

Technical Information / Datasheet

SK TIE4-M12-PBR

Part number: 275 274 500

PROFIBUS DP input and output connection extension
M12 BUS system connector



Scope of delivery

| | | |
|-----|----------------------|-----------------|
| 1 x | M12 Socket connector | SK TIE4-M12-PBR |
| 1 x | M12 Plug connector | |
| 2 x | Cover cap | violet |

As-delivered status with screwed-on connector cover



Field of use

The M12 Socket connector has open cable ends and wire end sleeves. It is used to make a pluggable connection using normal commercial M12 round plug connectors. It connects the PROFIBUS DP technology option with the outgoing PROFIBUS DP field bus cables at the input and output sides.

Technical data

| Version | |
|---|--|
| Temperature range | -30 ... +90 °C |
| Contact insert Colour / Material | Violet / RAL 4001 Plastic |
| Round plug connector Material | Metal, CuZn, nickel plated |
| Connection / Type Round plug connector | M12x1, adjustable Receptacle connector with flexible strand M16x1.5, metric screw thread |
| Contact insert Contacts / Coding | 5 pin, B - coded |

| | |
|--|------------------------------|
| Weight (per component) | 23 g |
| Connector cover Colour / Material | Violet / RAL 4001 Plastic |
| Protection class (screwed) | IP67 |
| Fastening | Hexagonal nut M16x1.5 * |
| Tightening torques * M12x1 Socket plug connectors M16x1.5 Screw thread. | 0.6 Nm 1.5 Nm |

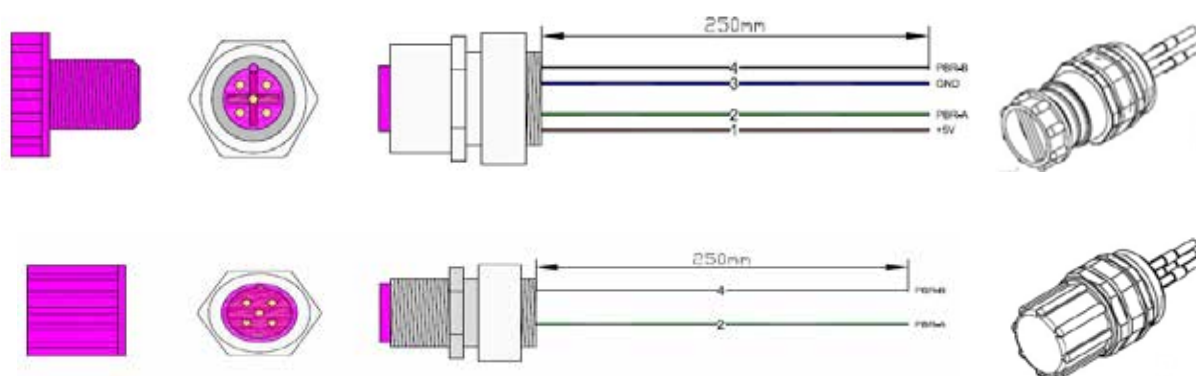
* Suitable assembly spanner commercially available (see Installation)

| Connection extension | | | | SK TIE4-M12-PBR | |
|----------------------|----------------------|-------|------|-----------------|--------|
| 1.1 | Extensive revision | 2414 | Bch | TI 275274500 | EN |
| version | reason for change(s) | issue | name | document | speech |

| Cable | |
|---|--|
| Number of cores / cross-section Socket connector Plug connector | 4 x 0.34 mm ² 2 x 0.34 mm ² |
| Flexible strands / colours Socket connector Plug connector | UL (br, gn, bl, rd) (gn, rd) |
| Length of wire strands | 250 mm |
| Degree of fouling | 3 / 2 |

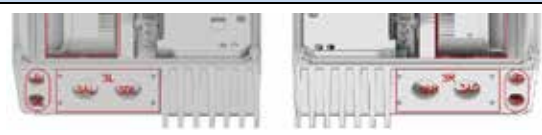
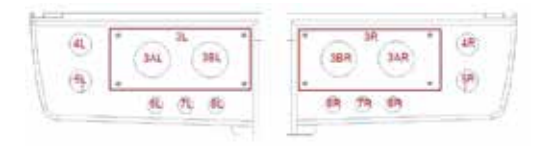
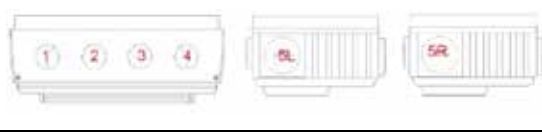
| | |
|-----------------------|--------------------------|
| Mech. Service life | min. 100 plugging cycles |
| Operating voltage | max. 60 V |
| Current rating | 4 A |
| Insulation resistance | ≥ 10 ⁸ Ω |

Circuit diagram



Installation / option locations








The M12 Receptacle connector are intended for direct installation in a free M16 hole / threaded opening of the device series (see below).


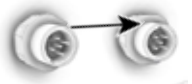




| Device series | Recommended option location | Option locations |
|--|--|--|
| SK 135E * SK 180E * ... SK 190E * Housing SK 1xxE xxx-xxx-x (-C) | 4R / 4L (incoming) 5R / 5L (outgoing) |  |
| SK 200E Frequency inverter connecting unit SK TI4-x-2xx-x (-C) | 4R / 4L (incoming) 5R / 5L (outgoing) optional ** 6R / 6L, 7R / 7L, 8R / 8L |  |
| BUS technology box BUS connection unit SK TI4-TU-BUS (-C) | 1 / 2 / 3 / 4 optional *** 5R / 5L |  |
| * The configuration capability of the respective Receptacle connector depends on its functionality with regard to the device series, e.g. the SK TIE-M12-SH Socket connector cannot be installed with the SK 1xxE housing. ** Size 1 – 3 with optional SK TIE4-M12-M16 connection extension, size 4 direct installation *** With optional SK TIE4-M20-M16 connection reduction | | |

The installation position and mounting location (coding pin or coding groove on contact carrier) of the Socket connector is freely positionable and should be aligned (see installation step 6) such that angled M12 round connectors can also be connected in a way that avoids collisions.

The installation steps described in the following apply to the installation of the M12 Receptable connectors in the housing and in the frequency inverter connecting unit or the BUS connecting unit of an external technology box.

Installation steps for installation of the M12 Receptable connector

| | | |
|----|--|--|
| 1. | Remove M16 blind plug at the provided option location side (right / left) of the starter or frequency inverter housing or the connection unit. |  |
| | Remove M16 blind plug from the provided option location hole (bottom) of the BUS connection unit. |  |
| 2. | Screw the middle hexagonal nut towards the front using a size 17 open-ended spanner. |  |
| 3. | EMC Twist associated wire pairs together (e. g. bus system, power supply, etc.). |  |
| 4. | Screw M12 flanges component directly into the affected M12 threaded opening of the housing or connecting unit of the frequency inverter. Screw M12 Receptable connector into the relevant M16 threaded opening of the BUS connecting unit. |  |
| | <p>Alternative option locations</p> <p>Connection extension SK TIE4-M12-M16</p> <p>The M12 Receptable connector can alternatively be installed with an optional M12-M16 connection extension.</p> <p>First screw the M12 Receptable connector directly into the connection extension and then fit into the M12 threaded opening in the connection unit. For more information see Optional accessories</p> |  |
| | <p>Connection reduction SK TIE4-M20-M16</p> <p>The M12 Receptable connector can alternatively be installed with an optional M20-M16 connection reduction.</p> <p>First screw the M12 Receptable connector directly into the connection reduction and then fit into one of the side M12 threaded openings in the connection unit. For more information see Optional accessories</p> |  |

| | | | |
|----|--|---|---|
| 5. | Align coding pin / coding groove vertically to 12 o'clock by rotating the front hexagonal nut. | Socket connector  | Plug connector  |
| 6. | Secure the front hexagonal nut with a 17 mm open-ended spanner. Screw the rear hexagonal nut to the connection unit or the starter or frequency inverter housing using a size 17 open-ended spanner or a special torque / installation wrench. Take the specified tightening torques into consideration, see technical data. |  |  |
| 7. | Ensure that the M12 round plug connector or the cover cap is properly screwed onto the M12 Receptable connector and tightened. |  |  |

NOTICE

Corrosion

Pay attention to leaktightness during the installation of all components (assembly, connection extension etc.). It must be ensured that all components are correctly seated and the tightening torques are adhered to when doing this.

In order to ensure that protection class **IP66** is complied with (concerns all devices with type key SK ...-C), another **pressure - leaktightness test** must be performed when the assembly work has been completed.

Failure to do this will allow moisture to penetrate the device, which will result in the risk of corrosion and short circuiting.

Information

Torque / assembly wrench



In order to provide a secure, sealed and vibration-proof connection, the M12 connection extensions, which are equipped with a hexagonal threaded ring (size 17), should be tightened with special torque / assembly wrenches. For professional installation NORD recommends the use of commercially available assembly tools (M12, size 17) with an adjustable, defined tightening torque (e.g. from Murrelektronik).

Connections

The open cable ends of the connection extension / M12 Socket connector are connected to the terminal strip of the BUS connection unit (technology box) or the BUS customer interface in the frequency inverter or the motor starter (see below).



Frequency inverter and motor starter



BUS technology box SK TU4-PBR (-M12) / (-C)



BUS customer interface SK CU4-PBR

Electrical connections



Connection extension M12 Plug connector SK TIE4-M12-PBR

BUS technology box SK TU4-PBR (-M12) / (-C) BUS connection unit SK TI4-TU-BUS (-C)

BUS customer interface SK CU4-PBR

Contact assignments
2-pole
Plug connector
B - coded



| Pin ** | Colour ** | Signal | Contact | Designation | Contact | Designation |
|--------|-----------|--------|---------|-------------|---------|-------------|
| 2 | green | PBR A | 5 | PB A IN | 81 | PBR A |
| 4 | red | PBR B | 3 | PB B IN | 82 | PBR B |



** the colour assignments and the colour-pin assignments were different in the pilot series:

| Pin | Colour | Signal | Contact | Designation | Contact | Designation |
|-----|--------|--------|---------|-------------|---------|-------------|
| 2 | green | PBR A | 5 | PB A IN | 81 | PBR A |
| 4 | red | PBR B | 3 | PB B IN | 82 | PBR B |



Connection extension M12 Socket connector SK TIE4-M12-PBR

BUS technology box SK TU4-PBR (-M12) / (-C) BUS connection unit SK TI4-TU-BUS (-C)

BUS customer interface SK CU4-PBR

Contact assignments
4-pole
Socket connector
B - coded



| Pin * | Colour * | Signal | Contact | Designation | Contact | Designation |
|-------|----------|--------|---------|-------------|---------|-------------|
| 1 | brown | +5V | 10 | +5 | 47 | 5V |
| 2 | green | PBR A | 6 | PB A OUT | 81 | PBR A |
| 3 | blue | GND | 8 | 0V B | 46 | 0V B |
| 4 | red | PBR B | 4 | PB B OUT | 82 | PBR B |



* the colour assignments and the colour-pin assignments were different in the pilot series:

| Pin | Colour | Signal | Contact | Designation | Contact | Designation |
|-----|--------|--------|---------|-------------|---------|-------------|
| 1 | red | +5V | 10 | +5 | 47 | 5V |
| 2 | white | PBR A | 6 | PB A OUT | 81 | PBR A |
| 3 | blue | GND | 8 | 0V B | 46 | 0V B |
| 4 | black | PBR B | 4 | PB B OUT | 82 | PBR B |

Optional accessories

i Information

M12 / M20 screw openings



Conductive connection extensions made from brass SK TIE4-M12-M16 from M12 to M16 or connection reductions SK TIE4-M20-M16 from M20 to M16 are optionally available for installing the M12 connection extensions in an M12 or M20 screw opening. For more information, see further documentation.

Further documentation (www.nord.com)

| Document | Designation |
|------------------------------|--|
| BU 0135 | Motor starter manual SK 105E ... SK 175E |
| BU 0180 | Frequency inverter manual SK 180E, SK 190E |
| BU 0200 | SK 2xxE frequency inverter manual |
| BU 0220 | PROFIBUS DP for SK 200E |
| TI 275280000 | Bus connection unit SK TI4-TU-BUS |
| TI 275280500 | Bus connection unit SK TI4-TU-BUS-C |
| TI 275271000 | PROFIBUS DP bus interface SK CU4-PBR |
| TI 275281000 | PROFIBUS DP bus interface SK TU4-PBR |

| Document | Designation |
|------------------------------|--|
| TI 275281150 | PROFIBUS DP bus interface SK TU4-PBR-C |
| TI 275281200 | PROFIBUS DP bus interface SK TU4-PBR-M12 |
| TI 275281250 | PROFIBUS DP bus interface SK TU4-PBR-M12-C |
| TI 275274510 | Connection extension SK TIE4-M12-M16 |
| TI 275274511 | Connection reduction SK TIE4-M20-M16 |

Technical Information / Datasheet

SK TIE4-M12-CAO

Part number: 275 274 501

CANopen connection extension
M12 BUS system connector



Scope of delivery

| | | |
|-----|--------------------|-----------------|
| 1 x | M12 Plug connector | SK TIE4-M12-CAO |
| 1 x | Cover cap | grey |

As-delivered status with screwed-on connector cover



Field of use

The M12 Plug connector has open cable ends and wire end sleeves. It is used to make a pluggable connection using normal commercial M12 round plug connectors. It connects the CANopen technology option with the incoming CANopen field bus cable at the input side.

Technical data

| Version | |
|---|--|
| Temperature range | -30 ... +90 °C |
| Contact insert Colour / Material | Grey / RAL 7042 Plastic |
| Round plug connector Material | Metal, CuZn, nickel plated |
| Connection / Type Round plug connector | M12x1, adjustable Plug connector with flexible strand M16x1.5, metric screw thread |
| Contact insert Contacts / Coding | 5 pin, A - coded |

| | |
|--|----------------------------|
| Weight | 23 g |
| Connector cover Colour / Material | Grey / RAL 7042 Plastic |
| Protection class (screwed) | IP67 |
| Fastening | Hexagonal nut M16x1.5 * |
| Tightening torques * M12x1 Male socket connector M16x1.5 Screw thread | 0.6 Nm 1.5 Nm |

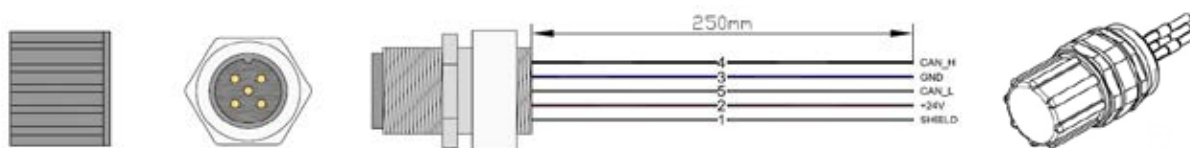
* Suitable assembly spanner commercially available (see Installation)

| Cable | |
|---|---------------------------|
| Number of conductors / Cross section | 5 x 0.34 mm ² |
| Wire strands / colours | UL / (wt, br, bl, bk, gr) |
| Length of wire strands | 250 mm |
| Degree of fouling | 3 / 2 |

| | |
|-----------------------|--------------------------|
| Mech. Service life | min. 100 plugging cycles |
| Operating voltage | max. 60 V |
| Current rating | 4 A |
| Insulation resistance | ≥ 10 ⁸ Ω |

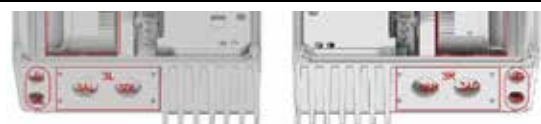
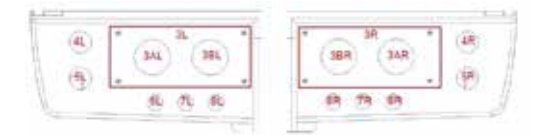

| Connection extension | | | | SK TIE4-M12-CAO | |
|----------------------|-----------------------------|--------------|-------------|-----------------|---------------|
| 1.2 | Extensive revision | 2414 | Bch | TI 275274501 | EN |
| version | reason for change(s) | issue | name | document | speech |

Circuit diagram



Installation / option locations

The M12 Receptacle connector are intended for direct installation in a free M16 hole / threaded opening of the device series (see below).

| Device series | Recommended option location | Option locations |
|--|--|--|
| SK 135E * SK 180E * ... SK 190E * Housing SK 1xxE xxx-xxx-x (-C)) | 4R / 4L (incoming) 5R / 5L (outgoing) |  |
| SK 200E Frequency inverter connecting unit SK TI4-x-2xx-x (-C) | 4R / 4L (incoming) 5R / 5L (outgoing) optional ** 6R / 6L, 7R / 7L, 8R / 8L |  |
| BUS technology box BUS connection unit SK TI4-TU-BUS (-C) | 1 / 2 / 3 / 4 optional *** 5R / 5L |  |

* The configuration capability of the respective Receptacle connector depends on its functionality with regard to the device series, e.g. the SK TIE-M12-SH Socket connector cannot be installed with the SK 1xxE housing.




** Size 1 – 3 with optional SK TIE4-M12-M16 connection extension, size 4 direct installation





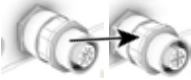



*** With optional SK TIE4-M20-M16 connection reduction

The installation position and mounting location (coding pin or coding groove on contact carrier) of the Socket connector is freely positionable and should be aligned (see installation step 6) such that angled M12 round connectors can also be connected in a way that avoids collisions.

The installation steps described in the following apply to the installation of the M12 Receptacle connectors in the housing and in the frequency inverter connecting unit or the BUS connecting unit of an external technology box.

Installation steps for installation of the M12 Receptacle connector

| | | |
|----|--|--|
| 1. | Remove M16 blind plug at the provided option location side (right / left) of the starter or frequency inverter housing or the connection unit. |  |
| | Remove M16 blind plug from the provided option location hole (bottom) of the BUS connection unit. |  |
| 2. | Screw the middle hexagonal nut towards the front using a size 17 open-ended spanner. |  |

| | | | |
|---|--|---|---|
| 3. | <p>EMC Twist associated wire pairs together (e. g. bus system, power supply, etc.).</p> |  | |
| 4. | <p>Screw M12 flanges component directly into the affected M12 threaded opening of the housing or connecting unit of the frequency inverter. Screw M12 Receptacle connector into the relevant M16 threaded opening of the BUS connecting unit.</p> |  | |
| <p>Alternative option locations Connection extension SK TIE4-M12-M16 The M12 Receptacle connector can alternatively be installed with an optional M12-M16 connection extension. First screw the M12 Receptacle connector directly into the connection extension and then fit into the M12 threaded opening in the connection unit. For more information see Optional accessories</p> | |  | |
| <p>Connection reduction SK TIE4-M20-M16 The M12 Receptacle connector can alternatively be installed with an optional M20-M16 connection reduction. First screw the M12 Receptacle connector directly into the connection reduction and then fit into one of the side M12 threaded openings in the connection unit. For more information see Optional accessories</p> | |  | |
| 5. | <p>Align coding pin / coding groove vertically to 12 o'clock by rotating the front hexagonal nut.</p> | <p>Socket connector</p>  | <p>Plug connector</p>  |
| 6. | <p>Secure the front hexagonal nut with a 17 mm open-ended spanner. Screw the rear hexagonal nut to the connection unit or the starter or frequency inverter housing using a size 17 open-ended spanner or a special torque / installation wrench. Take the specified tightening torques into consideration, see technical data.</p> |  | |
| 7. | <p>Ensure that the M12 round plug connector or the cover cap is properly screwed onto the M12 Receptacle connector and tightened.</p> |  | |

NOTICE

Corrosion

Pay attention to leaktightness during the installation of all components (assembly, connection extension etc.). It must be ensured that all components are correctly seated and the tightening torques are adhered to when doing this.

In order to ensure that protection class **IP66** is complied with (concerns all devices with type key SK ...-C), another **pressure - leaktightness test** must be performed when the assembly work has been completed.

Failure to do this will allow moisture to penetrate the device, which will result in the risk of corrosion and short circuiting.

i Information

Torque / assembly wrench



In order to provide a secure, sealed and vibration-proof connection, the M12 connection extensions, which are equipped with a hexagonal threaded ring (size 17), should be tightened with special torque / assembly wrenches. For professional installation NORD recommends the use of commercially available assembly tools (M12, size 17) with an adjustable, defined tightening torque (e.g. from Murrelektronik).

Connections

The open cable ends of the extension / M12 Plug connector are connected to the terminal strip of the BUS connection unit (technology box) or the BUS customer interface in the frequency inverter (see below).



| | | |
|--|---|---|
| BUS connection unit SK TI4-TU-BUS (-C) | BUS technology box SK TU4-CAO (-M12) / (-C) | BUS customer interface SK CU4-CAO |
|--|---|---|

Electrical connections

| <p>Contact assignments 5-pole Plug connector A-coded</p> | Connection extension M12 Plug connector SK TIE4-M12-CAO | BUS technology box SK TU4-CAO (-M12) / (-C) BUS connection unit SK TI4-TU-BUS (-C) | BUS customer interface SK CU4-CAO | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|---|--|-------------|---------------|-------------|---------|-------------|---|-------|--------|---|------|----|------|---|-------|-------|---|-----------|----|---------|---|------|-----|---|-----------|----|---------|---|-------|-------|---|----------|---------------|----------|---|------|-------|---|----------|---------------|----------|--|
| | <table border="1"> <thead> <tr> <th>Pin</th> <th>Colour</th> <th>Signal</th> <th>Contact</th> <th>Designation</th> <th>Contact</th> <th>Designation</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>white</td> <td>Shield</td> <td>9</td> <td>SHLD</td> <td>90</td> <td>SHLD</td> </tr> <tr> <td>2</td> <td>Brown</td> <td>+24 V</td> <td>1</td> <td>24V-B CAO</td> <td>45</td> <td>24V bus</td> </tr> <tr> <td>3</td> <td>Blue</td> <td>GND</td> <td>7</td> <td>GND B CAO</td> <td>46</td> <td>GND Bus</td> </tr> <tr> <td>4</td> <td>Black</td> <td>CAN_H</td> <td>3</td> <td>CAO+ OUT</td> <td>75 (incoming)</td> <td>CANopen+</td> </tr> <tr> <td>5</td> <td>grey</td> <td>CAN_L</td> <td>5</td> <td>CAO- OUT</td> <td>76 (incoming)</td> <td>CANopen-</td> </tr> </tbody> </table> | Pin | Colour | Signal | Contact | Designation | Contact | Designation | 1 | white | Shield | 9 | SHLD | 90 | SHLD | 2 | Brown | +24 V | 1 | 24V-B CAO | 45 | 24V bus | 3 | Blue | GND | 7 | GND B CAO | 46 | GND Bus | 4 | Black | CAN_H | 3 | CAO+ OUT | 75 (incoming) | CANopen+ | 5 | grey | CAN_L | 5 | CAO- OUT | 76 (incoming) | CANopen- | |
| Pin | Colour | Signal | Contact | Designation | Contact | Designation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | white | Shield | 9 | SHLD | 90 | SHLD | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | Brown | +24 V | 1 | 24V-B CAO | 45 | 24V bus | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | Blue | GND | 7 | GND B CAO | 46 | GND Bus | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | Black | CAN_H | 3 | CAO+ OUT | 75 (incoming) | CANopen+ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | grey | CAN_L | 5 | CAO- OUT | 76 (incoming) | CANopen- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Optional accessories

i Information

M12 / M20 screw openings



Conductive connection extensions made from brass SK TIE4-M12-M16 from M12 to M16 or connection reductions SK TIE4-M20-M16 from M20 to M16 are optionally available for installing the M12 connection extensions in an M12 or M20 screw opening. For more information, see further documentation.

