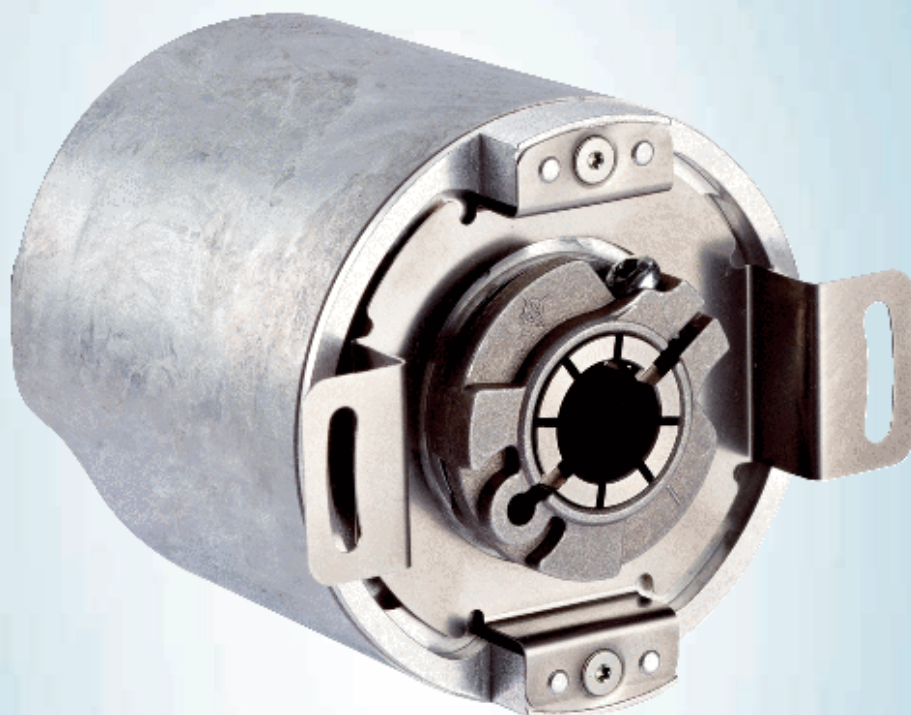




# AFS60A-BGEB262144

AFS/AFM60 Ethernet

**ABSOLUTE ENCODERS**

**SICK**  
Sensor Intelligence.



## Ordering information

| Type              | part no. |
|-------------------|----------|
| AFS60A-BGEB262144 | 1059065  |

Other models and accessories → [www.sick.com/AFS\\_AFM60\\_Ethernet](http://www.sick.com/AFS_AFM60_Ethernet)

Illustration may differ



## Detailed technical data

## Safety-related parameters

|                                                          |                                         |
|----------------------------------------------------------|-----------------------------------------|
| <b>MTTF<sub>D</sub> (mean time to dangerous failure)</b> | 80 years (EN ISO 13849-1) <sup>1)</sup> |
|----------------------------------------------------------|-----------------------------------------|

<sup>1)</sup> This product is a standard product and does not constitute a safety component as defined in the Machinery Directive. Calculation based on nominal load of components, average ambient temperature 40 °C, frequency of use 8760 h/a. All electronic failures are considered hazardous. For more information, see document no. 8015532.

## Performance

|                                                             |                      |
|-------------------------------------------------------------|----------------------|
| <b>Number of steps per revolution (max. resolution)</b>     | 262,144 (18 bit)     |
| <b>Error limits G</b>                                       | 0.03° <sup>1)</sup>  |
| <b>Repeatability standard deviation <math>\sigma</math></b> | 0.002° <sup>2)</sup> |

<sup>1)</sup> In accordance with DIN ISO 1319-1, position of the upper and lower error limit depends on the installation situation, specified value refers to a symmetrical position, i.e. deviation in upper and lower direction is the same.

<sup>2)</sup> In accordance with DIN ISO 55350-13; 68.3% of the measured values are inside the specified area.

## Interfaces

|                                           |                                                                                                                                                                                                                  |
|-------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Communication interface</b>            | EtherCAT®                                                                                                                                                                                                        |
| <b>Communication Interface detail</b>     | CoE (CAN over EtherCAT®)                                                                                                                                                                                         |
| <b>Encoder profile</b>                    | CiA DS-406                                                                                                                                                                                                       |
| <b>Data transmission rate (baud rate)</b> | 10 Mbit/s, 100 Mbit/s                                                                                                                                                                                            |
| <b>Transmission medium</b>                | CAT-5e cable                                                                                                                                                                                                     |
| <b>Initialization time</b>                | 6 s                                                                                                                                                                                                              |
| <b>Cycle time</b>                         | 125 µs ... 100 ms                                                                                                                                                                                                |
| <b>Parameterising data</b>                | Number of steps per revolution<br>PRESET<br>Counting direction<br>Sampling rate for speed calculation<br>Unit for output of the speed value<br>Singleturn or multiturn access mode<br>Quicker data exchange mode |
| <b>Available diagnostics data</b>         | Minimum and maximum temperature<br>Maximumspeed<br>Position monitoring<br>Power-on counter                                                                                                                       |

|  |                                                                                                                                                                                                                    |
|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | Operating hours counter power-on/motion<br>Counter of direction changes/number of movements cw/number of movements ccw<br>Minimum and maximum operating voltage<br>Signal monitoring for single turn and multiturn |
|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Electronics

|                                    |                                                                                                              |
|------------------------------------|--------------------------------------------------------------------------------------------------------------|
| <b>Connection type</b>             | Male connector, 1x, M12, 4-pin, axial <sup>1)</sup><br>Female connector, 2x, M12, 4-pin, axial <sup>2)</sup> |
| <b>Supply voltage</b>              | 10 ... 30 V                                                                                                  |
| <b>Power consumption</b>           | ≤ 3 W (without load)                                                                                         |
| <b>Reverse polarity protection</b> | ✓                                                                                                            |

<sup>1)</sup> A-coded.

<sup>2)</sup> D-coded.

