wieland

podis® CON 7G4

podis® CON Power Bus System
Installation system for decentralized power distribution

Manual

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INFO

CONTENTS

1 ABOUT THIS MANUAL

This manual provides you with support regarding the project planning and development of electrical facilities as well as the installation and commissioning of podis® CON modules. It contains information as to how the devices can be used.

This document contains the information required for the intended use of the device as well as technical data. It describes the technical characteristics, the usage of the device as well as the boundary conditions. Case studies that are used in practice are presented as part of illustrative application examples.

1.1 Target groups and qualification of personnel

Commissioning and installation of components should only be carried out by specialized technicians. The legal and valid regulations for such types of installations must be considered.

Therefore, the system manual is targeted at the following:

- Those who can verify that they have the corresponding training and already have corresponding basic knowledge of planning and commissioning of electrical installations.
- System integrators
- Electricians

1.2 Symbols and notations

Information that warns of personal injury or property damage are emphasized by safety instructions.

DANGER

The symbol "DANGER" indicates imminent danger. If it is not avoided, it can result in death or serious injury.
"DANGER" is used to warn of dangers at the time of the warning are already existing (e.g. hot surfaces, sharp edges, pinch points, etc.).
It is used exclusively in danger of personal injury!

WARNING

The symbol "WARNING" indicates a potential threat. If it is not avoided, it can result in death or serious injury.

CAUTION

The symbol "CAUTION" indicates a potential threat. If it is not avoided, it can result in light injuries.

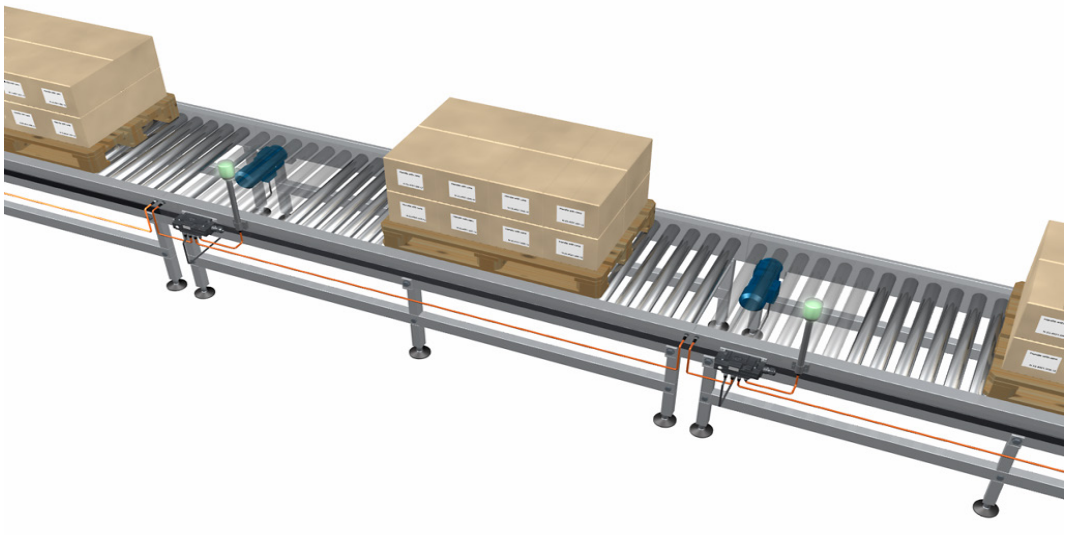
NOTE

Refer to notes for special features of a device.

Instructions also tell you about a potentially harmful situation. If it is not avoided, the system or something in its environment can be damaged.

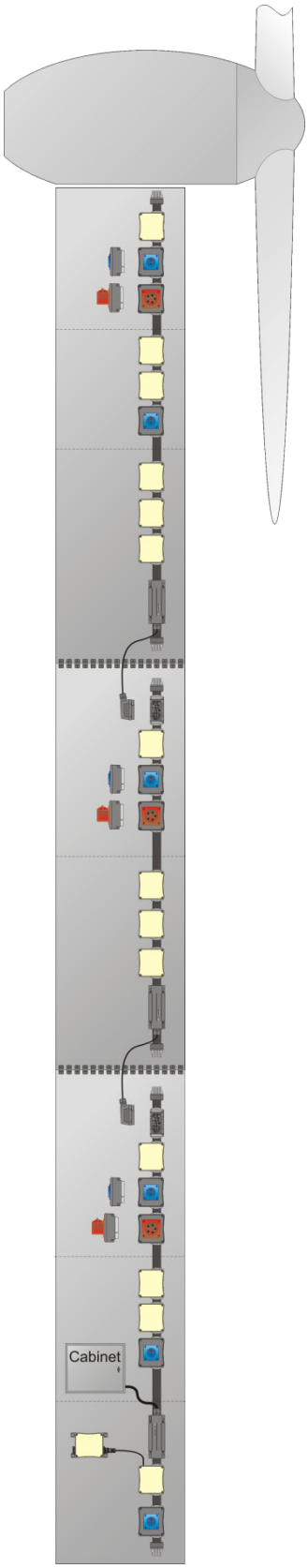
2 SYSTEM OVERVIEW

1. Cable end cap
2. Cable bushing
3. 7-pin connection module
4. Distributor module
5. Front plug connector
6. 2-pin and 3-pin connection module
7. Pluggable outlet, 7-pin with connector
8. Tray cable
9. Sealing sleeve



Example of a podis® system configuration for a conveyor system.

Tray cable with 400/480 V AC and 24 V DC with podis® MOT field distributors to control and power the drives. Separate field bus AS-i.



Example of a podis® system configuration for the tower of a wind energy plant.

Tray cable with 400 V AC and 24 V DC with podis® LED for (emergency) illumination and power sockets for maintenance.

