

# Accessories electrical for Fluid sensors / Interfaces / Power supply

English

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## 1 Finding a single-ended cordset, double-ended cordset

For various products and their applications, you will find suitable accessories in this chapter in the form of single-ended cordsets, double-ended cordsets, adapters as well as power supply units. You will also find examples for connecting the products.



Note the maximum permissible cordset lengths for the transmission of the supply voltage and / or for data transmission. Data transmission can be achieved by means of longer cordsets with the use of shielded single-ended cordsets or double-ended cordsets.

### 1.1 Protecting caps / Protecting plugs



Description	Part no.
Screw protective cap for male connector, M12x1, , Metal , color: Nickel-plated	6079195



Description	Part no.
Screw protection plug für female connector, M12x1, , Plastic , color: black	6045406



Close any unused, unconnected male connectors / female connectors with a protective cap / plug to maintain the IP code. For details, see Accessories.

### 1.2 Female connector/male connector with screw clamp

Here you will find female connectors for assembling single-ended cordsets or double-ended cordsets.



**ZBE00**
**Screwed connection bushing, , -,  
Socket M12x1, 5-pole, A-coded**

Description	Part no.
Screwed connection bushing, ZBE00, Color: -, -	6049128

1

**ZBE08**
**Screwed connection bushing, , -,  
Socket M12x1, 5-pole, A-coded**

Description	Part no.
Screwed connection bushing, ZBE08, Color: -, -	6006786

2

**ZBE44**
**Screwed connection bushing, shielded, -,  
Socket M12x1, 8-pole, A-coded**

Description	Part no.
Screwed connection bushing, ZBE44, Color: -, -	3281243

3

**ZBE0P**
**Screwed connection bushing, , -,  
Socket M12x1, 8-pole, A-coded**

Description	Part no.
Screwed connection bushing, ZBE0P, Color: -, -	6055444

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### 1.3 Single-ended cordset, female connector <-> open cable end

Here you will find a single-ended cordset with an open cable end for connecting sensors, interfaces, etc.

ZBE49



**Single-ended cordset, unshielded, black,  
Socket M12x1, 3-pole, A-coded <-> Open cable end , 3-pole**

Description	Part no.
Single-ended cordset, L: 1 m, ZBE49-01 Line sheath: PUR, color: black, -	4571463
Single-ended cordset, L: 5 m, ZBE49-05 Line sheath: PUR, color: black, -	4571464
Single-ended cordset, L: 10 m, ZBE49-10 Line sheath: PUR, color: black, -	4571465

ZBE82



**Single-ended cordset, unshielded, black,  
Plug M8x1, 4-pole <-> Open cable end , -pole**

Description	Part no.
Single-ended cordset, L: 1 m, ZBE82-01 Line sheath: PUR, color: black, -	4586511

ZBE83

**Single-ended cordset, unshielded, black,  
Socket M8x1, 4-pole <-> Open cable end , 4-pole**

Description	Part no.
Single-ended cordset, L: 1 m, ZBE83-01 Line sheath: PUR, color: black, -	4586512

**ZBE47**

**Single-ended cordset, unshielded, black,  
Socket M12x1, 5-pole, A <-> Open cable end , 5-pole**



Description	Part no.
Single-ended cordset, L: 5 m, ZBE47-05 Line sheath: -, color: black, -	3484562
Single-ended cordset, L: 10 m, ZBE47-10 Line sheath: -, color: black, -	3484564

**ZBE08**

**Single-ended cordset, unshielded, black,  
Socket M12x1, 5-pole, A <-> Open cable end , 5-pole**



Description	Part no.
Single-ended cordset, L: 0.5 m, ZBE08-005 Line sheath: -, color: black, -	6242152
Single-ended cordset, L: 2 m, ZBE08-02 Line sheath: -, color: black, -	6006792
Single-ended cordset, L: 3 m, ZBE08-03 Line sheath: -, color: black, -	3847617
Single-ended cordset, L: 5 m, ZBE08-05 Line sheath: -, color: black, -	6006791

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**ZBE0P**

**Single-ended cordset, unshielded, black,  
Socket M12x1, 8-pin, angled A-coded <-> Open cable end**

Description	Part no.
Single-ended cordset, L: 2 m, ZBE0P-02 Line sheath: -, color: black, -	6052697
Single-ended cordset, L: 5 m, ZBE0P-05 Line sheath: -, color: black, -	6052698

**ZBE85**

**Single-ended cordset, unshielded, black,  
Plug M8x1, 3-pole <-> Open cable end , 3-pole**

Description	Part no.
Single-ended cordset, L: 1 m, ZBE85-01 Line sheath: PUR, color: black, -	4586514
Single-ended cordset, L: 2 m, ZBE85-02 Line sheath: -, color: black, -	4586515
Single-ended cordset, L: 5 m, ZBE85-05 Line sheath: -, color: black, -	4586516
Single-ended cordset, L: 10 m, ZBE85-10 Line sheath: -, color: black, -	4586517

**ZBE08S**
**Single-ended cordset, shielded**  
**M12x1 Socket, 5 -pole, angled <-> Open cable end**

Designation	Part no.
Single-ended cordset, L = 2 m, ZBE08S-02, black, -	6019455
Single-ended cordset, L = 5 m, ZBE08S-05, black, -	6019456
Single-ended cordset, L = 10 m, ZBE08S-10, black, -	6023102
Single-ended cordset, L = 20 m, ZBE08S-20, black, -	6117350
Single-ended cordset, L = 30 m, ZBE08S-30, black, -	6035063

**ZBE42S**
**Single-ended cordset, shielded,**  
**M12x1 Socket, 8 -pin, even A-coded <-> Open cable end**

Designation	Part no.
Single-ended cordset, L = 2 m, ZBE42S-02 black, -, -	3281220
Single-ended cordset, L = 5 m, ZBE42S-05 black, -, -	3281239
Single-ended cordset, L = 10 m, ZBE42S-10 black, -, -	3449681
Single-ended cordset, L = 20 m, ZBE42S-20 black, -, -	3654932

**ZBE47S**
**Single-ended cordset , shielded,**  
**M12x1 Socket, 5 -pole, even A-coded <-> Open cable end**

Description	Part no.
Single-ended cordset, L = 5 m, Line sheath: - , Color: black, - ZBE47S-05	3527626

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Description	Part no.
Single-ended cordset, L = 10 m, Line sheath: - , Color: black, - ZBE47S-10	3527627
Single-ended cordset, L = 15 m, Line sheath: - , Color: black, - ZBE47S-15	4033085

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#### 1.4 Single-ended cordset, male connector <-> open cable end

Here you will find a shielded single-ended cordsets with an open cable end for connecting sensors, interfaces, etc.

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ZBE48S

**Single-ended cordset, shielded, black,  
Plug M12x1, 8-pole, A-coded <-> Open cable end, 8-  
pole**



Description	Part no.
Single-ended cordset, L: 2 m, ZBE48S-02 Line sheath: PUR, color: black, IP67	6072261
Single-ended cordset, L: 5 m, ZBE48S-05 Line sheath: PUR, color: black, IP67	6245278
Single-ended cordset, L: 10 m, ZBE48S-10 Line sheath: PUR, color: black, IP67	6072262

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ZBE70S

**Single-ended cordset, shielded, black,  
Plug M12x1, 4-pole, A-coded <-> Open cable end, 4-  
pole**

Description	Part no.
Single-ended cordset, L: 1 m, ZBE70S-01 Line sheath: -, color: black, -	4571667
Single-ended cordset, L: 5 m, ZBE70S-05 Line sheath: -, color: black, -	4571668

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Description	Part no.
Single-ended cordset, L: 10 m, ZBE70S-10 Line sheath: -, color: black, -	4571669

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## 1.5 Color coding of the single-ended cordset cores

The single-ended cordset from the HYDAC accessories have the following color coding. The following examples show shielded single-ended cordsets. This is not applicable for single-ended cordsets without shielding..