## Mechanics

|                                       |                                         |
|---------------------------------------|-----------------------------------------|
| <b>Mechanical design</b>              | Blind hollow shaft                      |
| <b>Shaft diameter</b>                 | 14 mm                                   |
| <b>Characteristics of the shaft</b>   | Front clamp                             |
| <b>Weight</b>                         | 0.2 kg                                  |
| <b>Shaft material</b>                 | Stainless steel                         |
| <b>Flange material</b>                | Zinc diecast                            |
| <b>Housing material</b>               | Aluminum                                |
| <b>Start up torque</b>                | 0.8 Ncm (+20 °C)                        |
| <b>Operating torque</b>               | 0.6 Ncm (+20 °C)                        |
| <b>Permissible movement static</b>    | ± 0.3 mm (radial)<br>± 0.5 mm (axial)   |
| <b>Permissible movement dynamic</b>   | ± 0.05 mm (radial)<br>± 0.1 mm (axial)  |
| <b>Operating speed</b>                | ≤ 6,000 min <sup>-1</sup> <sup>1)</sup> |
| <b>Moment of inertia of the rotor</b> | 40 gcm <sup>2</sup>                     |
| <b>Bearing lifetime</b>               | 3 x 10 <sup>9</sup> revolutions         |
| <b>Angular acceleration</b>           | ≤ 500,000 rad/s <sup>2</sup>            |

<sup>1)</sup> Allow for self-heating of 3.3 K per 1,000 rpm when designing the operating temperature range.

## Ambient data

|                                      |                                                                              |
|--------------------------------------|------------------------------------------------------------------------------|
| <b>EMC</b>                           | According to EN 61000-6-2 and EN 61000-6-3 <sup>1)</sup>                     |
| <b>Enclosure rating</b>              | IP65, shaft side (IEC 60529)<br>IP67, housing side (IEC 60529) <sup>2)</sup> |
| <b>Permissible relative humidity</b> | 90 % (Condensation not permitted)                                            |
| <b>Operating temperature range</b>   | -40 °C ... +85 °C                                                            |
| <b>Storage temperature range</b>     | -40 °C ... +100 °C, without package                                          |
| <b>Resistance to shocks</b>          | 100 g, 6 ms (EN 60068-2-27)                                                  |
| <b>Resistance to vibration</b>       | 30 g, 10 Hz ... 2,000 Hz (EN 60068-2-6)                                      |

<sup>1)</sup> The EMC according to the standards quoted is achieved if screened cables are used.

<sup>2)</sup> With mating connector fitted.

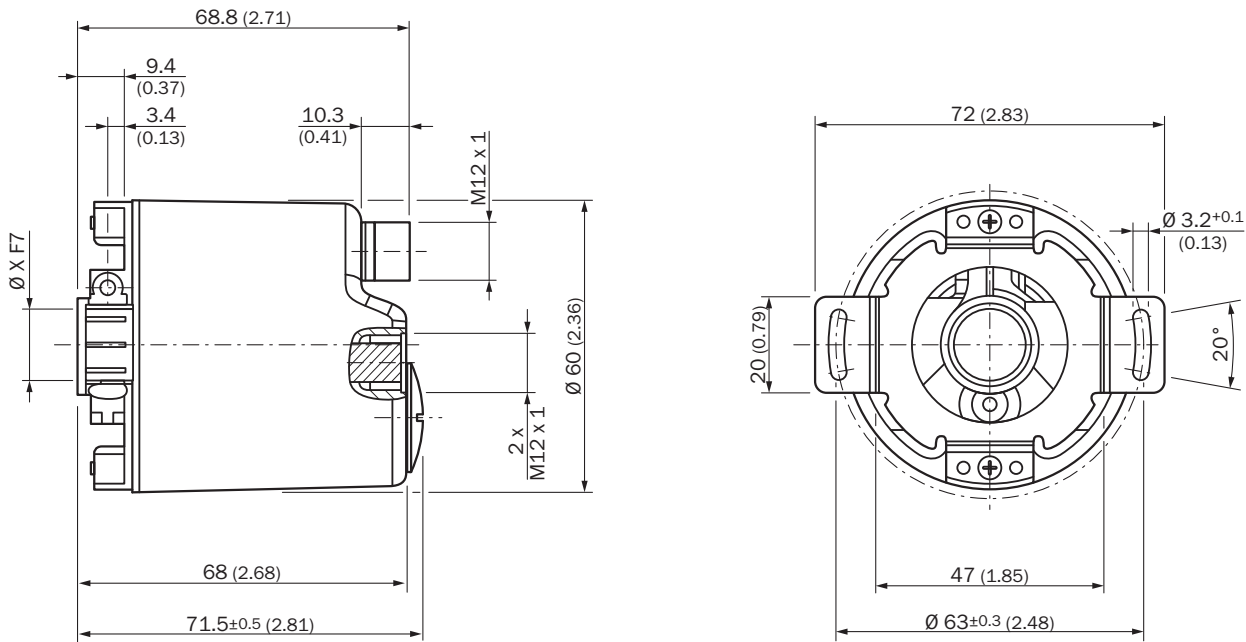
Certificates

|                                                                                  |   |
|----------------------------------------------------------------------------------|---|
| <b>EU declaration of conformity</b>                                              | ✓ |
| <b>UK declaration of conformity</b>                                              | ✓ |
| <b>ACMA declaration of conformity</b>                                            | ✓ |
| <b>Moroccan declaration of conformity</b>                                        | ✓ |
| <b>China-RoHS</b>                                                                | ✓ |
| <b>cTUVus certificate</b>                                                        | ✓ |
| <b>Information according to Art. 3 of Data Act<br/>(Regulation EU 2023/2854)</b> | ✓ |

Classifications

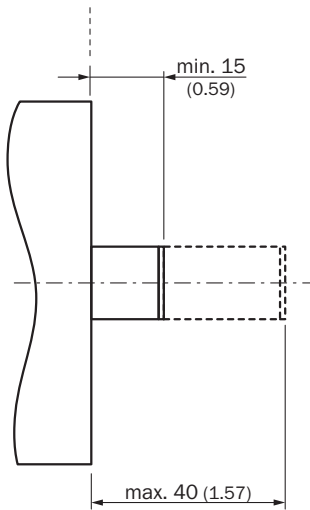
|                       |          |
|-----------------------|----------|
| <b>ECLASS 5.0</b>     | 27270502 |
| <b>ECLASS 5.1.4</b>   | 27270502 |
| <b>ECLASS 6.0</b>     | 27270590 |
| <b>ECLASS 6.2</b>     | 27270590 |
| <b>ECLASS 7.0</b>     | 27270502 |
| <b>ECLASS 8.0</b>     | 27270502 |
| <b>ECLASS 8.1</b>     | 27270502 |
| <b>ECLASS 9.0</b>     | 27270502 |
| <b>ECLASS 10.0</b>    | 27270502 |
| <b>ECLASS 11.0</b>    | 27270502 |
| <b>ECLASS 12.0</b>    | 27270502 |
| <b>ETIM 5.0</b>       | EC001486 |
| <b>ETIM 6.0</b>       | EC001486 |
| <b>ETIM 7.0</b>       | EC001486 |
| <b>ETIM 8.0</b>       | EC001486 |
| <b>UNSPSC 16.0901</b> | 41112113 |

