# flexbox 2

Article numbers: FBX02-XXXXXX0S000X00

Our Profinet and EtherNet/IP-capable flexboxes offer everything from simple I/O modules to plug & play-capable, decentralized control systems and decentralized material flow controllers - even for the most complex conveyor systems. The different control modules can also be combined so that the control system for your conveyor system meets your individual requirements exactly.

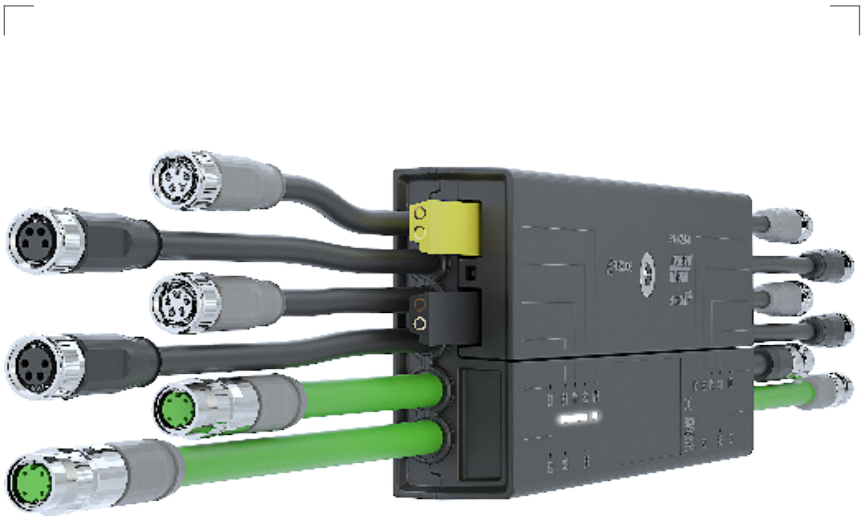

Image for illustration purposes only

## Description

The flexbox 2 performs individual functions locally and can operate sections autonomously: Local processes of a conveyor module are mapped in the module (e.g. transport control in a transfer unit). In addition, the modules can also communicate with neighboring modules and thus control sections completely autonomously. To simplify configuration, the modules can independently recognize the topology of its section.

## Functional description

**Autonomous control of sections**
Control sections of a conveyor system autonomously and decentralized in the field.

**Integrated passive distributor**
Current collection through state-of-the-art Pierce contacts on conventional ribbon cables integrated. Galvanic isolation of voltage and logic cable.

**Branching capability and optional I/O port**
Thanks to the integrated switch with 3x ports branching can be realized. Optionally available with optional I/O port (4x I/O and 2x O-pins) available.

**Internal current measurement**
Support for predictive maintenance applications through internal current measurements.

**External connection of accessories**
Connection option for accessories such as barcode scanners, RFID, scales, strapping machines, etc. possible via PLC / MFC.

**Innovative mounting concept**
Sophisticated installation concept and slimline design saves time during commissioning on site. Enables prewiring and minimizes the cabling effort at the customer‘s site with the help of simple looping through the ribbon cables to the power and logic supply.

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## General data

| | |
|---|---|
| Dimensions [mm] | 158 x 25 x 64 (without cable) |
| Weight [g] | 300 |
| Housing material | Bayblend® FR3010 |
| Installation type | Retaining clip in side profile or screw connection |
| Maximum installation height | 2000 m above sea level |
| Protection class | IP54 |
| CE labeling | Yes |
| Temperature (Operation) | +0°C to +45°C |
| Temperature (Storage) | -20°C to +60°C |
| Humidity | 10% to 95% (without condensation) |
| Processor | ARM® Cortex-A7® core; 528 MHz |
| Operation system | Linux |
| Protocols | MQTT; NTP; HTTP; TCP/IP; IPv4; IPv6 |

## Ethernet

| | |
|---|---|
| Velocity | 10/100 Mbit/s full duplex |
| Protocols | PROFINET; EtherNet/IP; FlexNet |
| Standard | IEEE 802.3 |
| Switch | 3 Ports |

## Ports

| | |
|---|---|
| Power supply | Integrated piercing contacts |
| Sensors<br>(Socket M8 4-pole A-coded) | 2x (FBX02-22*)<br>4x (FBX02-44*) |
| Motoren<br>(Socket M8 5-pole B-invers-coded) | 2x Screw (FBX02-22*100) 2x SnapIn (FBX02-22*200)<br>4x Screw (FBX02-44*100) 4x SnapIn (FBX02-44*200) |
| Ethernet<br>(Socket M8 4-pole D-coded) | 3x |
| I/O-Port<br>(Socket M8 8-pole A-coded) | Not available (FBX02-220* / FBX02-440*)<br>1x (FBX02-221* / FBX02-441*) |