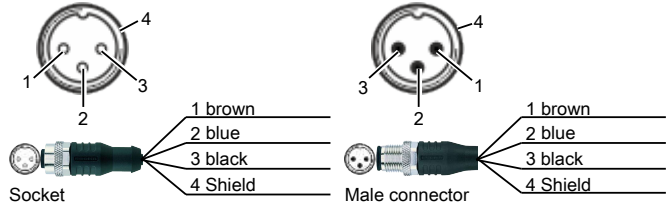


Fig. 1: Color coding using the example: M12x1 female connector / male connector, A-coded, 3-pole, shielded

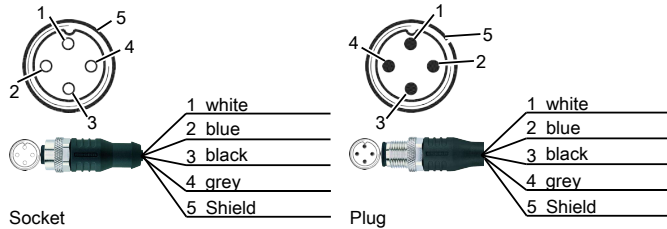


Fig. 2: Color coding using the example: M12x1 female connector / male connector, A-coded, 4-pole, shielded

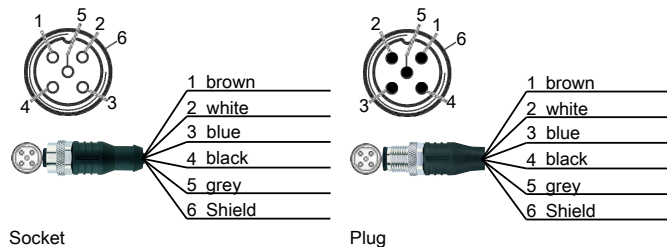


Fig. 3: Color coding using the example: M12x1 female connector / male connector, A-coded, 5-pole, shielded



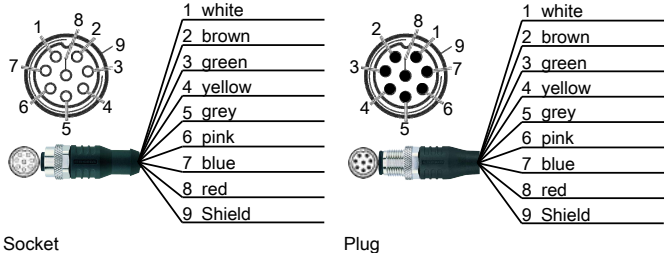


Fig. 4: Color coding using the example: M12x1 female connector / male connector, A-coded, 8-pole, shielded

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## 1.6 Double-ended cordset, female connector <-> male connector

Here you will find a double-ended cordset for connecting sensors, interfaces, etc.



Note the maximum permissible cordset lengths for the transmission of the supply voltage and / or for data transmission. Data transmission can be achieved by means of longer cordsets with the use of shielded single-ended cordsets or double-ended cordsets.

### ZBE72S



**Double-ended cordset, shielded, black,  
Socket M12x1, 3-pole, A-coded <-> Plug M12x1, 3-pole,  
A-coded**

Description	Part no.
Double-ended cordset, L: 1 m, ZBE72S-01 Line sheath: PUR, color: black, -	4571673

### ZBE30



**Connecting line, unshielded, black,  
Socket M12x1, 5-pole, A- coded <-> Plug M12x1, 5-  
pole, A-coded**

Description	Part no.
Connecting line, L: 0.5 m, ZBE30-005 Line sheath: -, color: black, -	4193586
Connecting line, L: 2 m, ZBE30-02 Line sheath: -, color: black, -	6040851
Connecting line, L: 3 m, ZBE30-03 Line sheath: -, color: black, -	6053924
Connecting line, L: 5 m, ZBE30-05 Line sheath: -, color: black, -	6040852
Connecting line, L: 20 m, ZBE30-20 Line sheath: -, color: black, -	3761071

Description	Part no.
Connecting line, L: 10 m, ZBE30-10 Line sheath: -, color: black, -	3534972
Connecting line, L: 30 m, ZBE30-30 Line sheath: -, color: black, -	3656854

**ZBE30S**

**Connecting line, shielded, black,  
Socket M12x1, 5-pole, A- coded <-> Plug M12x1, 5-  
pole, A-coded**

Description	Part no.
Connecting line, L: 10 m, ZBE30S-10 Line sheath: -, color: black, -	3729098

**ZBE43**

**Double-ended cordset, unshielded, black,  
Socket M12x1, 8-pole, A-coded <-> Plug M12x1, 8-pole,  
A-coded**

Description	Part no.
Double-ended cordset, L: 0.5 m, ZBE43-005 Line sheath: -, color: black, -	4193544

**ZBE43S**

**Double-ended cordset, shielded, black,  
Socket M12x1, 8-pole, A-coded <-> Plug M12x1, 8-pole,  
A-coded**

Description	Part no.
Double-ended cordset, L: 5 m, ZBE43S-05 Line sheath: -, color: black, -	3281240

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**Description****Part no.**

Double-ended cordset, L: 10 m, ZBE43S-10  
Line sheath: -, color: black, -

3519768

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ZBE81



**Double-ended cordset, unshielded, black,  
Socket M8x1, 4-pole <-> Plug M8x1, 4-pole**

**Description****Part no.**

Double-ended cordset, L: 0.15 m, ZBE81-0015  
Line sheath: -, color: black, -

4586505

Double-ended cordset, L: 1 m, ZBE81-01  
Line sheath: PUR, color: black, -

4586506

Double-ended cordset, L: 2 m, ZBE81-02  
Line sheath: PUR, color: black, -

4586508

Double-ended cordset, L: 5 m, ZBE81-05  
Line sheath: PUR, color: black, -

4586509

Double-ended cordset, L: 10 m, ZBE81-10  
Line sheath: PUR, color: black, -

4586510

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ZBE73S



**Double-ended cordset, shielded, black,  
Socket M12x1, 5-pole, A-coded <-> Plug M12x1, 5-pole,  
A-coded**

**Description****Part no.**

Double-ended cordset, L: 1 m, ZBE73S-01  
Line sheath: -, color: black, -

4571674

Double-ended cordset, L: 5 m, ZBE73S-05  
Line sheath: -, color: black, -

4571677

Double-ended cordset, L: 10 m, ZBE73S-10  
Line sheath: -, color: black, -

4571678

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## 1.7 Double-ended cordset and adapter for CANopen / DeviceNET

Here you will find a double-ended cordset for CANopen/ DeviceNET for connecting sensors, interfaces, etc.