Dimensional drawing Blind hollow shaft



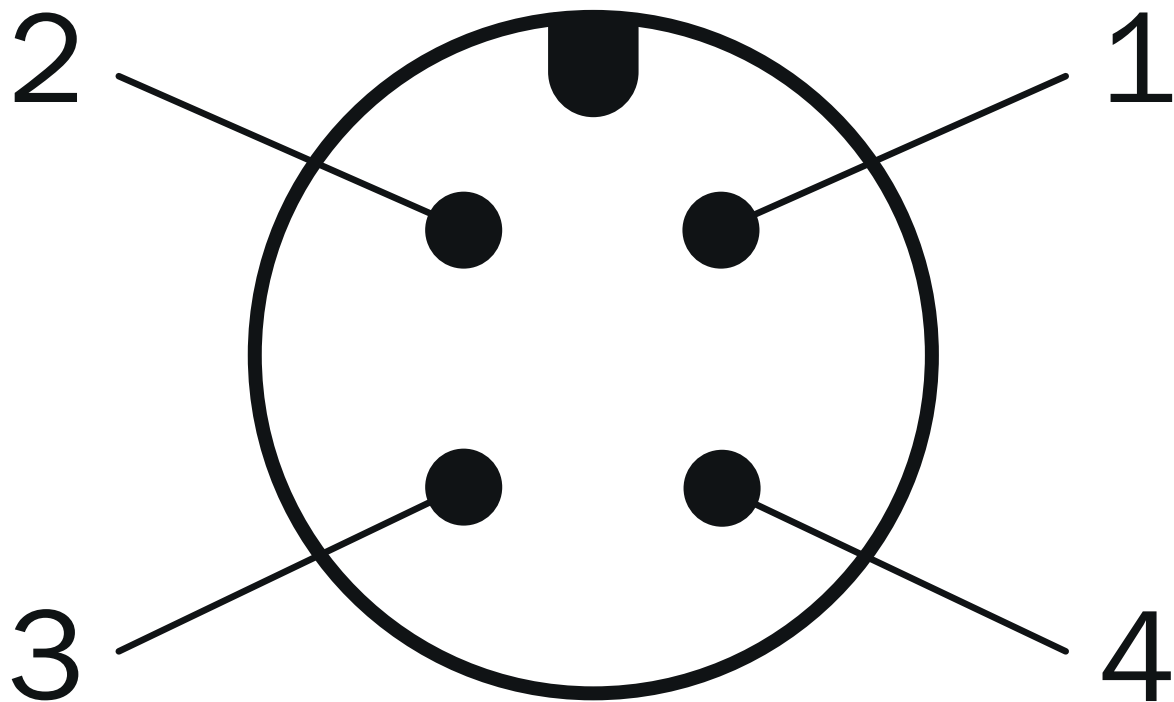
Dimensions in mm (inch)  
diameter x f7 corresponds to the shaft diameter

Attachment specifications Blind hollow shaft



All dimensions in mm (inch)

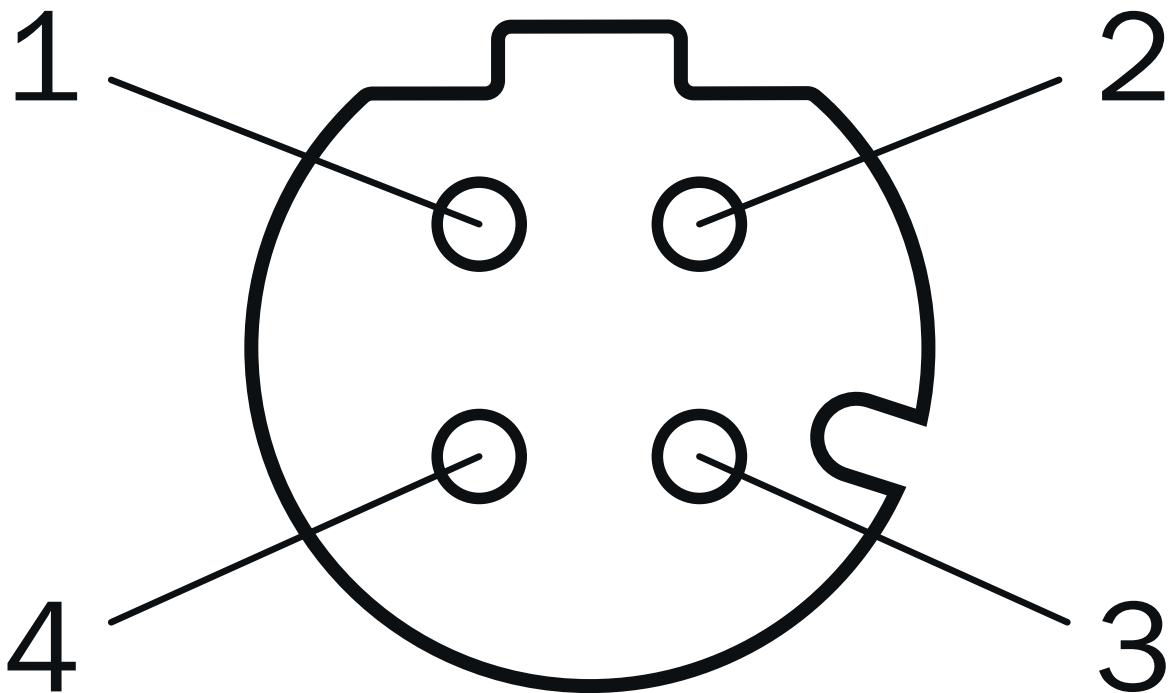
PIN assignment Male connector



Supply voltage

| PIN | Wire color | Signal                       |
|-----|------------|------------------------------|
| 1   | Brown      | U <sub>S</sub> 10 V ... 30 V |
| 2   | White      | Not assigned                 |
| 3   | Blue       | GND                          |
| 4   | Black      | Not assigned                 |