Further documentation (www.nord.com)

| Document | Designation |
|------------------------------|--|
| BU 0180 | SK 180E, SK 190E frequency inverter manual |
| BU 0200 | Frequency inverter manual SK 2xxE |
| BU 0260 | CANopen for SK 200E manual |
| BU 0280 | DEVICENET for SK 200E manual |
| TI 275280000 | Bus connection unit SK TI4-TU-BUS |
| TI 275280500 | Bus connection unit SK TI4-TU-BUS-C |
| TI 275274510 | Connection extension SK TIE4-M12-M16 |
| TI 275274511 | Connection reduction SK TIE4-M20-M16 |
| TI 275271001 | CANopen bus interface SK CU4-CAO |
| TI 275281101 | CANopen bus interface SK TU4-CAO |

| Document | Designation |
|---------------------|---|
| TI 275281151 | CANopen bus interface SK TU4-CAO-C |
| TI 275281201 | CANopen bus interface SK TU4-CAO-M12 |
| TI 275281251 | CANopen bus interface SK TU4-CAO-M12-C |
| TI 275271002 | DeviceNet bus interface SK CU4-DEV |
| TI 275281102 | DeviceNet bus interface SK TU4-DEV |
| TI 275281152 | DeviceNet bus interface SK TU4-DEV-C |
| TI 275281202 | DeviceNet bus interface SK TU4-DEV-M12 |
| TI 275281252 | DeviceNet bus interface SK TU4-DEV-M12-C |
| TI 275274515 | Connection extension SK TIE4-M12-CAO-OUT |

Technical Information / Datasheet

SK TIE4-M12-ASI

Part number: 275 274 502

AS interface connection extension

M12 BUS system connector



Scope of delivery

| | | |
|-----|--------------------|-----------------|
| 1 x | M12 Plug connector | SK TIE4-M12-ASI |
| 1 x | Cover cap | yellow |

As-delivered status with screwed-on connector cover



Field of use

The M12 Plug connector has open cable ends and wire end sleeves. It is used to make a pluggable connection using normal commercial M12 round plug connectors. It connects the AS Interface technology option with the incoming AS Interface field bus cable at the input side.

Technical data

| Version | |
|---|--|
| Temperature range | -30 ... +90 °C |
| Contact insert Colour / Material | Grey / RAL 1018 Plastic |
| Round plug connector Material | Metal, CuZn, nickel plated |
| Connection / Type Round plug connector | M12x1, adjustable Plug connector with flexible strand M16x1.5, metric screw thread |
| Contact set Contacts / Coding | 5 pin, A - coded |

| | |
|---|------------------------------|
| Weight | 23 g |
| Connector cover Colour / Material | Yellow / RAL 1018 Plastic |
| Protection class (screwed) | IP67 |
| Fastening | Hexagonal nut M16x1.5 * |
| Tightening torques * M12x1 Socket connector M16x1.5 Screw thread | 0.6 Nm 1.5 Nm |

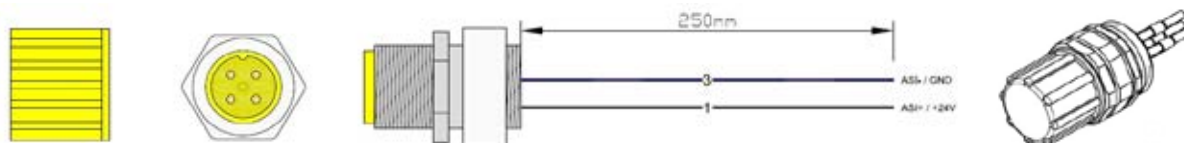
* Suitable assembly spanner commercially available (see Installation)

| Cable | |
|---|--------------------------|
| Number of conductors / Cross section | 2 x 0.34 mm ² |
| Wire strands / colours | UL / (br, bl) |
| Length of wire strands | 250 mm |
| Degree of fouling | 3 / 2 |

| | |
|-----------------------|--------------------------|
| Mech. Service life | min. 100 plugging cycles |
| Operating voltage | max. 250 V |
| Current rating | 4 A |
| Insulation resistance | ≥ 10 ⁸ Ω |

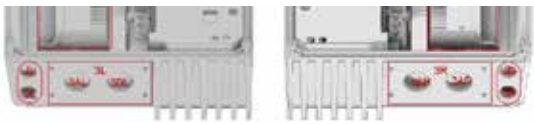


| Connection extension | | | | SK TIE4-M12-ASI | |
|----------------------|----------------------|-------|------|-----------------|--------|
| 1.2 | Extensive revision | 2414 | Bch | TI 275274502 | EN |
| version | reason for change(s) | issue | name | document | speech |

Circuit diagram



Installation / option locations



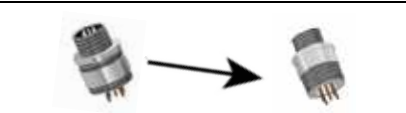
The M12 Receptacle connector are intended for direct installation in a free M16 hole / threaded opening of the device series (see below).





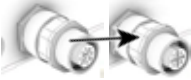



| Device series | Recommended option location | Option locations |
|--|--|--|
| SK 135E * SK 180E * ... SK 190E * Housing SK 1xxE xxx-xxx-x (-C)) | 4R / 4L (incoming) 5R / 5L (outgoing) |  |
| SK 200E Frequency inverter connecting unit SK TI4-x-2xx-x (-C) | 4R / 4L (incoming) 5R / 5L (outgoing) optional ** 6R / 6L, 7R / 7L, 8R / 8L |  |
| BUS technology box BUS connection unit SK TI4-TU-BUS (-C) | 1 / 2 / 3 / 4 optional *** 5R / 5L |  |
| * The configuration capability of the respective Receptacle connector depends on its functionality with regard to the device series, e.g. the SK TIE-M12-SH Socket connector cannot be installed with the SK 1xxE housing. ** Size 1 – 3 with optional SK TIE4-M12-M16 connection extension, size 4 direct installation *** With optional SK TIE4-M20-M16 connection reduction | | |

The installation position and mounting location (coding pin or coding groove on contact carrier) of the Socket connector is freely positionable and should be aligned (see installation step 6) such that angled M12 round connectors can also be connected in a way that avoids collisions.

The installation steps described in the following apply to the installation of the M12 Receptable connectors in the housing and in the frequency inverter connecting unit or the BUS connecting unit of an external technology box.

Installation steps for installation of the M12 Receptacle connector

| | | |
|----|--|--|
| 1. | Remove M16 blind plug at the provided option location side (right / left) of the starter or frequency inverter housing or the connection unit. |  |
| | Remove M16 blind plug from the provided option location hole (bottom) of the BUS connection unit. |  |
| 2. | Screw the middle hexagonal nut towards the front using a size 17 open-ended spanner. |  |

| | | | |
|---|---|---|---|
| 3. | EMC Twist associated wire pairs together (e. g. bus system, power supply, etc.). |  | |
| 4. | Screw M12 flanges component directly into the affected M12 threaded opening of the housing or connecting unit of the frequency inverter. Screw M12 Receptable connector into the relevant M16 threaded opening of the BUS connecting unit. |  | |
| Alternative option locations Connection extension SK TIE4-M12-M16 The M12 Receptable connector can alternatively be installed with an optional M12-M16 connection extension. First screw the M12 Receptable connector directly into the connection extension and then fit into the M12 threaded opening in the connection unit. For more information see Optional accessories | |  | |
| Connection reduction SK TIE4-M20-M16 The M12 Receptable connector can alternatively be installed with an optional M20-M16 connection reduction. First screw the M12 Receptable connector directly into the connection reduction and then fit into one of the side M12 threaded openings in the connection unit. For more information see Optional accessories | |  | |
| 5. | Align coding pin / coding groove vertically to 12 o'clock by rotating the front hexagonal nut. | Socket connector  | Plug connector  |
| 6. | Secure the front hexagonal nut with a 17 mm open-ended spanner. Screw the rear hexagonal nut to the connection unit or the starter or frequency inverter housing using a size 17 open-ended spanner or a special torque / installation wrench. Take the specified tightening torques into consideration, see technical data. |  | |
| 7. | Ensure that the M12 round plug connector or the cover cap is properly screwed onto the M12 Receptable connector and tightened. |  | |

NOTICE

Corrosion

Pay attention to leaktightness during the installation of all components (assembly, connection extension etc.). It must be ensured that all components are correctly seated and the tightening torques are adhered to when doing this.

In order to ensure that protection class **IP66** is complied with (concerns all devices with type key SK ...-C), another **pressure - leaktightness test** must be performed when the assembly work has been completed.

Failure to do this will allow moisture to penetrate the device, which will result in the risk of corrosion and short circuiting.

i Information

Torque / assembly wrench



In order to provide a secure, sealed and vibration-proof connection, the M12 connection extensions, which are equipped with a hexagonal threaded ring (size 17), should be tightened with special torque / assembly wrenches. For professional installation NORD recommends the use of commercially available assembly tools (M12, size 17) with an adjustable, defined tightening torque (e.g. from Murrelektronik).

Connections

The open cable ends of the extension / M12 Plug connector are connected to the terminal strip of the BUS connection unit (technology box), the BUS customer interface or the control terminal strip in the frequency inverter or the motor starter (see below).



Frequency inverter and motor starter

BUS connection unit SK TI4-TU-BUS (-C)

BUS technology box (SK TU4-... (-M12) / (-C)

Electrical connections



Connection extension M12 Plug connector SK TIE4-M12-ASI

Connecting terminals SK 1x5E, SK 180 ... 190E, SK 22xE, SK 23xE

Contact assignments 2-pole Plug connector A-coded

| Pin | Colour | Signal | Contact | Designation |
|-----|--------|--------|---------|-------------|
| 1 | brown | ASI + | 84 | ASI + |
| 3 | blue | ASI - | 85 | ASI - |



Optional accessories

i Information

M12 / M20 screw openings



Conductive connection extensions made from brass SK TIE4-M12-M16 from M12 to M16 or connection reductions SK TIE4-M20-M16 from M20 to M16 are optionally available for installing the M12 connection extensions in an M12 or M20 screw opening. For more information, see further documentation.

Further documentation (www.nord.com)

| Document | Designation |
|------------------------------|--|
| BU 0090 | AS interface (SK 300E ... SK 750E) |
| BU 0135 | Motor starter manual SK 105E ... SK 175E |
| BU 0180 | Frequency inverter manual SK 180E, SK 190E |
| BU 0200 | SK 2xE frequency inverter manual |
| TI 275280000 | Bus connection unit SK TI4-TU-BUS |

| Document | Designation |
|------------------------------|--|
| TI 275280500 | Bus connection unit SK TI4-TU-BUS-C |
| TI 275274510 | Connection extension SK TIE4-M12-M16 |
| TI 275274511 | Connection reduction SK TIE4-M20-M16 |
| TI 275274513 | Connection extension SK TIE4-M12-ASI-AUX |

Technical Information / Datasheet

SK TIE4-M12-INI

Part number: 275 274 503

Connection extension for initiators and actuators

M12 control system connector

Scope of delivery

| | | |
|-----|----------------------|-----------------|
| 1 x | M12 Socket connector | SK TIE4-M12-INI |
| 1 x | Cover cap | black |

As-delivered status with screwed-on connector cover



Field of use

The M12 Socket connector has open cable ends and wire end sleeves. It is used to make a pluggable connection using normal commercial M12 round plug connectors. It connects the technology option with the outgoing control signal cable at the output side.

Technical data

| Version | |
|---|--|
| Temperature range | -30 ... +90 °C |
| Contact insert Colour / Material | Black / RAL 9005 Plastic |
| Round plug connector Material | Metal, CuZn, nickel plated |
| Connection / Type Round plug connector | M12x1, adjustable Socket connector with flexible strand M16x1.5, metric screw thread |
| Contact set Contacts / Coding | 5 pin, A - coded |

| | |
|---|-----------------------------|
| Weight | 23 g |
| Connector cover Colour / Material | Black / RAL 9005 Plastic |
| Protection class (screwed) | IP67 |
| Fastening | Hexagonal nut M16x1.5 * |
| Tightening torques * M12x1 Socket connector M16x1.5 Screw thread | 0.6 Nm 1.5 Nm |

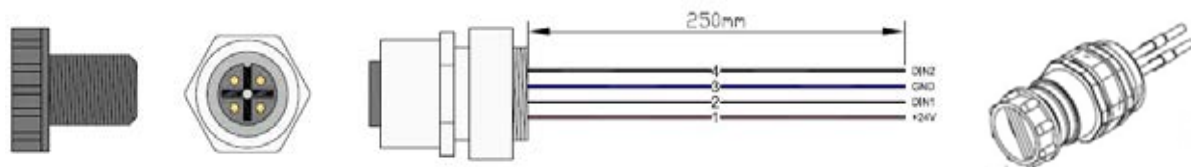
* Suitable assembly spanner commercially available (see Installation)

| Cable | |
|---|--------------------------|
| Number of conductors / Cross section | 4 x 0.34 mm ² |
| Wire strands / colours | UL / (br, wt, bl, bk) |
| Length of wire strands | 250 mm |
| Degree of fouling | 3 / 2 |

| | |
|-----------------------|--------------------------|
| Mech. Service life | min. 100 plugging cycles |
| Operating voltage | max. 250 V |
| Current rating | 4 A |
| Insulation resistance | ≥ 10 ⁸ Ω |

| Connection extension | | | | SK TIE4-M12-INI | |
|----------------------|----------------------|-------|------|-----------------|--------|
| 1.1 | Extensive revision | 2414 | Bch | TI 275274503 | EN |
| version | reason for change(s) | issue | name | document | speech |

Circuit diagram



Installation / option locations

The M12 Receptacle connector are intended for direct installation in a free M16 hole / threaded opening of the device series (see below).





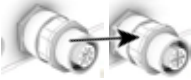



| Device series | Recommended option location | Option locations |
|--|--|------------------|
| SK 135E * SK 180E * ... SK 190E * Housing SK 1xxE xxx-xxx-x (-C) | 4R / 4L (incoming) 5R / 5L (outgoing) | |
| SK 200E Frequency inverter connecting unit SK TI4-x-2xx-x (-C) | 4R / 4L (incoming) 5R / 5L (outgoing) optional ** 6R / 6L, 7R / 7L, 8R / 8L | |
| BUS technology box BUS connection unit SK TI4-TU-BUS (-C) | 1 / 2 / 3 / 4 optional *** 5R / 5L | |
| * The configuration capability of the respective Receptacle connector depends on its functionality with regard to the device series, e.g. the SK TIE-M12-SH Socket connector cannot be installed with the SK 1xxE housing. ** Size 1 – 3 with optional SK TIE4-M12-M16 connection extension, size 4 direct installation *** With optional SK TIE4-M20-M16 connection reduction | | |

The installation position and mounting location (coding pin or coding groove on contact carrier) of the Socket connector is freely positionable and should be aligned (see installation step 6) such that angled M12 round connectors can also be connected in a way that avoids collisions.

The installation steps described in the following apply to the installation of the M12 Receptacle connectors in the housing and in the frequency inverter connecting unit or the BUS connecting unit of an external technology box.

Installation steps for installation of the M12 Receptacle connector

| | | |
|----|--|--|
| 1. | Remove M16 blind plug at the provided option location side (right / left) of the starter or frequency inverter housing or the connection unit. | |
| | Remove M16 blind plug from the provided option location hole (bottom) of the BUS connection unit. | |
| 2. | Screw the middle hexagonal nut towards the front using a size 17 open-ended spanner. | |

| | | | |
|---|---|---|---|
| 3. | EMC Twist associated wire pairs together (e. g. bus system, power supply, etc.). |  | |
| 4. | Screw M12 flanges component directly into the affected M12 threaded opening of the housing or connecting unit of the frequency inverter. Screw M12 Receptacle connector into the relevant M16 threaded opening of the BUS connecting unit. |  | |
| Alternative option locations Connection extension SK TIE4-M12-M16 The M12 Receptacle connector can alternatively be installed with an optional M12-M16 connection extension. First screw the M12 Receptacle connector directly into the connection extension and then fit into the M12 threaded opening in the connection unit. For more information see Optional accessories | |  | |
| Connection reduction SK TIE4-M20-M16 The M12 Receptacle connector can alternatively be installed with an optional M20-M16 connection reduction. First screw the M12 Receptacle connector directly into the connection reduction and then fit into one of the side M12 threaded openings in the connection unit. For more information see Optional accessories | |  | |
| 5. | Align coding pin / coding groove vertically to 12 o'clock by rotating the front hexagonal nut. | Socket connector  | Plug connector  |
| 6. | Secure the front hexagonal nut with a 17 mm open-ended spanner. Screw the rear hexagonal nut to the connection unit or the starter or frequency inverter housing using a size 17 open-ended spanner or a special torque / installation wrench. Take the specified tightening torques into consideration, see technical data. |  | |
| 7. | Ensure that the M12 round plug connector or the cover cap is properly screwed onto the M12 Receptacle connector and tightened. |  | |

NOTICE

Corrosion

Pay attention to leaktightness during the installation of all components (assembly, connection extension etc.). It must be ensured that all components are correctly seated and the tightening torques are adhered to when doing this.

In order to ensure that protection class **IP66** is complied with (concerns all devices with type key SK ...-C), another **pressure - leaktightness test** must be performed when the assembly work has been completed.

Failure to do this will allow moisture to penetrate the device, which will result in the risk of corrosion and short circuiting.

i Information

Torque / assembly wrench



In order to provide a secure, sealed and vibration-proof connection, the M12 connection extensions, which are equipped with a hexagonal threaded ring (size 17), should be tightened with special torque / assembly wrenches. For professional installation NORD recommends the use of commercially available assembly tools (M12, size 17) with an adjustable, defined tightening torque (e.g. from Murrelektronik).

Connections

The open cable ends of the connection extension / M12 Socket connector are connected to the terminal strip of the BUS connection unit (technology box), the customer interface or the control terminal strip in the frequency inverter or motor starter (see below).



| | | | |
|---|--|---|---|
| Frequency inverter and motor starter | BUS connection unit SK TI4-TU-BUS (-C) | Technology box SK TU4-... (-M12) / (-C) | Customer interface SK CU4-... |
|---|--|---|---|

Electrical connections



Connection extension
M12 Socket connector
SK TIE4-M12-PBR

Connection terminals***
SK 1x5E,
SK 180E ... SK 190E,
SK 2xxE

Technology box
SK TU4-... (-M12) / (-C)
Connection unit
SK TI4-TU-BUS (-C)

Customer interface
SK CU4-...

| Initiators | Pin | Colour | Signal | Contact | Designation | Contact | Designation | Contact | Designation |
|------------|-------|--------|---------|---------|-------------|-------------|-------------|---------|-------------|
| | 1 | brown | | +24 V | 43/44 ** | 24 V | 11/12 | 24 V | 44 |
| 2 | white | | DIN 1-4 | 21-24 | DIN1-4 | 19/20/25/26 | DIN 1-4 | C1/C2 | DIN 1-4 |
| 3 | blue | | GND | 40 | GND | 15/17 | GND | 40 | GND Bus |
| 4 | black | | DIN 1-4 | 21-24 | DIN 1-4 | 19/20/25/26 | DIN 1-4 | C1/C2 | DIN 1-4 |

| Actuators* | Pin | Colour | Signal | Contact | Designation | Contact | Designation | Contact | Designation |
|------------|-------|--------|--------|---------|-------------|---------|-------------|---------|-------------|
| | 1 | brown | | +24 V | 43 | +24 V | 44 | 24 V | 31/32 |
| 2 | white | | DOUT 1 | 1 | DOUT 1 | 1 | DOUT 1 | 33 | DOUT 1 |
| 3 | blue | | GND | 40 | GND | 40 | GND | 35/36 | 0 V |
| 4 | black | | DOUT 2 | 3 | DOUT 2 | 3 | DOUT 2 | 34 | DOUT 2 |

* Only possible with series SK 2x0E devices

** 43: 24 V internal, SK 2x0E; 44: 24 V external, SK 2x5E

*** For series SK1xxE devices: Replace existing pin fork terminals with 8 mm wire end sleeves, otherwise secure contact cannot be guaranteed over the long term.

Contact assignments
4-pole
Socket connector
A - coded



Optional accessories

i Information

M12 / M20 screw openings


Conductive connection extensions made from brass SK TIE4-M12-M16 from M12 to M16 or connection reductions SK TIE4-M20-M16 from M20 to M16 are optionally available for installing the M12 connection extensions in an M12 or M20 screw opening. For more information, see further documentation.

 Further documentation (www.nord.com)

| Document | Designation |
|------------------------------|--|
| BU 0135 | Motor starter manual SK 105E ... SK 175E |
| BU 0180 | Frequency inverter manual SK 180E, SK 190E |
| BU 0200 | Frequency inverter manual SK 2xxE |
| TI 275280000 | Bus connection unit SK TI4-TU-BUS |
| TI 275280500 | Bus connection unit SK TI4-TU-BUS-C |
| TI 275274510 | Connection extension SK TIE4-M12-M16 |
| TI 275274511 | Connection reduction SK TIE4-M20-M16 |
| TI 275271010 | Electronic brake rectifier, SK CU4-MBR |
| TI 275271011 | Setpoint converter, SK CU4-REL |
| TI 275271006 | IO extension SK CU4-IOE |
| TI 275281106 | IO extension SK TU4-IOE |
| TI 275281156 | IO extension SK TU4-IOE-C |
| TI 275281206 | IO extension SK TU4-IOE-M12 |
| TI 275281256 | IO extension SK TU4-IOE-M12-C |
| TI 275271108 | 24 V power supply SK CU4-24V-123 |
| TI 275271109 | 24 V power supply SK CU4-24V-140 |
| TI 275281108 | 24 V power supply SK TU4-24V-123 |
| TI 275281109 | 24 V power supply SK TU4-24V-140 |
| TI 275281158 | 24 V power supply SK TU4-24V-123-C |
| TI 275281159 | 24 V power supply SK TU4-24V-123-C |
| TI 275271000 | PROFIBUS DP bus interface SK CU4-PBR |
| TI 275281000 | PROFIBUS DP bus interface SK TU4-PBR |
| TI 275281150 | PROFIBUS DP bus interface SK TU4-PBR-C |
| TI 275281200 | PROFIBUS DP bus interface SK TU4-PBR-M12 |
| TI 275281250 | PROFIBUS DP bus interface SK TU4-PBR-M12-C |

| Document | Designation |
|------------------------------|---|
| TI 275271001 | CANopen bus interface SK CU4-CAO |
| TI 275281101 | CANopen bus interface SK TU4-CAO |
| TI 275281151 | CANopen bus interface SK TU4-CAO-C |
| TI 275281201 | CANopen bus interface SK TU4-CAO-M12 |
| TI 275281251 | CANopen bus interface SK TU4-CAO-M12-C |
| TI 275271002 | DeviceNet bus interface SK CU4-DEV |
| TI 275281102 | DeviceNet bus interface SK TU4-DEV |
| TI 275281152 | DeviceNet bus interface SK TU4-DEV-C |
| TI 275281202 | DeviceNet bus interface SK TU4-DEV-M12 |
| TI 275281252 | DeviceNet bus interface SK TU4-DEV-M12-C |
| TI 275271019 | Ethernet/IP bus interface SK CU4-EIP |
| TI 275281119 | Ethernet/IP bus interface SK TU4-EIP |
| TI 275281169 | Ethernet/IP bus interface SK TU4-EIP-C |
| TI 275271018 | POWERLINK bus interface SK CU4-POL |
| TI 275281118 | POWERLINK bus interface SK TU4-POL |
| TI 275281168 | POWERLINK bus interface SK TU4-POL-C |
| TI 275271015 | PROFINET bus interface SK CU4-PNT |
| TI 275281115 | PROFINET bus interface SK TU4-PNT |
| TI 275281165 | PROFINET bus interface SK TU4-PNT-C |
| TI 275281122 | PROFINET bus interface SK TU4-PNT-M12 |
| TI 275281172 | PROFINET bus interface SK TU4-PNT-M12-C |
| TI 275271017 | EtherCAT bus interface SK CU4-ECT |
| TI 275281117 | EtherCAT bus interface SK TU4-ECT |
| TI 275281167 | EtherCAT bus interface SK TU4-ECT-C |

SK TIE4-M12-SYSM

System bus output connection extension
M12 BUS system connector

Part number: 275 274 505



Scope of delivery

| | | |
|-----|----------------------|------------------|
| 1 x | M12 Socket connector | SK TIE4-M12-SYSM |
| 1 x | Cover cap | blue |

As-delivered status with screwed-on connector cover



Field of use

The M12 Socket connector has open cable ends and wire end sleeves. It is used to make a pluggable connection using normal commercial M12 round plug connectors. It connects the system bus technology option to the outgoing field bus cable at the output side.