### ZBE62S



**Double-ended cordset (CANopen / DeviceNET), shielded, grey,  
Socket M12x1, 5-pole, -coded <-> Plug M12x1, 5-pole, -coded**

Description	Part no.
Double-ended cordset (CANopen / DeviceNET), L: 0.5 m, ZBE62S-005 Line sheath: PUR(UL), color: grey, -	4571646
Double-ended cordset (CANopen / DeviceNET), L: 1 m, ZBE62S-01 Line sheath: PUR(UL), color: grey, -	4571647
Double-ended cordset (CANopen / DeviceNET), L: 2 m, ZBE62S-02 Line sheath: PUR(UL), color: grey, -	4571648
Double-ended cordset (CANopen / DeviceNET), L: 5 m, ZBE62S-05 Line sheath: PUR(UL), color: grey, -	4571649
Double-ended cordset (CANopen / DeviceNET), L: 10 m, ZBE62S-10 Line sheath: PUR(UL), color: grey, -	4571650

### ZBE63S



**Double-ended cordset (CANopen / DeviceNET), shielded, grey,  
Socket M12x1, 5-pole, -coded <-> Plug M12x1, 5-pole, -coded**

Description	Part no.
Double-ended cordset (CANopen / DeviceNET), L: 0.5 m, ZBE63S-005 Line sheath: PUR(UL), color: grey, -	4571652
Double-ended cordset (CANopen / DeviceNET), L: 1 m, ZBE63S-01 Line sheath: PUR(UL), color: grey, -	4571653

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**Description****Part no.**

Double-ended cordset (CANopen / DeviceNET),  
L: 2 m, ZBE63S-02  
Line sheath: PUR(UL), color: grey, -

**ZBE64S**

**Y distributor (CANopen / DeviceNET), shielded, black,  
Socket M12x1, 5-pole, A <-> Plug/plug M12x1/M12x1, -  
pole, -coded**

**Description****Part no.**

Y distributor (CANopen / DeviceNET), L: m,  
ZBE64S  
Line sheath: -, color: black, -

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**ZBE65**

**Terminator, 120 Ω (CANopen / DeviceNET), , -,  
Plug M12x1, 2-pole,**

**Designation****Part no.**

Terminator, 120 Ω (CANopen / DeviceNET),  
ZBE65, Color: -, -

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## 1.8 Double-ended cordset, Ethernet M8/M12 <-> RJ45

Here you will find a double-ended cordset for connecting sensors, interfaces, etc.

### ZBE45



### Connecting line, shielded M12x1, Socket, 4-pole, D-coded <-> RJ45 Plug, even

Description	Part no.
Connecting line, L: 0.5 m, ZBE45-005 Line sheath: -, color: green, -	4577285
Connecting line, L: 5 m, ZBE45-05 Line sheath: -, color: green, -	3346100
Connecting line, L: 10 m, ZBE45-10 Line sheath: -, color: green, -	3346101
Connecting line, L: 20 m, ZBE45-20 Line sheath: -, color: green, -	4509184
Connecting line, L: 30 m, ZBE45-30 Line sheath: -, color: green, -	4217234

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**ZBE90**
**Double-ended cordset, shielded,  
M12x1 Plug, 4-pole, D-coded <-> M12x1 Plug, 4-pole,  
D-coded**

Description	Part no.
Double-ended cordset, L: 1 m, ZBE90-01 Line sheath: PUR, color: black, -	4577237
Double-ended cordset, L: 2 m, ZBE90-02 Line sheath: PUR, color: black, -	4577238
Double-ended cordset, L: 5 m, ZBE90-05 Line sheath: PUR, color: black, -	4577239
Double-ended cordset, L: 7 m, ZBE90-07 Line sheath: PUR, color: black, -	4577240
Double-ended cordset, L: 10 m, ZBE90-10 Line sheath: PUR, color: black, -	4577241
Double-ended cordset, Length: 20 m, ZBE90-20 Cordset sheath: PUR, Color: black, -	4577243

**ZBE91**
**Double-ended cordset, shielded, black,  
Plug M12x1, 4-pole, D-coded <-> Socket M12x1, 4-pole,  
D-coded**

Description	Part no.
Double-ended cordset, L: 1 m, ZBE91-01 Line sheath: PUR, color: black, -	4577244
Double-ended cordset, L: 2 m, ZBE91-02 Line sheath: PUR, color: black, -	4577245
Double-ended cordset, L: 5 m, ZBE91-05 Line sheath: PUR, color: black, -	4577247
Double-ended cordset, L: 7 m, ZBE91-07 Line sheath: PUR, color: black, -	4577248
Double-ended cordset, L: 10 m, ZBE91-10 Line sheath: PUR, color: black, -	4577249
Double-ended cordset, L: 20 m, ZBE91-20 Line sheath: PUR, color: black, -	4577252



**ZBE93**



**RJ45 Socket, shielded <-> RJ45 Socket**

Description	Part no.
Female connector / Female connector, ZBE93, IP65	4577290

**ZBE94**



**Adapter cable M12x1, even, 4-pole, D-coded <-> M8x1 Plug, even**

Description	Part no.
Adapter cable, L: 0.5 m, ZBE94-005 Line sheath: PUR, color: black, -	4577254

**ZBE95**



**Double-ended cordset M12x1 Socket, even, 4-pole, D-coded <-> RJ45 Plug, even**

Description	Part no.
Double-ended cordset, L: 0.5 m, ZBE95-005 Line sheath: PUR, color: black, -	4577286

**ZBE96**

**Double-ended cordset M8x1 Plug, even, 4-pole, D-coded <-> RJ45 Plug, even**

Description	Part no.
Double-ended cordset, L: 0.5 m, ZBE96-005 Line sheath: PUR, color: black, -	4577287

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ZBE97

**Double-ended cordset M8x1 Plug, even, 4-pole <-> M8x1 Plug, even, 4-pole**

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Description	Part no.
Double-ended cordset, L: 0.15 m, ZBE97-0015 Line sheath: PUR, color: black, -	4577289

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## 1.9 Patch cable, RJ45 <-> RJ45

Here, you will find patch cables for connecting a computer, switch, hub, interface, etc..

These patch cables are available in different categories e.g. CAT 5e , CAT 6 , CAT 7 and different versions of the shield e.g. S/UTP , F/FTP , S/FTP , SF/UTP , U/FTP.

### Shield of the patch cables - U/UTP

Proper shielding of a cable also attempts to reduce external interference factors. This is particularly important for network design. Patch cables without shielding are called U/UTP (Unscreened Unshielded Twisted Pair). These patch cables without shielding are insulated with a plastic sheath and therefore flexible and adaptable to install. Since shielding is completely absent from these patch cables, their transmission quality is particularly dependent on their length. An unshielded cable should not be longer than ten meters, otherwise the quality will drop rapidly, and in addition, the patch cable without shielding should not be directly connected to power cables.

### Simple shielding - S/UTP

S/UTP (Screened Unshielded Twisted Pair) represents the simple shielding of a patch cable. In contrast to the unshielded patch cable, there are copper braids or aluminum foils (so-called PiMF) under the outer plastic sheath, which are supposed to protect the patch cable from external interference. However, the higher tolerance of this shielding to interference has a disadvantage: the patch cable becomes stiff and thus less flexible. Even FTP cables (Foiled Twisted Pair) offer an equal alternative, where - in contrast to S/UTP - the respective pairs of wires are protected. Both ftp and UTP form the simplest form of shielding in patch cables, but this is better than an unshielded patch cable without shielding.

### Double shielding - S/STP and S/FTP

A patch cable is particularly well protected against interference as soon as it is double-sheathed or has double shielding. A patch cable with such sheathing is called S/STP (Screened Shielded Twisted Pair) or S/FTP (S/

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FTP = Screened Foiled Twisted Pair). In these STP or SFTP patch cables, all cores are individually double protected by copper braids or aluminum foils (so-called PiMf ).