3 PODIS® CON TRAY CABLE

Item No.	Image	Description
00.709.0504.1		**Tray cable EVA 7G4 BLACK – VDE** Tray cable 7 × 4 mm² EVA, finely stranded, numbered cores, external dimensions of approx. 35 × 6 mm, weight approx. 440 g/m, 450/750 V in accordance with VDE, free of halogen and silicone, resistant against oils and acids, low fire load, black sheath
00.729.0504.1		**Tray cable XLPE 7G4 BLACK – UL** Tray cable 7 × 4 mm² XLPE, finely stranded, numbered cores, external dimensions of approx. 35 × 6 mm, 600 V in accordance with UL, UL 1277 TC-ER, free of halogen, low smoke, black sheath.
00.704.0504.1		**Tray cable PVC 7G4 BLACK – UL, cUR** Tray cable 7 × 4 mm² PVC, finely stranded, numbered cores, external dimensions of approx. 35 × 6 mm, 600 V in accordance with UL, UL 1277 TC-ER, UL WTTC, cUR – AWM Class II Group A/B, FT4, black sheath.

3.1 Current-carrying capacity of tray cables and points of contact

The maximum power load of the conductors refers to free routing of the cables in the open (>10 mm).

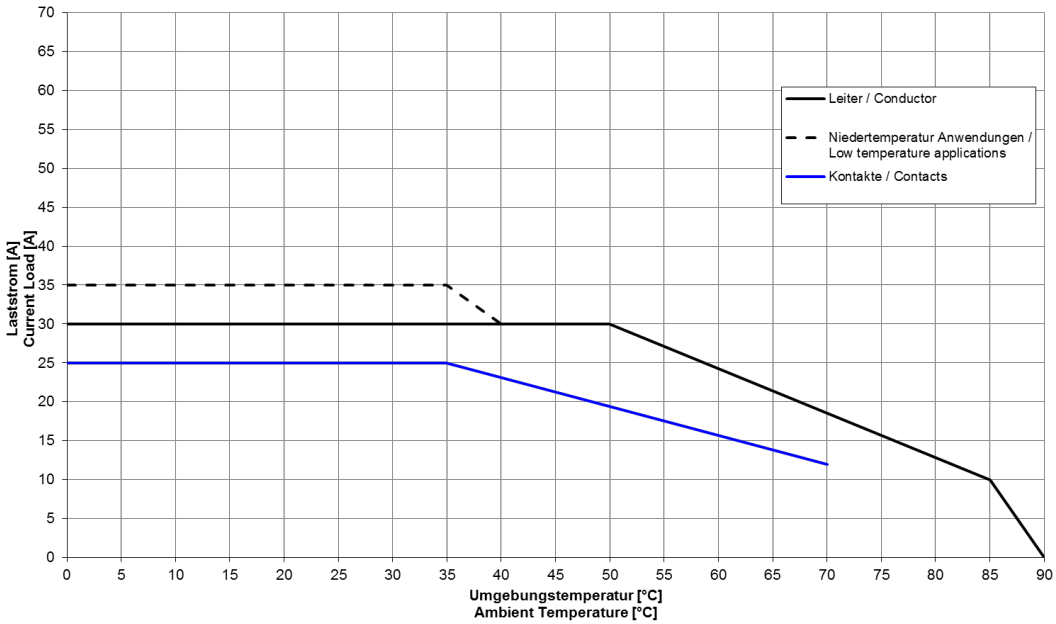


Diagram 1: Maximum permissible power load per conductor and contact for load currents applied to L1, L2 and L3, for tray cable EVA 7G4 (00.709.0504.1) and tray cable XLPE (00.729.0504.1) as fed entirely by plug FCS 4 7 ST SA SO0 (75.015.0151.0) and tray cable outlet.

	In the open d > 10 mm			Loose on wall or floor			Cable duct		
Loaded cores	**3**	**5**	**6**	**3**	**5**	**6**	**3**	**5**	**6**
Ta [°C]	**Max. cross current**			**Max. cross current**			**Max. cross current**		
20	40	35	35	40	32	32	35	30	25
25	40	35	35	35	32	30	35	30	25
30	40	35	32	35	30	25	32	25	25
35	35	32	30	32	25	25	30	25	25
40	35	30	30	30	25	25	25	20	20
45	32	30	30	25	20	20	25	20	20
50	30	30	30	25	20	20	20	20	16

Table 1: Current-carrying capacity of podis® CON tray cable EVA 7G4 and XLPE 7G4

3.2 Notes on routing of tray cables

The tray cable is convenient and easy to handle and install. Some rules apply to the installation and routing, which are described in the following.

3.2.1 General instructions and precautionary measures

The podis® tray cable is operated in grids with grounded feeds (TN-S networks). A floating installation of podis® systems is not permitted.

CAUTION

- The tray cable may only be commissioned if it is in a faultless condition and does not exhibit any damage to or openings of the sheath.
- Unused connections, outlets or devices on the tray cable must be sealed off using the corresponding measures (lids, blind plugs, etc.). It is not permitted to work on or operate the tray cable with open connections, outlets or devices.
- When conducting any working operations on the tray cable (assembly, maintenance, installation, etc.) the power must be turned off.
- The tray cable must always be closed off using the suitable end caps (see ordering instructions) due to the required air gaps and creepage distances. It is not permitted to operate the tray cable with open ends or using other sealing solutions than the end caps prescribed herein.

NOTE

Openings in the sheath caused by the insulation-piercing termination must be sealed using the sealing collar (see ordering instructions).

3.2.2 Monitoring and safety devices

Depending on the field of application, different components and protective measures are required to complete a system or installation. The type of components and the level of obligation associated with these protective measures depends on which VDE guideline affects your system or installation.

The assignment of safety guards to protect from short-circuits of cables and lines of the main or auxiliary circuits outside of switchgear combinations must be conducted under consideration of the loop impedance. DIN VDE 0100 Part 430 is to be applied in this regard.