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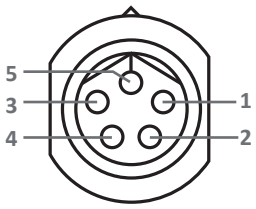
## Supply

| | |
|---|---|
| Power supply motor | 24 V (FBX02-*X20*) / 48 V (FBX02-*X40*) |
| Power supply logic | 24 V |
| Input voltage tolerance | +/- 10% |
| Nominal current (per motor) | 3,5 A (FBX02-*X20*) / 1,75 A (FBX02-*X40*) |
| Starting current (per motor) | 7 A (FBX02-*X20*) / 3,8 A (FBX02-*X40*) |
| Nominal current logic | 0,2 A |
| max. logic current (sensors,...) | 1,5 A |
| Earthing | via separately available earthing clip |

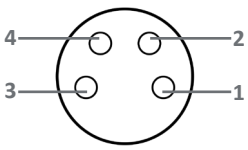
## Pin assignment

Motor connection (female):



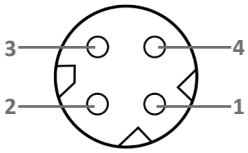

| Pin / Colour | Rulmeca® / Interroll® / MTA® | Itoh Denki® |
|---|---|---|
| 1/ Brown | 24 V (FBX02-*X20*)<br>48 V (FBX02-*X40*) | 24 V (FBX02-*X20*)<br>48 V (FBX02-*X40*) |
| 2 / White | Direction of rotation | Direction of rotation |
| 3 / Blue | GND | GND |
| 4 / Black | error input | Start / Stop |
| 5 / Grey | Velocity | Velocity |

Sensor connection (female):




| Pin / Colour | Signal |
|---|---|
| 1 / Brown | 24 V |
| 2 / White | Input 2 |
| 3 / Blue | GND |
| 4 / Black | Input 1 |

Ethernet (female):




| Pin / Colour | Signal |
|---|---|
| 1 / Yellow | TX data + |
| 2 / White | RX data + |
| 3 / Orange | TX data - |
| 4 / Blue | RX data - |

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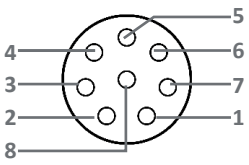
## Pin assignment

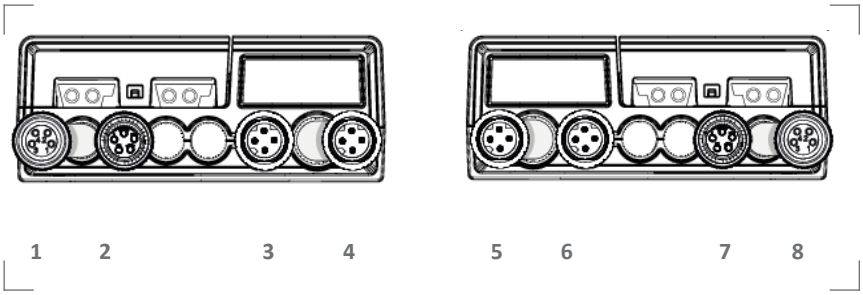
I/O-Port (8-pole, female):




| Pin / Colour | Signal |
|---|---|
| 1 / White | Input / Output |
| 2 / Brown | 24 V |
| 3 / Green | Input / Output |
| 4 / Yellow | Input / Output |
| 5 / Grey | Input / Output |
| 6 / Pink | Output |
| 7 / Blue | GND |
| 8 / Red | Output |

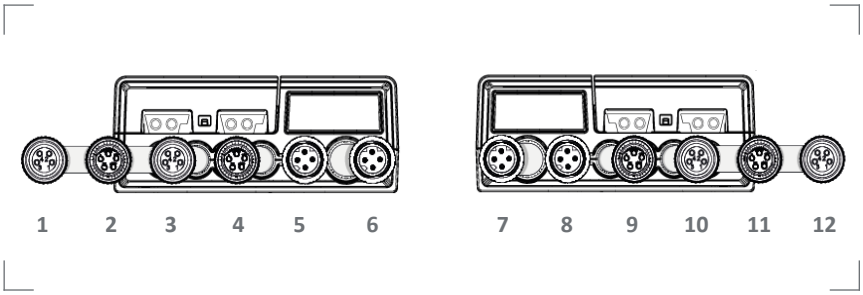
## Connection diagram flexbox 2® - 2MR / 2MR with IO

1. Motor connection 1
2. Sensor connection 1
3. Ethernet 3
4. Ethernet 1
5. Motor connection 2
6. Sensor connection 2
7. I/O-Port (only for FBX02-221*)
8. Ethernet 2




## Connection diagram flexbox 2® - 4MR /4MR with IO

1. Motor connection 2
2. Sensor connection 2
3. Motor connection 1
4. Sensor connection 1
5. Ethernet 3
6. Ethernet 1
7. Motor connection 3
8. Sensor connection 3
9. Motor connection 4
10. Sensor connection 4
11. I/O-Port (nur bei FBX02-441*)
12. Ethernet 2



