |
| Sampling time/sampling frequency              | 1 ms...4 s / 0.25 Hz...1 kHz   |
| Maximum sensor power supply                   | 8 $\times$ 30 mA   |
| Maximum current consumption of module         | 30 mA  |
| Galvanic isolation                            | No, all channels have a common reference potential.  |

### 1.5. 8DO module (digital output module, P-switching)

| Product properties                    |   |
|---------------------------------------|---|
| Diagnostics                           | Short-circuit detection   |
| Safety                                | Protection against overvoltage (up to at least $\pm 30$ V)  |
| Electrical data                       |   |
| Electrical variant                    | Voltage output  |
| Operating voltage                     | 24 V DC $\pm 10$ % (via backplane BPX3)   |
| Conductor connection cross-section    | 0.20...1.5 mm <sup>2</sup> / AWG 16...24  |
| Operating mode                        | ON/OFF<br>Switching signal with preconfigured limit in ME43<br>PWM (pulse width modulation)<br>PFM (pulse frequency modulation) |
| Clock frequency                       | 20 kHz configurable   |
| Maximum AUX Power current consumption | 8 $\times$ 750 mA   |
| Maximum module current consumption    | 30 mA   |
| Galvanic isolation                    | For system bus on backplane, no separation between the inputs, all channels have a common reference potential.                  |

### 1.6. 8DO module: digital output Liquid Dosing Open Loop

| Product properties                    |  |
|---------------------------------------|--|
| Diagnostics                           | Short-circuit detection  |
| Safety                                | Protection against overvoltage (up to at least $\pm 30$ V)   |
| Electrical data                       |  |
| Electrical variant                    | Voltage output   |
| Operating voltage                     | 24 V DC $\pm 10$ % (via backplane BPX3)  |
| Conductor connection cross-section    | 0.20...1.5 mm <sup>2</sup> / AWG 16...24   |
| Operating mode                        | ON/OFF<br>Switching signal with preconfigured limit in ME43<br>PWM (pulse width modulation)<br>PFM (pulse frequency modulation)<br>Impulse (switching for a defined high-resolution pulse time)<br>Dosing (switching based on taught-in dosing quantity) |
| Clock frequency                       | 20 kHz configurable  |
| Maximum AUX Power current consumption | 8 $\times$ 750 mA  |
| Maximum module current consumption    | 30 mA  |
| Galvanic isolation                    | For system bus on backplane, no separation between the inputs, all channels have a common reference potential.   |

## 2. Approvals and conformities

### 2.1. General notes

- The approvals and conformities listed below must be stated when making enquiries. This is the only way to ensure that the product complies with all required specifications.
- Not all available variants can be supplied with the below mentioned approvals or conformities.


### 2.2. Conformity

In accordance with the Declaration of Conformity, the product is compliant with the EU Directives.

### 2.3. Standards

The applied standards which are used to demonstrate compliance with the EU Directives are listed in the EU-Type Examination Certificate and/or the EU Declaration of Conformity.