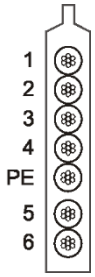
- The tray cable must be protected against overloads and short-circuits using a three-phase circuit breaker.
- For the determination of the nominal current, the information in section 3.1 must be considered.
- By using the connection module FCS 4 7 SI FK or the tap-off module FCS 4 7 SI BU SW, the nominal current of the breakers I_{rated} has to comply with the blue graph for the contacts in Diagram 1.
- The tripping characteristic has to be class C. The tripping current is then between 8 and 10 I_{rated} in this case (EN 60898, DIN VDE 0641 Part 11 and IEC 898).
- The auxiliary circuit must be protected by a single-phase 20 A (I_{rated}) circuit breaker with tripping characteristic class C.
- Emergency stop devices (in accordance with IEC 204, complies with DIN VDE 113) must be available. Their functioning may not be impaired in any way.
- The feed must be grounded (TN-S network). The plant into which the podis® systems are to be integrated should be connected to the protective ground (neutral point of the mains transformer). If this is not the case, every consumer connected to the podis® tray cable must be separately connected to the neutral point of the mains transformer through a protective conductor. The diameter of the protective conductor must be at least 4 mm². The protective conductor must not be looped through the consumers.
- Effective lightning protection measures must be fitted to the plant in order to prevent damage to electronic devices.
- The safe electric separation between main and auxiliary circuits is required for the motor starters. The main and auxiliary circuits are constructively separated in the podis® system in a safe and secure manner. When connecting motor/contactor combinations made by third party manufacturers, make sure that electric separation is guaranteed for these devices (separation voltage of at least 2.5 kV AC).

Regarding the 24 V or 50 V supply, make sure that lightning protection measures are fitted and the low voltage supply is separated in an electrically safe manner.

3.2.3 Use of different voltages

The podis® CON 7G4 tray cables fulfill the requirements of DIN VDE 0100-528.1 for the use of the voltage levels I and II acc. 60449 in one cable. Additionally, the podis® CON 7G4 tray cables are designed with a separator between PE and the conductors 5 and 6. Different voltage level should be assigned to conductors 1…4 and conductors 5 and 6.

For the use of different voltage levels acc. UL, the maximum ratings are defined in UL File PQUR.E480715.

	Wire	Color	Assignment option a	Assignment option b
	1	black	600 V AC	600 V AC
	2	black	600 V AC	600 V AC
	3	black	600 V AC	600 V AC
	4	black	600 V AC	600 V AC
	PE	green/yellow	PE	PE
	5	black	48 V DC	600 V AC
	6	black	0 V DC	600 V AC

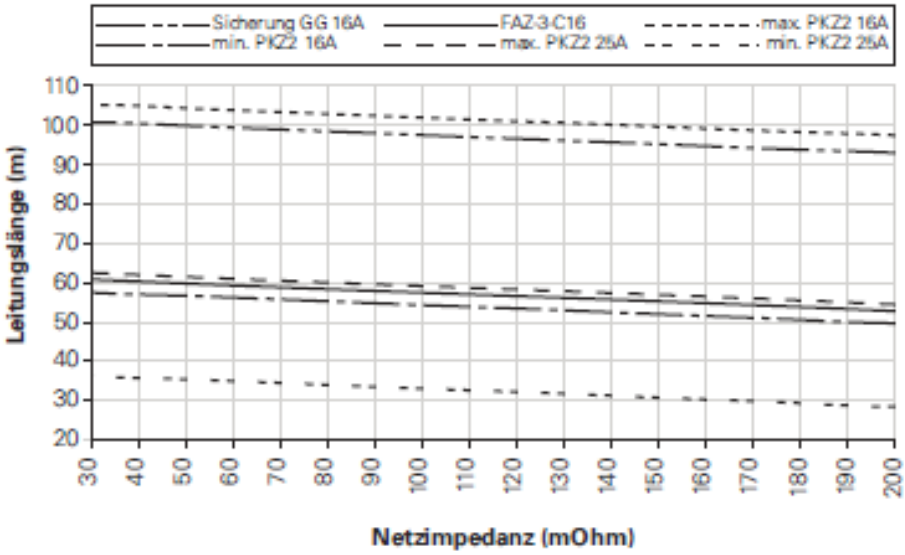
3.2.4 Routing instructions

Assembly	EVA 7 × 4 mm² (00.709.0504.1)	XLPE 7 × 4 mm² (00.729.0504.1)	PVC 7 × 4 mm² (00.704.0504.1)
Bending radius	> 18 mm	≥ 100 mm	72 mm
Assembly temperature	-5 °C…+50 °C	+5 °C…+50 °C	+5 °C…+50 °C
Routing type	Cable duct, platform with cable clamps (see "Cable collar" section)		

PVC-Cable

The tray cables are not non-trailing cables.

When routing the tray cables inside cable ducts, you must consider the derating according to VDE 0660 Part 507 and the maximum ambient temperature of 50 °C. Please also consider the following diagram regarding the derating.

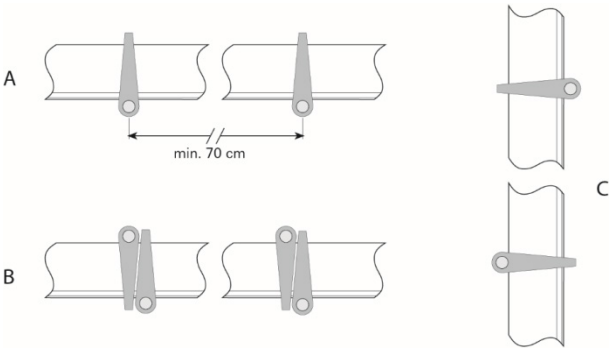


3.2.5 Mounting and routing of tray cables with cable clamps

The cable clamps (Z5.563.3000.0) are fitted to solid surfaces by means of screw fitting. The tray cable is suspended from the mounted cable clamps (see drawing, variant A).

To secure the tray cable against being pulled out, mount two cable clamps immediately next to one another so that they are put up on the opposing sides of the tray cable (see drawing, variant B).

This type of mounting can also be applied for the vertical routing of tray cables. However, offset cable clamps with alternating stops are also sufficient in this case (see drawing, variant C).



3.3 Cutting tray cables to length

In order to cut the podis® CON tray cables to length, the cables are separated by a single cut with a pair of cable shears.

Required tools:

Figure 1: Cable shears (F0.000.0051.9)

Cut the tray cable to length as desired using the cable shears (F0.000.0051.9). Ensure a clean, square cut. Avoid fraying of the copper cores. For big cables, cut in two steps.