### Power-over-Ethernet (PoE )

The power supply of end devices in network technology is typically within the sphere of influence of the manufacturers of the end devices. They solve the power supply problem via internal power supply units, or in the case of low-power devices via wall power supplies. This means that next to each network socket there must also be at least one 230 V socket. Power-over-Ethernet (PoE) eliminates the need for a power connection and wall power supply at the end device.

### Patch cable categories CAT 1 – CAT 8

Once you have decided on the appropriate cable type, you should keep an eye on the power class, which is reflected in the categories (CAT) 1 to 8. It should be noted that higher category classes automatically cover the performance parameters of all network cable categories below them.

Category	Transmission speed	Frequency
CAT 3	10 MBit/s	16 MHz
CAT 5	100 MBit/s	100 MHz
CAT 5e	1 GBit/s	100 MHz
FastCAT 5e	1 GBit/s	350 MHz
CAT 6	1 GBit/s	250 MHz
CAT 6a	10 GBit/s	500 MHz
CAT 7	10 GBit/s	600 MHz
CAT 7a	100 GBit/s	1000 MHz
CAT 8	40 GBit/s <sup>1)</sup>	2000 MHz

<sup>1)</sup> for a maximum cable length  $\leq 30$  m

*Tab. 1: Category/Transmission speed (for cable lengths  $\leq 100$  m)*

**Patch cable****RJ45 Plug, even <-> RJ45 Plug, even**

Description	Part no.
Patch cable CAT 5e X/XXX, L = 0.5 m, grey, -	6195755
Patch cable CAT 5e X/XXX, L = 0.5 m, grey, -	6081045
Patch cable CAT X X/XXX, L = 1 m, grey, -	6059542
Patch cable CAT 5e X/XXX, L = 3 m, grey, -	6081046
Patch cable CAT X X/XXX, L = 15 m, grey, -	6080077
Patch cable CAT 6a S/FTP, L = 2 m, Green, FRNC(UL) <sup>2)</sup>	6156027
Patch cable CAT 6a S/FTP, L = 6 m, Green, FRNC(UL) <sup>2)</sup>	6194595
Patch cable CAT 6a S/FTP, L = 10 m, Green, FRNC(UL) <sup>2)</sup>	6194594

2) FRNC, (UL) = UL permitted

**ZBE93****RJ45 Socket, shielded <-> RJ45 Socket**

Description	Part no.
Female connector / Female connector, ZBE93, IP65	4577290

1

2

3

4

5

A

## 2 Finding adapters/adapter cables/terminators

Here, you will find adapters for connecting sensors, interfaces etc.

ZBE36



Adapter, , -,  
Socket M12x1, 5-pole, A <-> Plug M12x1, 5-pole, -  
coded

Description	Part no.
Adapter, L: m, ZBE36 Line sheath: -, color: -, -	909737

ZBE26



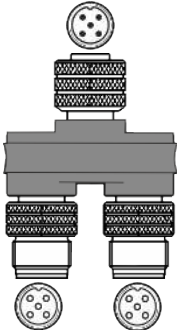
Y-Adaptor, , blue,  
Socket M12x1, -pole, A <-> Plug/plug M12x1, 5-pole, -  
coded

Description	Part no.
Y-Adaptor, L: m, ZBE26 Line sheath: -, color: blue, -	3304374

ZBE38

Y-Adaptor, , grey,  
Plug M12x1, 5-pole, A <-> Female connector/Female  
connector M12x1, 5/5-pole, -coded

Description	Part no.
Y-Adaptor, L: m, ZBE38 Line sheath: -, color: grey, -	3224436



ZBE41

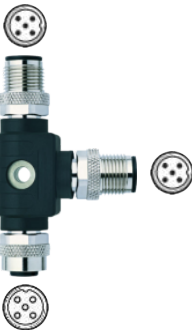
**Y-Adaptor, , yellow,  
Socket M12x1, 8-pole, A <-> Plug/plug M12x1, 8/5-pole,  
-coded**



Description	Part no.
Y-Adaptor, L: m, ZBE41	910000
Line sheath: -, color: yellow, -	

ZBE74S

**T-adapter, shielded, -,  
Socket M12x1, 5-pole, A <-> Plug/plug M12x1/M12x1,  
5-pole, A-coded**



Description	Part no.
T-adapter, L: m, ZBE74S	4571679
Line sheath: -, color: -, -	

**ZBE75S**

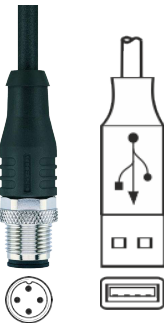
**T-adapter, shielded, -,  
Plug M12x1, 5-pole, A <-> Female connector/Female  
connector M12x1/M12x1, 5-pole, A-coded**

Description	Part no.
T-adapter, L: m, ZBE75S	4571681
Line sheath: -, color: -, -	

**ZBE76S**

**Terminator, 120 Ω (RS485), , -,  
Plug M12x1, 2-pole,**

Designation	Part no.
Terminator, 120 Ω (RS485), ZBE76S	4571684
Color: -, -	

**ZBE80S**

**Adapter cable, , -,  
Plug M12x1, 4-pole, D <-> Socket USB-A**

Description	Part no.
Adapter cable, L: 2 m, ZBE80S	4571705
Line sheath: -, color: -, -	



**ZBE84**

**Adapter cable, -, black,  
Plug M8x1, 4-pole, D <-> Socket M12x1, 4-pole, D-  
coded**



Description	Part no.
Adapter cable, L: 1 m, ZBE84-01 Line sheath: -, color: black, -	4586513

**ZBECSI-60**

**Connection adapter, 6x, , -,  
M12x1, -pole, -coded**



Description	Part no.
Connection adapter, 6x, L: 0.15 m, ZBECSI-60 line sheath: -, color: -, -, for details, see ZBECSI 60 connection adapter - Connection overview [▶ 30]	4420372

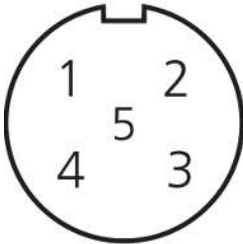
## 2.1 ZBEC60 connection adapter - Connection overview

The ZBEC60 has connections for up to 6 sensors (4x analog sensors and 2x HSI SMART sensors) with the following assignment.



Fig. 5: ZBE CSI 60 Connection adapters

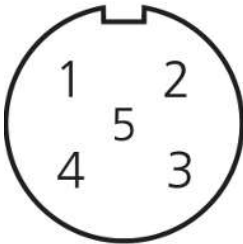
### A1 / A2 - analog connection, 5-pole



Pin	Description	Description
1	Signal +	Analog current signal + (e.g. 4 ... 20 mA)
2	n.c.	Not connected
3	Signal -	Analog current signal + (e.g. 4 ... 20 mA)
4	n.c.	Not connected
5	n.c.	Not connected

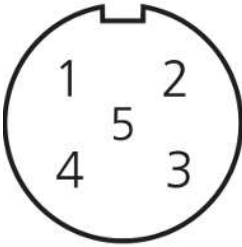
Tab. 2: A1 / A2 - analog connection, 5-pole

### A3 - analog connection, 5-pole



Pin	Description	Description
1	+24VDC	Power supply +24 V DC
2	n.c.	Not connected
3	GND	Supply voltage GND
4	Signal	Analog voltage signal (e.g. 0 ... 10 V)
5	n.c.	Not connected

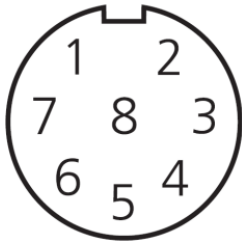
Tab. 3: A3 - analog connection, 5-pole



### A4 - analog connection, 5-pole

Pin	Description	Description
1	+24VDC	Power supply +24 V DC
2	Signal	Analog voltage signal (e.g. 0 ... 10 V)
3	GND	Power supply GND
4	n.c.	Not connected
5	n.c.	Not connected