Technical data

| Version | |
|---|--|
| Temperature range | -30 ... +90 °C |
| Contact insert Colour / Material | Blue / RAL 5012 plastic |
| Round plug connector Material | Metal, CuZn, nickel plated |
| Connection / Type Round plug connector | M12x1, adjustable Socket connector with flexible strand M16x1.5, metric screw thread |
| Contact set Contacts / Coding | 5 pin, A - coded |

* Suitable spanner commercially available (see Installation)

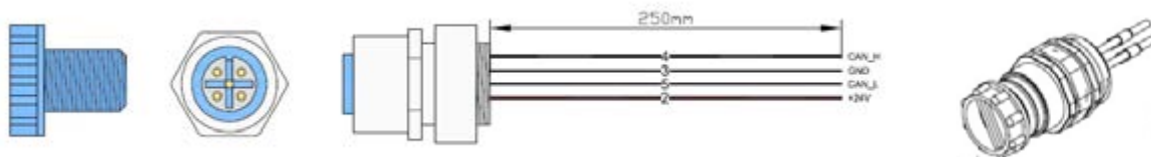
| | |
|--------------------------------------|----------------------------|
| Weight | 23 g |
| Connector cover Colour / Material | Blue / RAL 5012 plastic |
| Protection class (screwed) | IP67 |
| Fastening | Hexagonal nut M16x1.5 * |
| Tightening torques * | |
| M12x1 Socket connector | 0.6 Nm |
| M16x1.5 Screw thread | 1.5 Nm |

| Cable | |
|---|--------------------------|
| Number of conductors / Cross section | 4 x 0.34 mm ² |
| Wire strands / colours | UL / (br, bl, bk, gr) |
| Length of wire strands | 250 mm |
| Degree of fouling | 3 / 2 |

| | |
|-----------------------|--------------------------|
| Mech. Service life | min. 100 plugging cycles |
| Operating voltage | max. 60 V |
| Current rating | 4 A |
| Insulation resistance | ≥ 10 ⁸ Ω |


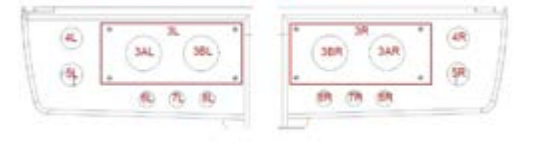

| Technical Information / Datasheet | SK TIE4-M12-SYSM | | | |
|-----------------------------------|------------------|-----|------|----|
| Connection extension | TI 275274505 | 1.3 | 0217 | EN |

Circuit diagram



Installation / option locations




The M12 Receptacle connector are intended for direct installation in a free M16 hole / threaded opening of the device series (see below).





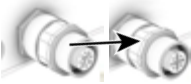

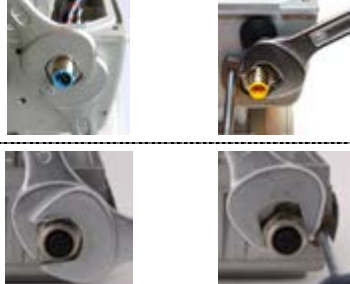

| Device series | Recommended option location | Option locations |
|--|--|--|
| SK 135E * SK 180E * ... SK 190E * Housing SK 1xxE xxx-xxx-x (-C) | 4R / 4L (incoming) 5R / 5L (outgoing) |  |
| SK 200E Frequency inverter connecting unit SK TI4-x-2xx-x (-C) | 4R / 4L (incoming) 5R / 5L (outgoing) optional ** 6R / 6L, 7R / 7L, 8R / 8L |  |
| BUS technology box BUS connection unit SK TI4-TU-BUS (-C) | 1 / 2 / 3 / 4 optional *** 5R / 5L |  |
| * The configuration capability of the respective Receptacle connector depends on its functionality with regard to the device series, e.g. the SK TIE-M12-SH Socket connector cannot be installed with the SK 1xxE housing. ** Size 1 – 3 with optional SK TIE4-M12-M16 connection extension, size 4 direct installation *** With optional SK TIE4-M20-M16 connection reduction | | |

The installation position and mounting location (coding pin or coding groove on contact carrier) of the Socket connector is freely positionable and should be aligned (see installation step 6) such that angled M12 round connectors can also be connected in a way that avoids collisions.

The installation steps described in the following apply to the installation of the M12 Receptable connectors in the housing and in the frequency inverter connecting unit or the BUS connecting unit of an external technology box.

Installation steps for installation of the M12 Receptable connector

| | | |
|----|--|--|
| 1. | Remove M16 blind plug at the provided option location side (right / left) of the starter or frequency inverter housing or the connection unit. |  |
| | Remove M16 blind plug from the provided option location hole (bottom) of the BUS connection unit. |  |
| 2. | Screw the middle hexagonal nut towards the front using a size 17 open-ended spanner. |  |

| | | | |
|---|---|---|---|
| 3. | EMC Twist associated wire pairs together (e. g. bus system, power supply, etc.). |  | |
| 4. | Screw M12 flanges component directly into the affected M12 threaded opening of the housing or connecting unit of the frequency inverter. Screw M12 Receptable connector into the relevant M16 threaded opening of the BUS connecting unit. |  | |
| Alternative option locations Connection extension SK TIE4-M12-M16 The M12 Receptable connector can alternatively be installed with an optional M12-M16 connection extension. First screw the M12 Receptable connector directly into the connection extension and then fit into the M12 threaded opening in the connection unit. For more information see Optional accessories | |  | |
| Connection reduction SK TIE4-M20-M16 The M12 Receptable connector can alternatively be installed with an optional M20-M16 connection reduction. First screw the M12 Receptable connector directly into the connection reduction and then fit into one of the side M12 threaded openings in the connection unit. For more information see Optional accessories | |  | |
| 5. | Align coding pin / coding groove vertically to 12 o'clock by rotating the front hexagonal nut. | Socket connector  | Plug connector  |
| 6. | Secure the front hexagonal nut with a 17 mm open-ended spanner. Screw the rear hexagonal nut to the connection unit or the starter or frequency inverter housing using a size 17 open-ended spanner or a special torque / installation wrench. Take the specified tightening torques into consideration, see technical data. |  | |
| 7. | Ensure that the M12 round plug connector or the cover cap is properly screwed onto the M12 Receptable connector and tightened. |  | |

NOTICE

Corrosion

Pay attention to leaktightness during the installation of all components (assembly, connection extension etc.). It must be ensured that all components are correctly seated and the tightening torques are adhered to when doing this.

In order to ensure that protection class **IP66** is complied with (concerns all devices with type key SK ...-C), another **pressure - leaktightness test** must be performed when the assembly work has been completed.

Failure to do this will allow moisture to penetrate the device, which will result in the risk of corrosion and short circuiting.

i Information

Torque / assembly wrench



In order to provide a secure, sealed and vibration-proof connection, the M12 connection extensions, which are equipped with a hexagonal threaded ring (size 17), should be tightened with special torque / assembly wrenches. For professional installation NORD recommends the use of commercially available assembly tools (M12, size 17) with an adjustable, defined tightening torque (e.g. from Murrelektronik).

Connections

The open cable ends of the connection extension / M12 socket connector are connected to the terminal strip of the BUS connection unit (technology box), the BUS customer interface or the control terminal strip in the frequency inverter (see below).



| | | |
|--------------------|---|--|
| Frequency inverter | BUS connection unit (SK TI4-TU-BUS (-C)) | BUS technology box (SK TU4-... (-M12) / (-C)) |
|--------------------|---|--|

Electrical connections

Contact assignments
4-pole
Socket connector
A - coded

Connection extension
M12 Socket connector
SK TIE4-M12-SYSM

Connection terminals
SK 180E ... 190E,
SK 2xxE

BUS technology box
SK TU4-... (-M12) / (-C)
BUS connection unit
SK TI4-TU-BUS (-C)

| Pin * | Colour * | Signal | Contact | Designation | Contact | Designation |
|-------|----------|--------|----------|-------------|---------|-------------|
| 2 | brown | +24 V | 43/44 ** | +24 V | 13 | 24 V |
| 3 | blue | GND | 40 | 0 V GND | 17 | 0 V GND |
| 4 | black | CAN_H | 77 | SYS H | 14 | SYS + |
| 5 | grey | CAN_L | 78 | SYS L | 16 | SYS - |

**43: 24 V internal, SK 180E...SK 190E, SK 2x0E; 44: 24 V external, SK 2x5E

*the colour assignments and the colour-pin assignments were different in the pilot series

| Pin | Colour | Signal | Contact | Designation | Contact | Designation |
|-----|--------|--------|----------|-------------|---------|-------------|
| 2 | red | +24 V | 43/44 ** | +24 V | 13 | 24 V |
| 3 | blue | GND | 40 | 0 V GND | 17 | 0 V GND |
| 4 | black | CAN_H | 77 | SYS H | 14 | SYS + |
| 5 | grey | CAN_L | 78 | SYS L | 16 | SYS - |

Optional accessories

i Information

M12 / M20 screw openings


Conductive connection extensions made from brass SK TIE4-M12-M16 from M12 to M16 or connection reductions SK TIE4-M20-M16 from M20 to M16 are optionally available for installing the M12 connection extensions in an M12 or M20 screw opening. For more information, see further documentation.

 Further documentation (www.nord.com)

| Document | Designation |
|------------------------------|--|
| BU 0180 | Frequency inverter manual SK 180E, SK 190E |
| BU 0200 | Frequency inverter manual SK 2xxE |
| TI 275280000 | Bus connection unit SK TI4-TU-BUS |
| TI 275280500 | Bus connection unit SK TI4-TU-BUS-C |
| TI 275274510 | Connection extension SK TIE4-M12-M16 |
| TI 275274511 | Connection reduction SK TIE4-M20-M16 |
| TI 275271001 | CANopen bus interface SK CU4-CAO |
| TI 275281101 | CANopen bus interface SK TU4-CAO |
| TI 275281151 | CANopen bus interface SK TU4-CAO-C |
| TI 275281201 | CANopen bus interface SK TU4-CAO-M12 |
| TI 275281251 | CANopen bus interface SK TU4-CAO-M12-C |
| TI 275271002 | DeviceNet bus interface SK CU4-DEV |
| TI 275281102 | DeviceNet bus interface SK TU4-DEV |
| TI 275281152 | DeviceNet bus interface SK TU4-DEV-C |
| TI 275281202 | DeviceNet bus interface SK TU4-DEV-M12 |
| TI 275281252 | DeviceNet bus interface SK TU4-DEV-M12-C |
| TI 275271000 | PROFIBUS DP bus interface SK CU4-PBR |
| TI 275281000 | PROFIBUS DP bus interface SK TU4-PBR |
| TI 275281150 | PROFIBUS DP bus interface SK TU4-PBR-C |

| Document | Designation |
|------------------------------|--|
| TI 275281200 | PROFIBUS DP bus interface SK TU4-PBR-M12 |
| TI 275281250 | PROFIBUS DP bus interface SK TU4-PBR-M12-C |
| TI 275271015 | PROFINET IO bus interface SK CU4-PNT |
| TI 275281115 | PROFINET IO bus interface SK TU4-PNT |
| TI 275281165 | PROFINET IO bus interface SK TU4-PNT-C |
| TI 275281122 | PROFINET IO bus interface SK TU4-PNT-M12 |
| TI 275281172 | PROFINET IO bus interface SK TU4-PNT-M12-C |
| TI 275271018 | POWERLINK bus interface SK CU4-POL |
| TI 275281118 | POWERLINK bus interface SK TU4-POL |
| TI 275281168 | POWERLINK bus interface SK TU4-POL-C |
| TI 275271019 | Ethernet/IP bus interface SK CU4-EIP |
| TI 275281119 | Ethernet/IP bus interface SK TU4-EIP |
| TI 275281169 | Ethernet/IP bus interface SK TU4-EIP-C |
| TI 275271017 | EtherCAT bus interface SK CU4-ECT |
| TI 275281117 | EtherCAT bus interface SK TU4-ECT |
| TI 275281167 | EtherCAT bus interface SK TU4-ECT-C |
| TI 275274506 | Connection extension SK TIE4-M12-SYSS |

SK TIE4-M12-SYSS

Part number: 275 274 506

System bus input connection extension

M12 BUS system connector



Scope of delivery

| | | |
|-----|--------------------|------------------|
| 1 x | M12 Plug connector | SK TIE4-M12-SYSS |
| 1 x | Cover cap | blue |

As-delivered status with screwed-on connector cover



Field of use

The M12 Plug connector has open cable ends and wire end sleeves. It is used to make a pluggable connection using normal commercial M12 round plug connectors. It connects the system bus technology option to the incoming field bus cable at the input side.

Technical data

| Version | |
|---|--|
| Temperature range | -30 ... +90 °C |
| Contact insert Colour / Material | Blue / RAL 5012 plastic |
| Round plug connector Material | Metal, CuZn, nickel plated |
| Connection / Type Round plug connector | M12x1, adjustable Plug connector with flexible strand M16x1.5, metric screw thread |
| Contact set Contacts / Coding | 5 pin, A - coded |

| | |
|--|----------------------------|
| Weight | 23 g |
| Connector cover Colour / Material | Blue / RAL 5012 plastic |
| Protection class (screwed) | IP67 |
| Fastening | Hexagonal nut M16x1.5 * |
| Tightening torques * M12x1 Plug connector M16x1.5 Screw thread | 0.6 Nm 1.5 Nm |

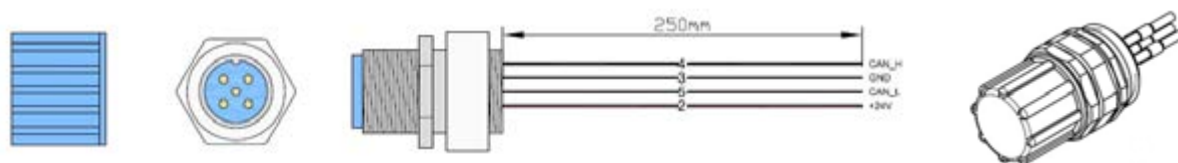
* Suitable assembly spanner commercially available (see Installation)

| Cable | |
|---|--------------------------|
| Number of conductors / Cross section | 4 x 0.34 mm ² |
| Wire strands / colours | UL / (br, bl, bk, gr) |
| Length of wire strands | 250 mm |
| Degree of fouling | 3 / 2 |

| | |
|-----------------------|--------------------------|
| Mech. Service life | min. 100 plugging cycles |
| Operating voltage | max. 60 V |
| Current rating | 4 A |
| Insulation resistance | ≥ 10 ⁸ Ω |

| Technical Information / Datasheet | SK TIE4-M12-SYSS | | | |
|-----------------------------------|------------------|-----|------|----|
| Connection extension | IT 275274506 | 1.3 | 0217 | EN |

Circuit diagram



Installation / option locations

The M12 Receptacle connector are intended for direct installation in a free M16 hole / threaded opening of the device series (see below).





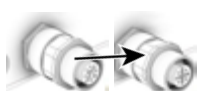

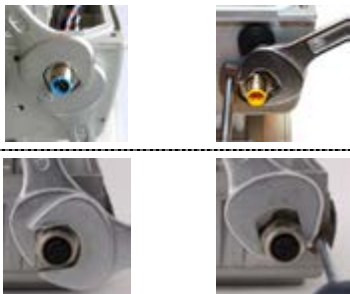

| Device series | Recommended option location | Option locations |
|--|--|------------------|
| SK 135E * SK 180E * ... SK 190E * Housing SK 1xxE xxx-xxx-x (-C) | 4R / 4L (incoming) 5R / 5L (outgoing) | |
| SK 200E Frequency inverter connecting unit SK TI4-x-2xx-x (-C) | 4R / 4L (incoming) 5R / 5L (outgoing) optional ** 6R / 6L, 7R / 7L, 8R / 8L | |
| BUS technology box BUS connection unit SK TI4-TU-BUS (-C) | 1 / 2 / 3 / 4 optional *** 5R / 5L | |
| * The configuration capability of the respective Receptacle connector depends on its functionality with regard to the device series, e.g. the SK TIE-M12-SH Socket connector cannot be installed with the SK 1xxE housing. ** Size 1 – 3 with optional SK TIE4-M12-M16 connection extension, size 4 direct installation *** With optional SK TIE4-M20-M16 connection reduction | | |

The installation position and mounting location (coding pin or coding groove on contact carrier) of the Socket connector is freely positionable and should be aligned (see installation step 6) such that angled M12 round connectors can also be connected in a way that avoids collisions.

The installation steps described in the following apply to the installation of the M12 Receptacle connectors in the housing and in the frequency inverter connecting unit or the BUS connecting unit of an external technology box.

Installation steps for installation of the M12 Receptable connector

| | | |
|----|--|--|
| 1. | Remove M16 blind plug at the provided option location side (right / left) of the starter or frequency inverter housing or the connection unit. | |
| | Remove M16 blind plug from the provided option location hole (bottom) of the BUS connection unit. | |
| 2. | Screw the middle hexagonal nut towards the front using a size 17 open-ended spanner. | |

| | | | |
|---|--|--|---|
| 3. | <p>EMC Twist associated wire pairs together (e. g. bus system, power supply, etc.).</p> |  | |
| 4. | <p>Screw M12 flanges component directly into the affected M12 threaded opening of the housing or connecting unit of the frequency inverter. Screw M12 Receptable connector into the relevant M16 threaded opening of the BUS connecting unit.</p> |  | |
| <p>Alternative option locations Connection extension SK TIE4-M12-M16 The M12 Receptable connector can alternatively be installed with an optional M12-M16 connection extension. First screw the M12 Receptable connector directly into the connection extension and then fit into the M12 threaded opening in the connection unit. For more information see Optional accessories</p> | |  | |
| <p>Connection reduction SK TIE4-M20-M16 The M12 Receptable connector can alternatively be installed with an optional M20-M16 connection reduction. First screw the M12 Receptable connector directly into the connection reduction and then fit into one of the side M12 threaded openings in the connection unit. For more information see Optional accessories</p> | |  | |
| 5. | <p>Align coding pin / coding groove vertically to 12 o'clock by rotating the front hexagonal nut.</p> | <p>Socket connector</p>  | <p>Plug connector</p>  |
| 6. | <p>Secure the front hexagonal nut with a 17 mm open-ended spanner. Screw the rear hexagonal nut to the connection unit or the starter or frequency inverter housing using a size 17 open-ended spanner or a special torque / installation wrench. Take the specified tightening torques into consideration, see technical data.</p> |  | |
| 7. | <p>Ensure that the M12 round plug connector or the cover cap is properly screwed onto the M12 Receptable connector and tightened.</p> |  | |

NOTICE

Corrosion

Pay attention to leaktightness during the installation of all components (assembly, connection extension etc.). It must be ensured that all components are correctly seated and the tightening torques are adhered to when doing this.

In order to ensure that protection class **IP66** is complied with (concerns all devices with type key SK ...-C), another **pressure - leaktightness test** must be performed when the assembly work has been completed.

Failure to do this will allow moisture to penetrate the device, which will result in the risk of corrosion and short circuiting.

i Information

Torque / assembly wrench



In order to provide a secure, sealed and vibration-proof connection, the M12 connection extensions, which are equipped with a hexagonal threaded ring (size 17), should be tightened with special torque / assembly wrenches. For professional installation NORD recommends the use of commercially available assembly tools (M12, size 17) with an adjustable, defined tightening torque (e.g. from Murrelektronik).

Connections

The open cable ends of the connection extension / M12 Plug connector are connected to the terminal strip of the BUS connection unit (technology box), the BUS customer interface or the control terminal strip in the frequency inverter or motor starter (see below).



| | | |
|--------------------|---|--|
| Frequency inverter | BUS connection unit (SK TI4-TU-BUS (-C)) | BUS technology box (SK TU4-... (-M12) / (-C)) |
|--------------------|---|--|

Electrical connections

Contact assignments
4-pole
Plug connector
A - coded

Connection extension
M12 Plug connector
SK TIE4-M12-SYSS

Connection terminals
SK 180E ... 190E,
SK 2xxE

BUS technology box
SK TU4-... (-M12) / (-C)
BUS connection unit
SK TI4-TU-BUS (-C)

| Pin * | Colour * | Signal | Contact | Designation | Contact | Designation |
|-------|----------|--------|----------|-------------|---------|-------------|
| 2 | brown | +24 V | 43/44 ** | +24 V | 11 | 24 V |
| 3 | blue | GND | 40 | 0 V GND | 15 | 0 V GND |
| 4 | black | CAN_H | 77 | SYS H | 14 | SYS + |
| 5 | grey | CAN_L | 78 | SYS L | 16 | SYS - |

** 43: 24 V internal, SK 180E...SK 190E, SK 2x0E; 44: 24 V external, SK 2x5E

* the colour assignments and the colour-pin assignments were different in the pilot series

| Pin | Colour | Signal | Contact | Designation | Contact | Designation |
|-----|--------|--------|----------|-------------|---------|-------------|
| 2 | white | +24 V | 43/44 ** | +24 V | 11 | 24 V |
| 3 | blue | GND | 40 | 0 V GND | 15 | 0 V GND |
| 4 | black | CAN_H | 77 | SYS H | 14 | SYS + |
| 5 | grey | CAN_L | 78 | SYS L | 16 | SYS - |

Optional accessories

i Information

M12 / M20 screw openings


Conductive connection extensions made from brass SK TIE4-M12-M16 from M12 to M16 or connection reductions SK TIE4-M20-M16 from M20 to M16 are optionally available for installing the M12 connection extensions in an M12 or M20 screw opening. For more information, see further documentation.

 Further documentation (www.nord.com)

| Document | Designation |
|------------------------------|--|
| BU 0180 | Frequency inverter manual SK 180E, SK 190E |
| BU 0200 | Frequency inverter manual SK 2xxE |
| TI 275280000 | Bus connection unit SK TI4-TU-BUS |
| TI 275280500 | Bus connection unit SK TI4-TU-BUS-C |
| TI 275274510 | Connection extension SK TIE4-M12-M16 |
| TI 275274511 | Connection reduction SK TIE4-M20-M16 |
| TI 275271001 | CANopen bus interface SK CU4-CAO |
| TI 275281101 | CANopen bus interface SK TU4-CAO |
| TI 275281151 | CANopen bus interface SK TU4-CAO-C |
| TI 275281201 | CANopen bus interface SK TU4-CAO-M12 |
| TI 275281251 | CANopen bus interface SK TU4-CAO-M12-C |
| TI 275271002 | DeviceNet bus interface SK CU4-DEV |
| TI 275281102 | DeviceNet bus interface SK TU4-DEV |
| TI 275281152 | DeviceNet bus interface SK TU4-DEV-C |
| TI 275281202 | DeviceNet bus interface SK TU4-DEV-M12 |
| TI 275281252 | DeviceNet bus interface SK TU4-DEV-M12-C |
| TI 275271000 | PROFIBUS DP bus interface SK CU4-PBR |
| TI 275281000 | PROFIBUS DP bus interface SK TU4-PBR |
| TI 275281150 | PROFIBUS DP bus interface SK TU4-PBR-C |

| Document | Designation |
|------------------------------|--|
| TI 275281200 | PROFIBUS DP bus interface SK TU4-PBR-M12 |
| TI 275281250 | PROFIBUS DP bus interface SK TU4-PBR-M12-C |
| TI 275271015 | PROFINET IO bus interface SK CU4-PNT |
| TI 275281115 | PROFINET IO bus interface SK TU4-PNT |
| TI 275281165 | PROFINET IO bus interface SK TU4-PNT-C |
| TI 275281122 | PROFINET IO bus interface SK TU4-PNT-M12 |
| TI 275281172 | PROFINET IO bus interface SK TU4-PNT-M12-C |
| TI 275271018 | POWERLINK bus interface SK CU4-POL |
| TI 275281118 | POWERLINK bus interface SK TU4-POL |
| TI 275281168 | POWERLINK bus interface SK TU4-POL-C |
| TI 275271019 | Ethernet/IP bus interface SK CU4-EIP |
| TI 275281119 | Ethernet/IP bus interface SK TU4-EIP |
| TI 275281169 | Ethernet/IP bus interface SK TU4-EIP-C |
| TI 275271017 | EtherCAT bus interface SK CU4-ECT |
| TI 275281117 | EtherCAT bus interface SK TU4-ECT |
| TI 275281167 | EtherCAT bus interface SK TU4-ECT-C |
| TI 275274505 | Connection extension SK TIE4-M12-SYSS |

SK TIE4-M12-POW

Part number: 275 274 507

24 V feed connection extension

M12 system connector

Scope of delivery

| | | |
|-----|--------------------|-----------------|
| 1 x | M12 Plug connector | SK TIE4-M12-POW |
| 1 x | Cover cap | black |

As-delivered status with screwed-on connector cover



Field of use

The M12 Plug connector has open cable ends and wire end sleeves. It is used to make a pluggable connection using normal commercial M12 round plug connectors and for supplying the device or the optional module with a 24 V DC supply voltage.