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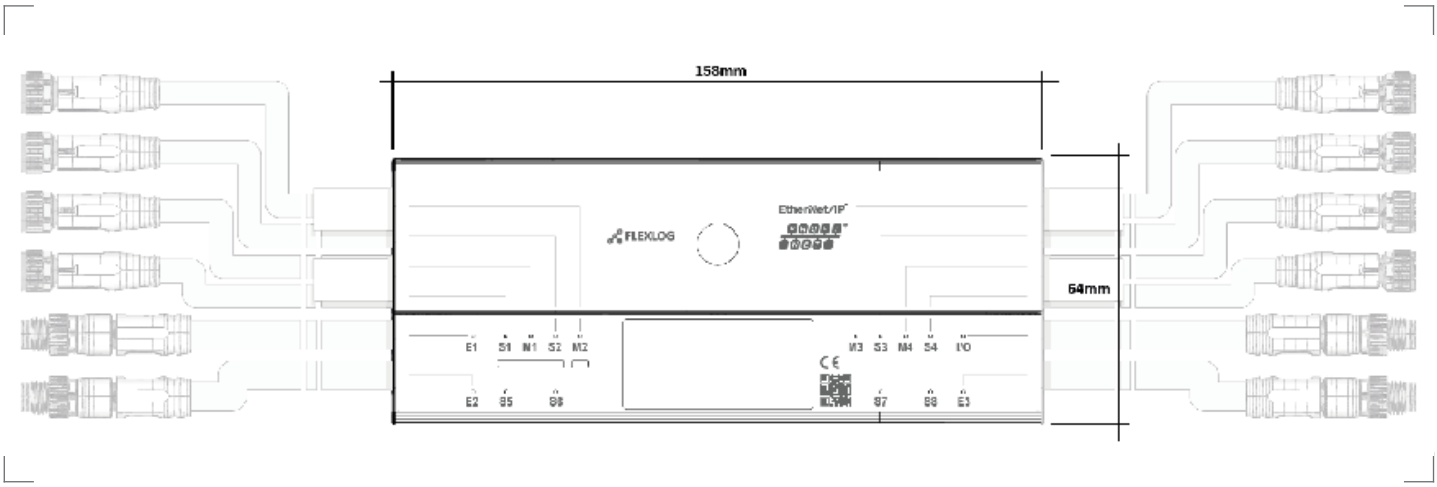
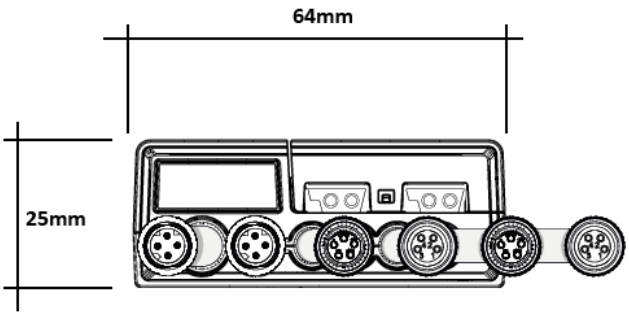
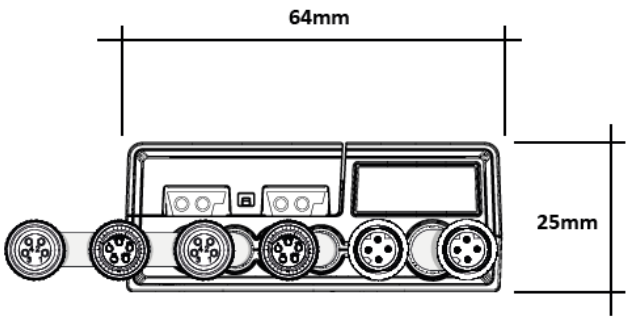


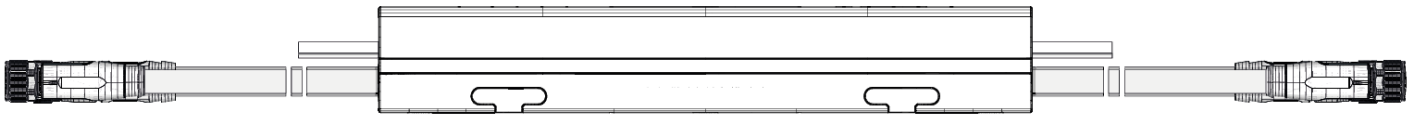

**Top view**




**Side view right**




**Side view left**



**Bottom view**

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## Matrix article numbers

| Article numbers | Supply | Number of motor ports | IO port | Motor connection version |
|---|---|---|---|---|
| FBX02-4403X20S000100 | 24 V | 4 | 0 | Screw |
| FBX02-4403X20S000200 | 24 V | 4 | 0 | SnapIn |
| FBX02-4413X20S000100 | 24 V | 4 | 1 | Screw |
| FBX02-4413X20S000200 | 24 V | 4 | 1 | SnapIn |
| FBX02-4403X40S000100 | 48 V | 4 | 0 | Screw |
| FBX02-4403X40S000200 | 48 V | 4 | 0 | SnapIn |
| FBX02-4413X40S000100 | 48 V | 4 | 1 | Screw |
| FBX02-4413X40S000200 | 48 V | 4 | 1 | SnapIn |