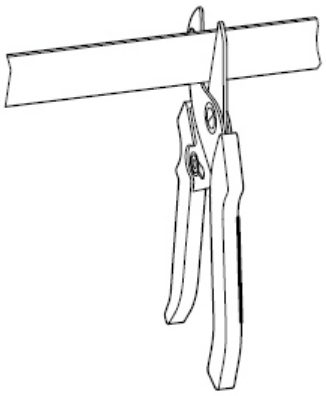


Figure 2: Cutting tray cable to length

3.4 Stripping of tray cables

The podis® CON tray cable has to be stripped for some applications. Required for this purpose:

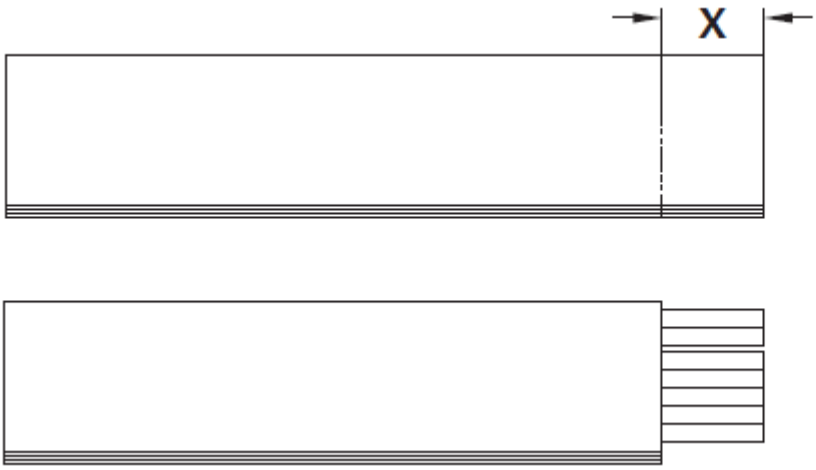
- Assembly of tray cable end caps (Z5.562.7553.1)
- Connection to distributor module (75.010.0053.1)

Required tool:

Figure 3: Stripping knife (95.350.1100.0)

Procedure:

1. Cut the cable to the desired length.
2. Strip the tray cable in accordance with the following table.



	Stripping lengths (X mm)
Cable end cap	19 mm
Distributor module	50 mm
Terminal block inside switchgear cabinet	> 50 mm (depending on specific connecting conditions)

A training video regarding stripping of the cables and attachment of the cable end cap is available here: https://www.youtube.com/watch?v=SMx9gI7TGZE

3.4.1 Stripping of tray cables for connection to the distributor module or terminal strips

Scratch the sheath of the cable on the front and rear sides of the tray cable in the longitudinal and transverse directions as shown in the following images. A standard cable stripping knife suffices for this purpose.

CAUTION

Do not scratch deeper into the rubber sheath than a maximum of 0.7 mm in order to avoid damage to the insulation.

When using the stripping knife (95.350.1100.0), the blade protrudes by exactly 0.7 mm in order to prevent any damage to the insulation. The stripping knife is supplied with a set of instructions.

1. Cutter F0.000.0051.9
   Dismantling knife 95.350.1100.0
   Flat plier

2. Straight cut of the cable

3. Cutting lines:
   Cut the sheath of the cable along the lines as shown here on the front and the back of the cable.

4. Scarify the sheath of the cable with the tip of the dismantling knife.

5. Cut the sides of the cable with the left blank blade.

6. Tear open the sheath of the cable with a flat plier. Apply the plier on the side of the cable.

7. Remove all remaining parts of the sheath.

8. The result should like this:

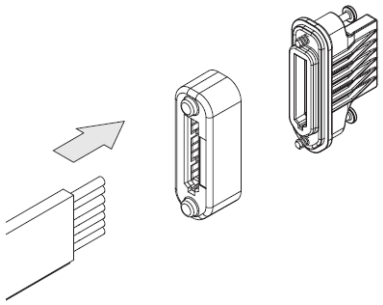
3.5 Termination of the tray cable

CAUTION

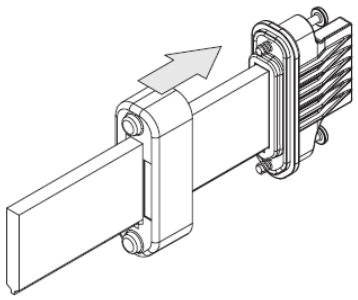
Due to the required air gaps and creepage distances, podis® CON tray cables must always be terminated by end caps on both ends.

After the tray cable has been routed, all free cable ends must be safely terminated and sealed in accordance with IP65. Use the cable end pieces (Z5.562.7553.1) for this purpose. They are composed of a shorter part (cover) and a longer part, which contains the screws, the seal and the insulation ducts. The following images illustrate the termination of the tray cable.

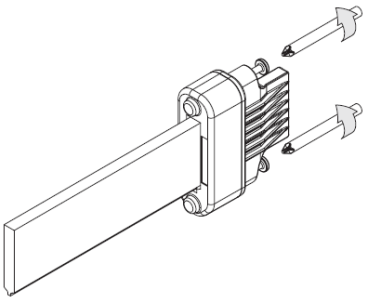
1. Push the counterpiece with gasket over the dismantled tray cable. To handle it more easy, push the lamella in the counter piece outwards.



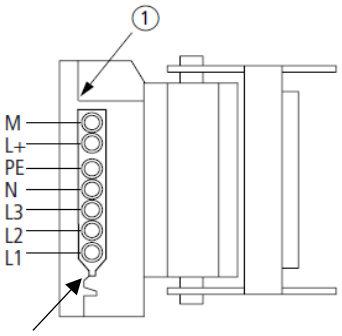
2. Route the stripped end of the tray cable into the end cap. The openings in the end cap are coded in accordance with the cable outline.



3. Tighten both clamping screws.



CAUTION: The tray cable is protected against polarity reversal via coding. One edge of the tray cable is V-shaped. The cable receptacles in all system components (tray cable outlets, cable end caps) are shaped correspondingly. The tray cable is inserted in such a manner that the V-shaped side is opposed to the hinge of the opened cable receptacle.