### 2.4. North America (USA/Canada)

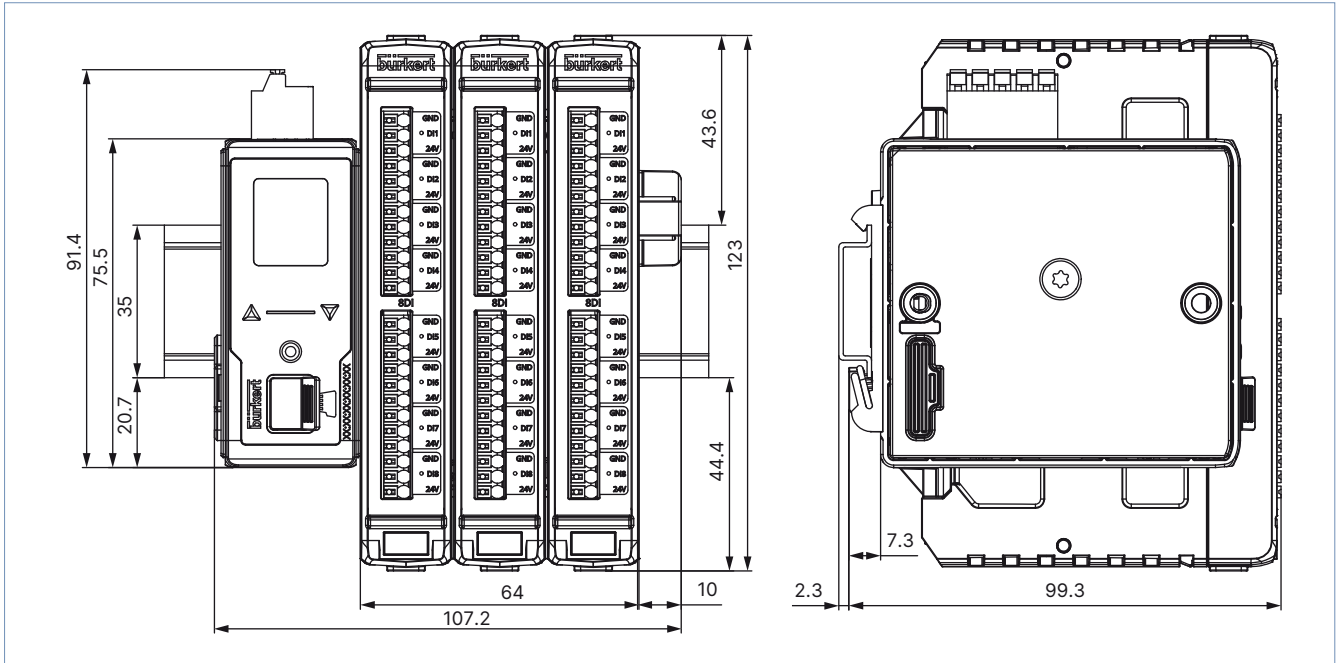
| Approval   | Description  |
|--|--|
|  | <p><b>Optional: UL Listed for the USA and Canada</b><br/>           The products are UL Listed for the USA and Canada according to:</p> <ul style="list-style-type: none"> <li>• UL 61010-1 (ELECTRICAL EQUIPMENT FOR MEASUREMENT, CONTROL, AND LABORATORY USE – Part 1: General Requirements)</li> <li>• CAN/CSA-C22.2 No. 61010-1</li> </ul> |