Tab. 4: A4 - analog connection, 5-pole



### S1 / S2 – HSI SMART Sensor connection, 8-pole

Pin	Description	Description
1	+24VDC	Power supply +24 V DC
2	n.c.	Not connected
3	GND	Power supply GND
4	n.c.	Not connected
5	HSI	HYDAC Sensor Interface
6	n.c.	Not connected
7	n.c.	Not connected
8	n.c.	Not connected

Tab. 5: S1 / S2 – HSI SMART Sensor connection, 8-pole

1

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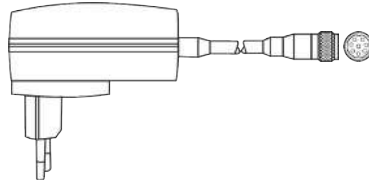
A

### 3 Select power supply

Different power supplies are available for the different applications of products or interfaces. Always observe the primary and secondary voltage and current.

#### Male connector power supply unit

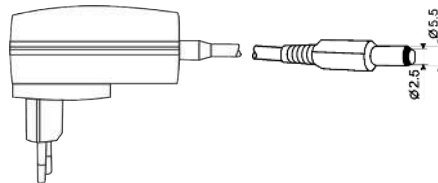
PS1



Designation	Part no.
Male connector power supply unit, cable length: 1.8 m, M12x1 Socket, 8-pole, even, PS1	3376530
Primary: 100-240 V AC , 50-60 Hz	
Secondary: 15 V DC , 800 mA	
Protection class: IP40	

#### Male connector power supply unit

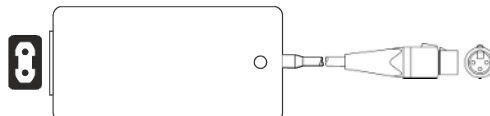
PS2



Designation	Part no.
Male connector power supply unit, cable length: 1.8 m, 5,5/2,5 Socket, 2-pole, even, PS2	6076711
Primary: 100-240 V AC , 50-60 Hz	
Secondary: 12 V DC , 2000 mA	
Protection class: IP40	

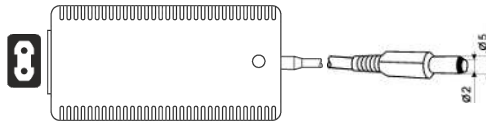
#### Table power supply unit

PS3



Designation	Part no.
Table power supply unit, cable length: 1.8 m, XLR Plug, 3-pole, even, PS3 Primary: 100-240 V AC , 50-60 Hz Secondary: 24 V DC , 5000 mA Protection class: IP40	6059933

**Table power supply unit**

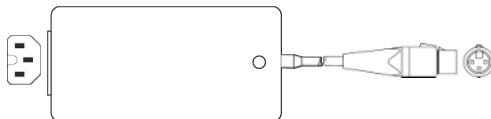


Designation	Part no.
Table power supply unit, cable length: 1.8 m, 5,0/2,0 Socket, 2-pole, even, PS4 Primary: 100-240 V AC , 50-60 Hz Secondary: 24 V DC , 2200 mA Protection class: IP40	3090803

**Male connector power supply unit**

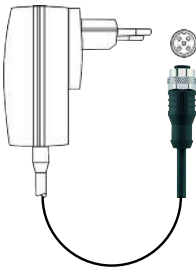
Designation	Part no.
Male connector power supply unit, cable length: 1.8 m, M12x1 Socket, 5-pole, even, PS5 Primary: 100-240 V AC , 50-60 Hz Secondary: 24 V DC , 1000 mA Protection class: IP40	3399939

**Table power supply unit**



PS4

PS5



PS6

1

2

3

4

5

A

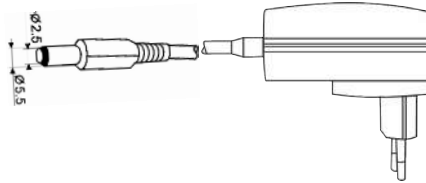
1

Designation	Part no.
Table power supply unit, cable length: 1.8 m, XLR Plug, 3-pole, even, PS6 Primary: 90-240 V AC , 47-63 Hz Secondary: 12 V DC , 6600 mA Protection class: IP40	6066586

2

PS7

### Male connector power supply unit

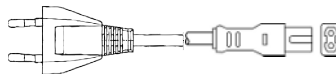


3

Designation	Part no.
Male connector power supply unit, cable length: 1.8 m, 5,5/2,5 Socket, 2-pole, even, PS7 Primary: 100-240 V AC , 50-60 Hz Secondary: 12 V DC , 2000 mA Protection class: IP40	6099121

4

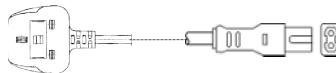
C8 / 2 pol



Description	Part no.
Single-ended cordset power supply unit (Europe), 2-pole, Length = 2 m	6008448

5

C8 / 2 pol



Description	Part no.
Single-ended cordset power supply unit (United Kingdom), 2-pole, Length = 2 m	6008447

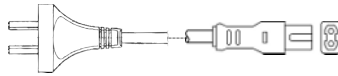
A

C8 / 2 pol



C8 / 2 pol

Description	Part no.
Single-ended cordset power supply unit (USA/ Canada), 2-pole, Length = 2 m	6008446



Description	Part no.
Single-ended cordset power supply unit (Australia), 2-pole, Length = 2 m	6008449

C13 / 2+PE pol

**Power supply unit of single-ended cordset, 3-pin**



Description	Part no.
Single-ended cordset power supply unit (Europe), 3-pole, Length = 2 m	6254930

C13 / 2+PE pol



Description	Part no.
Single-ended cordset power supply unit (United Kingdom), 3-pole, Length = 2 m	6254962

C13 / 2+PE pol



Description	Part no.
Single-ended cordset power supply unit (USA/ Canada), 3-pole, Length = 2 m	6254961

C13 / 2+PE pol



Description	Part no.
Single-ended cordset power supply unit (Australia), 3-pole, Length = 2 m	6254963

1

2

3

4

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A

## 4 I/O module multiprotocol for Ethernet

Here, you will find I/O modules for Ethernet ...



Description / Features	Part no.
Compact multiprotocol I/O module for Ethernet 8 universal digital channels as PNP inputs or outputs 2 A	4577027
<ul style="list-style-type: none"> <li>– PROFINET Device, EtherNet/IP Device or Modbus TCP Slave</li> <li>– Integrated Ethernet Switch allows line topology</li> <li>– Supports 10 Mbps/100 Mbps</li> <li>– 2x M8, 4-pole, Ethernet field bus connection</li> <li>– M8 4-pole connector for power supply</li> <li>– Galvanically separated voltage groups</li> <li>– Fiberglass reinforced housing</li> <li>– Schock and vibration tested</li> <li>– Fully encapsulated module electronics</li> <li>– Protection class IP65/IP67/IP69K</li> </ul>	



Description / Features	Part no.
Compact multiprotocol I/O module for Ethernet 4 analog inputs, configurable as voltage, current, RTD or thermo element	4577028
<ul style="list-style-type: none"> <li>– PROFINET device, EtherNet/IP device or Modbus TCP slave</li> <li>– Integrated Ethernet Switch allows line topology</li> <li>– Supports 10 Mbps/100 Mbps</li> <li>– 2x M8, 4-pole, Ethernet field bus connection</li> <li>– M8 4-pole connector for power supply</li> <li>– Galvanically separated voltage groups</li> <li>– Fiberglass reinforced housing</li> <li>– Schock and vibration tested</li> <li>– Fully encapsulated module electronics</li> <li>– Protection class IP65/IP67/IP69K</li> </ul>	