Coding/polarity reversal protection

NOTE A training video regarding stripping of the cables and attachment of the cable end cap is available here: https://www.youtube.com/watch?v=oLoFVR-LJ-w

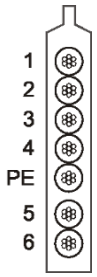
3.5.1 Making the connection

The modules for power feed and tap can be installed at any desired point of the tray cable. The conductors of the tray cable remain uninterrupted. The connection is made using contact screws.

Microsection of a contact point, penetration of the sheath and insulation, contact with the conductor through the contact screw.

3.5.2 Conductor assignment

In order to guarantee flawless interaction with other podis® CON components, we recommend the following assignment for the individual cores, however the individual conductors of the tray cable can generally be assigned freely apart from PE.

	Wire	Color	Assignment option a	Assignment option b	Assignment option c
	1	black	L1	L1	+24 V DC
	2	black	L2	L2	+24 V DC
	3	black	L3	L3	+24 V DC
	4	black	N	N	0 V
	PE	green/yellow	PE	PE	PE
	5	black	+24 V DC	N	0 V
	6	black	0 V	L1'	0 V

All connecting and removal operations may only be performed on the tray cable in an unpowered state!

For the use of different voltage levels, please consider the information under point "Use of different voltages", page 10.

4 FEEDING INTO A POWER BUS SEGMENT

There are multiple ways to feed into a power bus segment:

- Directly from the switchgear cabinet
- Through the distributor module
- Through the 7-pin connection module

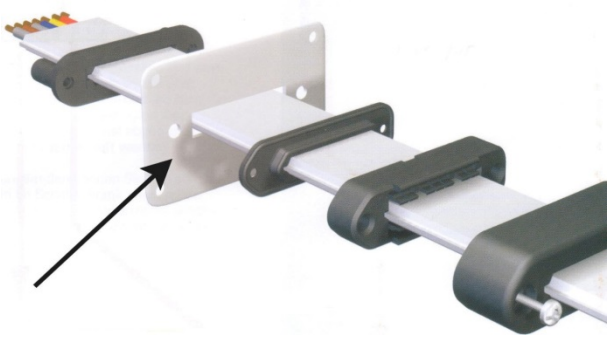
4.1 Feed directly from the switchgear cabinet

The tray cable is routed into the switchgear cabinet using the tray cable bushing (Z5.563.6553.1) and connected there directly.

Advantages: No feeding via round conductor and feeding module necessary.

Disadvantages: Poor distribution of voltage and current on the power bus (high currents close to switchgear cabinet, high voltage away from the switchgear cabinet). Long distances between switch-gear cabinet and first consumer in the field wastes unnecessary quantities of tray cable.

4.1.1 Insertion, retaining and connection of tray cable inside switchgear cabinet



Connection of tray cable with tray cable bushing (black) and adapter plate (white). The adapter plate Z5.563.7553.0 can optionally be used, for example for large housing openings.

4.2 Feeding through distributor module

A round conductor is routed into the field from the switchgear cabinet. This conductor is connected to the tray cable through the distributor module (FCS 4 7 SA SA SW, 75.010.0053.1).

Advantages:

- Central feed of up to 32 A possible
- Simultaneous branching of up to 3 cable connections

Disadvantage: Comparatively high assembly efforts

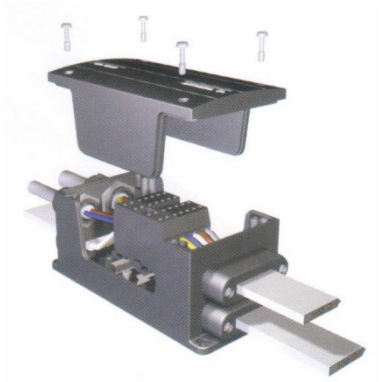


Figure 4: Distribution module with round cable feed-in 400/480 V AC and 24 V DC, three outgoing flat cables.

The following wire sizes can be connected:

- 0.5 – 4 mm² single-wire or with wire end ferrule
- 0.5 – 6 mm² single-wire

4.3 Feeding through 7-pin connection module

A round conductor is routed into the field from the switchgear cabinet. This conductor is connected to the tray cable through the 7-pin connection module (FCS 4 7 SI FK, 75.018.0051.2).

Advantages:

- Central feed of up to 25 A possible (derating)
- Uninterrupted feed through insulation-piercing termination – fast and secure

Disadvantages:

- Maximum feeding current of 25 A
- The connection module has branching points for round conductor fittings on all sides.
- These have to be ordered as extra accessories depending on the application

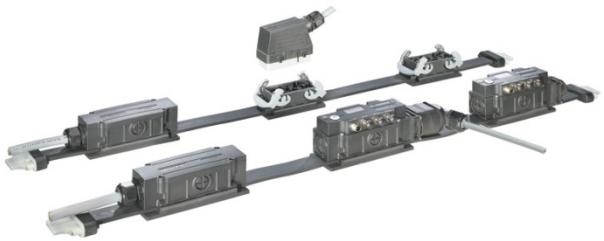


Figure 5: Examples of the connection module with round cable feed-in 400/480 V AC and 24 V DC, one outgoing flat cable.

NOTE Feeding through the connection module is the most cost-effective solution for the power feed (requirement for this application: the supplied current must be sufficient for the intended application of the power bus segment).