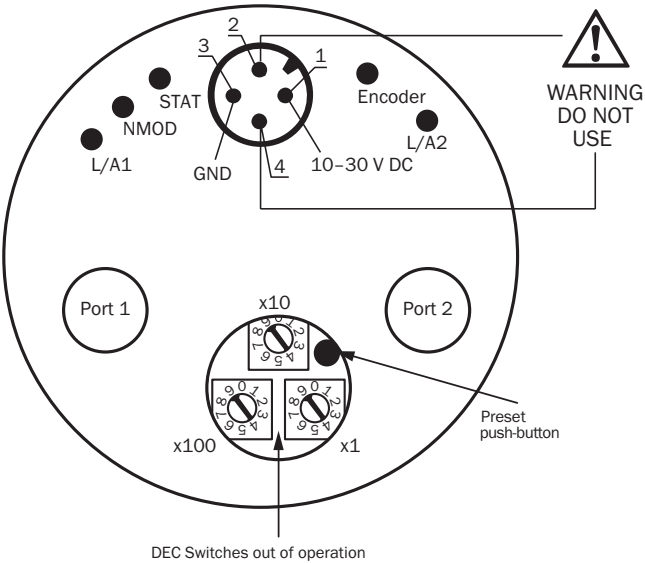
PIN assignment Female connector



Port 1, Port 2

| PIN | Wire color | Signal |
|-----|------------|--------|
| 1   | Yellow     | T x D+ |
| 2   | White      | R x D+ |
| 3   | Orange     | T x D- |
| 4   | Blue       | R x D- |

Connection diagram





## Recommended accessories

Other models and accessories → [www.sick.com/AFS\\_AFM60\\_Ethernet](http://www.sick.com/AFS_AFM60_Ethernet)

|                                                                                     | Brief description                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Type                                       | part no. |
|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|----------|
| connectors and cables                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                            |          |
|    | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M12, 4-pin, angled, A-coded</li> <li><b>Description:</b> Unshielded</li> <li><b>Connection systems:</b> Screw-type terminals</li> <li><b>Permitted cross-section:</b> ≤ 0.75 mm²</li> </ul>                                                                                                                                                                                          | DOS-1204-W                                 | 6007303  |
|    | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M12, 4-pin, D-coded</li> <li><b>Connection type head B:</b> Female connector, RJ45, 8-pin</li> <li><b>Signal type:</b> Ethernet</li> <li><b>Cable:</b> CAT5, CAT5e</li> <li><b>Description:</b> Ethernet, shielded</li> <li><b>Note:</b> Cabinet through</li> </ul>                                                                                                                  | Feedthrough female connector Ethernet RJ45 | 6048180  |
|    | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M12, 4-pin, straight, D-coded</li> <li><b>Signal type:</b> PROFINET</li> <li><b>Cable:</b> CAT5, CAT5e</li> <li><b>Description:</b> PROFINET, shielded</li> <li><b>Connection systems:</b> IDC quick connection</li> <li><b>Permitted cross-section:</b> 0.14 mm² ... 0.34 mm²</li> </ul>                                                                                            | DOS-1204-GZ                                | 6048263  |
|    | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M12, 4-pin, angled, D-coded</li> <li><b>Signal type:</b> PROFINET</li> <li><b>Cable:</b> CAT5, CAT5e</li> <li><b>Description:</b> PROFINET, shielded</li> <li><b>Connection systems:</b> IDC quick connection</li> <li><b>Permitted cross-section:</b> 0.14 mm² ... 0.34 mm²</li> </ul>                                                                                              | DOS-1204-WZ                                | 6048264  |
|    | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Male connector, RJ45, 4-pin, straight</li> <li><b>Connection type head B:</b> Male connector, M12, 4-pin, angled, D-coded</li> <li><b>Signal type:</b> Ethernet, PROFINET</li> <li><b>Cable:</b> 30 m, 4-wire, CAT5, CAT5e, PVC</li> <li><b>Description:</b> Ethernet, shieldedPROFINET</li> </ul>                                                                                                     | SSL-2J04-F30MZ                             | 6059450  |
|  | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Male connector, RJ45, 4-pin, straight</li> <li><b>Signal type:</b> Ethernet, PROFINET</li> <li><b>Cable:</b> CAT5, CAT5e</li> <li><b>Description:</b> Ethernet, shieldedPROFINET</li> <li><b>Connection systems:</b> IDC quick connection</li> <li><b>Permitted cross-section:</b> 4 mm² ... 8 mm²</li> </ul>                                                                                          | STE-0J04-GZ                                | 6048260  |
|  | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Male connector, M12, 4-pin, straight, D-coded</li> <li><b>Signal type:</b> PROFINET</li> <li><b>Cable:</b> CAT5, CAT5e</li> <li><b>Description:</b> PROFINET, shielded</li> <li><b>Connection systems:</b> IDC quick connection</li> <li><b>Permitted cross-section:</b> 0.14 mm² ... 0.34 mm²</li> </ul>                                                                                              | STE-1204-GZ                                | 6048261  |
|  | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Male connector, M12, 4-pin, angled, D-coded</li> <li><b>Signal type:</b> PROFINET</li> <li><b>Cable:</b> CAT5, CAT5e</li> <li><b>Description:</b> PROFINET, shielded</li> <li><b>Connection systems:</b> IDC quick connection</li> <li><b>Permitted cross-section:</b> 0.14 mm² ... 0.34 mm²</li> </ul>                                                                                                | STE-1204-WZ                                | 6048262  |
|  | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M12, 4-pin, straight, A-coded</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Sensor/actuator cable</li> <li><b>Cable:</b> 2 m, 4-wire, PUR, halogen-free</li> <li><b>Description:</b> Sensor/actuator cable, unshielded</li> <li><b>Application:</b> Uncontaminated zones, Zones with oils and lubricants, Robot, Drag chain operation</li> </ul> | YF2A14-020UB3XLEAX                         | 2095607  |
|  | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M12, 4-pin, straight, A-coded</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Sensor/actuator cable</li> <li><b>Cable:</b> 5 m, 4-wire, PUR, halogen-free</li> <li><b>Description:</b> Sensor/actuator cable, unshielded</li> <li><b>Application:</b> Uncontaminated zones, Zones with oils and lubricants, Robot, Drag chain operation</li> </ul> | YF2A14-050UB3XLEAX                         | 2095608  |
|  | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M12, 4-pin, straight, A-coded</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Sensor/actuator cable</li> <li><b>Cable:</b> 10 m, 4-wire, PUR, halogen-free</li> <li><b>Description:</b> Sensor/actuator cable, unshielded</li> </ul>                                                                                                               | YF2A14-100UB3XLEAX                         | 2095609  |