### 3. Dimensions

#### 3.1. 3 I/O modules on 3-fold backplane mounted on gateway Type ME43

**Note:**

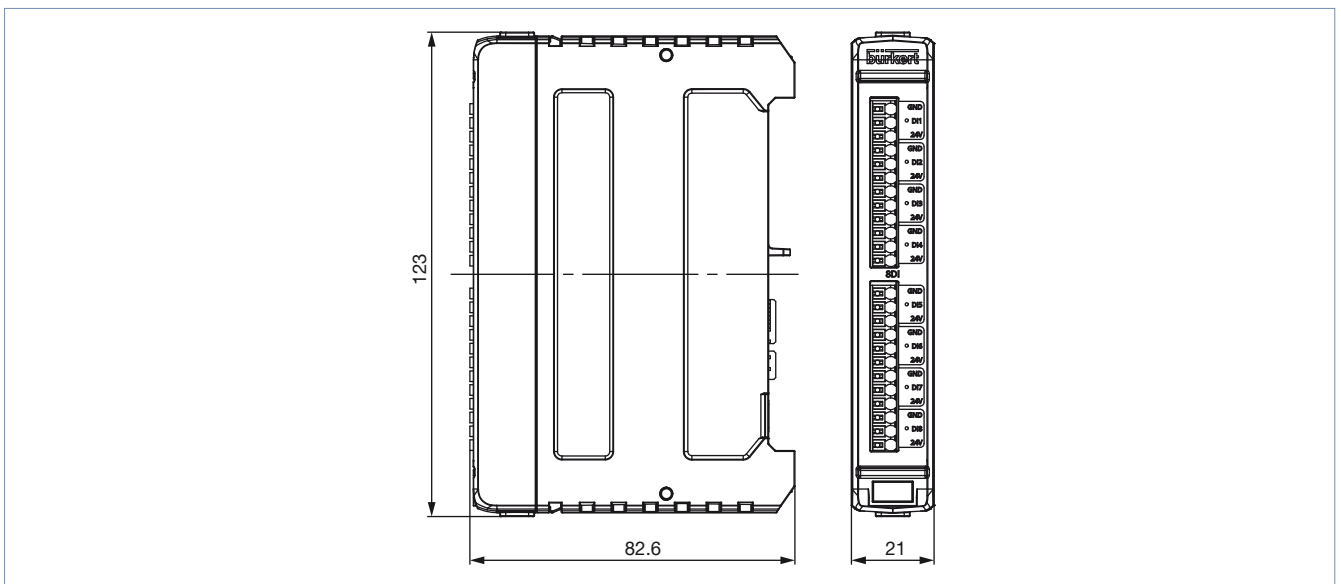
Dimensions in mm



#### 3.2. I/O module

**Note:**

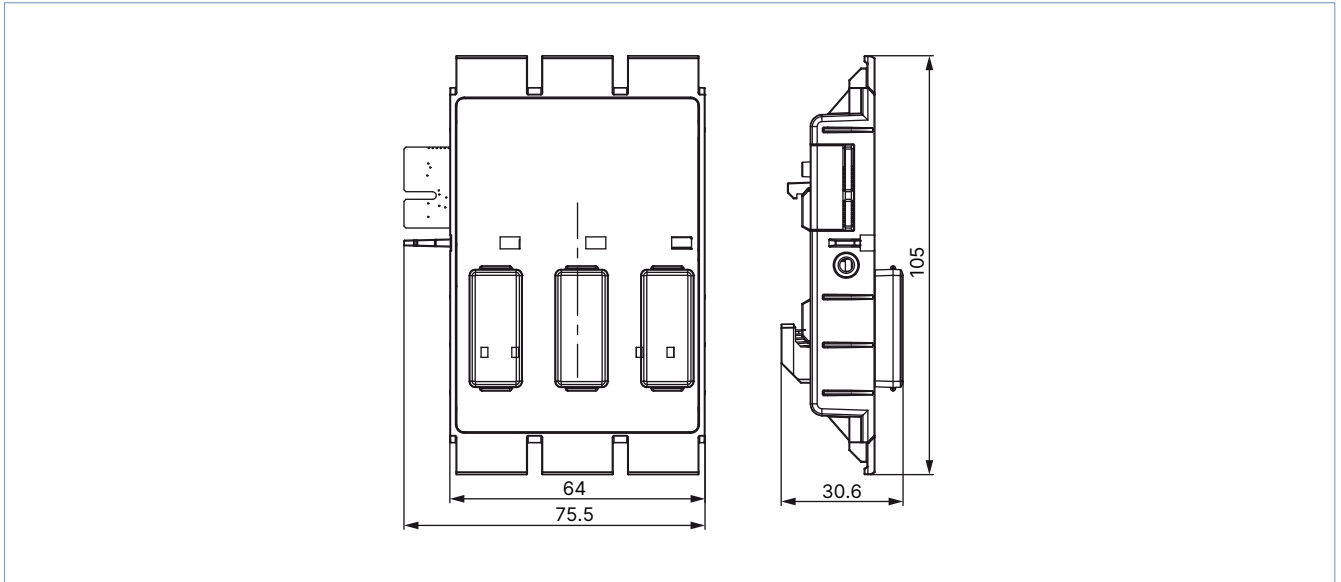
Dimensions in mm



### 3.3. 3-fold backplane

**Note:**

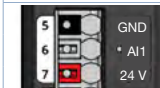
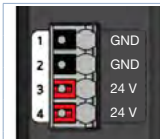
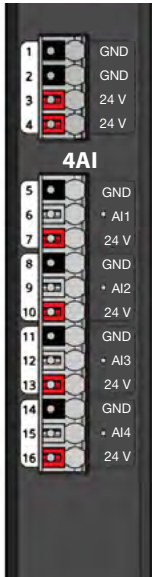
Dimensions in mm



## 4. Device/Process connections

### 4.1. Electrical assignment and circuit diagram for 4AI module

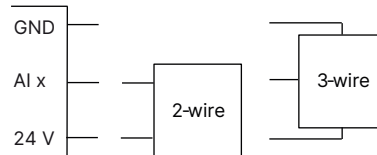
The AUX Power connection is used for the power supply of the AI channels. A second AUX Power connection can be used to supply another module.