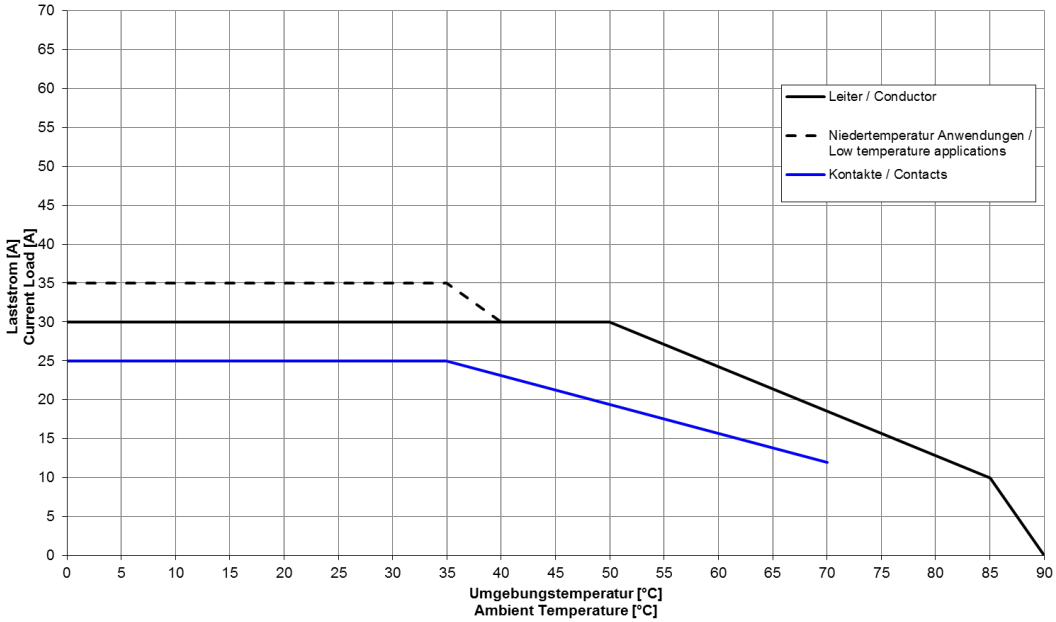


Diagram 2: Maximum permissible power load per conductor and contact for load currents applied to L1, L2 and L3, for tray cable EVA 7G4 (00.709.0504.1) and tray cable XLPE (00.729.0504.1) as fed entirely by plug FCS 4 7 ST SA SO0 (75.015.0151.0) and tray cable outlet.

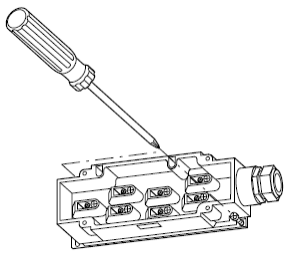
Example for feeding

Assuming a maximum ambient temperature of 30 °C, it is, for example, possible to feed up to 35 A for the cable section (400 V AC, contact points 1-3) and 20 A for the auxiliary conductors (24 V DC, contact points 5 and 6). This example assumes a symmetrical load (no current on neutral conductors or contact point 4).

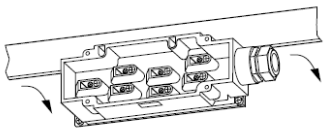
5 MOUNTING OF CONNECTION MODULES AND TAPPING MODULES

Connection modules and tray cable outlets can be placed on both sides of the tray cable due to its symmetrical properties. The tray cable is inserted with the correct coding; the top section is closed and then screwed into place. The mounting is demonstrated by means of a fixed connection module. The assembly of a pluggable outlet is handled in the same manner.

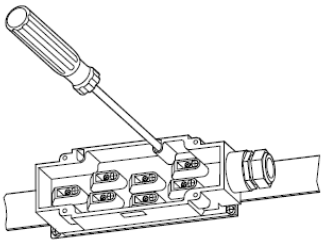
1. Fasten the module by means of two fastening screws M4 securely to the underground. Use shims.
2. Remove the four screws on the cover and take it off.



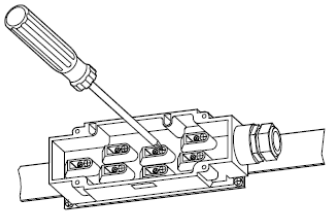
3. Unscrew the screws in the upper rim to open the module.
   Consider the coding of the tray cable (flat side, pointed side) and put the tray cable in the appropriate orientation into the housing.



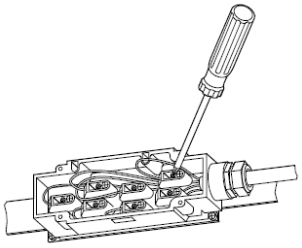
4. Afterwards flip back the upper part of the housing again and tighten the two screws (torque 1.2 Nm / 10.6 lb-in).



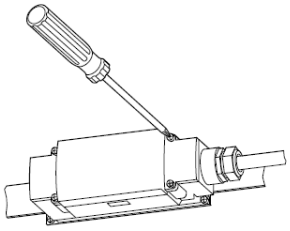
5. Screw all the contact screws (also those that are not needed) into the tray cable (torque 1.0 Nm / 8.8 lb-in).



6. Remove the sheath from the round cable for a distance of approximately 160 mm.
7. Feed the round cable through the gland and tighten the gland.
8. Remove the insulation from the individual strands for 12 mm.
9. Connect the individual strands to the respective spring loaded terminals.



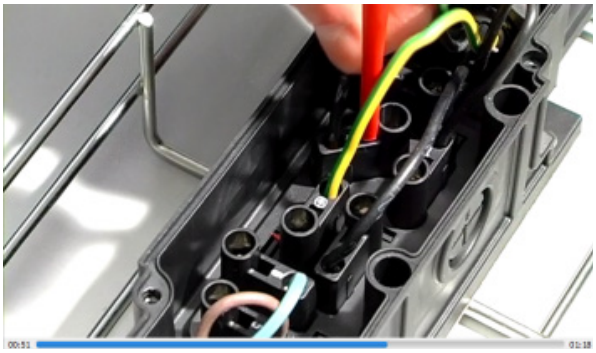
10. Put the cover back on the housing and tighten the four screws (torque 1.2 Nm / 10.6 lb-in).
    Make sure that no wires are squeezed between the cover and housing.



CAUTION

- The contact screws must be screwed in until they meet the stop! The maximum tightening torque may not exceed 1 Nm.
- The use of an electric or pneumatic torque driver is recommended. Phillips-head screwdriver, size 1, shaft length at least 45 mm. Matching screwdriver blade in accordance with DIN 3128, PH 1, Item No. 06.502.5200.0
- The minimum connection temperature for the EVA 7 × 4 mm² tray cable is -5 °C. for the XLPE 7G4 tray cable, the minimum assembly temperature is +5 °C.