Technical data

| Version | |
|---|--|
| Temperature range | -30 ... +90 °C |
| Contact insert Colour / Material | Black / RAL 9005 Plastic |
| Round plug connector Material | Metal, CuZn, nickel plated |
| Connection / Type Round plug connector | M12x1, adjustable Plug connector with flexible strand M16x1.5, metric screw thread |
| Contact set Contacts / Coding | 4 pin, A - coded |

| | |
|--|-----------------------------|
| Weight | 23 g |
| Connector cover Colour / Material | Black / RAL 9005 Plastic |
| Protection class (screwed) | IP67 |
| Fastening | Hexagonal nut M16x1.5 * |
| Tightening torques * M12x1 Plug connector M16x1.5 Screw thread | 0.6 Nm 1.5 Nm |

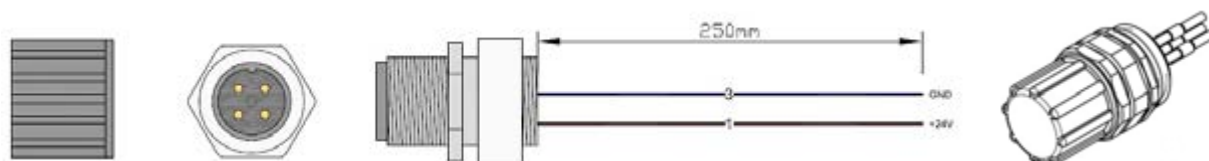
* Suitable assembly spanner commercially available (see Installation)

| Cable | |
|---|--------------------------|
| Number of conductors / Cross section | 2 x 0.34 mm ² |
| Wire strands / colours | UL / (br, bl) |
| Length of wire strands | 250 mm |
| Degree of fouling | 3 / 2 |

| | |
|-----------------------|--------------------------|
| Mech. Service life | min. 100 plugging cycles |
| Operating voltage | max. 250 V |
| Current rating | 4 A |
| Insulation resistance | ≥ 10 ⁸ Ω |

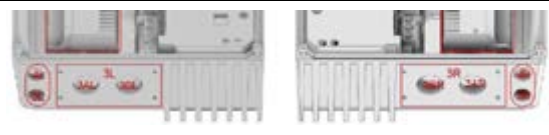


| Technical Information / Datasheet | SK TIE4-M12-POW | | | |
|-----------------------------------|-----------------|-------|------|----|
| Connection extension | TI 275274507 | V 1.2 | 0217 | EN |

Circuit diagram



Installation / option locations

The M12 Receptacle connector are intended for direct installation in a free M16 hole / threaded opening of the device series (see below).

| Device series | Recommended option location | Option locations |
|--|--|--|
| SK 135E * SK 180E * ... SK 190E * Housing SK 1xxE xxx-xxx-x (-C)) | 4R / 4L (incoming) 5R / 5L (outgoing) |  |
| SK 200E Frequency inverter connecting unit SK T14-x-2xx-x (-C) | 4R / 4L (incoming) 5R / 5L (outgoing) optional ** 6R / 6L, 7R / 7L, 8R / 8L |  |
| BUS technology box BUS connection unit SK T14-TU-BUS (-C) | 1 / 2 / 3 / 4 optional *** 5R / 5L |  |

* The configuration capability of the respective Receptacle connector depends on its functionality with regard to the device series, e.g. the SK TIE-M12-SH Socket connector cannot be installed with the SK 1xxE housing.




** Size 1 – 3 with optional SK TIE4-M12-M16 connection extension, size 4 direct installation







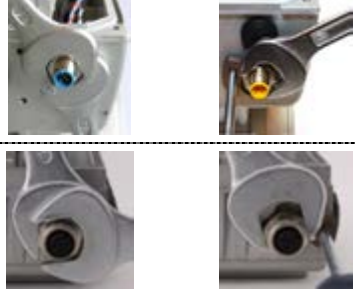

*** With optional SK TIE4-M20-M16 connection reduction

The installation position and mounting location (coding pin or coding groove on contact carrier) of the Socket connector is freely positionable and should be aligned (see installation step 6) such that angled M12 round connectors can also be connected in a way that avoids collisions.

The installation steps described in the following apply to the installation of the M12 Receptable connectors in the housing and in the frequency inverter connecting unit or the BUS connecting unit of an external technology box.

Installation steps for installation of the M12 Receptable connector

| | | |
|----|--|--|
| 1. | Remove M16 blind plug at the provided option location side (right / left) of the starter or frequency inverter housing or the connection unit. |  |
| | Remove M16 blind plug from the provided option location hole (bottom) of the BUS connection unit. |  |
| 2. | Screw the middle hexagonal nut towards the front using a size 17 open-ended spanner. |  |

| | | | |
|---|---|---|---|
| 3. | EMC Twist associated wire pairs together (e. g. bus system, power supply, etc.). |  | |
| 4. | Screw M12 flanges component directly into the affected M12 threaded opening of the housing or connecting unit of the frequency inverter. Screw M12 Receptable connector into the relevant M16 threaded opening of the BUS connecting unit. |  | |
| Alternative option locations Connection extension SK TIE4-M12-M16 The M12 Receptable connector can alternatively be installed with an optional M12-M16 connection extension. First screw the M12 Receptable connector directly into the connection extension and then fit into the M12 threaded opening in the connection unit. For more information see Optional accessories | |  | |
| Connection reduction SK TIE4-M20-M16 The M12 Receptable connector can alternatively be installed with an optional M20-M16 connection reduction. First screw the M12 Receptable connector directly into the connection reduction and then fit into one of the side M12 threaded openings in the connection unit. For more information see Optional accessories | |  | |
| 5. | Align coding pin / coding groove vertically to 12 o'clock by rotating the front hexagonal nut. | Socket connector  | Plug connector  |
| 6. | Secure the front hexagonal nut with a 17 mm open-ended spanner. Screw the rear hexagonal nut to the connection unit or the starter or frequency inverter housing using a size 17 open-ended spanner or a special torque / installation wrench. Take the specified tightening torques into consideration, see technical data. |  | |
| 7. | Ensure that the M12 round plug connector or the cover cap is properly screwed onto the M12 Receptable connector and tightened. |  | |

NOTICE

Corrosion

Pay attention to leaktightness during the installation of all components (assembly, connection extension etc.). It must be ensured that all components are correctly seated and the tightening torques are adhered to when doing this.

In order to ensure that protection class **IP66** is complied with (concerns all devices with type key SK ...-C), another **pressure - leaktightness test** must be performed when the assembly work has been completed.

Failure to do this will allow moisture to penetrate the device, which will result in the risk of corrosion and short circuiting.

i Information

Torque / assembly wrench



In order to provide a secure, sealed and vibration-proof connection, the M12 connection extensions, which are equipped with a hexagonal threaded ring (size 17), should be tightened with special torque / assembly wrenches. For professional installation NORD recommends the use of commercially available assembly tools (M12, size 17) with an adjustable, defined tightening torque (e.g. from Murrelektronik).

Connections

The open cable ends of the connection extension / M12 Plug connector are connected to the terminal strip of the BUS connection unit (technology box), the BUS customer interface or the control terminal strip in the frequency inverter or motor starter (see below).



| | | | |
|---|---|--|--------------------------------------|
| Frequency inverters and motor starters | BUS connection unit SK TI4-TU-BUS (-C) | Technology box SK TU4-... (-M12) / (-C) | Customer interface SK CU4-... |
|---|---|--|--------------------------------------|

Electrical connections



Connection extension M12 Plug connector SK TIE4-M12-POW

Connection terminals* SK 1x5E, SK 180E ... SK 190E, SK 2xxE

BUS technology box SK TU4-... (-M12) / (-C) BUS connection unit SK TI4-TU-BUS (-C)

Customer interface SK CU4-...

| Pin | Colour | Signal | Contact | Designation | Contact | Designation | Contact | Designation |
|-----|--------|--------|---------|-------------|---------|-------------|---------|-------------|
| 1 | brown | +24 V | 44 | 24 V | 11/12 | 24 V | 44 | +24 V |
| 3 | blue | GND | 40 | GND | 15/17 | GND | 40 | GND Bus |

* For series SK 1xxE devices: Replace existing pin for terminal with 8 mm wire end sleeves, otherwise a secure contact cannot be guaranteed over the long term.

Contact assignments 2-pole Plug connector A - coded



Optional accessories

i Information

M12 / M20 screw openings



Conductive connection extensions made from brass SK TIE4-M12-M16 from M12 to M16 or connection reductions SK TIE4-M20-M16 from M20 to M16 are optionally available for installing the M12 connection extensions in an M12 or M20 screw opening. For more information, see further documentation.

Further documentation (www.nord.com)

| Document | Designation |
|------------------------------|--|
| BU 0135 | Motor starter manual SK 105E ... SK 175E |
| BU 0180 | Frequency inverter manual SK 180E, SK 190E |
| BU 0200 | Frequency inverter manual SK 2xxE |
| TI 275280000 | Bus connection unit SK TI4-TU-BUS |
| TI 275280500 | Bus connection unit SK TI4-TU-BUS-C |
| TI 275274510 | Connection extension SK TIE4-M12-M16 |
| TI 275274511 | Connection reduction SK TIE4-M20-M16 |
| TI 275271010 | Electronic brake rectifier, SK CU4-MBR |
| TI 275271011 | Setpoint converter, SK CU4-REL |
| TI 275271006 | IO extension SK CU4-IOE |
| TI 275281106 | IO extension SK TU4-IOE |
| TI 275281156 | IO extension SK TU4-IOE-C |
| TI 275281206 | IO extension SK TU4-IOE-M12 |
| TI 275281256 | IO extension SK TU4-IOE-M12-C |
| TI 275271108 | 24 V power supply SK CU4-24V-123 |
| TI 275271109 | 24 V power supply SK CU4-24V-140 |
| TI 275281108 | 24 V power supply SK TU4-24V-123 |
| TI 275281109 | 24 V power supply SK TU4-24V-140 |
| TI 275281158 | 24 V power supply SK TU4-24V-123-C |
| TI 275281159 | 24 V power supply SK TU4-24V-123-C |
| TI 275271000 | PROFIBUS DP bus interface SK CU4-PBR |
| TI 275281000 | PROFIBUS DP bus interface SK TU4-PBR |
| TI 275281150 | PROFIBUS DP bus interface SK TU4-PBR-C |
| TI 275281200 | PROFIBUS DP bus interface SK TU4-PBR-M12 |
| TI 275281250 | PROFIBUS DP bus interface SK TU4-PBR-M12-C |

| Document | Designation |
|------------------------------|---|
| TI 275271001 | CANopen bus interface SK CU4-CAO |
| TI 275281101 | CANopen bus interface SK TU4-CAO |
| TI 275281151 | CANopen bus interface SK TU4-CAO-C |
| TI 275281201 | CANopen bus interface SK TU4-CAO-M12 |
| TI 275281251 | CANopen bus interface SK TU4-CAO-M12-C |
| TI 275271002 | DeviceNet bus interface SK CU4-DEV |
| TI 275281102 | DeviceNet bus interface SK TU4-DEV |
| TI 275281152 | DeviceNet bus interface SK TU4-DEV-C |
| TI 275281202 | DeviceNet bus interface SK TU4-DEV-M12 |
| TI 275281252 | DeviceNet bus interface SK TU4-DEV-M12-C |
| TI 275271019 | Ethernet/IP bus interface SK CU4-EIP |
| TI 275281119 | Ethernet/IP bus interface SK TU4-EIP |
| TI 275281169 | Ethernet/IP bus interface SK TU4-EIP-C |
| TI 275271018 | POWERLINK bus interface SK CU4-POL |
| TI 275281118 | POWERLINK bus interface SK TU4-POL |
| TI 275281168 | POWERLINK bus interface SK TU4-POL-C |
| TI 275271015 | PROFINET bus interface SK CU4-PNT |
| TI 275281115 | PROFINET bus interface SK TU4-PNT |
| TI 275281165 | PROFINET bus interface SK TU4-PNT-C |
| TI 275281122 | PROFINET bus interface SK TU4-PNT-M12 |
| TI 275281172 | PROFINET bus interface SK TU4-PNT-M12-C |
| TI 275271017 | EtherCAT bus interface SK CU4-ECT |
| TI 275281117 | EtherCAT bus interface SK TU4-ECT |
| TI 275281167 | EtherCAT bus interface SK TU4-ECT-C |

SK TIE4-M12-ANA

Part number: 275 274 508

Connection extension for analogue initiators and actuators

M12 system plug connector

Scope of delivery

| | | |
|-----|----------------------|-------------|
| 1 x | M12 Socket connector | SK TIE4-ANA |
| 1 x | Cover cap | white |

As-delivered status with screwed-on connector cover



Field of use

The M12 Socket connector has open cable ends and wire end sleeves. It is used to make a pluggable connection using normal commercial M12 round plug connectors. It connects the technology option with the outgoing connecting cable.

Technical data

| Version | |
|---|--|
| Temperature range | -30 ... +90 °C |
| Contact insert Colour / Material | White / RAL 9010 plastic |
| Round plug connector Material | Metal, CuZn, nickel plated |
| Connection / Type Round plug connector | M12x1, adjustable Socket connector with flexible strand M16x1.5, metric screw thread |
| Contact set Contacts / Coding | 5 pin, A - coded |

| | |
|---|-----------------------------|
| Weight | 23 g |
| Connector cover Colour / Material | White / RAL 9010 plastic |
| Protection class (screwed) | IP67 |
| Fastening | Hexagonal nut M16x1.5 * |
| Tightening torques * M12x1 Socket connector M16x1.5 Screw thread | 0.6 Nm 1.5 Nm |

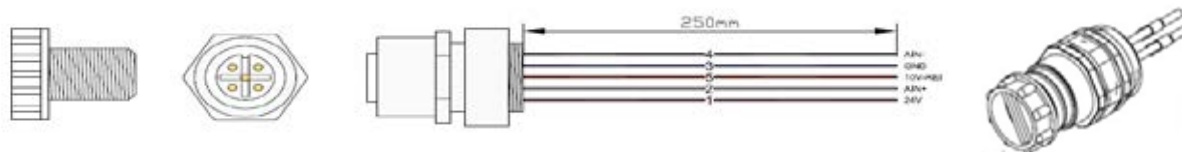
* Suitable assembly spanner commercially available (see Installation)

| Cable | |
|---|---------------------------|
| Number of conductors / Cross section | 5 x 0.34 mm ² |
| Wire strands / colours | UL / (br, wt, bl, bk, rd) |
| Length of wire strands | 250 mm |
| Degree of fouling | 3 / 2 |

| | |
|-----------------------|--------------------------|
| Mech. Service life | min. 100 plugging cycles |
| Operating voltage | max. 60 V |
| Current rating | 4 A |
| Insulation resistance | ≥ 10 ⁸ Ω |

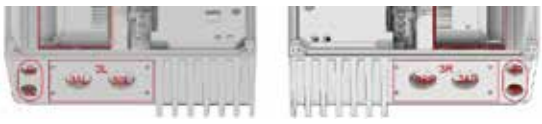


| Technical Information / Datasheet | SK TIE4-M12-ANA | | | |
|-----------------------------------|-----------------|-------|------|----|
| Connection extension | TI 275274508 | V 1.1 | 2414 | EN |

Circuit diagram



Installation / option locations

The M12 Receptacle connector are intended for direct installation in a free M16 hole / threaded opening of the device series (see below).




| Device series | Recommended option location | Option locations |
|---|--|--|
| SK 135E * SK 180E * ... SK 190E * Housing SK 1xxE xxx-xxx-x (-C) | 4R / 4L (incoming) 5R / 5L (outgoing) |  |
| SK 200E Frequency inverter connecting unit SK TI4-x-2xx-x (-C) | 4R / 4L (incoming) 5R / 5L (outgoing) optional ** 6R / 6L, 7R / 7L, 8R / 8L |  |
| BUS technology box BUS connection unit SK TI4-TU-BUS (-C) | 1 / 2 / 3 / 4 optional *** 5R / 5L |  |





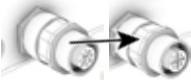



* The configuration capability of the respective Receptacle connector depends on its functionality with regard to the device series, e.g. the SK TIE-M12-SH Socket connector cannot be installed with the SK 1xxE housing.
 ** Size 1 – 3 with optional SK TIE4-M12-M16 connection extension, size 4 direct installation
 *** With optional SK TIE4-M20-M16 connection reduction

The installation position and mounting location (coding pin or coding groove on contact carrier) of the Socket connector is freely positionable and should be aligned (see installation step 6) such that angled M12 round connectors can also be connected in a way that avoids collisions.

The installation steps described in the following apply to the installation of the M12 Receptable connectors in the housing and in the frequency inverter connecting unit or the BUS connecting unit of an external technology box.

Installation steps for installation of the M12 Receptable connector

| | | |
|----|--|--|
| 1. | Remove M16 blind plug at the provided option location side (right / left) of the starter or frequency inverter housing or the connection unit. |  |
| | Remove M16 blind plug from the provided option location hole (bottom) of the BUS connection unit. |  |
| 2. | Screw the middle hexagonal nut towards the front using a size 17 open-ended spanner. |  |

| | | | |
|---|--|---|---|
| 3. | <p>EMC Twist associated wire pairs together (e. g. bus system, power supply, etc.).</p> |  | |
| 4. | <p>Screw M12 flanges component directly into the affected M12 threaded opening of the housing or connecting unit of the frequency inverter. Screw M12 Receptable connector into the relevant M16 threaded opening of the BUS connecting unit.</p> |  | |
| <p>Alternative option locations Connection extension SK TIE4-M12-M16 The M12 Receptable connector can alternatively be installed with an optional M12-M16 connection extension. First screw the M12 Receptable connector directly into the connection extension and then fit into the M12 threaded opening in the connection unit. For more information see Optional accessories</p> | |  | |
| <p>Connection reduction SK TIE4-M20-M16 The M12 Receptable connector can alternatively be installed with an optional M20-M16 connection reduction. First screw the M12 Receptable connector directly into the connection reduction and then fit into one of the side M12 threaded openings in the connection unit. For more information see Optional accessories</p> | |  | |
| 5. | <p>Align coding pin / coding groove vertically to 12 o'clock by rotating the front hexagonal nut.</p> | <p>Socket connector</p>  | <p>Plug connector</p>  |
| 6. | <p>Secure the front hexagonal nut with a 17 mm open-ended spanner. Screw the rear hexagonal nut to the connection unit or the starter or frequency inverter housing using a size 17 open-ended spanner or a special torque / installation wrench. Take the specified tightening torques into consideration, see technical data.</p> |  | |
| 7. | <p>Ensure that the M12 round plug connector or the cover cap is properly screwed onto the M12 Receptable connector and tightened.</p> |  | |

NOTICE

Corrosion

Pay attention to leaktightness during the installation of all components (assembly, connection extension etc.). It must be ensured that all components are correctly seated and the tightening torques are adhered to when doing this.

In order to ensure that protection class **IP66** is complied with (concerns all devices with type key SK ...-C), another **pressure - leaktightness test** must be performed when the assembly work has been completed.

Failure to do this will allow moisture to penetrate the device, which will result in the risk of corrosion and short circuiting.

i Information

Torque / assembly wrench



In order to provide a secure, sealed and vibration-proof connection, the M12 connection extensions, which are equipped with a hexagonal threaded ring (size 17), should be tightened with special torque / assembly wrenches. For professional installation NORD recommends the use of commercially available assembly tools (M12, size 17) with an adjustable, defined tightening torque (e.g. from Murrelektronik).

Connections

The open cable ends of the connection extension / M12 Socket connector are connected to the terminal strip of the IOE connection unit (technology box), the IOE customer interface in the frequency inverter or the connection terminals of the frequency inverter (see below).



| | | |
|--|---|---|
| Frequency inverter SK 180E ... 190E SK 2x0E Only performance stages with integrated power supply | IOE technology box SK TU4-IOE (-M12) / (-C) BUS connection unit SK TI4-TU-BUS (-C) | BUS customer interface SK CU4-IOE |
|--|---|---|

Electrical connections



Connection extension
M12 Socket connector
SK TIE4-M12-ANA

Connection terminals*
SK 180E ... SK 190E,
SK 2x0E

Technology box
SK TU4-IOE (-M12) / (-C)
BUS connection unit
SK TI4-TU-BUS (-C)

Customer interface
SK CU4-IOE

Contact assignments
 5-pole
Socket connector
 A - coded

| | Pin | Colour | Signal | Contact | Designation | Contact | Designation |
|-------------------|-----|--------|------------|---------|-------------|---------|-------------|
| Initiators | 1 | brown | +24 V | 11/12 | 24V | 44 | 24 V |
| | 2 | white | AIN1+ / 2+ | 3/4 | AIN1+ / 2+ | 14/16 | AIN1+ / 2+ |
| | 3 | blue | GND | 7/8 | 0 V-A | 12 | AGND |
| | 4 | black | AIN1- / 2- | 5/6 | AIN1- / 2- | 13/15 | AIN1- / 2- |
| | 5 | red | +10 V | 1/2 | 10 V-A | 11 | 10 V |

| | Pin | Colour | Signal | Contact | Designation | Contact | Designation |
|------------------|-----|--------|--------|---------|-------------|---------|-------------|
| Actuators | 1 | brown | +24 V | 11/12 | 24V | 44 | 24 V |
| | 2 | white | AOUT 1 | 9 | AOUT | 17 | AOUT |
| | 3 | blue | AGND | 7/8 | 0 V-A | 12 | AGND |
| | 4 | black | n. c. | n. c. | n. c. | n. c. | n. c. |
| | 5 | red | n. c. | n. c. | n. c. | n. c. | n. c. |

* For series SK1x0E devices: Replace existing pin fork terminal with 8mm wire end sleeves, otherwise a secure contact cannot be guaranteed over the long term.



| Analog-IO | | Systembussteuers und Digitalausgänge | | | | | | | | | | Digitalausgänge | |
|-----------|--------|--------------------------------------|--------|-----|--------|-----|--------|-----|--------|-----|--------|-----------------|--------|
| Pin | Signal | Pin | Signal | Pin | Signal | Pin | Signal | Pin | Signal | Pin | Signal | Pin | Signal |
| 1 | 24V | 11 | AIN1+ | 21 | AIN1+ | 31 | AIN1+ | 41 | AIN1+ | 51 | AIN1+ | 61 | AIN1+ |
| 2 | AIN1+ | 12 | AIN1- | 22 | AIN1- | 32 | AIN1- | 42 | AIN1- | 52 | AIN1- | 62 | AIN1- |
| 3 | GND | 13 | AIN2+ | 23 | AIN2+ | 33 | AIN2+ | 43 | AIN2+ | 53 | AIN2+ | 63 | AIN2+ |
| 4 | AIN1- | 14 | AIN2- | 24 | AIN2- | 34 | AIN2- | 44 | AIN2- | 54 | AIN2- | 64 | AIN2- |
| 5 | +10V | 15 | AIN3+ | 25 | AIN3+ | 35 | AIN3+ | 45 | AIN3+ | 55 | AIN3+ | 65 | AIN3+ |
| | | 16 | AIN3- | 26 | AIN3- | 36 | AIN3- | 46 | AIN3- | 56 | AIN3- | 66 | AIN3- |



Optional accessories

i Information

M12 / M20 screw openings



Conductive connection extensions made from brass SK TIE4-M12-M16 from M12 to M16 or connection reductions SK TIE4-M20-M16 from M20 to M16 are optionally available for installing the M12 connection extensions in an M12 or M20 screw opening. For more information, see further documentation.