**Description / Features****Part no.**

Compact multiprotocol I/O module for Ethernet  
4 analog outputs, configurable as voltage or current

4577030

- PROFINET device, EtherNet/IP device or Modbus TCP slave
- Integrated Ethernet Switch allows line topology
- Supports 10 Mbps/100 Mbps
- 2x M8, 4-pole, Ethernet field bus connection
- M8 4-pole connector for power supply
- Galvanically separated voltage groups
- Fiberglass reinforced housing
- Schock and vibration tested
- Fully encapsulated module electronics
- Protection class IP65/IP67/IP69K

**Description / Features****Part no.**

Compact multiprotocol I/O module for Ethernet,  
4 IO link master channels,  
4 universal digital channels PNP channels, 0.5 A,  
channel diagnosis

4577031

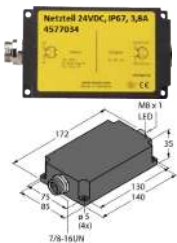
- PROFINET device, EtherNet/IP device or Modbus TCP slave
- Integrated Ethernet Switch allows line topology
- Supports 10 Mbps/100 Mbps
- 2x M8, 4-pole, Ethernet field bus connection
- M8 4-pole connector for power supply
- Galvanically separated voltage groups
- Fiberglass reinforced housing
- Schock and vibration tested
- Fully encapsulated module electronics
- Protection class IP65/IP67/IP69K



Description / Features	Part no.
------------------------	----------

Connector to design TBEN-S module groups on DIN rail	4577032
--	---------

- Packaging unit 5 pieces
- Earthing the module on the DIN rail
- Simple series of TBEN-S modules
- Creation of compact TBEN-S module groups
- Reduced time and effort required for installation of the group
- Easy observance of installation dimensions



Description / Features	Part no.
------------------------	----------

Kompaktes switched power supply in IP67 24 VDC input voltage, 3.8 A output current	4577034
---	---------

- Wide temperature range
- LED state indicator
- AC and DC wide range input
- Power supply failure bridging time up to 50 ms
- High efficiency
- Idle running and short circuit proof
- Air cooled



ZBE230

Description / Features	Part no.
------------------------	----------

Accessories for field bus systems	4577035
-----------------------------------	---------

Field attachable connector

Coupling 7/8", straight

- for use in PROFIBUS-PA applications
- Screw-type terminal
- Metallic union nut
- Oil-resistant
- UL permitted
- 3-pole
- PG13.5 screw-in thread
- Cable bushings 10 ... 12 mm

**ZBE230**



**Switching power supply unit female connector, , black,  
Socket 7/8", 3-pole**

Designation	Part no.
Switching power supply unit female connector, ZBE230, Color: black, IP67	4577045

1

2

3

4

5

A

## 5 Examples / Applications

### 5.1 DATA+ Box - connection examples

Here, you will find connection examples regarding the DATA+ BOX.

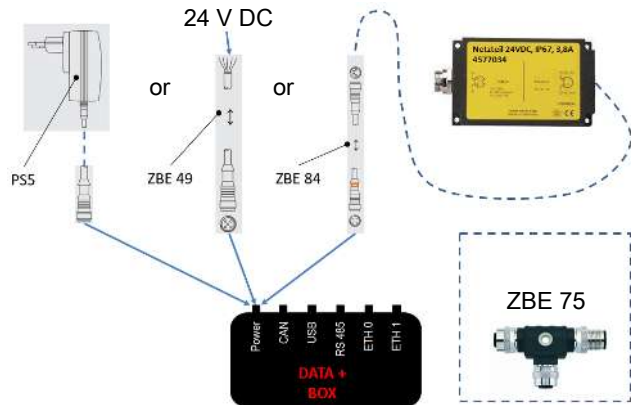


Fig. 6: Supply voltage DATA+ BOX

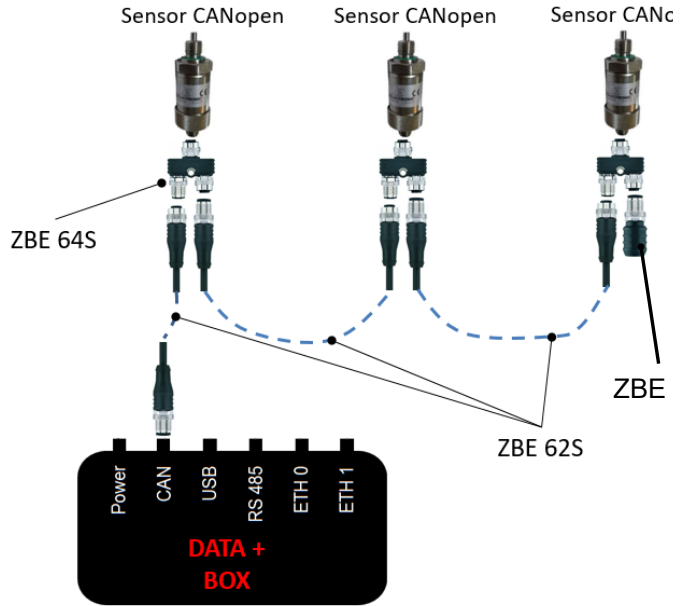


Fig. 7: Example: DATA+ BOX and CAN bus

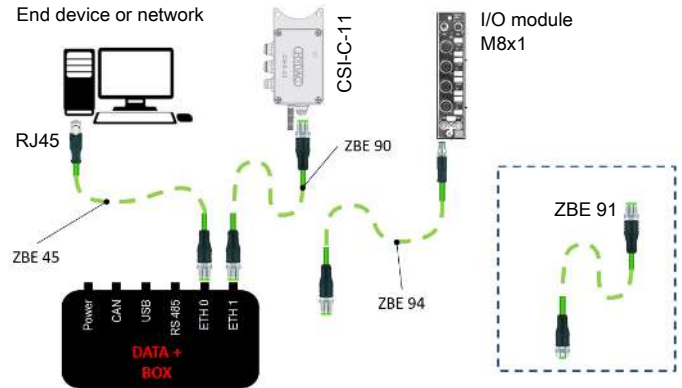


Fig. 8: Example 1: DATA+ BOX and Ethernet

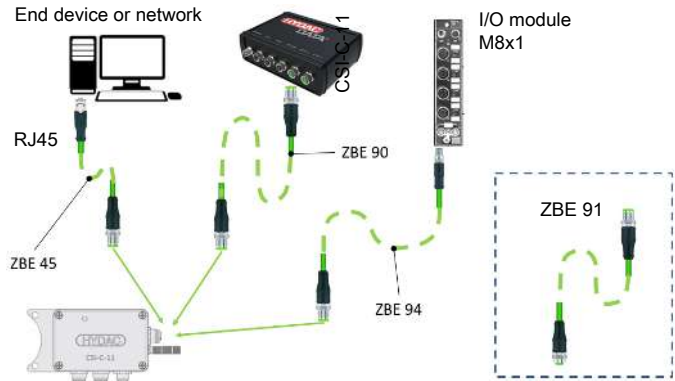


Fig. 9: Example 2: DATA+ BOX and Ethernet

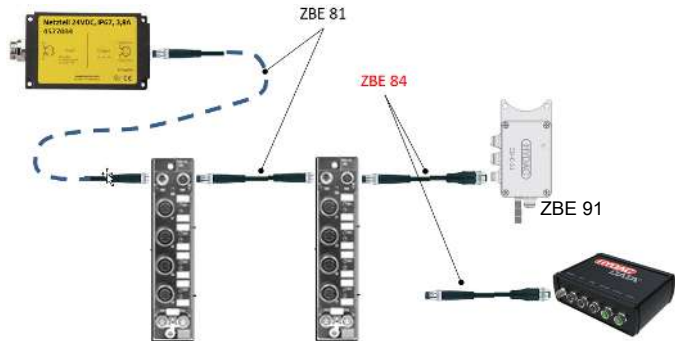


Fig. 10: Example: DATA+ BOX and I/O\_Module



The I/O modules always require 24 V DC doubled: Pin 1 + 2 with 24 V DC, Pin 3 + 4 Ground (GND). This means that in case it must be adapted.