A training video showing the mounting of the connection components, the insertion of the tray cable and the termination of conductors is available at:
https://www.youtube.com/watch?v=LZKgNO11-kA



A training video detailing the connection of a round conductor to a connection module is available at: https://www.youtube.com/watch?v=-2cPjqt4JM8

6 ATTACHMENT OF FIXED MODULES

6.1 Connection modules

The permanently connected podis® CON connection module is used for both feeding into the power bus and as a tap for supplying permanently connected devices. Furthermore, the connection module is used for connection of two power bus segments. The module is electrically connected to the tray cable through insulation-piercing termination. All seven cores are connected through so that all voltage levels are available. The coding of the cable avoids twisting.

The permanent connection of the connection module and the tray cable via the inserted seal also provides strain relief.

DANGER

Contact between the connection module and the cable must be established in an unpowered state.

Item No.	Image	Description
75.018.0051.2		**Connecting module FCS 4 7 SI FK** Connection module, 7-pin, 20 A; 277/480 V 4 kV/3 (VDE); protection class IP65; insulation-piercing termination, connection of 1.5…6 mm² finely stranded/solid through spring terminals; 4 predetermined breaking points (2xM20, 2xM25); black.
99.801.4866.1		**Connecting module FCS 4 7 SI FK FM** with rapid assembly panel for mounting inside basket trays; 7-pin, 20 A; 277/480 V 4 kV/3 (VDE); 600 V (UL, CSA); protection class IP65; insulation-piercing termination; connection of 1.5…6 mm² finely stranded/single-wire through spring terminals.
75.010.0053.1		**Distributor module FCS 4 7 SA SA SW** Distributor module FCS 4 7 SA SA; 7-pin 32 A; 7 × 32 A (VDE) and/or 7 × 30 A (UL/CSA); 500 V 6 kV/3 (VDE) and/or 600 V (UL/CSA) with double level terminal strips, 5 predetermined breaking points, 3 × podis® tray cable, 2 × round conductors M20/M25; black.

The distributor module 75.010.0053.1 is used for feeding into the tray cable, but also for distributing the power to multiple tray cables. The distributor module is equipped with connection options for three tray cables and two round conductors. The round conductors can be routed through the housing, for example for one 5-core 400 V cable through cable gland M25 and one 2-core 24 V cable through cable gland M20.

Tray cables and round conductors are connected to the distributor module with screw terminals.

The cable bushing Z5.563.6553.1, see accessories, is available for routing the tray cable to the distributor module.

Item no.	Image	Description
75.016.2053.1		**Connecting module FCS 2,5 2 SI SA SW** Connection module FCS 2.5 3 SI SA; 3-pole. 16 A, 230 V / 2.5 kV/3 (VDE); contacting cable 4. 5. 6; push-through contact; connection of 2.5/4 mm² finely stranded/single strand via screw terminals; three rupture joints M20; black
75.016.3053.1		**Connecting module FCS 2,5 3 SI SA SW** Connection module FCS 2.5 3 SI SA; 3-pole. 16 A, 230 V / 2.5 kV/3 (VDE); contacting cable 4, 5, 6; push-through contact; connection of 2.5/4 mm² finely stranded/single strand via screw terminals; three rupture joints M20; black

7 ATTACHMENT OF PLUGGABLE MODULES AND FUNCTIONAL DEVICES

Plugs and various functional modules can be attached to the podis® CON tray cable outlet and secured using two locking bolts.

7.1 Tray cable outlet, pluggable (power tap)

The podis® CON tray cable outlet is the connection interface (power tap) on the power bus for supplying the pluggable devices. The tray cable outlet is electrically connected to the tray cable through insulation-piercing termination. All seven cores are connected through so that all voltage levels are available. This allows for the insertion of motor starters, CEE sockets, grounded sockets and LED lights on a socket. Functional modules and plugs can be connected in a powered state. The coding of the cable and connector makes twisting of the tray cable outlet impossible. The permanent connection of the connection module and the tray cable via the inserted seal also provides strain relief.

DANGER

Contact between the connection module and the cable must be established in an unpowered state.

Item No.	Image	Description
75.015.5153.1		**Tray cable outlet FCS 4 7 SI BU SW** Tray cable outlet, pluggable FCS 4 7 SI BU; 7-pin, 20 A; 277/480 V 4 kV/3 (VDE); 600 V (UL, CSA); socket with plastic locking bolt; protection class IP65, plugged or with protective lid 07.409.7256.0; black
99.800.4866.1		**Tray cable outlet FCS 4 7 SI BU FM** pluggable with rapid assembly panel for basket trays; 7-pin, 20 A; 277/480 V 4 kV/3 (VDE); 600 V (UL, CSA); socket with plastic locking bolt; protection class IP65, plugged or with protective lid 07.409.7256.0.

7.1.1 Protective lid

If a tap of the pluggable outlet (75.015.5153.1; 99.800.4866.1) is no longer required, it can be closed using a protective lid. When using the protective lid, protection class IP65 is ensured.

Item No.	Image	Description
07.409.7256.0		**Protective lid** Protective lid without locking bolt, without seal, size 16

7.2 Connector for round conductor connection

Electrical devices can easily be connected to the power bus using a round conductor and the podis® CON plug. The podis® CON plug is suitable for supplying devices away from the power bus in an easily replaceable manner.

Item No.	Image	Description
75.015.0151.0		**Complete plug FCS 4 7 ST SA SO0** podis® CON plug FCS 4.0 7 ST SA; 7-pin, pins, 20 A, 277/480 V 4kV/3 (VDE); 600 V (UL, CSA); with M25 screw fitting for 9…16 mm round conductors; screw connection 4.0 mm²; protection class IP65; black.

7.3 Connection of multiple tray cable sections

The connection of a tray cable and an additional tray cable section can be made using the podis® CON connection module FCS 4 7SI FK and the podis® CON connector FCS 4.0 7 ST SA.