Further documentation (www.nord.com)

| Document | Designation |
|------------------------------|--|
| BU 0180 | Frequency inverter manual SK 180E, SK 190E |
| BU 0200 | Frequency inverter manual SK 2xxE |
| TI 275280000 | Bus connection unit SK TI4-TU-BUS |
| TI 275280500 | Bus connection unit SK TI4-TU-BUS-C |
| TI 275274510 | Connection extension SK TIE4-M12-M16 |
| TI 275274511 | Connection reduction SK TIE4-M20-M16 |
| TI 275271010 | Electronic brake rectifier, SK CU4-MBR |
| TI 275271011 | Setpoint converter, SK CU4-REL |
| TI 275271006 | IO extension SK CU4-IOE |
| TI 275281106 | IO extension SK TU4-IOE |

| Document | Designation |
|------------------------------|------------------------------------|
| TI 275281156 | IO extension SK TU4-IOE-C |
| TI 275281206 | IO extension SK TU4-IOE-M12 |
| TI 275281256 | IO extension SK TU4-IOE-M12-C |
| TI 275271108 | 24 V power supply SK CU4-24V-123 |
| TI 275271109 | 24 V power supply SK CU4-24V-140 |
| TI 275281108 | 24 V power supply SK TU4-24V-123 |
| TI 275281109 | 24 V power supply SK TU4-24V-140 |
| TI 275281158 | 24 V power supply SK TU4-24V-123-C |
| TI 275281159 | 24 V power supply SK TU4-24V-123-C |

Technical Information / Datasheet

SK TIE4-M12-SH

Part number: 275 274 509

Connection extension "secure hold" output
M12 control system plug connector

Scope of delivery

| | | |
|-----|----------------------|----------------|
| 1 x | M12 Socket connector | SK TIE4-M12-SH |
| 1 x | Cover cap | yellow |

As-delivered status with screwed-on connector cover



Field of use

The M12 Socket connector has open cable ends and wire end sleeves. It is used to make a pluggable connection using normal commercial M12 round plug connectors. It connects the control terminal strip with the outgoing control signal cable at the output side.

Technical data

| Version | |
|---|--|
| Temperature range | -30 ... +90 °C |
| Contact insert Colour / Material | Grey / RAL 1021 Plastic |
| Round plug connector Material | Metal, CuZn, nickel plated |
| Connection / Type Round plug connector | M12x1, adjustable Socket connector with flexible strand M16x1.5, metric screw thread |
| Contact set Contacts / Coding | 5 pin, A - coded |

| | |
|---|------------------------------|
| Weight | 23 g |
| Connector cover Colour / Material | Yellow / RAL 1021 Plastic |
| Protection class (screwed) | IP67 |
| Fastening | Hexagonal nut M16x1.5 * |
| Tightening torques * M12x1 Socket connector M16x1.5 Screw thread | 0.6 Nm 1.5 Nm |

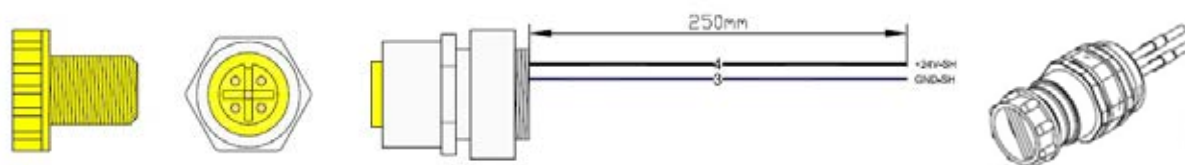
* Suitable assembly spanner commercially available (see Installation)

| Cable | |
|---|--------------------------|
| Number of conductors / Cross section | 2 x 0.34 mm ² |
| Wire strands / colours | UL / (bl, bk) |
| Length of wire strands | 250 mm |
| Degree of fouling | 3 / 2 |

| | |
|-----------------------|--------------------------|
| Mech. Service life | min. 100 plugging cycles |
| Operating voltage | max. 60 V |
| Current rating | 4 A |
| Insulation resistance | ≥ 10 ⁸ Ω |

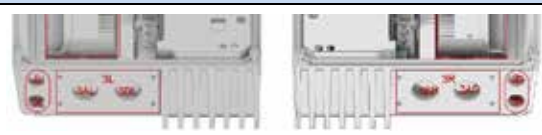
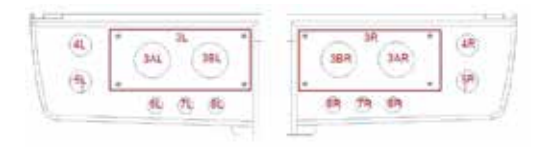
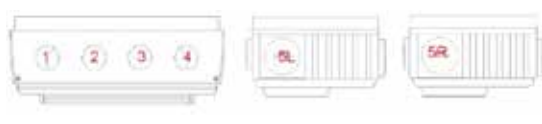
| Connection extension | | | | SK TIE4-M12-SH | |
|----------------------|----------------------|-------|------|----------------|--------|
| 1.1 | Extensive revision | 2414 | Bch | TI 27574509 | EN |
| version | reason for change(s) | issue | name | document | speech |

Circuit diagram



Installation / option locations




The M12 Receptacle connector are intended for direct installation in a free M16 hole / threaded opening of the device series (see below).





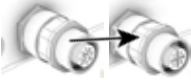



| Device series | Recommended option location | Option locations |
|--|--|--|
| SK 135E * SK 180E * ... SK 190E * Housing SK 1xxE xxx-xxx-x (-C) | 4R / 4L (incoming) 5R / 5L (outgoing) |  |
| SK 200E Frequency inverter connecting unit SK TI4-x-2xx-x (-C) | 4R / 4L (incoming) 5R / 5L (outgoing) optional ** 6R / 6L, 7R / 7L, 8R / 8L |  |
| BUS technology box BUS connection unit SK TI4-TU-BUS (-C) | 1 / 2 / 3 / 4 optional *** 5R / 5L |  |
| * The configuration capability of the respective Receptacle connector depends on its functionality with regard to the device series, e.g. the SK TIE-M12-SH Socket connector cannot be installed with the SK 1xxE housing. ** Size 1 – 3 with optional SK TIE4-M12-M16 connection extension, size 4 direct installation *** With optional SK TIE4-M20-M16 connection reduction | | |

The installation position and mounting location (coding pin or coding groove on contact carrier) of the Socket connector is freely positionable and should be aligned (see installation step 6) such that angled M12 round connectors can also be connected in a way that avoids collisions.

The installation steps described in the following apply to the installation of the M12 Receptacle connectors in the housing and in the frequency inverter connecting unit or the BUS connecting unit of an external technology box.

Installation steps for installation of the M12 Receptacle connector

| | | |
|----|--|--|
| 1. | Remove M16 blind plug at the provided option location side (right / left) of the starter or frequency inverter housing or the connection unit. |  |
| | Remove M16 blind plug from the provided option location hole (bottom) of the BUS connection unit. |  |
| 2. | Screw the middle hexagonal nut towards the front using a size 17 open-ended spanner. |  |

| | | | |
|---|---|---|---|
| 3. | EMC Twist associated wire pairs together (e. g. bus system, power supply, etc.). |  | |
| 4. | Screw M12 flanges component directly into the affected M12 threaded opening of the housing or connecting unit of the frequency inverter. Screw M12 Receptacle connector into the relevant M16 threaded opening of the BUS connecting unit. |  | |
| Alternative option locations Connection extension SK TIE4-M12-M16 The M12 Receptacle connector can alternatively be installed with an optional M12-M16 connection extension. First screw the M12 Receptacle connector directly into the connection extension and then fit into the M12 threaded opening in the connection unit. For more information see Optional accessories | |  | |
| Connection reduction SK TIE4-M20-M16 The M12 Receptacle connector can alternatively be installed with an optional M20-M16 connection reduction. First screw the M12 Receptacle connector directly into the connection reduction and then fit into one of the side M12 threaded openings in the connection unit. For more information see Optional accessories | |  | |
| 5. | Align coding pin / coding groove vertically to 12 o'clock by rotating the front hexagonal nut. | Socket connector  | Plug connector  |
| 6. | Secure the front hexagonal nut with a 17 mm open-ended spanner. Screw the rear hexagonal nut to the connection unit or the starter or frequency inverter housing using a size 17 open-ended spanner or a special torque / installation wrench. Take the specified tightening torques into consideration, see technical data. |  | |
| 7. | Ensure that the M12 round plug connector or the cover cap is properly screwed onto the M12 Receptacle connector and tightened. |  | |

NOTICE

Corrosion

Pay attention to leaktightness during the installation of all components (assembly, connection extension etc.). It must be ensured that all components are correctly seated and the tightening torques are adhered to when doing this.

In order to ensure that protection class **IP66** is complied with (concerns all devices with type key SK ...-C), another **pressure - leaktightness test** must be performed when the assembly work has been completed.

Failure to do this will allow moisture to penetrate the device, which will result in the risk of corrosion and short circuiting.

i Information

Torque / assembly wrench



In order to provide a secure, sealed and vibration-proof connection, the M12 connection extensions, which are equipped with a hexagonal threaded ring (size 17), should be tightened with special torque / assembly wrenches. For professional installation NORD recommends the use of commercially available assembly tools (M12, size 17) with an adjustable, defined tightening torque (e.g. from Murrelektronik).

Connections

The open cable ends of the connection extension / M12 Socket connector are connected to the terminal strip of the control terminals in the frequency inverter (see below).



| | | |
|---|--|---|
| Frequency inverter SK 21xE, SK 23xE | BUS connection unit SK TI4-TU-BUS (-C) | BUS technology box SK TU4-... (-M12) / (-C) |
|---|--|---|

Electrical connections



Connection extension
M12 Socket connector
SK TIE4-M12-SH

Connection terminals
SK 21xE
SK 23xE

Contact assignments
 2-pole
Socket connector
 A - coded

| Pin | Colour | Signal | Contact | Designation |
|-----|--------|----------|---------|-------------|
| 3 | blue | GND SH | 88 | GND SH |
| 4 | black | +24 V SH | 89 | +24 V SH |



Optional accessories

i Information

M12 / M20 screw openings



Conductive connection extensions made from brass SK TIE4-M12-M16 from M12 to M16 or connection reductions SK TIE4-M20-M16 from M20 to M16 are optionally available for installing the M12 connection extensions in an M12 or M20 screw opening. For more information, see further documentation.

Further documentation (www.nord.com)

| Document | Designation |
|------------------------------|--------------------------------------|
| BU 0200 | Frequency inverter manual SK 2xxE |
| BU 0230 | Functional safety for SK 200E manual |
| TI 275280000 | Bus connection unit SK TI4-TU-BUS |

| Document | Designation |
|------------------------------|--------------------------------------|
| TI 275280500 | Bus connection unit SK TI4-TU-BUS-C |
| TI 275274510 | Connection extension SK TIE4-M12-M16 |
| TI 275274511 | Connection reduction SK TIE4-M20-M16 |

Technical Information / Datasheet

SK TIE4-M12-HTL

Part number: 275 274 512

HTL rotary encoder output connection extension

M12 system plug connector

Scope of delivery

| | | |
|-----|----------------------|-----------------|
| 1 x | M12 Socket connector | SK TIE4-M12-HTL |
| 1 x | Cover cap | black |

As-delivered status with screwed-on connector cover



Field of use

The M12 Socket connector has open cable ends and wire end sleeves. It is used to make a pluggable connection using normal commercial M12 round plug connectors. It connects the technology option with the outgoing HTL rotary encoder cable at the output side.

Technical data

| Version | |
|---|--|
| Temperature range | -30 ... +90 °C |
| Contact insert Colour / Material | Black / RAL 9005 Plastic |
| Round plug connector Material | Metal, CuZn, nickel plated |
| Connection / Type Round plug connector | M12x1, adjustable Socket connector with flexible strand M16x1.5, metric screw thread |
| Contact set Contacts / Coding | 5 pin, B - coded |

| | |
|---|-----------------------------|
| Weight | 23 g |
| Connector cover Colour / Material | Black / RAL 9005 Plastic |
| Protection class (screwed) | IP67 |
| Fastening | Hexagonal nut M16x1.5 * |
| Contacts / Coding | 5 pin, A - coded |
| Tightening torques * M12x1 Socket connector M16x1.5 Screw thread | 0.6 Nm 1.5 Nm |

* Suitable assembly spanner commercially available (see Installation)

| Cable | |
|---|--------------------------|
| Number of conductors / Cross section | 4 x 0.34 mm ² |
| Wire strands / colours | UL / (br, bl, bk, wt) |
| Length of wire strands | 250 mm |
| Degree of fouling | 3 / 2 |

| | |
|-----------------------|--------------------------|
| Mech. Service life | min. 100 plugging cycles |
| Operating voltage | max. 60 V |
| Current rating | 4 A |
| Insulation resistance | ≥ 10 ⁸ Ω |

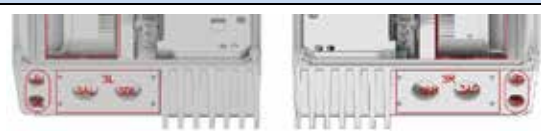
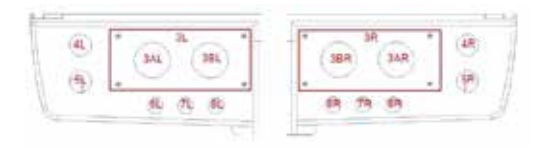
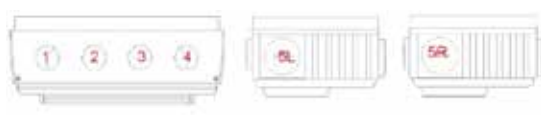
| Connection extension | | | | SK TIE4-M12-HTL | |
|----------------------|----------------------|-------|------|-----------------|--------|
| 1.1 | Extensive revision | 2414 | Bch | TI 27527412 | EN |
| version | reason for change(s) | issue | name | document | speech |

Circuit diagram



Installation / option locations



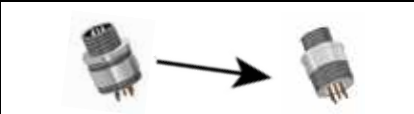
The M12 Receptacle connector are intended for direct installation in a free M16 hole / threaded opening of the device series (see below).





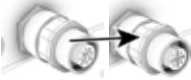



| Device series | Recommended option location | Option locations |
|--|--|--|
| SK 135E * SK 180E * ... SK 190E * Housing SK 1xxE xxx-xxx-x (-C)) | 4R / 4L (incoming) 5R / 5L (outgoing) |  |
| SK 200E Frequency inverter connecting unit SK TI4-x-2xx-x (-C) | 4R / 4L (incoming) 5R / 5L (outgoing) optional ** 6R / 6L, 7R / 7L, 8R / 8L |  |
| BUS technology box BUS connection unit SK TI4-TU-BUS (-C) | 1 / 2 / 3 / 4 optional *** 5R / 5L |  |
| * The configuration capability of the respective Receptacle connector depends on its functionality with regard to the device series, e.g. the SK TIE-M12-SH Socket connector cannot be installed with the SK 1xxE housing. ** Size 1 – 3 with optional SK TIE4-M12-M16 connection extension, size 4 direct installation *** With optional SK TIE4-M20-M16 connection reduction | | |

The installation position and mounting location (coding pin or coding groove on contact carrier) of the Socket connector is freely positionable and should be aligned (see installation step 6) such that angled M12 round connectors can also be connected in a way that avoids collisions.

The installation steps described in the following apply to the installation of the M12 Receptable connectors in the housing and in the frequency inverter connecting unit or the BUS connecting unit of an external technology box.

Installation steps for installation of the M12 Receptable connector

| | | |
|----|--|--|
| 1. | Remove M16 blind plug at the provided option location side (right / left) of the starter or frequency inverter housing or the connection unit. |  |
| | Remove M16 blind plug from the provided option location hole (bottom) of the BUS connection unit. |  |
| 2. | Screw the middle hexagonal nut towards the front using a size 17 open-ended spanner. |  |

| | | | |
|---|---|---|---|
| 3. | EMC Twist associated wire pairs together (e. g. bus system, power supply, etc.). |  | |
| 4. | Screw M12 flanges component directly into the affected M12 threaded opening of the housing or connecting unit of the frequency inverter. Screw M12 Receptable connector into the relevant M16 threaded opening of the BUS connecting unit. |  | |
| Alternative option locations Connection extension SK TIE4-M12-M16 The M12 Receptable connector can alternatively be installed with an optional M12-M16 connection extension. First screw the M12 Receptable connector directly into the connection extension and then fit into the M12 threaded opening in the connection unit. For more information see Optional accessories | |  | |
| Connection reduction SK TIE4-M20-M16 The M12 Receptable connector can alternatively be installed with an optional M20-M16 connection reduction. First screw the M12 Receptable connector directly into the connection reduction and then fit into one of the side M12 threaded openings in the connection unit. For more information see Optional accessories | |  | |
| 5. | Align coding pin / coding groove vertically to 12 o'clock by rotating the front hexagonal nut. | Socket connector  | Plug connector  |
| 6. | Secure the front hexagonal nut with a 17 mm open-ended spanner. Screw the rear hexagonal nut to the connection unit or the starter or frequency inverter housing using a size 17 open-ended spanner or a special torque / installation wrench. Take the specified tightening torques into consideration, see technical data. |  | |
| 7. | Ensure that the M12 round plug connector or the cover cap is properly screwed onto the M12 Receptable connector and tightened. |  | |

NOTICE

Corrosion

Pay attention to leaktightness during the installation of all components (assembly, connection extension etc.). It must be ensured that all components are correctly seated and the tightening torques are adhered to when doing this.

In order to ensure that protection class **IP66** is complied with (concerns all devices with type key SK ...-C), another **pressure - leaktightness test** must be performed when the assembly work has been completed.

Failure to do this will allow moisture to penetrate the device, which will result in the risk of corrosion and short circuiting.

i Information

Torque / assembly wrench



In order to provide a secure, sealed and vibration-proof connection, the M12 connection extensions, which are equipped with a hexagonal threaded ring (size 17), should be tightened with special torque / assembly wrenches. For professional installation NORD recommends the use of commercially available assembly tools (M12, size 17) with an adjustable, defined tightening torque (e.g. from Murrelektronik).

Connections

The open cable ends of the connection extension / M12 Socket connector are connected to the terminal strip of the control terminals in the frequency inverter (see below).



| | | |
|---------------------------|---------------------------------------|--|
| HTL rotary encoder | Frequency inverter SK 2xxE | BUS technology box SK TU4-... (-M12) / -C |
|---------------------------|---------------------------------------|--|

Electrical connections



**Connection extension
M12 Socket connector
SK TIE4-M12-HTL**

**Connection terminals
SK 2xxE**

Contact assignments
4-pole
Socket connector
B-coded

| Pin | Colour | Signal | Contact | Designation |
|-----|--------|---------|---------|-------------|
| 1 | brown | 24 V | 43/44* | 24 V |
| 2 | white | TRACK B | 23 | DIN3 |
| 3 | blue | GND | 40 | GND |
| 4 | black | TRACK A | 22 | DIN2 |

* 43: 24 V internal, SK 2x0E; 44: 24 V external, SK 2x5E



i Information

Connection to digital inputs

The HTL rotary encoder can **only** be connected to **DIN2** and **DIN3** of the control terminal strip of the frequency inverter. The digital inputs of the customer interfaces and technology assemblies cannot be used for rotary encoders.

Optional accessories

i Information

M12 / M20 screw openings



Conductive connection extensions made from brass SK TIE4-M12-M16 from M12 to M16 or connection reductions SK TIE4-M20-M16 from M20 to M16 are optionally available for installing the M12 connection extensions in an M12 or M20 screw opening. For more information, see further documentation.

Further documentation (www.nord.com)

| Document | Designation |
|------------------------------|--------------------------------------|
| BU 0200 | Frequency inverter manual SK 2xxE |
| TI 275280000 | Bus connection unit SK TI4-TU-BUS |
| TI 275280500 | Bus connection unit SK TI4-TU-BUS-C |
| TI 275274510 | Connection extension SK TIE4-M12-M16 |

| Document | Designation |
|------------------------------|--|
| TI 275274511 | Connection reduction SK TIE4-M20-M16 |
| TI 18552090 | Level adaptation PCB HTL - RS422 |
| TI 18552095 | Level adaptation PCB HTL - HTL A+/- B+/- |

SK TIE4-M12-ASI-AUX

Part number: 275 274 513

AS interface with auxiliary power connection extension

M12 BUS system connector



Scope of delivery

| | | |
|-----|--------------------|---------------------|
| 1 x | M12 Plug connector | SK TIE4-M12-ASI-AUX |
| 1 x | Cover cap | yellow |

As-delivered status with screwed-on connector cover



Field of use

The M12 Plug connector has open cable ends and wire end sleeves. It is used to make a pluggable connection using normal commercial M12 round plug connectors. It connects the AS Interface technology option with the incoming AS Interface field bus cable at the input side.

Technical data

| Version | |
|---|--|
| Temperature range | -30 ... +90 °C |
| Contact insert Colour / Material | Yellow / RAL 1018 Plastic |
| Round plug connector Material | Metal, CuZn, nickel plated |
| Connection / Type Round plug connector | M12x1, adjustable Plug connector with flexible strand M16x1.5, metric screw thread |
| Contact set Contacts / Coding | 5 pin, A - coded |

| | |
|---|------------------------------|
| Weight | 23 g |
| Connector cover Colour / Material | Yellow / RAL 1018 Plastic |
| Protection class (screwed) | IP67 |
| Fastening | Hexagonal nut M16x1.5 * |
| Tightening torques * M12x1 Socket connector M16x1.5 Screw thread | 0.6 Nm 1.5 Nm |

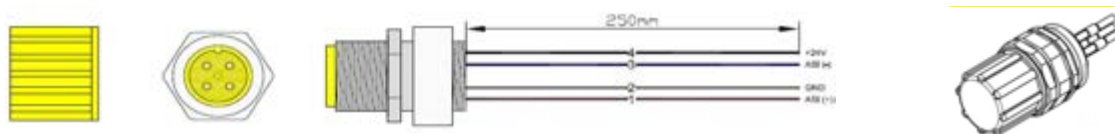
* Suitable assembly spanner commercially available (see Installation)

| Cable | |
|---|--------------------------|
| Number of conductors / Cross section | 4 x 0.34 mm ² |
| Wire strands / colours | UL / (br, bl) |
| Length of wire strands | 250 mm |
| Degree of fouling | 3 / 2 |

| | |
|-----------------------|--------------------------|
| Mech. Service life | min. 100 plugging cycles |
| Operating voltage | max. 250 V |
| Current rating | 4 A |
| Insulation resistance | ≥ 10 ⁸ Ω |




| Technical Information / Datasheet | SK TIE4-M12-ASI-AUX | | | |
|-----------------------------------|---------------------|-------|------|----|
| Connection extension | TI 275274513 | V 1.2 | 4214 | EN |

Circuit diagram



Installation / option locations

The M12 Receptacle connector are intended for direct installation in a free M16 hole / threaded opening of the device series (see below).

| Device series | Recommended option location | Option locations |
|---|--|--|
| SK 135E * SK 180E * ... SK 190E * Housing SK 1xxE xxx-xxx-x (-C) | 4R / 4L (incoming) 5R / 5L (outgoing) |  |
| SK 200E Frequency inverter connecting unit SK TI4-x-2xx-x (-C) | 4R / 4L (incoming) 5R / 5L (outgoing) optional ** 6R / 6L, 7R / 7L, 8R / 8L |  |
| BUS technology box BUS connection unit SK TI4-TU-BUS (-C) | 1 / 2 / 3 / 4 optional *** 5R / 5L |  |

* The configuration capability of the respective Receptacle connector depends on its functionality with regard to the device series, e.g. the SK TIE-M12-SH Socket connector cannot be installed with the SK 1xxE housing.





** Size 1 – 3 with optional SK TIE4-M12-M16 connection extension, size 4 direct installation





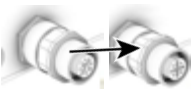
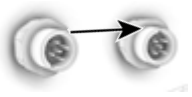
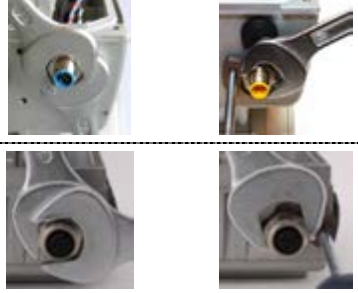

*** With optional SK TIE4-M20-M16 connection reduction

The installation position and mounting location (coding pin or coding groove on contact carrier) of the Socket connector is freely positionable and should be aligned (see installation step 6) such that angled M12 round connectors can also be connected in a way that avoids collisions.

The installation steps described in the following apply to the installation of the M12 Receptable connectors in the housing and in the frequency inverter connecting unit or the BUS connecting unit of an external technology box.