|                                                                                     | Brief description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Type                | part no. |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|----------|
|    | <ul style="list-style-type: none"> <li><b>Application:</b> Uncontaminated zones, Zones with oils and lubricants, Robot, Drag chain operation</li> <li><b>Connection type head A:</b> Female connector, M12, 4-pin, straight, A-coded</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Sensor/actuator cable</li> <li><b>Cable:</b> 25 m, 4-wire, PUR, halogen-free</li> <li><b>Description:</b> Sensor/actuator cable, unshielded</li> <li><b>Application:</b> Uncontaminated zones, Zones with oils and lubricants, Robot, Drag chain operation</li> </ul> | YF2A14-250UB3XLEAX  | 2095615  |
|    | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M12, 4-pin, angled, A-coded</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Sensor/actuator cable</li> <li><b>Cable:</b> 2 m, 4-wire, PUR, halogen-free</li> <li><b>Description:</b> Sensor/actuator cable, unshielded</li> <li><b>Application:</b> Uncontaminated zones, Zones with oils and lubricants, Robot, Drag chain operation</li> </ul>                                                                                                                   | YG2A14-020UB3XLEAX  | 2095766  |
|    | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M12, 4-pin, angled, A-coded</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Sensor/actuator cable</li> <li><b>Cable:</b> 5 m, 4-wire, PUR, halogen-free</li> <li><b>Description:</b> Sensor/actuator cable, unshielded</li> <li><b>Application:</b> Uncontaminated zones, Zones with oils and lubricants, Robot, Drag chain operation</li> </ul>                                                                                                                   | YG2A14-050UB3XLEAX  | 2095767  |
|    | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M12, 4-pin, angled, A-coded</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Sensor/actuator cable</li> <li><b>Cable:</b> 10 m, 4-wire, PUR, halogen-free</li> <li><b>Description:</b> Sensor/actuator cable, unshielded</li> <li><b>Application:</b> Uncontaminated zones, Zones with oils and lubricants, Robot, Drag chain operation</li> </ul>                                                                                                                  | YG2A14-100UB3XLEAX  | 2095768  |
|    | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M12, 4-pin, angled, A-coded</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Sensor/actuator cable</li> <li><b>Cable:</b> 25 m, 4-wire, PUR, halogen-free</li> <li><b>Description:</b> Sensor/actuator cable, unshielded</li> <li><b>Application:</b> Uncontaminated zones, Zones with oils and lubricants, Robot, Drag chain operation</li> </ul>                                                                                                                  | YG2A14-250UB3XLEAX  | 2095771  |
|   | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Male connector, M12, 4-pin, angled, D-coded</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Ethernet, PROFINET</li> <li><b>Cable:</b> 25 m, 4-wire, PUR, halogen-free</li> <li><b>Description:</b> Ethernet, shieldedPROFINET</li> <li><b>Application:</b> Drag chain operation, Zones with oils and lubricants</li> </ul>                                                                                                                                                           | YN2D24-250P-N1XLEAX | 2106180  |
|  | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Male connector, M12, 4-pin, angled, D-coded</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Ethernet, PROFINET</li> <li><b>Cable:</b> 10 m, 4-wire, PUR, halogen-free</li> <li><b>Description:</b> Ethernet, shieldedPROFINET</li> <li><b>Application:</b> Drag chain operation, Zones with oils and lubricants</li> </ul>                                                                                                                                                           | YN2D24-100P-N1XLEAX | 2106176  |
|  | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Male connector, M12, 4-pin, angled, D-coded</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Ethernet, PROFINET</li> <li><b>Cable:</b> 5 m, 4-wire, PUR, halogen-free</li> <li><b>Description:</b> Ethernet, shieldedPROFINET</li> <li><b>Application:</b> Drag chain operation, Zones with oils and lubricants</li> </ul>                                                                                                                                                            | YN2D24-050P-N1XLEAX | 2106175  |
|  | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Male connector, M12, 4-pin, angled, D-coded</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Ethernet, PROFINET</li> <li><b>Cable:</b> 2 m, 4-wire, PUR, halogen-free</li> <li><b>Description:</b> Ethernet, shieldedPROFINET</li> <li><b>Application:</b> Drag chain operation, Zones with oils and lubricants</li> </ul>                                                                                                                                                            | YN2D24-020P-N1XLEAX | 2106174  |
|  | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Male connector, M12, 4-pin, straight, D-coded</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Ethernet, PROFINET</li> <li><b>Cable:</b> 10 m, 4-wire, PUR, halogen-free</li> <li><b>Description:</b> Ethernet, shieldedPROFINET</li> <li><b>Application:</b> Drag chain operation, Zones with oils and lubricants</li> </ul>                                                                                                                                                         | YM2D24-100P-N1XLEAX | 2106173  |
|  | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Male connector, M12, 4-pin, straight, D-coded</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Ethernet, PROFINET</li> <li><b>Cable:</b> 5 m, 4-wire, PUR, halogen-free</li> <li><b>Description:</b> Ethernet, shieldedPROFINET</li> </ul>                                                                                                                                                                                                                                            | YM2D24-050P-N1XLEAX | 2106172  |