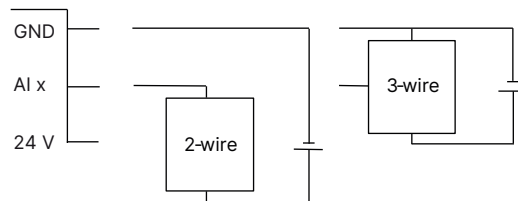
| Pin assignment for AUX Power       | Outer circuitry                          |
|------------------------------------|--|
| GND                                | Ground                                   |
| GND                                | Ground                                   |
| 24 V                               | AUX power supply voltage 24 V $\pm 10\%$ |
| 24 V                               | AUX power supply voltage 24 V $\pm 10\%$ |
| Pin assignment for analogue inputs | Outer circuitry                          |
| GND                                | Ground                                   |
| AI1...AI4                          | Analogue input +                         |
| 24 V                               | Supply voltage output 24 V               |

#### Circuit diagram:

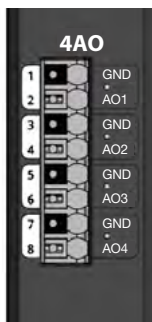
Internally powered (sensor is supplied via this module)



Externally powered (sensor is not supplied via module, but from another source)

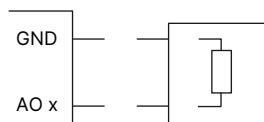


### 4.2. Electrical assignment and circuit diagram for 4AO module

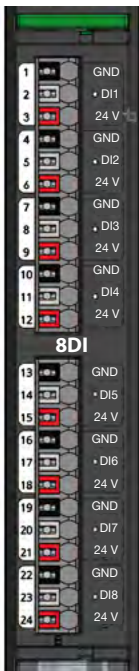


| Pin assignment for analogue inputs | Outer circuitry   |
|------------------------------------|-------------------|
| GND                                | Ground            |
| AO1...AO4                          | Analogue output + |

#### Circuit diagram:

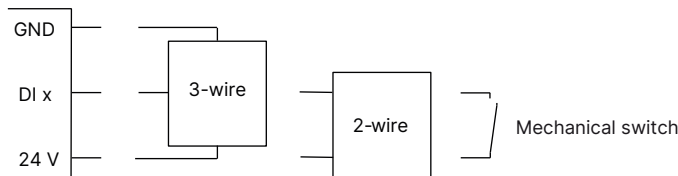


### 4.3. Electrical assignment and circuit diagram for 8DI module



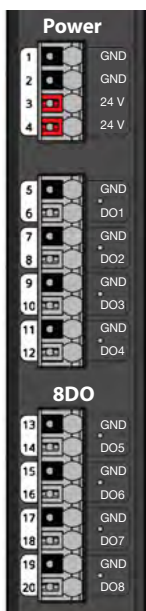
| Pin assignment of analogue inputs | Outer circuitry          |
|-----------------------------------|--------------------------|
| GND                               | Ground                   |
| DI1...DI8                         | Digital input            |
| 24 V                              | Power supply output 24 V |

Circuit diagram:



### 4.4. Electrical assignment and circuit diagram for 8DO module/8DO module Liquid Dosing Open Loop

The AUX Power connection is used for the power supply of the DO channels. A second AUX-Power connection can be used to supply another module.