Installation steps for installation of the M12 Receptable connector

| | | |
|----|--|--|
| 1. | Remove M16 blind plug at the provided option location side (right / left) of the starter or frequency inverter housing or the connection unit. |  |
| | Remove M16 blind plug from the provided option location hole (bottom) of the BUS connection unit. |  |
| 2. | Screw the middle hexagonal nut towards the front using a size 17 open-ended spanner.  |  |

| | | | |
|---|---|---|---|
| 3. | EMC Twist associated wire pairs together (e. g. bus system, power supply, etc.). |  | |
| 4. | Screw M12 flanges component directly into the affected M12 threaded opening of the housing or connecting unit of the frequency inverter. Screw M12 Receptable connector into the relevant M16 threaded opening of the BUS connecting unit. |  | |
| Alternative option locations Connection extension SK TIE4-M12-M16 The M12 Receptable connector can alternatively be installed with an optional M12-M16 connection extension. First screw the M12 Receptable connector directly into the connection extension and then fit into the M12 threaded opening in the connection unit. For more information see Optional accessories | |  | |
| Connection reduction SK TIE4-M20-M16 The M12 Receptable connector can alternatively be installed with an optional M20-M16 connection reduction. First screw the M12 Receptable connector directly into the connection reduction and then fit into one of the side M12 threaded openings in the connection unit. For more information see Optional accessories | |  | |
| 5. | Align coding pin / coding groove vertically to 12 o'clock by rotating the front hexagonal nut. | Socket connector  | Plug connector  |
| 6. | Secure the front hexagonal nut with a 17 mm open-ended spanner. Screw the rear hexagonal nut to the connection unit or the starter or frequency inverter housing using a size 17 open-ended spanner or a special torque / installation wrench. Take the specified tightening torques into consideration, see technical data. |  | |
| 7. | Ensure that the M12 round plug connector or the cover cap is properly screwed onto the M12 Receptable connector and tightened. |  | |

NOTICE

Corrosion

Pay attention to leaktightness during the installation of all components (assembly, connection extension etc.). It must be ensured that all components are correctly seated and the tightening torques are adhered to when doing this.

In order to ensure that protection class **IP66** is complied with (concerns all devices with type key SK ...-C), another **pressure - leaktightness test** must be performed when the assembly work has been completed.

Failure to do this will allow moisture to penetrate the device, which will result in the risk of corrosion and short circuiting.

i Information

Torque / assembly wrench



In order to provide a secure, sealed and vibration-proof connection, the M12 connection extensions, which are equipped with a hexagonal threaded ring (size 17), should be tightened with special torque / assembly wrenches. For professional installation NORD recommends the use of commercially available assembly tools (M12, size 17) with an adjustable, defined tightening torque (e.g. from Murrelektronik).

Connections

The open cable ends of the extension / M12 Plug connector are connected to the terminal strip of the BUS connection unit (technology box), the BUS customer interface or the control terminal strip in the frequency inverter or the motor starter (see below).




Frequency inverter and motor starter


BUS connection unit SK TI4-TU-BUS (-C)

BUS technology box (SK TU4-... (-M12) / (-C))

Electrical connections



Contact assignments
4-pole
Plug connector
A-coded





Connection extension
M12 Plug connector
SK TIE4-M12-ASI-AUX

| Pin | Colour | Signal |
|-----|--------|--------|
| 1 | brown | ASI + |
| 2 | white | GND |
| 3 | blue | ASI - |
| 4 | black | +24 V |

Connecting terminals
SK 1x5E (set jumper position at device)
SK 22xE/ 23xE-...-AxB

| Contact | Designation |
|---------|-------------|
| 84 | ASI + |
| 40 | GND |
| 85 | ASI - |
| 44 | +24 V |

Optional accessories

i Information

M12 / M20 screw openings



Conductive connection extensions made from brass SK TIE4-M12-M16 from M12 to M16 or connection reductions SK TIE4-M20-M16 from M20 to M16 are optionally available for installing the M12 connection extensions in an M12 or M20 screw opening. For more information, see further documentation.

Further documentation (www.nord.com)

| Document | Designation |
|------------------------------|--|
| BU 0090 | AS interface (SK 300E ... SK 750E) |
| BU 0135 | Motor starter manual SK 105E ... SK 175E |
| BU 0200 | Frequency inverter manual SK 2xxE |
| TI 275280000 | Bus connection unit SK TI4-TU-BUS |

| Document | Designation |
|------------------------------|--------------------------------------|
| TI 275280500 | Bus connection unit SK TI4-TU-BUS-C |
| TI 275274510 | Connection extension SK TIE4-M12-M16 |
| TI 275274511 | Connection reduction SK TIE4-M20-M16 |
| TI 275274502 | Connection extension SK TIE4-M12-ASI |

SK TIE4-M12-ETH

Part number: 275 274 514

Ethernet output connection extension

M12 BUS system connector

Scope of delivery

| | | |
|-----|----------------------|-----------------|
| 1 x | M12 Socket connector | SK TIE4-M12-ETH |
| 1 x | Cover cap | green |

Delivery status with screwed-on connector cover



Field of use

The M12 Socket connector has open cable ends and wire end sleeves. It is used to make a pluggable connection using normal commercial M12 round plug connectors. It connects the Ethernet technology options with the outgoing Ethernet field bus cable at the output side.

Technical data

| Design | |
|---|--|
| Temperature range | -30 ... +90 °C |
| Contact insert Colour / Material | green plastic |
| Round plug connector Material | Metal, CuZn, nickel plated |
| Connection / Type Round plug connector | M12x1, adjustable Socket connector with flexible strand M16x1.5, metric screw thread |
| Contact set Contacts / Coding | |

| | |
|---|----------------------------|
| Weight | 23 g |
| Connector cover Colour / Material | green plastic |
| Protection class (screwed) | IP67 |
| Fastening | Hexagonal nut M16x1.5 * |
| Tightening torques * M12x1 Socket connector M16x1.5 Screw thread | 0.6 Nm 1.5 Nm |

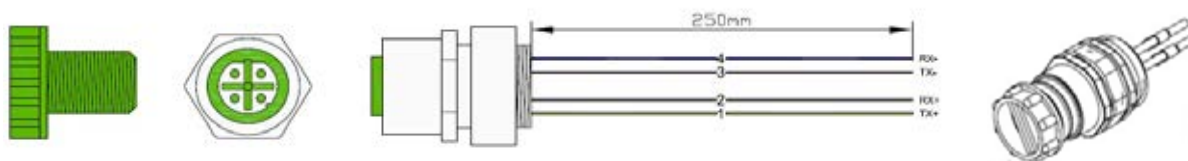
* Suitable assembly spanner commercially available (see Installation)

| Cable | |
|---|--------------------------|
| Number of conductors / Cross section | 4 x 0.34 mm ² |
| Wire strands / colours | UL / (ye, wt, or, bl) |
| Length of wire strands | 250 mm |
| Degree of fouling | 3 / 2 |

| | |
|-----------------------|--------------------------|
| Mech. service life: | min. 100 plugging cycles |
| Operating voltage | max. 250 V |
| Current rating | 4 A |
| Insulation resistance | ≥ 10 ⁸ Ω |

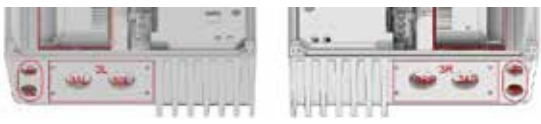


| Technical Information / Datasheet | SK TIE4-M12-ETH | | | |
|-----------------------------------|-----------------|-------|------|----|
| Connection extension | TI 275274514 | V 1.0 | 2414 | EN |

Circuit diagram



Installation / option locations




The M12 Receptacle connector are intended for direct installation in a free M16 hole / threaded opening of the device series (see below).





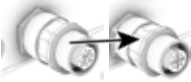



| Device series | Recommended option location | Option locations |
|--|--|--|
| SK 135E * SK 180E * ... SK 190E * Housing SK 1xxE xxx-xxx-x (-C) | 4R / 4L (incoming) 5R / 5L (outgoing) |  |
| SK 200E Frequency inverter connecting unit SK TI4-x-2xx-x (-C) | 4R / 4L (incoming) 5R / 5L (outgoing) optional ** 6R / 6L, 7R / 7L, 8R / 8L |  |
| BUS technology box BUS connection unit SK TI4-TU-BUS (-C) | 1 / 2 / 3 / 4 optional *** 5R / 5L |  |
| * The configuration capability of the respective Receptacle connector depends on its functionality with regard to the device series, e.g. the SK TIE-M12-SH Socket connector cannot be installed with the SK 1xxE housing. ** Size 1 – 3 with optional SK TIE4-M12-M16 connection extension, size 4 direct installation *** With optional SK TIE4-M20-M16 connection reduction | | |

The installation position and mounting location (coding pin or coding groove on contact carrier) of the Socket connector is freely positionable and should be aligned (see installation step 6) such that angled M12 round connectors can also be connected in a way that avoids collisions.

The installation steps described in the following apply to the installation of the M12 Receptacle connectors in the housing and in the frequency inverter connecting unit or the BUS connecting unit of an external technology box.

Installation steps for installation of the M12 Receptable connector

| | | |
|----|--|--|
| 1. | Remove M16 blind plug at the provided option location side (right / left) of the starter or frequency inverter housing or the connection unit. |  |
| | Remove M16 blind plug from the provided option location hole (bottom) of the BUS connection unit. |  |
| 2. | Screw the middle hexagonal nut towards the front using a size 17 open-ended spanner. |  |

| | | | |
|---|--|---|---|
| 3. | <p>EMC Twist associated wire pairs together (e. g. bus system, power supply, etc.).</p> |  | |
| 4. | <p>Screw M12 flanges component directly into the affected M12 threaded opening of the housing or connecting unit of the frequency inverter. Screw M12 Receptable connector into the relevant M16 threaded opening of the BUS connecting unit.</p> |  | |
| <p>Alternative option locations Connection extension SK TIE4-M12-M16 The M12 Receptable connector can alternatively be installed with an optional M12-M16 connection extension. First screw the M12 Receptable connector directly into the connection extension and then fit into the M12 threaded opening in the connection unit. For more information see Optional accessories</p> | |  | |
| <p>Connection reduction SK TIE4-M20-M16 The M12 Receptable connector can alternatively be installed with an optional M20-M16 connection reduction. First screw the M12 Receptable connector directly into the connection reduction and then fit into one of the side M12 threaded openings in the connection unit. For more information see Optional accessories</p> | |  | |
| 5. | <p>Align coding pin / coding groove vertically to 12 o'clock by rotating the front hexagonal nut.</p> | <p>Socket connector</p>  | <p>Plug connector</p>  |
| 6. | <p>Secure the front hexagonal nut with a 17 mm open-ended spanner. Screw the rear hexagonal nut to the connection unit or the starter or frequency inverter housing using a size 17 open-ended spanner or a special torque / installation wrench. Take the specified tightening torques into consideration, see technical data.</p> |  | |
| 7. | <p>Ensure that the M12 round plug connector or the cover cap is properly screwed onto the M12 Receptable connector and tightened.</p> |  | |

NOTICE

Corrosion

Pay attention to leaktightness during the installation of all components (assembly, connection extension etc.). It must be ensured that all components are correctly seated and the tightening torques are adhered to when doing this.

In order to ensure that protection class **IP66** is complied with (concerns all devices with type key SK ...-C), another **pressure - leaktightness test** must be performed when the assembly work has been completed.

Failure to do this will allow moisture to penetrate the device, which will result in the risk of corrosion and short circuiting.

i Information

Torque / assembly wrench



In order to provide a secure, sealed and vibration-proof connection, the M12 connection extensions, which are equipped with a hexagonal threaded ring (size 17), should be tightened with special torque / assembly wrenches. For professional installation NORD recommends the use of commercially available assembly tools (M12, size 17) with an adjustable, defined tightening torque (e.g. from Murrelektronik).

Connections

The open cable ends of the connection extension / M12 Socket connector are connected to the terminal strip of the BUS customer interface in the frequency inverter (see below).

i Information

Connection to technology box

An M12 Socket connector can only be connected to Ethernet-based BUS customer interfaces. The field bus is always connected to the BUS technology boxes at the front via one or both of the integrated M12 Male socket connectors.



| | | |
|---|---|--|
| Frequency inverter SK 2xxE | BUS technology boxes SK TU4-... (-C) see information above | BUS customer interfaces SK CU4-... Ethernet-based options |
|---|---|--|

Electrical connections



Connection extension
M12 Socket connector
SK TIE4-M12-ETH

BUS customer interfaces
SK CU4-ECT, SK CU4-POL,
SK CU4-EIP, SK CU4-PNT

Contact assignments
 4-pole
Socket connector
 D - coded

| Pin | Colour | Signal | Contact | Designation |
|-----|--------|--------|---------|---------------------|
| 1 | yellow | TX + | E1 / E5 | Transmission Data + |
| 2 | white | RX + | E3 / E7 | Receive Data + |
| 3 | orange | TX - | E2 / E6 | Transmission Data - |
| 4 | blue | RX - | E4 / E8 | Receive Data - |

E1 – E4 incoming
 E5 – E8 outgoing



Optional accessories

i Information

M12 / M20 screw openings



Conductive connection extensions made from brass SK TIE4-M12-M16 from M12 to M16 or connection reductions SK TIE4-M20-M16 from M20 to M16 are optionally available for installing the M12 connection extensions in an M12 or M20 screw opening. For more information, see further documentation.

Further documentation (www.nord.com)

| Document | Designation |
|------------------------------|--|
| BU 0180 | Frequency inverter manual SK 180E, SK 190E |
| BU 0200 | Frequency inverter manual SK 2xxE |
| BU 0270 | EtherCAT for SK 2xxE manual |
| BU 2100 | EtherNet/IP™ for SK 2xxE manual |
| BU 2200 | POWERLINK for SK 2xxE manual |
| TI 275274510 | Connection extension SK TIE4-M12-M16 |

| Document | Designation |
|------------------------------|--------------------------------------|
| TI 275274511 | Connection reduction SK TIE4-M20-M16 |
| TI 275271019 | Ethernet/IP bus interface SK CU4-EIP |
| TI 275271018 | POWERLINK bus interface SK CU4-POL |
| TI 275271015 | PROFINET bus interface SK CU4-PNT |
| TI 275271017 | EtherCAT bus interface SK CU4-ECT |

Technical Information / Datasheet

SK TIE4-M12-CAO-OUT

Part number: 275 274 515

CANopen output connection extension
M12 BUS system connector



Scope of delivery

| | | |
|-----|----------------------|---------------------|
| 1 x | M12 Socket connector | SK TIE4-M12-CAO-OUT |
| 1 x | Cover cap | grey |

As-delivered status with screwed-on connector cover



Field of use

The M12 Socket connector has open cable ends and wire end sleeves. It is used to make a pluggable connection using normal commercial M12 round plug connectors. It connects the CANopen technology option with the outgoing CANopen field bus cable at the output side.

Technical data

| Version | |
|---|--|
| Temperature range | -30 ... +90 °C |
| Contact insert Colour / Material | Grey / RAL 7042 Plastic |
| Round plug connector Material | Metal, CuZn, nickel plated |
| Connection / Type Round plug connector | M12x1, adjustable Socket connector with flexible strand M16x1.5, metric screw thread |
| Contact set Contacts / Coding | 5 pin, A - coded |

| | |
|--|----------------------------|
| Weight | 23 g |
| Connector cover Colour / Material | Grey / RAL 7042 Plastic |
| Protection class (screwed) | IP67 |
| Fastening | Hexagonal nut M16x1.5 * |
| Tightening torques * M12x1 Male socket connector M16x1.5 Screw thread | 0.6 Nm 1.5 Nm |

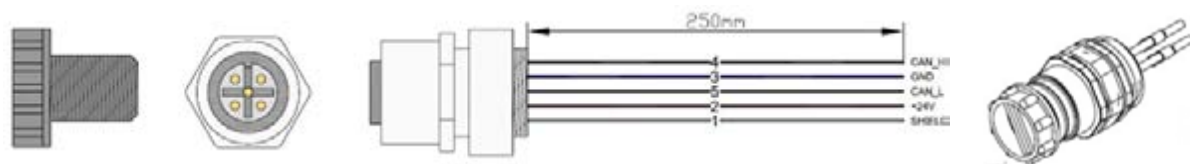
* Suitable assembly spanner commercially available (see Installation)

| Cable | |
|---|---------------------------|
| Number of conductors / Cross section | 5 x 0.34 mm ² |
| Wire strands / colours | UL / (wt, br, bl, bk, gr) |
| Length of wire strands | 250 mm |
| Degree of fouling | 3 / 2 |

| | |
|-----------------------|--------------------------|
| Mech. Service life | min. 100 plugging cycles |
| Operating voltage | max. 60 V |
| Current rating | 4 A |
| Insulation resistance | ≥ 10 ⁸ Ω |

| Connection extension | | | | SK TIE4-M12-CAO-OUT | |
|----------------------|-----------------------------|--------------|-------------|---------------------|---------------|
| 1.0 | First Version | 2414 | Bch | TI 275274515 | EN |
| version | reason for change(s) | issue | name | document | speech |

Circuit diagram



Installation / option locations

The M12 Receptacle connector are intended for direct installation in a free M16 hole / threaded opening of the device series (see below).

| Device series | Recommended option location | Option locations |
|--|--|------------------|
| SK 135E * SK 180E * ... SK 190E * Housing SK 1xxE xxx-xxx-x (-C)) | 4R / 4L (incoming) 5R / 5L (outgoing) | |
| SK 200E Frequency inverter connecting unit SK TI4-x-2xx-x (-C) | 4R / 4L (incoming) 5R / 5L (outgoing) optional ** 6R / 6L, 7R / 7L, 8R / 8L | |
| BUS technology box BUS connection unit SK TI4-TU-BUS (-C) | 1 / 2 / 3 / 4 optional *** 5R / 5L | |





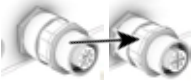



* The configuration capability of the respective Receptacle connector depends on its functionality with regard to the device series, e.g. the SK TIE-M12-SH Socket connector cannot be installed with the SK 1xxE housing.
 ** Size 1 – 3 with optional SK TIE4-M12-M16 connection extension, size 4 direct installation
 *** With optional SK TIE4-M20-M16 connection reduction

The installation position and mounting location (coding pin or coding groove on contact carrier) of the Socket connector is freely positionable and should be aligned (see installation step 6) such that angled M12 round connectors can also be connected in a way that avoids collisions.

The installation steps described in the following apply to the installation of the M12 Receptable connectors in the housing and in the frequency inverter connecting unit or the BUS connecting unit of an external technology box.

Installation steps for installation of the M12 Receptable connector

| | | |
|----|--|--|
| 1. | Remove M16 blind plug at the provided option location side (right / left) of the starter or frequency inverter housing or the connection unit. | |
| | Remove M16 blind plug from the provided option location hole (bottom) of the BUS connection unit. | |
| 2. | Screw the middle hexagonal nut towards the front using a size 17 open-ended spanner. | |

| | | | |
|---|--|---|---|
| 3. | <p>EMC Twist associated wire pairs together (e. g. bus system, power supply, etc.).</p> |  | |
| 4. | <p>Screw M12 flanges component directly into the affected M12 threaded opening of the housing or connecting unit of the frequency inverter. Screw M12 Receptable connector into the relevant M16 threaded opening of the BUS connecting unit.</p> |  | |
| <p>Alternative option locations Connection extension SK TIE4-M12-M16 The M12 Receptable connector can alternatively be installed with an optional M12-M16 connection extension. First screw the M12 Receptable connector directly into the connection extension and then fit into the M12 threaded opening in the connection unit. For more information see Optional accessories</p> | |  | |
| <p>Connection reduction SK TIE4-M20-M16 The M12 Receptable connector can alternatively be installed with an optional M20-M16 connection reduction. First screw the M12 Receptable connector directly into the connection reduction and then fit into one of the side M12 threaded openings in the connection unit. For more information see Optional accessories</p> | |  | |
| 5. | <p>Align coding pin / coding groove vertically to 12 o'clock by rotating the front hexagonal nut.</p> | <p>Socket connector</p>  | <p>Plug connector</p>  |
| 6. | <p>Secure the front hexagonal nut with a 17 mm open-ended spanner. Screw the rear hexagonal nut to the connection unit or the starter or frequency inverter housing using a size 17 open-ended spanner or a special torque / installation wrench. Take the specified tightening torques into consideration, see technical data.</p> |  | |
| 7. | <p>Ensure that the M12 round plug connector or the cover cap is properly screwed onto the M12 Receptable connector and tightened.</p> |  | |

NOTICE

Corrosion

Pay attention to leaktightness during the installation of all components (assembly, connection extension etc.). It must be ensured that all components are correctly seated and the tightening torques are adhered to when doing this.

In order to ensure that protection class **IP66** is complied with (concerns all devices with type key SK ...-C), another **pressure - leaktightness test** must be performed when the assembly work has been completed.

Failure to do this will allow moisture to penetrate the device, which will result in the risk of corrosion and short circuiting.

i Information

Torque / assembly wrench



In order to provide a secure, sealed and vibration-proof connection, the M12 connection extensions, which are equipped with a hexagonal threaded ring (size 17), should be tightened with special torque / assembly wrenches. For professional installation NORD recommends the use of commercially available assembly tools (M12, size 17) with an adjustable, defined tightening torque (e.g. from Murrelektronik).

Connections

The open cable ends of the connection extension / M12 Socket connector are connected to the terminal strip of the BUS connection unit (technology box) or the BUS customer interface in the frequency inverter (see below).



| | | |
|--|---|---|
| BUS connection unit SK TI4-TU-BUS (-C) | BUS technology box SK TU4-CAO (-M12) / (-C) | BUS customer interface SK CU4-CAO |
|--|---|---|

Electrical connections



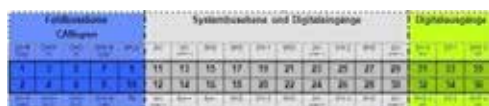
Connection extension
M12 Socket connector
K TIE4-M12-CAO-OUT

BUS technology box
SK TU4-CAO (-M12) / (-C)
BUS connection unit
SK TI4-TU-BUS (-C)

BUS customer interface
SK CU4-CAO

Contact assignments
 5-pole
Socket connector
 A - coded

| Pin | Colour | Signal | Contact | Designation | Contact | Designation |
|-----|--------|--------|---------|-------------|---------------|-------------|
| 1 | white | Shield | 9 | SHLD | 90 | SHLD |
| 2 | brown | +24 V | 2 | 24V-B CAO | 45 | 24V Bus |
| 3 | blue | GND | 8 | GND B CAO | 46 | GND Bus |
| 4 | black | CAN_H | 4 | CAO+ OUT | 75 (outgoing) | CANopen+ |
| 5 | grey | CAN_L | 6 | CAO- OUT | 76 (outgoing) | CANopen- |



Optional accessories

i Information

M12 / M20 screw openings



Conductive connection extensions made from brass SK TIE4-M12-M16 from M12 to M16 or connection reductions SK TIE4-M20-M16 from M20 to M16 are optionally available for installing the M12 connection extensions in an M12 or M20 screw opening. For more information, see further documentation.

Further documentation (www.nord.com)

| Document | Designation |
|------------------------------|--|
| BU 0180 | Frequency inverter manual SK 180E, SK 190E |
| BU 0200 | Frequency inverter manual SK 2xxE |
| BU 0260 | Manual CANopen for SK 200E |
| BU 0280 | Manual DEVICENET for SK 200E |
| TI 275280000 | Bus connection unit SK TI4-TU-BUS |
| TI 275280500 | Bus connection unit SK TI4-TU-BUS-C |
| TI 275274510 | Connection extension SK TIE4-M12-M16 |
| TI 275274511 | Connection reduction SK TIE4-M20-M16 |
| TI 275271001 | CANopen – bus interface SK CU4-CAO |
| TI 275281101 | CANopen – bus interface SK TU4-CAO |

| Document | Designation |
|------------------------------|---|
| TI 275281151 | CANopen – bus interface SK TU4-CAO-C |
| TI 275281201 | CANopen – bus interface SK TU4-CAO-M12 |
| TI 275281251 | CANopen – bus interface SK TU4-CAO-M12-C |
| TI 275271002 | DeviceNet – bus interface SK CU4-DEV |
| TI 275281102 | DeviceNet – bus interface SK TU4-DEV |
| TI 275281152 | DeviceNet – bus interface SK TU4-DEV-C |
| TI 275281202 | DeviceNet – bus interface SK TU4-DEV-M12 |
| TI 275281252 | DeviceNet – bus interface SK TU4-DEV-M12-C |
| TI 275274501 | Connection extension SK TIE4-M12-CAO |

SK TIE4-M12-INP

Part number: 275 274 516

Connection extension for initiators and 24 V
M12 control system connector

Scope of delivery

| | | |
|-----|--------------------|-----------------|
| 1 x | M12 plug connector | SK TIE4-M12-INP |
| 1 x | Cover cap | black |

As-delivered status with screwed-on connector cover



Usage area

The M12 plug connector has open cable ends and wire end sleeves. It is used to make a pluggable connection using normal commercial M12 round plug connectors. It connects the technology option and the control terminal strip with the outgoing control signal cable at the input side.

i Information

Connecting variants

The three "variably" used connecting cables (IN 1, IN 2 und IN 3) can be used differently depending on the application (e.g. 24 V feeds, digital inputs etc.). More information can be found in the associated customer specification.