**NOTICE! Do not connect HYDAC Interfaces/module directly, to do that, always use the adapter cable ZBE84.**

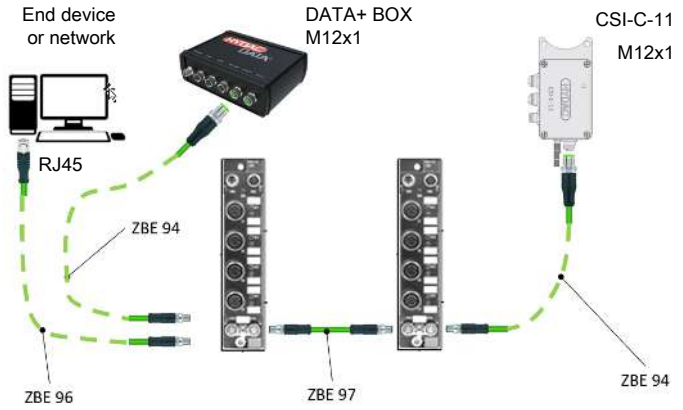


Fig. 11: Example: DATA+ BOX and I/O modules of 24V DC

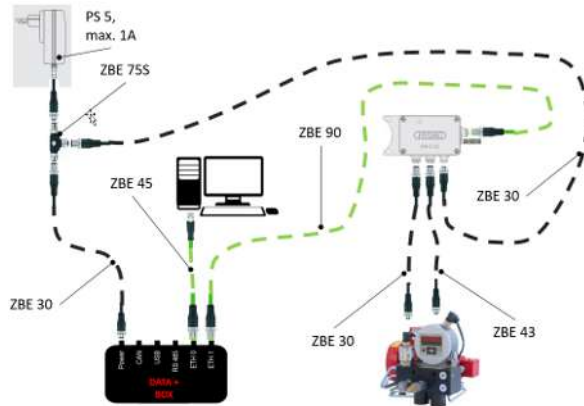


Fig. 12: Example: DATA+ BOX 1

1

2

3

4

5

A

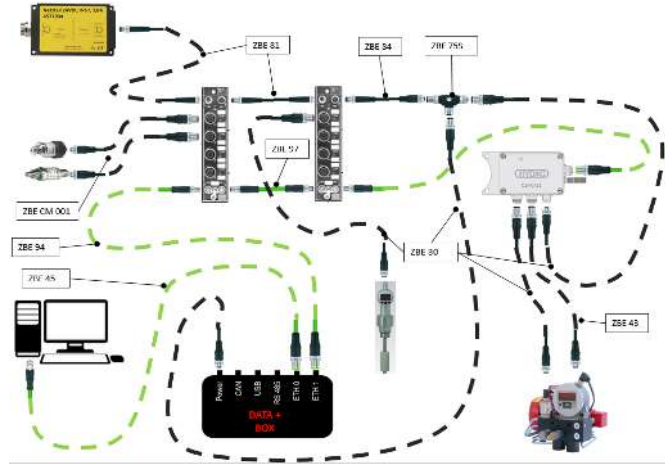


Fig. 13: Example: DATA+ BOX 2

## 5.2 CSI-C-11 - Connection examples

Here, you will find connection examples for the CSI-C-11.