|                                                                                     | Brief description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Type                | part no. |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|----------|
|    | <ul style="list-style-type: none"> <li><b>Application:</b> Drag chain operation, Zones with oils and lubricants</li> <li><b>Connection type head A:</b> Male connector, M12, 4-pin, straight, D-coded</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Ethernet, PROFINET</li> <li><b>Cable:</b> 2 m, 4-wire, PUR, halogen-free</li> <li><b>Description:</b> Ethernet, shieldedPROFINET</li> <li><b>Application:</b> Drag chain operation, Zones with oils and lubricants</li> </ul> | YM2D24-020P-N1XLEAX | 2106171  |
|    | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Male connector, M12, 4-pin, angled, D-coded</li> <li><b>Connection type head B:</b> Male connector, M12, 4-pin, angled, D-coded</li> <li><b>Signal type:</b> Ethernet, PROFINET</li> <li><b>Cable:</b> 10 m, 4-wire, PUR, halogen-free</li> <li><b>Description:</b> Ethernet, shieldedPROFINET</li> <li><b>Application:</b> Drag chain operation, Zones with oils and lubricants</li> </ul>                                                     | YN2D24-100P-N1N2D24 | 2106170  |
|    | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Male connector, M12, 4-pin, angled, D-coded</li> <li><b>Connection type head B:</b> Male connector, M12, 4-pin, angled, D-coded</li> <li><b>Signal type:</b> Ethernet, PROFINET</li> <li><b>Cable:</b> 2 m, 4-wire, PUR, halogen-free</li> <li><b>Description:</b> Ethernet, shieldedPROFINET</li> <li><b>Application:</b> Drag chain operation, Zones with oils and lubricants</li> </ul>                                                      | YN2D24-020P-N1N2D24 | 2106168  |
|    | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Male connector, M12, 4-pin, straight, D-coded</li> <li><b>Connection type head B:</b> Male connector, M12, 4-pin, straight, D-coded</li> <li><b>Signal type:</b> Ethernet, PROFINET</li> <li><b>Cable:</b> 10 m, 4-wire, PUR, halogen-free</li> <li><b>Description:</b> Ethernet, shieldedPROFINET</li> <li><b>Application:</b> Drag chain operation, Zones with oils and lubricants</li> </ul>                                                 | YM2D24-100P-N1M2D24 | 2106161  |
|    | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Male connector, M12, 4-pin, straight, D-coded</li> <li><b>Connection type head B:</b> Male connector, M12, 4-pin, straight, D-coded</li> <li><b>Signal type:</b> Ethernet, PROFINET</li> <li><b>Cable:</b> 2 m, 4-wire, PUR, halogen-free</li> <li><b>Description:</b> Ethernet, shieldedPROFINET</li> <li><b>Application:</b> Drag chain operation, Zones with oils and lubricants</li> </ul>                                                  | YM2D24-020P-N1M2D24 | 2106159  |
|   | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Male connector, M12, 4-pin, straight, D-coded</li> <li><b>Connection type head B:</b> Male connector, M12, 4-pin, angled, D-coded</li> <li><b>Signal type:</b> Ethernet, PROFINET</li> <li><b>Cable:</b> 10 m, 4-wire, PUR, halogen-free</li> <li><b>Description:</b> Ethernet, shieldedPROFINET</li> <li><b>Application:</b> Drag chain operation, Zones with oils and lubricants</li> </ul>                                                   | YM2D24-100P-N1N2D24 | 2106167  |
|  | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Male connector, M12, 4-pin, straight, D-coded</li> <li><b>Connection type head B:</b> Male connector, M12, 4-pin, angled, D-coded</li> <li><b>Signal type:</b> Ethernet, PROFINET</li> <li><b>Cable:</b> 5 m, 4-wire, PUR, halogen-free</li> <li><b>Description:</b> Ethernet, shieldedPROFINET</li> <li><b>Application:</b> Drag chain operation, Zones with oils and lubricants</li> </ul>                                                    | YM2D24-050P-N1N2D24 | 2106166  |
|  | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Male connector, M12, 4-pin, straight, D-coded</li> <li><b>Connection type head B:</b> Male connector, M12, 4-pin, angled, D-coded</li> <li><b>Signal type:</b> Ethernet, PROFINET</li> <li><b>Cable:</b> 2 m, 4-wire, PUR, halogen-free</li> <li><b>Description:</b> Ethernet, shieldedPROFINET</li> <li><b>Application:</b> Drag chain operation, Zones with oils and lubricants</li> </ul>                                                    | YM2D24-020P-N1N2D24 | 2106165  |
|  | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Male connector, M12, 4-pin, straight, D-coded</li> <li><b>Connection type head B:</b> Male connector, RJ45, 4-pin, straight</li> <li><b>Signal type:</b> Ethernet, PROFINET</li> <li><b>Cable:</b> 2 m, 4-wire, PUR, halogen-free</li> <li><b>Description:</b> Ethernet, shieldedPROFINET</li> <li><b>Application:</b> Drag chain operation, Zones with oils and lubricants</li> </ul>                                                          | YM2D24-020P-N1MRJA4 | 2106182  |
|  | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Male connector, M12, 4-pin, straight, D-coded</li> <li><b>Connection type head B:</b> Male connector, RJ45, 4-pin, straight</li> <li><b>Signal type:</b> Ethernet, PROFINET</li> <li><b>Cable:</b> 10 m, 4-wire, PUR, halogen-free</li> <li><b>Description:</b> Ethernet, shieldedPROFINET</li> <li><b>Application:</b> Drag chain operation, Zones with oils and lubricants</li> </ul>                                                         | YM2D24-100P-N1MRJA4 | 2106185  |
|  | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Male connector, M12, 4-pin, angled, D-coded</li> <li><b>Connection type head B:</b> Male connector, RJ45, 4-pin, straight</li> <li><b>Signal type:</b> Ethernet, PROFINET</li> <li><b>Cable:</b> 10 m, 4-wire, PUR, halogen-free</li> <li><b>Description:</b> Ethernet, shieldedPROFINET</li> </ul>                                                                                                                                             | YN2D24-100P-N1MRJA4 | 2106164  |