Technical data

| Version | |
|---|--|
| Temperature range | -30 ... +90 °C |
| Contact insert Colour / Material | Black / RAL 9005 Plastic |
| Round plug connector Material | Metal, CuZn, nickel plated |
| Connection / Type Round plug connector | M12x1, adjustable plug connector with flexible strand M16x1.5, metric screw thread |
| Contact set Contacts / Coding | 5 pin, A - coded |

| | |
|--|-----------------------------|
| Weight | 23 g |
| Connector cover Colour / Material | Black / RAL 9005 Plastic |
| Protection class (screwed) | IP67 |
| Fastening | Hexagonal nut M16x1.5 * |
| Tightening torques * M12x1 Plug connector M16x1.5 Screw thread | 0.6 Nm 1.5 Nm |

* Suitable assembly spanner commercially available (see Installation)

| Cable | |
|------------------------|--------------------------|
| Number of conductors / | 5 x 0.34 mm ² |

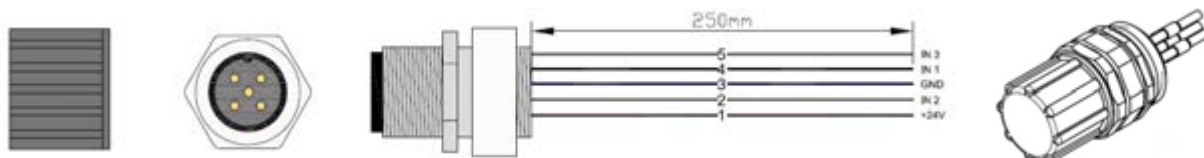
| | |
|--------------------|--------------------------|
| Mech. Service life | min. 100 plugging cycles |
|--------------------|--------------------------|

| Technical Information / Datasheet | SK TIE4-M12-INP | | | |
|-----------------------------------|-----------------|-------|------|----|
| Connection extension | TI 275274516 | V 1.0 | 2414 | EN |

Connection extension – SK TIE4-M12-INP

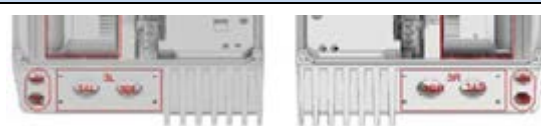


| | | | |
|------------------------|---------------------------|-----------------------|--------------------|
| Cross section | | | |
| Wire strands / colours | UL / (br, wt, bl, bk, rd) | Operating voltage | max. 250 V |
| Length of wire strands | 250 mm | Current rating | 4 A |
| Degree of fouling | 3 / 2 | Insulation resistance | $\geq 10^8 \Omega$ |

Circuit diagram



Installation / option locations









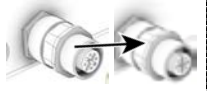
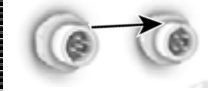
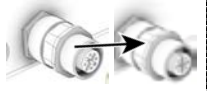
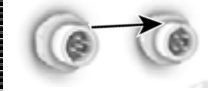
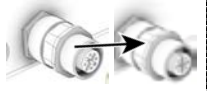
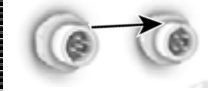
The M12 Receptacle connector are intended for direct installation in a free M16 hole / threaded opening of the device series (see below).



| Device series | Recommended option location | Option locations |
|---|--|--|
| SK 135E * SK 180E * ... SK 190E * Housing SK 1xxE xxx-xxx-x (-C) | 4R / 4L (incoming) 5R / 5L (outgoing) |  |
| SK 200E Frequency inverter connecting unit SK TI4-x-2xx-x (-C) | 4R / 4L (incoming) 5R / 5L (outgoing) optional ** 6R / 6L, 7R / 7L, 8R / 8L |  |
| BUS technology box BUS connection unit SK TI4-TU-BUS (-C) | 1 / 2 / 3 / 4 optional *** 5R / 5L |  |
| <p>* The configuration capability of the respective Receptacle connector depends on its functionality with regard to the device series, e.g. the SK TIE-M12-SH Plug connector cannot be installed with the SK 1xxE housing.</p> <p>** Size 1 – 3 with optional SK TIE4-M12-M16 connection extension, size 4 direct installation</p> <p>*** With optional SK TIE4-M20-M16 connection reduction</p> | | |

The installation position and mounting location (coding pin or coding groove on contact carrier) of the Plug connector is freely positionable and should be aligned (see installation step 6) such that angled M12 round connectors can also be connected in a way that avoids collisions.

The installation steps described in the following apply to the installation of the M12 Receptable connectors in the housing and in the frequency inverter connecting unit or the BUS connecting unit of an external technology box.

Installation steps for installation of the M12 Receptable connector

| | | | | |
|--|--|---|--|---|
| 1. | Remove M16 blind plug at the provided option location side (right / left) of the starter or frequency inverter housing or the connection unit. |  | | |
| Remove M16 blind plug from the provided option location hole (bottom) of the BUS connection unit. | |  | | |
| 2. | Screw the middle hexagonal nut towards the front using a size 17 open-ended spanner.  |  | | |
| 3. | EMC Twist associated wire pairs together (e. g. bus system, power supply, etc.). |  | | |
| 4. | Screw M12 flanges component directly into the affected M12 threaded opening of the housing or connecting unit of the frequency inverter. Screw M12 Receptable connector into the relevant M16 threaded opening of the BUS connecting unit. |  | | |
| <p>Alternative option locations</p> <p>Connection extension SK TIE4-M12-M16</p> <p>The M12 Receptable connector can alternatively be installed with an optional M12-M16 connection extension.</p> <p>First screw the M12 Receptable connector directly into the connection extension and then fit into the M12 threaded opening in the connection unit. For more information see Optional accessories</p> | |  | | |
| <p>Connection reduction SK TIE4-M20-M16</p> <p>The M12 Receptable connector can alternatively be installed with an optional M20-M16 connection reduction.</p> <p>First screw the M12 Receptable connector directly into the connection reduction and then fit into one of the side M12 threaded openings in the connection unit. For more information see Optional accessories</p> | |  | | |
| 5. | Align coding pin / coding groove vertically to 12 o'clock by rotating the front hexagonal nut. | <table border="1" style="width: 100%;"> <tr> <td data-bbox="997 1534 1204 1691"> <p>Socket connector</p>  </td> <td data-bbox="1204 1534 1412 1691"> <p>Plug connector</p>  </td> </tr> </table> | <p>Socket connector</p>  | <p>Plug connector</p>  |
| <p>Socket connector</p>  | <p>Plug connector</p>  | | | |

| | | |
|-----------|--|---|
| <p>6.</p> | <p>Secure the front hexagonal nut with a 17 mm open-ended spanner. Screw the rear hexagonal nut to the connection unit or the starter or frequency inverter housing using a size 17 open-ended spanner or a special torque / installation wrench. Take the specified tightening torques into consideration, see technical data.</p> |  |
| <p>7.</p> | <p>Ensure that the M12 round plug connector or the cover cap is properly screwed onto the M12 Receptable connector and tightened.</p> |  |

NOTICE

Corrosion

Pay attention to leaktightness during the installation of all components (assembly, connection extension etc.). It must be ensured that all components are correctly seated and the tightening torques are adhered to when doing this.

In order to ensure that protection class **IP66** is complied with (concerns all devices with type key SK ...-C), another **pressure - leaktightness test** must be performed when the assembly work has been completed.

Failure to do this will allow moisture to penetrate the device, which will result in the risk of corrosion and short circuiting.

Information

Torque / assembly wrench



In order to provide a secure, sealed and vibration-proof connection, the M12 connection extensions, which are equipped with a hexagonal threaded ring (size 17), should be tightened with special torque / assembly wrenches. For professional installation NORD recommends the use of commercially available assembly tools (M12, size 17) with an adjustable, defined tightening torque (e.g. from Murrelektronik).

Connections

The open cable ends of the connection extension / M12 panel connector are connected to the terminal strip of the BUS connection unit (technology box), the BUS customer interface or the control terminal strip in the frequency inverter or motor starter (see below).



| | | | |
|---|--|---|---|
| Frequency inverter and motor starter | BUS connection unit SK TI4-TU-BUS (-C) | Technology box SK TU4-... (-M12) / (-C) | BUS customer interface SK CU4-... |
|---|--|---|---|

Electrical connections

| | | | | |
|--|---|--|---|--|
| | Connection extension M12 panel connector SK TIE4-M12-IMP | Connection terminals* SK 1x5E, SK 180E...SK 190E, SK 2xxE | Technology box SK TU4-... (-M12) / (-C) Connection unit SK TI4-TU-BUS (-C) | Customer interface SK CU4-... |
|--|---|--|---|--|

| | Pin | Colour | Signal | Contact | Designation | Contact | Designation | Contact | Designation |
|------------|-----|--------|--------|-------------|-------------|-------------|-------------|-------------|-------------|
| Initiators | 1 | brown | +24 V | 43/44 ** | 24 V | 11/12 | 24 V | 44 | +24 V |
| | 2 | white | IN 2 | as required | | as required | | as required | |
| | 3 | blue | GND | 40 | GND | 15/17 | GND | 40 | GND Bus |
| | 4 | black | IN 1 | as required | | as required | | as required | |
| | 5 | gr | IN 3 | as required | | as required | | as required | |

* For series SK1xxE devices: Replace existing pin fork terminal with 8mm wire end sleeves, otherwise a secure contact cannot be guaranteed over the long term.

** 43: 24 V internal, SK 2x0E; 44: 24 V external, SK 2x5E

Contact assignments
5-pole
Panel connector
A - coded

Optional accessories

Information

M12 / M20 screw openings



Conductive connection extensions made from brass SK TIE4-M12-M16 from M12 to M16 or connection reductions SK TIE4-M20-M16 from M20 to M16 are optionally available for installing the M12 connection extensions in an M12 or M20 screw opening. For more information, see further documentation.

Further documentation (www.nord.com)

| Document | Name |
|------------------------------|--|
| BU 0135 | Motor starter manual SK 105E ... SK 175E |
| BU 0180 | Frequency inverter manual SK 180E, SK 190E |
| BU 0200 | SK 2xxE frequency inverter manual |
| TI 275280000 | Bus connection unit SK TI4-TU-BUS |
| TI 275280500 | Bus connection unit SK TI4-TU-BUS-C |
| TI 275274510 | Connection extension SK TIE4-M12-M16 |
| TI 275274511 | Connection reduction SK TIE4-M20-M16 |
| TI 275271010 | Electronic brake rectifier, SK CU4-MBR |
| TI 275271011 | Setpoint converter, SK CU4-REL |
| TI 275271006 | IO extension SK CU4-IOE |
| TI 275281106 | IO extension SK TU4-IOE |
| TI 275281156 | IO extension SK TU4-IOE-C |
| TI 275281206 | IO extension SK TU4-IOE-M12 |
| TI 275281256 | IO extension SK TU4-IOE-M12-C |
| TI 275271108 | 24 V power supply SK CU4-24V-123 |
| TI 275271109 | 24 V power supply SK CU4-24V-140 |
| TI 275281108 | 24 V power supply SK TU4-24V-123 |
| TI 275281109 | 24 V power supply SK TU4-24V-140 |
| TI 275281158 | 24 V power supply SK TU4-24V-123-C |
| TI 275281159 | 24 V power supply SK TU4-24V-123-C |
| TI 275271000 | PROFIBUS DP bus interface SK CU4-PBR |
| TI 275281000 | PROFIBUS DP bus interface SK TU4-PBR |
| TI 275281150 | PROFIBUS DP bus interface SK TU4-PBR-C |
| TI 275281200 | PROFIBUS DP bus interface SK TU4-PBR-M12 |
| TI 275281250 | PROFIBUS DP bus interface SK TU4-PBR-M12-C |

| Document | Name |
|------------------------------|---|
| TI 275271001 | CANopen bus interface SK CU4-CAO |
| TI 275281101 | CANopen bus interface SK TU4-CAO |
| TI 275281151 | CANopen bus interface SK TU4-CAO-C |
| TI 275281201 | CANopen bus interface SK TU4-CAO-M12 |
| TI 275281251 | CANopen bus interface SK TU4-CAO-M12-C |
| TI 275271002 | DeviceNet bus interface SK CU4-DEV |
| TI 275281102 | DeviceNet bus interface SK TU4-DEV |
| TI 275281152 | DeviceNet bus interface SK TU4-DEV-C |
| TI 275281202 | DeviceNet bus interface SK TU4-DEV-M12 |
| TI 275281252 | DeviceNet bus interface SK TU4-DEV-M12-C |
| TI 275271019 | Ethernet/IP bus interface SK CU4-EIP |
| TI 275281119 | Ethernet/IP bus interface SK TU4-EIP |
| TI 275281169 | Ethernet/IP bus interface SK TU4-EIP-C |
| TI 275271018 | POWERLINK bus interface SK CU4-POL |
| TI 275281118 | POWERLINK bus interface SK TU4-POL |
| TI 275281168 | POWERLINK bus interface SK TU4-POL-C |
| TI 275271015 | PROFINET bus interface SK CU4-PNT |
| TI 275281115 | PROFINET bus interface SK TU4-PNT |
| TI 275281165 | PROFINET bus interface SK TU4-PNT-C |
| TI 275281122 | PROFINET bus interface SK TU4-PNT-M12 |
| TI 275281172 | PROFINET bus interface SK TU4-PNT-M12-C |
| TI 275271017 | EtherCAT bus interface SK CU4-ECT |
| TI 275281117 | EtherCAT bus interface SK TU4-ECT |
| TI 275281167 | EtherCAT bus interface SK TU4-ECT-C |

SK TIE4-M12-INI

Part number: 275 274 517

Connection extension for initiators and actuators

M12 control system connector

Scope of delivery

| | | |
|-----|---------------------|--------------------|
| 1 x | M12 cable connector | SK TIE4-M12-INI-1M |
|-----|---------------------|--------------------|



Field of use

The M12 cable connector has open cable ends (1m) and wire end sleeves. It is used to make a pluggable connection using normal commercial M12 round plug connectors. The connection is via a standard cable entry. It connects the technology option with the outgoing control signal cable at the output side.

Technical data

| Version | |
|---|--|
| Temperature range | -25 ... +80 °C |
| Contact insert Colour / Material | green / RAL 6018 Plastic |
| Round plug connector Material | Metal, CuZn, nickel plated |
| Connection / Type Round plug connector | M12x1, Socket connector with flexible strand |
| Contact set Contacts / Coding | 5 pin, A - coded |

| | |
|------------------------------------|----------------------|
| Weight | 35 g |
| Cabel / cable sheath | AWG 22 Black / PUR |
| Protection class (screwed) | IP67 |
| Fastening | Separate cable entry |
| Tightening torques M12x1 Socket | 0.6 Nm |

| Cable | |
|---|---------------------------------|
| Number of conductors / Cross section | 5 x 0.34 mm ² |
| Wire strands / colours | UL / (br, wt, bl, bk, gn/ye) |
| Length of wire strands | 1000 mm |
| Degree of fouling | 3 |

| | |
|-----------------------|--------------------------|
| Mech. Service life | min. 100 plugging cycles |
| Operating voltage | max. 125 V AC/DC |
| Current rating | 4 A |
| Rated impulse voltage | 1.5 kV |


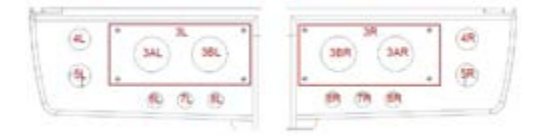

| Technical Information / Datasheet | SK TIE4-M12-INI-1M | | | |
|-----------------------------------|--------------------|-------|------|----|
| Connection extension | TI 275274517 | V 1.0 | 1515 | EN |

Graphic illustration



Installation / option locations

The cable connectors are to be mounted in a free fitting of the following series of devices via a suitable cable entry (not included).

| Device series | Recommended option location | Option locations |
|---|---|--|
| SK 135E SK 180E ... SK 190E Housing SK 1xxE xxx-xxx-x (-C) | 4R / 4L (incoming) 5R / 5L (outgoing) |  |
| SK 200E Frequency inverter connecting unit SK TI4-x-2xx-x (-C) | 4R / 4L (incoming) 5R / 5L (outgoing) optional 6R / 6L, 7R / 7L, 8R / 8L |  |
| BUS technology box BUS connection unit SK TI4-TU-BUS (-C) | 1 / 2 / 3 / 4 optional 5R / 5L |  |

NOTICE

Corrosion

Pay attention to leaktightness during the installation of all components (assembly, connection extension etc.). It must be ensured that all components are correctly seated and the tightening torques are adhered to when doing this.

In order to ensure that protection class **IP66** is complied with (concerns all devices with type key SK ...-C), another **pressure - leaktightness test** must be performed when the assembly work has been completed.

Failure to do this will allow moisture to penetrate the device, which will result in the risk of corrosion and short circuiting.


Connections

The open cable ends of the connection extension are connected to the terminal strip of the BUS connection unit (technology box), the customer interface or the control terminal strip in the frequency inverter or motor starter (see below).



| | | | |
|---|--|---|---|
| Frequency inverter and motor starter | BUS connection unit SK T14-TU-BUS (-C) | Technology box SK TU4-... (-M12) / (-C) | Customer interface SK CU4-... |
|---|--|---|---|

Electrical connections



Connection extension
M12 Socket connector
SK TIE4-M12-INI-1M

Connection terminals***
SK 1x5E,
SK 180E ... SK 190E,
SK 2xxE

Technology box
SK TU4-... (-M12) / (-C)
Connection unit
SK T14-TU-BUS (-C)



Customer interface
SK CU4-...

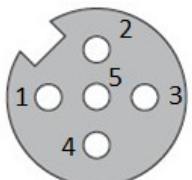


| | Initiators | | | | | Actuators* | | | | |
|--|------------|--------|---------|----------|-------------|-------------|-------------|---------|-------------|--|
| | Pin | Colour | Signal | Contact | Designation | Contact | Designation | Contact | Designation | |
| | 1 | brown | +24 V | 43/44 ** | 24 V | 11/12 | 24 V | 44 | +24 V | |
| | 2 | white | DIN 1-4 | 21-24 | DIN1-4 | 19/20/25/26 | DIN 1-4 | C1/C2 | DIN 1-4 | |
| | 3 | blue | GND | 40 | GND | 15/17 | GND | 40 | GND Bus | |
| | 4 | black | DIN 1-4 | 21-24 | DIN 1-4 | 19/20/25/26 | DIN 1-4 | C1/C2 | DIN 1-4 | |
| | 5 | gn/ye | nc. | | | | | | | |

| | Initiators | | | | | Actuators* | | | | |
|--|------------|--------|--------|---------|-------------|------------|-------------|---------|-------------|--|
| | Pin | Colour | Signal | Contact | Designation | Contact | Designation | Contact | Designation | |
| | 1 | brown | +24 V | 43 | +24 V | 44 | 24 V | 31/32 | 24 V | |
| | 2 | white | DOUT 1 | 1 | DOUT 1 | 1 | DOUT 1 | 33 | DOUT 1 | |
| | 3 | blue | GND | 40 | GND | 40 | GND | 35/36 | 0 V | |
| | 4 | black | DOUT 2 | 3 | DOUT 2 | 3 | DOUT 2 | 34 | DOUT 2 | |
| | 5 | gn/ye | nc. | | | | | | | |

* Only possible with series SK 2x0E devices
 ** 43: 24 V internal, SK 2x0E; 44: 24 V external, SK 2x5E
 *** For series SK1xxE devices: Replace existing pin fork terminals with 8 mm wire end sleeves, otherwise secure contact cannot be guaranteed over the long term.

Contact assignments
 5-pole
Socket connector
 A - coded

SK TIE4-M12-SH-IN

Part number: 275 274 519

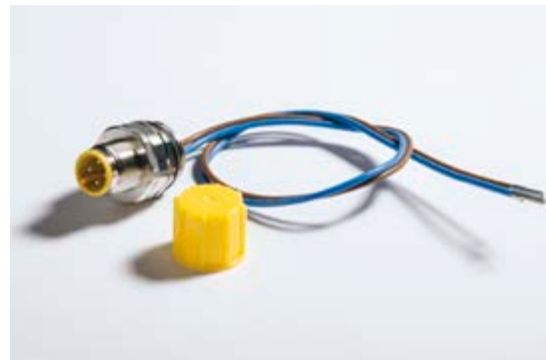
Connection extension "Safe Stop" input

M12 control system plug connector

Scope of supply

| | | |
|-----|----------------------|-------------------|
| 1 x | M12 Socket connector | SK TIE4-M12-SH-IN |
| 1 x | Cover cap | yellow |

As-delivered status with screwed-on connector cover



Field of use

The M12 Socket connector has open cable ends and wire end sleeves. It is used to make a pluggable connection using normal commercial M12 round plug connectors. It connects the control terminal strip with the outgoing control signal cable at the output side.

Technical data

| Version | |
|---|--|
| Temperature range | -30 ... +90 °C |
| Contact insert Color / Material | Grey / RAL 1021 Plastic |
| Round plug connector Material | Metal, CuZn, nickel plated |
| Connection / Type Round plug connector | M12x1, adjustable Socket connector with flexible strand M16x1.5, metric screw thread |
| Contact set Contacts / Coding | 5 pin, A - coded |

| | |
|---|------------------------------|
| Weight | 23 g |
| Connector cover Color / Material | Yellow / RAL 1021 Plastic |
| Protection class (screwed) | IP67 |
| Fastening | Hexagonal nut M16x1.5 * |
| Tightening torques * M12x1 Socket connector M16x1.5 Screw thread | 0.6 Nm 1.5 Nm |

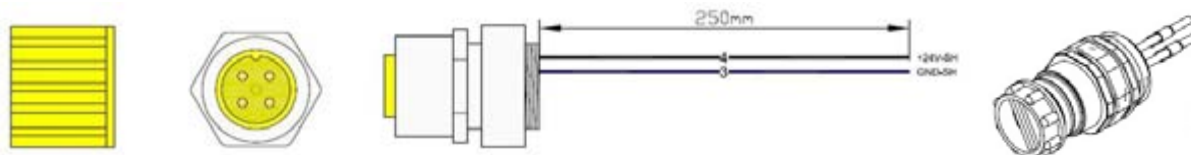
* Suitable assembly spanner commercially available (see Installation)

| Technical Information / Datasheet | SK TIE4-M12-SH-IN | | | |
|-----------------------------------|-------------------|-------|------|----|
| Connection extension | TI 275274519 | V 1.0 | 1417 | EN |

| Cable | |
|--------------------------------------|--------------------------|
| Number of conductors / Cross section | 2 x 0.34 mm ² |
| Wire strands / colors | UL / (bl, sw) |
| Length of wire strands | 250 mm |
| Degree of fouling | 3 / 2 |


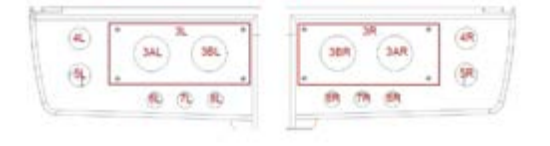

| | |
|-----------------------|--------------------------|
| Mech. Service life | Min. 100 plugging cycles |
| Operating voltage | Max. 60 V |
| Current rating | 4 A |
| Insulation resistance | ≥ 10 ⁸ Ω |

Circuit diagram



Installation / option locations

The M12 Receptacle connector are intended for direct installation in a free M16 hole / threaded opening of the device series (see below).

| Device series | Recommended option location | Option locations |
|--|--|--|
| SK 135E * SK 180E * ... SK 190E * Housing SK 1xxE xxx-xxx-x (-C)) | 4R / 4L (incoming) 5R / 5L (outgoing) |  |
| SK 200E Frequency inverter connecting unit SK TI4-x-2xx-x (-C) | 4R / 4L (incoming) 5R / 5L (outgoing) optional ** 6R / 6L, 7R / 7L, 8R / 8L |  |
| BUS technology box BUS connection unit SK TI4-TU-BUS (-C) | 1 / 2 / 3 / 4 optional *** 5R / 5L |  |

* The configuration capability of the respective Receptacle connector depends on its functionality with regard to the device series, e.g. the SK TIE-M12-SH Socket connector cannot be installed with the SK 1xxE housing.