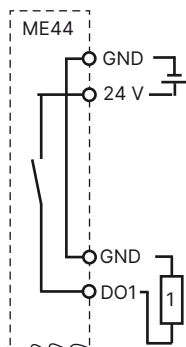


| Pin assignment for AUX Power | Outer circuitry                          |
|------------------------------|--|
| GND                          | Ground                                   |
| GND                          | Ground                                   |
| 24 V                         | AUX power supply voltage 24 V $\pm 10\%$ |
| 24 V                         | AUX power supply voltage 24 V $\pm 10\%$ |

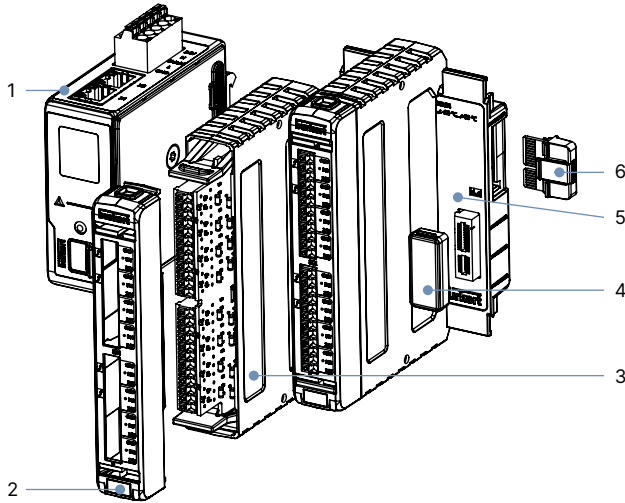
| Pin assignment of digital outputs | Outer circuitry  |
|-----------------------------------|------------------|
| GND                               | Ground           |
| DO1...DO8                         | Digital output + |

Circuit diagram:



## 5. Product design and assembly

### 5.1. Product features



| No. | Designation                        |
|-----|------------------------------------|
| 1   | Fieldbus gateway ME43              |
| 2   | Connection panel ME44              |
| 3   | I/O module ME44                    |
| 4   | Cover for module slot of backplane |
| 5   | Backplane (3-fold) BPX3            |
| 6   | Terminating resistor               |

## 6. Ordering information

### 6.1. Bürkert eShop



#### Bürkert eShop – Easy ordering and quick delivery

You want to find your desired Bürkert product or spare part quickly and order directly? Our online shop is available for you 24/7. Sign up and enjoy all the benefits.

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### 6.2. Bürkert product filter









#### Bürkert product filter – Get quickly to the right product

You want to select products comfortably based on your technical requirements? Use the Bürkert product filter and find suitable articles for your application quickly and easily.










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### 6.3. Ordering chart

| Description  | Article no. <sup>1.)</sup>   |
|--|--|
| 8 x digital outputs: 8DO module – Liquid Dosing Open Loop (LDO) (ME44) | 20047149  |
| 8 x digital inputs: 8DI module (ME44)                                  | 354316    |
| 8 x digital outputs: 8DO module (ME44)                                 | 354317    |
| 4 x analogue inputs: 4AI module (ME44)                                 | 354321    |
| 4 x analogue outputs: 4AO module (ME44)                                | 354325    |
| Backplane System Connect Type BPX3                                     | 307510    |

1.) Each Article no. including UL approval and CE conformity

### 6.4. Ordering chart accessories

| Description   | Article no.  |
|---|--|
| Termination resistor (directly pluggable)   | 303833            |
| Power supply unit Phoenix Class2 (Type 1573), 85...240 V AC/24 V DC, 1.25 A, NEC Class 2 (UL 1310)                        | 772438            |
| Power supply unit for standard rail (Type 1573), 100...240 V AC/24 V DC, 1 A, NEC Class 2 (UL 1310)                       | 772361            |
| Power supply unit for standard rail (Type 1573), 100...240 V AC/24 V DC, 2 A, NEC Class 2 (UL 1310)                       | 772362            |
| Power supply unit for standard rail (Type 1573), 100...240 V AC/24 V DC, 4 A  | 772363            |
| Micro-SD card   | 774087            |
| büS stick set 1 (incl. cable (M12), stick with integrated terminating resistor, power supply and software) <sup>1.)</sup> | 772426            |
| büS stick set 2 (incl. cable (M12), stick with integrated terminating resistor) <sup>1.)</sup>                            | 772551            |
| Bürkert Communicator Software   | <b>Type 8920</b>  |

1.) For space reasons, M12 individual push-in connectors may not be suitable for simultaneous use on the same side as a Y distributor. Use a commercially available covered cable in this case.