|                                                                                     | Brief description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Type                | part no. |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|----------|
|    | <ul style="list-style-type: none"> <li><b>Application:</b> Drag chain operation, Zones with oils and lubricants</li> <li><b>Connection type head A:</b> Male connector, M12, 4-pin, angled, D-coded</li> <li><b>Connection type head B:</b> Male connector, RJ45, 4-pin, straight</li> <li><b>Signal type:</b> Ethernet, PROFINET</li> <li><b>Cable:</b> 5 m, 4-wire, PUR, halogen-free</li> <li><b>Description:</b> Ethernet, shieldedPROFINET</li> <li><b>Application:</b> Drag chain operation, Zones with oils and lubricants</li> </ul> | YN2D24-050P-N1MRJA4 | 2106163  |
|    | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Male connector, M12, 4-pin, angled, D-coded</li> <li><b>Connection type head B:</b> Male connector, RJ45, 4-pin, straight</li> <li><b>Signal type:</b> Ethernet, PROFINET</li> <li><b>Cable:</b> 2 m, 4-wire, PUR, halogen-free</li> <li><b>Description:</b> Ethernet, shieldedPROFINET</li> <li><b>Application:</b> Drag chain operation, Zones with oils and lubricants</li> </ul>                                                                                   | YN2D24-020P-N1MRJA4 | 2106162  |
|    | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Male connector, M12, 4-pin, straight, D-coded</li> <li><b>Connection type head B:</b> Male connector, M12, 4-pin, straight, D-coded</li> <li><b>Signal type:</b> Ethernet, PROFINET</li> <li><b>Cable:</b> 5 m, 4-wire, PUR, halogen-free</li> <li><b>Description:</b> Ethernet, shieldedPROFINET</li> <li><b>Application:</b> Drag chain operation, Zones with oils and lubricants</li> </ul>                                                                         | YM2D24-050P-N1M2D24 | 2106160  |
|    | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Male connector, M12, 4-pin, angled, D-coded</li> <li><b>Connection type head B:</b> Male connector, RJ45, 4-pin, straight</li> <li><b>Signal type:</b> Ethernet, PROFINET</li> <li><b>Cable:</b> 3 m, 4-wire, PUR, halogen-free</li> <li><b>Description:</b> Ethernet, shieldedPROFINET</li> <li><b>Application:</b> Drag chain operation, Zones with oils and lubricants</li> </ul>                                                                                   | YN2D24-030P-N1MRJA4 | 2144265  |
|    | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M12, 4-pin, straight, A-coded</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Sensor/actuator cable</li> <li><b>Cable:</b> 0.6 m, 4-wire, PUR, halogen-free</li> <li><b>Description:</b> Sensor/actuator cable, unshielded</li> <li><b>Application:</b> Uncontaminated zones, Zones with oils and lubricants, Robot, Drag chain operation</li> </ul>                                                               | YF2A14-C60UB3XLEAX  | 2145654  |
|   | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M12, 4-pin, straight, A-coded</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Sensor/actuator cable</li> <li><b>Cable:</b> 1 m, 4-wire, PUR, halogen-free</li> <li><b>Description:</b> Sensor/actuator cable, unshielded</li> <li><b>Application:</b> Uncontaminated zones, Zones with oils and lubricants, Robot, Drag chain operation</li> </ul>                                                                 | YF2A14-010UB3XLEAX  | 2145655  |
|  | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M12, 4-pin, straight, A-coded</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Sensor/actuator cable</li> <li><b>Cable:</b> 3 m, 4-wire, PUR, halogen-free</li> <li><b>Description:</b> Sensor/actuator cable, unshielded</li> <li><b>Application:</b> Uncontaminated zones, Zones with oils and lubricants, Robot, Drag chain operation</li> </ul>                                                                 | YF2A14-030UB3XLEAX  | 2145656  |
|  | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M12, 4-pin, angled, A-coded</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Sensor/actuator cable</li> <li><b>Cable:</b> 0.6 m, 4-wire, PUR, halogen-free</li> <li><b>Description:</b> Sensor/actuator cable, unshielded</li> <li><b>Application:</b> Uncontaminated zones, Zones with oils and lubricants, Robot, Drag chain operation</li> </ul>                                                                 | YG2A14-C60UB3XLEAX  | 2145657  |
|  | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M12, 4-pin, angled, A-coded</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Sensor/actuator cable</li> <li><b>Cable:</b> 1 m, 4-wire, PUR, halogen-free</li> <li><b>Description:</b> Sensor/actuator cable, unshielded</li> <li><b>Application:</b> Uncontaminated zones, Zones with oils and lubricants, Robot, Drag chain operation</li> </ul>                                                                   | YG2A14-010UB3XLEAX  | 2145658  |
|  | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Male connector, M12, 4-pin, angled, D-coded</li> <li><b>Connection type head B:</b> Male connector, M12, 4-pin, angled, D-coded</li> <li><b>Signal type:</b> Ethernet, PROFINET</li> <li><b>Cable:</b> 5 m, 4-wire, PUR, halogen-free</li> <li><b>Description:</b> Ethernet, shieldedPROFINET</li> <li><b>Application:</b> Drag chain operation, Zones with oils and lubricants</li> </ul>                                                                             | YN2D24-050P-N1N2D24 | 2127662  |
|  | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Male connector, M12, 4-pin, straight, D-coded</li> <li><b>Connection type head B:</b> Male connector, RJ45, 4-pin, straight</li> <li><b>Signal type:</b> Ethernet, PROFINET</li> <li><b>Cable:</b> 5 m, 4-wire, PUR, halogen-free</li> <li><b>Description:</b> Ethernet, shieldedPROFINET</li> </ul>                                                                                                                                                                   | YM2D24-050P-N1MRJA4 | 2106184  |