** Size 1 – 3 with optional SK TIE4-M12-M16 connection extension, size 4 direct installation

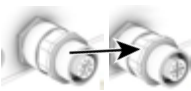
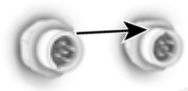




*** With optional SK TIE4-M20-M16 connection reduction

The installation position and mounting location (coding pin or coding groove on contact carrier) of the Socket connector is freely positionable and should be aligned (see installation step 6) such that angled M12 round connectors can also be connected in a way that avoids collisions.

The installation steps described in the following apply to the installation of the M12 Receptacle connectors in the housing and in the frequency inverter connecting unit or the BUS connecting unit of an external technology box.

Installation steps for installation of the M12 Receptable connector

| | | |
|-----------|---|--|
| <p>1.</p> | <p>Remove M16 blind plug at the provided option location side (right / left) of the starter or frequency inverter housing or the connection unit.</p> |  |
| | <p>Remove M16 blind plug from the provided option location hole (bottom) of the BUS connection unit.</p> |  |
| <p>2.</p> | <p>Screw the middle hexagonal nut towards the front using a size 17 open-ended spanner.</p>  |  |
| <p>3.</p> | <p>EMC Twist associated wire pairs together (e. g. bus system, power supply, etc.).</p> |  |
| <p>4.</p> | <p>Screw M12 flanges component directly into the affected M12 threaded opening of the housing or connecting unit of the frequency inverter. Screw M12 Receptable connector into the relevant M16 threaded opening of the BUS connecting unit.</p> |  |
| | <p>Alternative option locations Connection extension SK TIE4-M12-M16 The M12 Receptable connector can alternatively be installed with an optional M12-M16 connection extension. First screw the M12 Receptable connector directly into the connection extension and then fit into the M12 threaded opening in the connection unit. For more information see Optional accessories</p> |  |
| | <p>Connection reduction SK TIE4-M20-M16 The M12 Receptable connector can alternatively be installed with an optional M20-M16 connection reduction. First screw the M12 Receptable connector directly into the connection reduction and then fit into one of the side M12 threaded openings in the connection unit. For more information see Optional accessories</p> |  |

| | | | |
|----|---|---|---|
| 5. | Align coding pin / coding groove vertically to 12 o'clock by rotating the front hexagonal nut. | Socket connector  | Plug connector  |
| 6. | Secure the front hexagonal nut with a 17 mm open-ended spanner. Screw the rear hexagonal nut to the connection unit or the starter or frequency inverter housing using a size 17 open-ended spanner or a special torque / installation wrench. Take the specified tightening torques into consideration, see technical data. |  |  |
| 7. | Ensure that the M12 round plug connector or the cover cap is properly screwed onto the M12 Receptable connector and tightened. |  |  |

NOTICE

Corrosion

Pay attention to leaktightness during the installation of all components (assembly, connection extension etc.). It must be ensured that all components are correctly seated and the tightening torques are adhered to when doing this.

In order to ensure that protection class **IP66** is complied with (concerns all devices with type key SK ...-C), another **pressure - leaktightness test** must be performed when the assembly work has been completed.

Failure to do this will allow moisture to penetrate the device, which will result in the risk of corrosion and short circuiting.

Information

Torque / assembly wrench



In order to provide a secure, sealed and vibration-proof connection, the M12 connection extensions, which are equipped with a hexagonal threaded ring (size 17), should be tightened with special torque / assembly wrenches. For professional installation NORD recommends the use of commercially available assembly tools (M12, size 17) with an adjustable, defined tightening torque (e.g. from Murrelektronik).

Connections

The open cable ends of the connection extension / M12 Socket connector are connected to the terminal strip of the control terminals in the frequency inverter (see below).



**Frequency inverter
NORDAC FLEX**



**BUS connection unit
SK TI4-TU-BUS (-C)**



**BUS technology box
SK TU4-... (-M12) / (-C)**

Electrical connections



**Connection extension
M12 Male connector
SK TIE4-M12-SH**

**Connection terminals
NORDAC FLEX
SK 21xE, SK 23xE**

Contact assignments
2-pole

| Pin | Colour | Signal | Contact | Designation |
|-----|--------|----------|---------|-------------|
| 3 | blue | GND SH | 88 | GND SH |
| 4 | black | +24 V SH | 89 | +24 V SH |

**Male connector
A - coded**



Optional accessories

i Information

M12 / M20 screw openings



Conductive connection extensions made from brass SK TIE4-M12-M16 from M12 to M16 or connection reductions SK TIE4-M20-M16 from M20 to M16 are optionally available for installing the M12 connection extensions in an M12 or M20 screw opening. For more information, see further documentation.

Further documentation (www.nord.com)

| Document | Designation |
|------------------------------|--------------------------------------|
| BU 0200 | Frequency inverter manual SK 2xxE |
| BU 0230 | Functional safety for SK 200E manual |
| TI 275280000 | Bus connection unit SK TI4-TU-BUS |

| Document | Designation |
|------------------------------|--------------------------------------|
| TI 275280500 | Bus connection unit SK TI4-TU-BUS-C |
| TI 275274510 | Connection extension SK TIE4-M12-M16 |
| TI 275274511 | Connection reduction SK TIE4-M20-M16 |

SK TIE4-M12-HTL-A0

Part number: 275 274 522

HTL rotary encoder output connection extension
M12 system plug connector for synchronous motors

Scope of supply

| | | |
|-----|----------------------|--------------------|
| 1 x | M12 Socket connector | SK TIE4-M12-HTL-A0 |
| 1 x | Cover cap | black |

As-delivered status with screwed-on connector cover



Field of use

The 5-pole M12 Socket connector has open cable ends and wire end sleeves. It is used to make a pluggable connection using normal commercial M12 round plug connectors. It connects the technology option with the outgoing HTL rotary encoder cable at the output side. This connection is mandatory for using of synchronous motors with encoder and M12 plug connector.

Technical data

| Version | |
|---|--|
| Temperature range | -30 ... +90 °C |
| Contact insert Color / Material | Black / RAL 9005 Plastic |
| Round plug connector Material | Metal, CuZn, nickel plated |
| Connection / Type Round plug connector | M12x1, adjustable Female connector with flexible strand M16x1.5, metric screw thread |
| Contact set Contacts / Coding | 5 pin, A - coded |

| | |
|---|-----------------------------|
| Weight | 23 g |
| Connector cover Color / Material | Black / RAL 9005 Plastic |
| Protection class (screwed) | IP67 |
| Fastening | Hexagonal nut M16x1.5 * |
| Contacts / Coding | 5 pin, A - coded |
| Tightening torques * M12x1 Socket connector M16x1.5 Screw thread | 0.6 Nm 1.5 Nm |

* Suitable assembly spanner commercially available (see Installation)

| Technical Information / Datasheet | SK TIE4-M12-HTL-A0 | | | |
|-----------------------------------|--------------------|-------|------|----|
| Connection extension | TI 275274522 | V 1.0 | 1417 | EN |

| Cable | |
|--------------------------------------|---------------------------|
| Number of conductors / Cross section | 5 x 0.34 mm ² |
| Wire strands / colors | UL / (br, bl, bk, wt, gr) |
| Length of wire strands | 250 mm |
| Degree of fouling | 3 / 2 |




| | |
|-----------------------|--------------------------|
| Mech. Service life | Min. 100 plugging cycles |
| Operating voltage | Max. 60 V |
| Current rating | 4 A |
| Insulation resistance | ≥ 10 ⁸ Ω |

Circuit diagram



Installation / option locations

The M12 Receptacle connector are intended for direct installation in a free M16 hole / threaded opening of the device series (see below).

| Device series | Recommended option location | Option locations |
|--|--|--|
| SK 135E * SK 180E * ... SK 190E * Housing SK 1xxE xxx-xxx-x (-C)) | 4R / 4L (incoming) 5R / 5L (outgoing) |  |
| SK 200E Frequency inverter connecting unit SK TI4-x-2xx-x (-C) | 4R / 4L (incoming) 5R / 5L (outgoing) optional ** 6R / 6L, 7R / 7L, 8R / 8L |  |
| BUS technology box BUS connection unit SK TI4-TU-BUS (-C) | 1 / 2 / 3 / 4 optional *** 5R / 5L |  |

* The configuration capability of the respective Receptacle connector depends on its functionality with regard to the device series, e.g. the SK TIE-M12-SH Socket connector cannot be installed with the SK 1xxE housing.









** Size 1 – 3 with optional SK TIE4-M12-M16 connection extension, size 4 direct installation

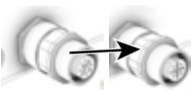
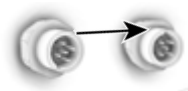




*** With optional SK TIE4-M20-M16 connection reduction

The installation position and mounting location (coding pin or coding groove on contact carrier) of the Socket connector is freely positionable and should be aligned (see installation step 6) such that angled M12 round connectors can also be connected in a way that avoids collisions.

The installation steps described in the following apply to the installation of the M12 Receptacle connectors in the housing and in the frequency inverter connecting unit or the BUS connecting unit of an external technology box.

Installation steps for installation of the M12 Receptable connector

| | | |
|-----------|---|---|
| <p>1.</p> | <p>Remove M16 blind plug at the provided option location side (right / left) of the starter or frequency inverter housing or the connection unit.</p> |  |
| | <p>Remove M16 blind plug from the provided option location hole (bottom) of the BUS connection unit.</p> |  |
| <p>2.</p> | <p>Screw the middle hexagonal nut towards the front using a size 17 open-ended spanner.</p>  |  |
| <p>3.</p> | <p>EMC Twist associated wire pairs together (e. g. bus system, power supply, etc.).</p> |  |
| <p>4.</p> | <p>Screw M12 flanges component directly into the affected M12 threaded opening of the housing or connecting unit of the frequency inverter. Screw M12 Receptable connector into the relevant M16 threaded opening of the BUS connecting unit.</p> |  |
| | <p>Alternative option locations Connection extension SK TIE4-M12-M16 The M12 Receptable connector can alternatively be installed with an optional M12-M16 connection extension. First screw the M12 Receptable connector directly into the connection extension and then fit into the M12 threaded opening in the connection unit. For more information see Optional accessories</p> |  |
| | <p>Connection reduction SK TIE4-M20-M16 The M12 Receptable connector can alternatively be installed with an optional M20-M16 connection reduction. First screw the M12 Receptable connector directly into the connection reduction and then fit into one of the side M12 threaded openings in the connection unit. For more information see Optional accessories</p> |  |

| | | | |
|----|--|---|---|
| 5. | Align coding pin / coding groove vertically to 12 o'clock by rotating the front hexagonal nut. | Socket connector  | Plug connector  |
| 6. | Secure the front hexagonal nut with a 17 mm open-ended spanner. Screw the rear hexagonal nut to the connection unit or the starter or frequency inverter housing using a size 17 open-ended spanner or a special torque / installation wrench. Take the specified tightening torques into consideration, see technical data. |  |  |
| 7. | Ensure that the M12 round plug connector or the cover cap is properly screwed onto the M12 Receptable connector and tightened. |  |  |

NOTICE

Corrosion

Pay attention to leaktightness during the installation of all components (assembly, connection extension etc.). It must be ensured that all components are correctly seated and the tightening torques are adhered to when doing this.

In order to ensure that protection class **IP66** is complied with (concerns all devices with type key SK ...-C), another **pressure - leaktightness test** must be performed when the assembly work has been completed.

Failure to do this will allow moisture to penetrate the device, which will result in the risk of corrosion and short circuiting.

Information

Torque / assembly wrench



In order to provide a secure, sealed and vibration-proof connection, the M12 connection extensions, which are equipped with a hexagonal threaded ring (size 17), should be tightened with special torque / assembly wrenches. For professional installation NORD recommends the use of commercially available assembly tools (M12, size 17) with an adjustable, defined tightening torque (e.g. from Murrelektronik).

Connections

The open cable ends of the connection extension / M12 Socket connector are connected to the terminal strip of the control terminals in the frequency inverter (see below).



HTL rotary encoder



Frequency inverter
NORDAC FLEX



Frequency inverter
NORDAC LINK

Electrical connections

| <p>Contact assignments 5-pole Socket connector A-coded</p> | <p>Connection extension M12 Socket connector SK TIE4-M12-HTL-A0</p> | <p>Connection terminals NORDAC FLEX SK 2xxE</p> | <p>Connection terminals NORDAC LINK Internally wired (factory fitted)</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|--|---|-------------|---------|-------------|---|-------|------|--------|------|---|-------|---------|----|------|---|------|-----|----|-----|---|-------|---------|----|------|---|------|---------|----|------|---|----------------------|--|------|--|---------|------|-----|--|---------|------|---------|
| | <table border="1"> <thead> <tr> <th>Pin</th> <th>Colour</th> <th>Signal</th> <th>Contact</th> <th>Designation</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>brown</td> <td>24 V</td> <td>43/44*</td> <td>24 V</td> </tr> <tr> <td>2</td> <td>white</td> <td>Track-B</td> <td>23</td> <td>DIN3</td> </tr> <tr> <td>3</td> <td>blue</td> <td>GND</td> <td>40</td> <td>GND</td> </tr> <tr> <td>4</td> <td>black</td> <td>Track-A</td> <td>22</td> <td>DIN2</td> </tr> <tr> <td>5</td> <td>grey</td> <td>Track-0</td> <td>21</td> <td>DIN1</td> </tr> </tbody> </table> <p>* 43: 24 V internal, SK 2x0E; 44: 24 V external, SK 2x5E</p> | Pin | Colour | Signal | Contact | Designation | 1 | brown | 24 V | 43/44* | 24 V | 2 | white | Track-B | 23 | DIN3 | 3 | blue | GND | 40 | GND | 4 | black | Track-A | 22 | DIN2 | 5 | grey | Track-0 | 21 | DIN1 | <table border="1"> <thead> <tr> <th colspan="2">Signal / Designation</th> </tr> </thead> <tbody> <tr> <td colspan="2">24 V</td> </tr> <tr> <td>Track-B</td> <td>DIN3</td> </tr> <tr> <td colspan="2">GND</td> </tr> <tr> <td>Track-A</td> <td>DIN2</td> </tr> <tr> <td>Track-0</td> <td>DIN1</td> </tr> </tbody> </table> | Signal / Designation | | 24 V | | Track-B | DIN3 | GND | | Track-A | DIN2 | Track-0 |
| Pin | Colour | Signal | Contact | Designation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | brown | 24 V | 43/44* | 24 V | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | white | Track-B | 23 | DIN3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | blue | GND | 40 | GND | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | black | Track-A | 22 | DIN2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | grey | Track-0 | 21 | DIN1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Signal / Designation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 24 V | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Track-B | DIN3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| GND | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Track-A | DIN2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Track-0 | DIN1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

i Information

Connection to digital inputs

The HTL rotary encoder (Track-A and Track-B) can **only** be connected to **DIN2** and **DIN3** of the control terminal strip of the frequency inverter. The Track-0 must be connected to DIN1.

The digital inputs of the customer interfaces and technology assemblies cannot be used for rotary encoders.

Optional accessories

i Information

M12 / M20 screw openings



Conductive connection extensions made from brass SK TIE4-M12-M16 from M12 to M16 or connection reductions SK TIE4-M20-M16 from M20 to M16 are optionally available for installing the M12 connection extensions in an M12 or M20 screw opening. For more information, see further documentation.

Further documentation (www.nord.com)

| Document | Designation |
|------------------------------|--------------------------------------|
| BU 0200 | Frequency inverter manual SK 2xxE |
| TI 275280000 | Bus connection unit SK TI4-TU-BUS |
| TI 275280500 | Bus connection unit SK TI4-TU-BUS-C |
| TI 275274510 | Connection extension SK TIE4-M12-M16 |

| Document | Designation |
|------------------------------|--|
| TI 275274511 | Connection reduction SK TIE4-M20-M16 |
| TI 18552090 | Level adaptation PCB HTL - RS422 |
| TI 18552095 | Level adaptation PCB HTL - HTL A+/- B+/- |

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Getriebebau NORD GmbH & Co. KG

Getriebebau-Nord-Straße 1 • 22941 Bargteheide, Germany • www.nord.com

SK TIE4-M12-INS

Part number: 275 274 531

Connection extension "Safe inputs"

M12 control system plug connector

Scope of supply

| | | |
|-----|----------------------|------------------------|
| 1 x | M12 Socket connector | SK TIE4-M12-INS |
| 1 x | Cover cap | yellow |
| 1 x | Insulating hose | l = 240 mm, d = 5.0 mm |

As-delivered status with screwed-on connector cover



Field of use

The M12 Socket connector has open cable ends and wire end sleeves. It is used to make a pluggable connection using normal commercial M12 round plug connectors. It connects the control terminal strip with the outgoing control signal cable at the output side.

Technical data

| Version | |
|---|--|
| Temperature range | -30 ... +90 °C |
| Contact insert Color / Material | Grey / RAL 1021 Plastic |
| Round plug connector Material | Metal, CuZn, nickel plated |
| Connection / Type Round plug connector | M12x1, adjustable Socket connector with flexible strand M16x1.5, metric screw thread |
| Contact set Contacts / Coding | 5 pin, A - coded |

| | |
|---|------------------------------|
| Weight | 23 g |
| Connector cover Color / Material | Yellow / RAL 1021 Plastic |
| Protection class (screwed) | IP67 |
| Fastening | Hexagonal nut M16x1.5 * |
| Tightening torques * M12x1 Socket connector M16x1.5 Screw thread | 0.6 Nm 1.5 Nm |

* Suitable assembly spanner commercially available (see Installation)

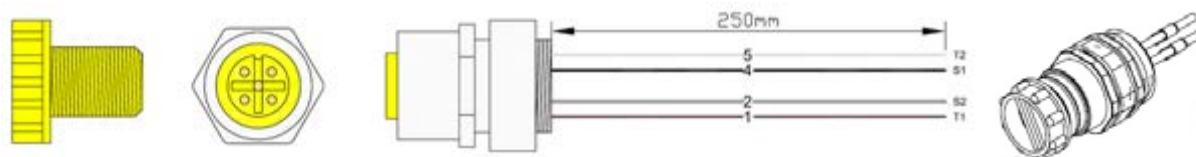
| Technical Information / Datasheet | SK TIE4-M12-INS | | | |
|-----------------------------------|-----------------|-------|------|----|
| Connection extension | TI 275274531 | V 1.0 | 1318 | en |

| Cable ¹⁾ | |
|--------------------------------------|--------------------------|
| Number of conductors / Cross section | 4 x 0.34 mm ² |
| Wire strands ¹⁾ / colors | UL / (bn, wh, bk, gy) |
| Length of wire strands | 250 mm |
| Degree of fouling | 3 / 2 |

1) AWM Style 1007/1569 80/105 °C 300 V


| | |
|-----------------------|--------------------------|
| Mech. Service life | Min. 100 plugging cycles |
| Operating voltage | Max. 60 V |
| Current rating | 4 A |
| Insulation resistance | ≥ 10 ⁸ Ω |

Circuit diagram



Installation / option locations

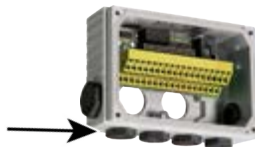

The M12 Receptacle connector are intended for direct installation in a free M16 hole / threaded opening of the device (see below).






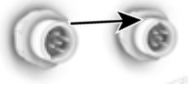

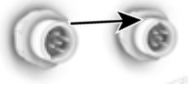

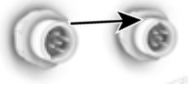













| Device series | Recommended option location | Option locations |
|---|--|--|
| BUS technology box (SAFE) BUS connection unit (SAFE) SK TI4-TU-SAFE (-C) | 1 / 2 / 3 / 4 optional * 5R / 5L |  |
| * With optional SK TIE4-M20-M16 connection reduction | | |

The installation position and mounting location (coding pin or coding groove on contact carrier) of the Socket connector is freely positionable and should be aligned (see installation step 7) such that angled M12 round connectors can also be connected in a way that avoids collisions.

The installation steps described in the following apply to the installation of the M12 Receptacle connectors in the BUS connecting unit (SAFE) of an external PROFIsafe technology box.

Installation steps for installation of the M12 Receptable connector

| | | |
|----|---|---|
| 1. | Remove M16 blind plug from the provided option location hole (bottom) of the BUS connection unit. |  |
| 2. | Screw the middle hexagonal nut towards the front using a size 17 open-ended spanner. |  |

| | | | | | | |
|--|---|---|---|---|---|---|
| 3. | EMC Twist associated wire pairs together (e. g. bus system, power supply, etc.). |  | | | | |
| 4. | Pull insulating hose over connecting cables. |  | | | | |
| 5. | Screw M12 flanges component directly into the affected M12 threaded opening of the housing or connecting unit of the frequency inverter. Screw M12 Receptable connector into the relevant M16 threaded opening of the BUS connecting unit. |  | | | | |
| Alternative option locations | | | | | | |
| Connection reduction SK TIE4-M20-M16 | | | | | | |
| The M12 Receptable connector can alternatively be installed with an optional M20-M16 connection reduction. First screw the M12 Receptable connector directly into the connection reduction and then fit into one of the side M12 threaded openings in the connection unit. | |  | | | | |
| 6. | Align coding pin / coding groove vertically to 12 o'clock by rotating the front hexagonal nut. | <table border="0"> <tr> <td data-bbox="1002 936 1198 1093"> Socket connector  </td> <td data-bbox="1198 936 1417 1093"> Plug connector  </td> </tr> </table> | Socket connector  | Plug connector  | | |
| Socket connector  | Plug connector  | | | | | |
| 7. | Secure the front hexagonal nut with a 17 mm open-ended spanner. Screw the rear hexagonal nut to the connection unit or the starter or frequency inverter housing using a size 17 open-ended spanner or a special torque / installation wrench. Take the specified tightening torques into consideration, see technical data. | <table border="0"> <tr> <td data-bbox="1027 1106 1155 1240">  </td> <td data-bbox="1241 1106 1378 1240">  </td> </tr> <tr> <td data-bbox="1027 1263 1155 1397">  </td> <td data-bbox="1241 1263 1378 1397">  </td> </tr> </table> |  |  |  |  |
|  |  | | | | | |
|  |  | | | | | |
| 8. | Ensure that the M12 round plug connector or the cover cap is properly screwed onto the M12 Receptable connector and tightened. |  | | | | |

NOTICE

Corrosion

Pay attention to leaktightness during the installation of all components (assembly, connection extension etc.). It must be ensured that all components are correctly seated and the tightening torques are adhered to when doing this.

In order to ensure that protection class **IP66** is complied with (concerns all devices with type key SK ...-C), another **pressure - leaktightness test** must be performed when the assembly work has been completed.

Failure to do this will allow moisture to penetrate the device, which will result in the risk of corrosion and short circuiting.


i Information

Torque / assembly wrench



In order to provide a secure, sealed and vibration-proof connection, the M12 connection extensions, which are equipped with a hexagonal threaded ring (size 17), should be tightened with special torque / assembly wrenches. For professional installation NORD recommends the use of commercially available assembly tools (M12, size 17) with an adjustable, defined tightening torque (e.g. from Murrelektronik).

Electrical connections



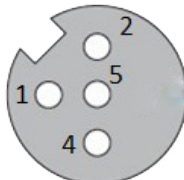
Connection extension
M12 Female connector
SK TIE4-M12-INS

Connection terminals
SK TI4-TU-SAFE

| Pin | Colour | Signal | Contact | Designation |
|-----|--------|--------|---------|-------------|
| 1 | brown | T1 | 25 | Clock1 |
| 2 | white | S2 | 20 | SI2 |
| 3 | n.c. | | | |
| 4 | black | S1 | 19 | SI1 |
| 5 | grey | T2 | 26 | Clock2 |

Contact assignments

Female connector
A - coded



Further documentation (www.nord.com)

| Document | Designation |
|------------------------------|--------------------------------------|
| TI 275280300 | Bus connection unit SK TI4-TU-SAFE |
| TI 275280800 | Bus connection unit SK TI4-TU-SAFE-C |

| Document | Designation |
|------------------------------|--------------------------------------|
| TI 275274511 | Connection reduction SK TIE4-M20-M16 |
| | |