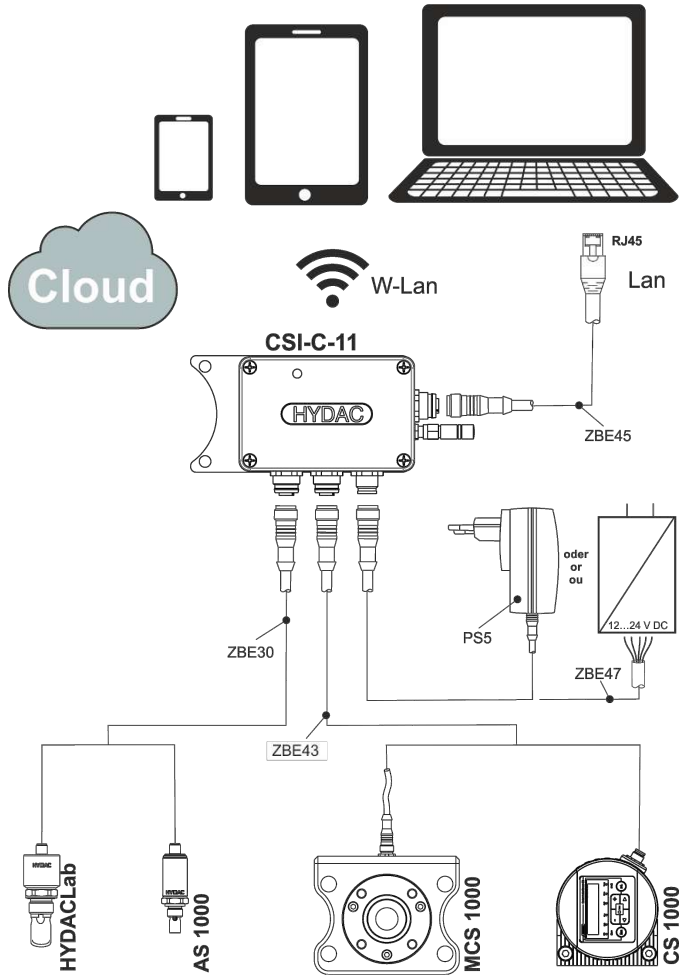


Fig. 14: Connection example CSI-C-11-0-0-0

- 1
- 2
- 3
- 4
- 5
- A

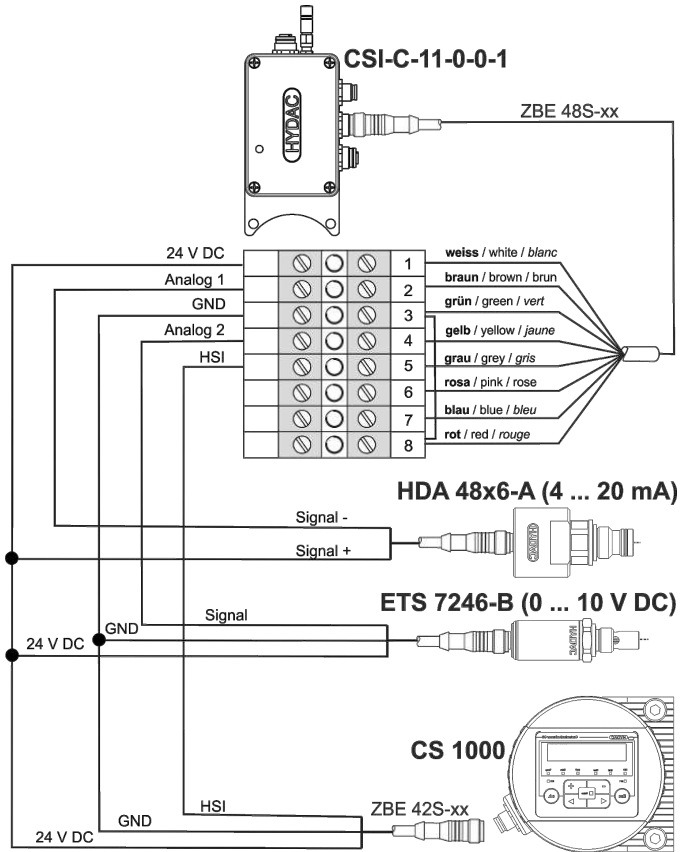


Fig. 15: Connection example CSI-C-11 - CS1000 - HDA48x6-A - ETS7246-B

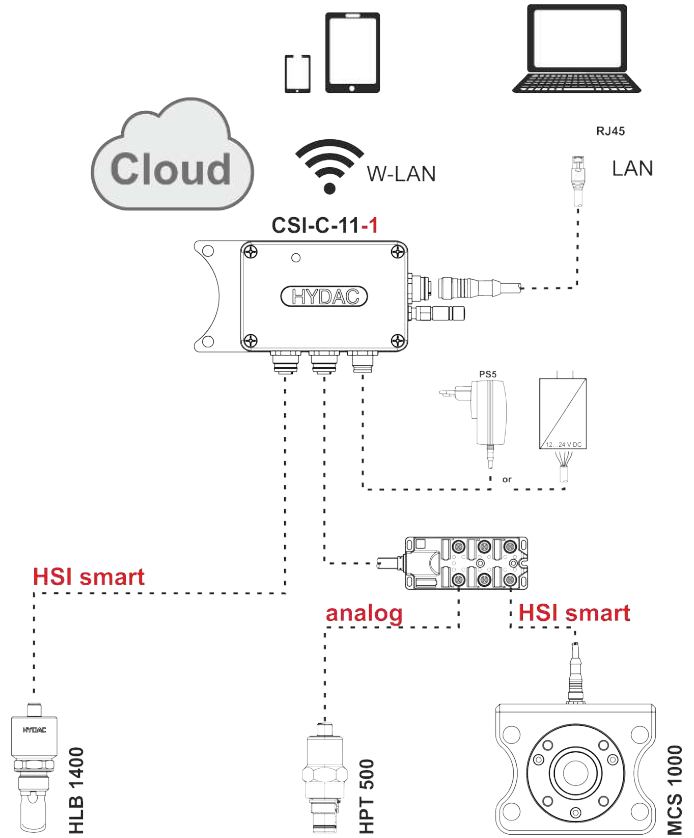


Fig. 16: Connection example ZBE CSI 60

For further details on the ZBE CSI 60 connections, see ZBECSI 60 connection adapter - Connection overview [▶ 30].



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A

## A Appendix

### A.1 Contacting Customer Service

Contact data such as the telephone numbers, e-mail and mailing addresses for the Hotline, product support, Customer Service, Branches, service partners for maintenance, repair and spare parts can be found, always updated, on our homepage [www.hydac.com](http://www.hydac.com).

HYDAC SYSTEMS & SERVICES GMBH	
Friedrichsthaler Str. 15, Werk 13	
66450 Neunkirchen - Heinitz	
Germany	
Telephone:	+49 6897 509 01
Fax:	+49 6897 509 324
E-mail:	<a href="mailto:service@hydac.com">service@hydac.com</a>
Homepage:	<a href="http://www.hydac.com">www.hydac.com</a>

*Tab. 6: HYDAC Service Germany*

## Glossary

### CAT 5 / CAT 5e

---

CAT 5 patch cables represent a common standard and are used in the majority of networks. They can perform higher data transmission rates in a frequency range of 100 Mhz, and the standard designation for these cables is EIA/TIA-568. The CAT 5 patch cable can transmit data at higher speeds of 100 Mbps. CAT 5e forms a subcategory, the e stands for "enhanced". The patch cable is suitable for Gigabit Ethernet networks with longer line lengths. The CAT 5 patch cables are suitable for Fast or Gigabit Ethernet. A still common standard is the Fast CAT 5e patch cable. The maximum performance is also one gigabit per second, due to the 350 Mhz transmission frequency, the effective speed is even higher than that of the CAT 5e patch cables. The CAT 5 cables are generally a bit more sensitive and have the disadvantage that the damping increases quickly. Both CAT 5 and CAT 5e patch cables are well suited for shorter distances around ten meters.

### CAT 6

---

Cables of this category are designed for higher frequencies of up to 250 MHz. However, the data transfer rate for data transmissions decreases the longer the patch cable is. These patch cables are

used for all voice and data transmissions as well as on ATM and multimedia networks. The CAT 6a subcategory cables operate at operating frequencies of up to 500 Mhz and are particularly powerful. They are suitable for 10 gigabit Ethernet. The CAT 6 cables provide a higher transmission rate.

### CAT 7

---

CAT 7 is a standard category whose technology is used worldwide. Often, this cable class is also designated "Class F", operating frequencies of 600 MegaHertz are possible with CAT 7 patch cables. CAT 7 also has a subcategory, CAT 7a (also class FA), which can achieve frequencies of 1000 MHz and 100 Gbps. The CAT 7 patch cables all have 4 individually shielded pairs of wires within a common shield.

### F/FTP

---

A total foil shield (F) with twisted pairs shielded by foil. Similar to F/UTP cables, these shielded cables are commonly used in 10GBaseT applications.

### FRNC

---

Flame Retardant Non Corrosive - flame-resistant, halogen-free sheath material of a line, flame resistant according to IEC 60332-1-2, smoke

density according to IEC 61034, oil a according to IEC 60811-2-1 (4 h / 70°C)

## Patch cable

A patch cable (from to patch - interconnect) is a type of cable for network technology and telecommunication. Patch cables or network cables made of copper (for example Twisted Pair for Ethernet). Synonyms are e.g. Ethernet cables or LAN cables.

## PiMF

= Pairs in Metal Foil

## PoE

Power-over-Ethernet are IEEE standards and procedures for supplying power to end devices in a network via the network cable. With Power-over-Ethernet, power is supplied to an end device via the existing twisted pair cable and RJ45 connectors through a line-side Ethernet interface. In this case, data and the power for the energy supply are transmitted together via a cable to the end device. The feeding device is, for example, a switch.

## S/FTP

An overall shielding braid (S) with foil shielded (FTP) twisted pairs. The "shielding" underneath the sheath forms a mesh and each pair is surrounded by its own individual foil barrier. The purpose of the additional foil on individual pairs is to

limit the amount of overlap between them. S/STP (Screened Shielded Twisted Pair) or S/FTP (sftp = Screened Foiled Twisted Pair)

## S/UTP

A cable with shielding braid (S) and with pairs of twisted wires (UTP). This is sometimes referred to as a STP cable.

## SF/UTP

Both an overall shielding braid (S) and a foil shield (F) with unshielded twisted pairs (UTP). This cable is sometimes also referred to as a STP cable. Fully braided cables provide very effective protection to prevent electromagnetic interference (EMI) from entering or leaving the cable.

## U/FTP

Twisted pairs shielded by foil (FTP) without overall shielding or braiding (U). This type of shielded cable is also commonly used in 10Gbaset applications.

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Authorized representative 2

**W**

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Wire color <-> Pin 12



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