|                                                                                     | Brief description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Type               | part no. |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|----------|
|    | <ul style="list-style-type: none"> <li>• <b>Application:</b> Drag chain operation, Zones with oils and lubricants</li> <li>• <b>Connection type head A:</b> Female connector, M12, 4-pin, angled, A-coded</li> <li>• <b>Connection type head B:</b> Flying leads</li> <li>• <b>Signal type:</b> Sensor/actuator cable</li> <li>• <b>Cable:</b> 20 m, 4-wire, PUR, halogen-free</li> <li>• <b>Description:</b> Sensor/actuator cable, unshielded</li> <li>• <b>Application:</b> Uncontaminated zones, Zones with oils and lubricants, Robot, Drag chain operation</li> </ul> | YG2A14-200UB3XLEAX | 2095770  |
|                                                                                     | <ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M12, 4-pin, straight, A-coded</li> <li>• <b>Connection type head B:</b> Flying leads</li> <li>• <b>Signal type:</b> Sensor/actuator cable</li> <li>• <b>Cable:</b> 20 m, 4-wire, PUR, halogen-free</li> <li>• <b>Description:</b> Sensor/actuator cable, unshielded</li> <li>• <b>Application:</b> Uncontaminated zones, Zones with oils and lubricants, Robot, Drag chain operation</li> </ul>                                                                                   | YF2A14-200UB3XLEAX | 2095611  |
| Mounting systems                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                    |          |
|    | <ul style="list-style-type: none"> <li>• <b>Description:</b> Flange adapter, adaptation of face mount flange with 36 mm centering hub to 50 mm servo flange, aluminum, including 3 flat head screws M4 x 10</li> <li>• <b>Material:</b> Aluminum</li> <li>• <b>Details:</b> Aluminum</li> <li>• <b>Items supplied:</b> Including 3 countersunk screws M3 x 10</li> </ul>                                                                                                                                                                                                    | BEF-FA-036-050     | 2029160  |
|    | <ul style="list-style-type: none"> <li>• <b>Description:</b> Flange adapter, adaptation of face mount flange with 36 mm centering hub to 60 mm square mounting plate, aluminum, including 3 flat head screws M4 x 8</li> <li>• <b>Material:</b> Aluminum</li> <li>• <b>Details:</b> Aluminum</li> <li>• <b>Items supplied:</b> Including 3 countersunk screws M4 x 8</li> </ul>                                                                                                                                                                                             | BEF-FA-036-060REC  | 2029162  |
|  | <ul style="list-style-type: none"> <li>• <b>Description:</b> Flange adapter, adaptation of face mount flange with 36 mm centering hub to 58 mm square mounting plate with shock absorbers, aluminum</li> <li>• <b>Material:</b> Aluminum</li> <li>• <b>Details:</b> Aluminum</li> </ul>                                                                                                                                                                                                                                                                                     | BEF-FA-036-060RSA  | 2029163  |
|  | <ul style="list-style-type: none"> <li>• <b>Description:</b> Flange adapter, adaptation of face mount flange with 36 mm centering hub to 63 mm square mounting plate, aluminum, including 3 flat head screws M4 x 10</li> <li>• <b>Material:</b> Aluminum</li> <li>• <b>Details:</b> Aluminum</li> <li>• <b>Items supplied:</b> Including 3 countersunk screws M3 x 10</li> </ul>                                                                                                                                                                                           | BEF-FA-036-063REC  | 2034225  |
|  | <ul style="list-style-type: none"> <li>• <b>Product family:</b> Stator couplings</li> <li>• <b>Description:</b> One-sided stator coupling, slot, slot radius 33 mm to 211.9 mm, slot width 5.1 mm</li> </ul>                                                                                                                                                                                                                                                                                                                                                                | BEF-DS03DFS/VFS    | 2047431  |

|                                                                                     | Brief description                                                                                                                                                                                                                                                                                                | Type           | part no. |
|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------|
| measuring wheels and measuring wheel mechanics                                      |                                                                                                                                                                                                                                                                                                                  |                |          |
|    | <ul style="list-style-type: none"> <li><b>Product segment:</b> Measuring wheels and measuring wheel mechanics</li> <li><b>Product family:</b> Measuring wheels</li> <li><b>Description:</b> Aluminium measuring wheel with O-ring (NBR70) for 6 mm solid shaft, circumference 200 mm</li> </ul>                  | BEF-MR006020R  | 2055222  |
|    | <ul style="list-style-type: none"> <li><b>Product segment:</b> Measuring wheels and measuring wheel mechanics</li> <li><b>Product family:</b> Measuring wheels</li> <li><b>Description:</b> Measuring wheel with O-ring (NBR70) for 6 mm solid shaft, circumference 300 mm</li> </ul>                            | BEF-MR006030R  | 2055634  |
|    | <ul style="list-style-type: none"> <li><b>Product segment:</b> Measuring wheels and measuring wheel mechanics</li> <li><b>Product family:</b> Measuring wheels</li> <li><b>Description:</b> Plastic measuring wheel with smooth plastic surface (Hytrel), for 10 mm solid shaft, circumference 200 mm</li> </ul> | BEF-MR-010020  | 5312988  |
|   | <ul style="list-style-type: none"> <li><b>Product segment:</b> Measuring wheels and measuring wheel mechanics</li> <li><b>Product family:</b> Measuring wheels</li> <li><b>Description:</b> Measuring wheel with ridged plastic surface (Hytrel) for 10 mm solid shaft, circumference 200 mm</li> </ul>          | BEF-MR-010020G | 5318678  |
|  | <ul style="list-style-type: none"> <li><b>Product segment:</b> Measuring wheels and measuring wheel mechanics</li> <li><b>Product family:</b> Measuring wheels</li> <li><b>Description:</b> Aluminium measuring wheel with O-ring (NBR70) for 10 mm solid shaft, circumference 200 mm</li> </ul>                 | BEF-MR010020R  | 2055224  |
|  | <ul style="list-style-type: none"> <li><b>Product segment:</b> Measuring wheels and measuring wheel mechanics</li> <li><b>Product family:</b> Measuring wheels</li> <li><b>Description:</b> Aluminium measuring wheel with O-ring (NBR70) for 10 mm solid shaft, circumference 300 mm</li> </ul>                 | BEF-MR010030R  | 2049278  |
|  | <ul style="list-style-type: none"> <li><b>Product segment:</b> Measuring wheels and measuring wheel mechanics</li> <li><b>Product family:</b> Measuring wheels</li> <li><b>Description:</b> Plastic measuring wheel with smooth plastic surface (Hytrel) for 10 mm solid shaft, circumference 500 mm</li> </ul>  | BEF-MR-010050  | 5312989  |
|  | <ul style="list-style-type: none"> <li><b>Product segment:</b> Measuring wheels and measuring wheel mechanics</li> <li><b>Product family:</b> Measuring wheels</li> <li><b>Description:</b> Measuring wheel with O-ring (NBR70) for 10 mm solid shaft, circumference 500 mm</li> </ul>                           | BEF-MR010050R  | 2055227  |
| 14                                                                                  | ABSOLUTE ENCODERS   SIC                                                                                                                                                                                                                                                                                          | BEF-OR-053-040 | 2064061  |



|  | Brief description                                                                                                                                                                                                                                                                                               | Type           | part no. |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------|
|  | <ul style="list-style-type: none"><li>• <b>Product family:</b> Measuring wheel mechanics</li><li>• <b>Description:</b> O-ring for measuring wheels (circumference 200 mm)</li></ul>                                                                                                                             |                |          |
|  | <ul style="list-style-type: none"><li>• <b>Product segment:</b> Measuring wheels and measuring wheel mechanics</li><li>• <b>Product family:</b> Measuring wheel mechanics</li><li>• <b>Description:</b> O-ring for measuring wheels (circumference 300 mm)</li><li>• <b>Items supplied:</b> 2x O-ring</li></ul> | BEF-OR-083-050 | 2064076  |

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