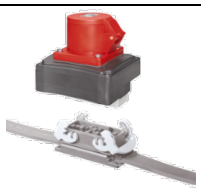
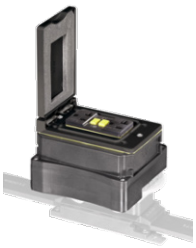
If the tray cable sections are to be connected in a pluggable manner, a tray cable outlet FCS 4 7 SI BU SW (75.015.5153.1) must be fitted to the feeding tray cable. The connection module of the connecting line 83.302.x025.1 is mounted on the receiving tray cable section. The plug can now be connected to the feeding tray cable section.

If the tray cable sections are to be connected to one another permanently, the 83.303.x039.1 connecting line should be used. The connection modules with pre-mounted round conductors are mounted on the tray cable sections to be connected and terminated.

Item No.	Image	Description
83.302.x025.1		**Connecting line FCS 2,5 7 STSA SIFK** podis® CON connecting line FCS 2,5 7 STSA SIFK; assembled plug with 7 × 2.5 mm² round conductor, connection module; cable length x in meters; black.
83.303.x039.1		**Connecting line FCS 4 7 SIFK SIFK** podis® CON connecting line FCS 4 7 SIFK SIFK; assembled connection module with 7 × 4mm2 round conductor, connection module; cable length x in meters; black

7.4 Socket module

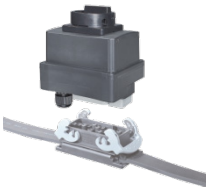
Additional electric consumers can be connected to the power bus and/or for maintenance or servicing purposes quite easily using podis® CON socket modules. These socket modules are attached to the tray cable outlet FCS 4 7 SI BU SW and securely mounted using two locking bolts.

Item No.	Image	Description
83.315.0001.1		**podis® CON socket FCS-CEE7/4 230V16A3P** podis® CON plug with socket (blue); German standard; straight installation; Schuko plug and/or CEE 7/4, 230 V, 16 A, 3-pin, IP54; connected conductors: L1 - 1; N - 4; PE - PE.
83.315.0002.1		**podis® CON socket FCS-CEE6H 400V16A5P** podis® CON plug with CEE socket (red); straight installation; 220/380 V AC; 240/415 V AC; 16 A-6 h, 3P+N+PE; 50/60 Hz; IP44; connected conductors: L1 - 1; L2 - 2; L3 - 3; N - 4; PE - PE.
83.315.0004.1		**podis® CON socket PLUG FCS NEMA 5-20 GFCI 2P** podis® CON socket FCS-NEMA 5-20 GFCI 120V20A3P podis® CON plug-in module with two NEMA 5-20 sockets; secured by GFCI; 120 V, 20 A, 3-pin; protection class NEMA 3 (humidor), connected conductors L1 - 1, N - 4.
83.315.0005.1		**podis® CON socket PLUG FCS CPCS 230V10A3P** podis® CON socket; CPCS socket (multiple plug adapter); 250 V AC, 10 A, 3-pin; IP44; connected conductors L1 - 1, N - 4, PE - PE

7.5 Drive control systems podis® MOT, podis® MCU

Item No.	Image	Description
83.210.xxxx.x 83.214.xxxx.x 83.252.xxxx.x		The podis® MOT field distributors provide the remotely switched drives with power, and also connect them to the 24 V auxiliary voltage and the fieldbus. podis® MOT are used to control SEW MOVIMOT and MOVI-SWITCH drive units.
83.222.0009.5 83.223.0009.5		As part of a particularly compact housing, the podis® MCU and podis® MSS motor starters combine the function of the electronic motor starter with AS-i controls as well as the integration of up to three sensors. They are used in applications where three-phase current motors of up to 1.5 kW have to be started, optionally in one or two directions of rotation. **podis® MCU** - Direct starter/reversing starter **podis® MSS** - Soft starter

7.6 Maintenance switch podis® SWITCH

Item No.	Image	Description
83.226.0009.4		**podis® SWITCH** podis® SWITCH FCS 1I-1O 3P disconnector switch pluggable on tap-off podis® 7G4 for disconnecting drives and branches from the power bus; with additional auxiliary contact; lockable; "Suitable as Motor Disconnect"; switched output: 1; switched phases 3; nominal current 25 A, nominal voltage 600 V; switching power AC23a/b / AC3 11,5 / 9,5 kW; degree of protection Type 1; color of handle red/yellow; mounting any; outer dimensions, connected to FCS 4 7 SI BU 118 x 104 x 172 mm;
83.226.0009.5		**podis® SWITCH** pluggable outlet with maintenance switch; 400 V AC, 3-phase with additional auxiliary contact; switching position signal on M12 plug; rated uninterrupted current Iu = 25 A; switching capacity in accordance with AC23A/B = 11 kW/400V; in accordance with AC3 = 7.5 kW/400V
83.226.0009.6		**podis® SWITCH** podis® SWITCH FCS 1I-1O 3P disconnector switch pluggable on tap-off podis® 7G4 for disconnecting drives and branches from the power bus; lockable; "Suitable as Motor Disconnect"; switched output: 1; switched phases 3; nominal current 25 A, nominal voltage 600 V; switching power AC23a/b / AC3 11,5 / 9,5 kW; degree of protection Type 1; color of handle red/yellow; mounting any; outer dimensions, connected to FCS 4 7 SI BU 118 x 104 x 172 mm;

7.7 LED lights podis® LED

Item No.	Image	Description
83.240.0010.0 83.241.0030.0		**podis® LED** Energy-saving LED lights pluggable on tray cable outlets (Item No. 75.015.5153.1); for rough industrial environments (for example wind energy plants) and as emergency illumination in accordance with DIN 60598-2-22; typ. 360 lm; 15…32 V DC; 5 W; daylight white, 6500 K
83.240.0110.0 83.241.0110.0		**podis® LED** Energy-saving LED lights pluggable on tray cable outlets (Item No. 75.015.5153.1); for rough industrial environments (for example wind energy plants, shafts, machines), workplaces and as emergency illumination in accordance with DIN 60598-2-22; can be installed in any position; typ. 2000 lm

For more products, visit www.wieland-electric.com.

8 RAPID ASSEMBLY USING BASKET TRAYS

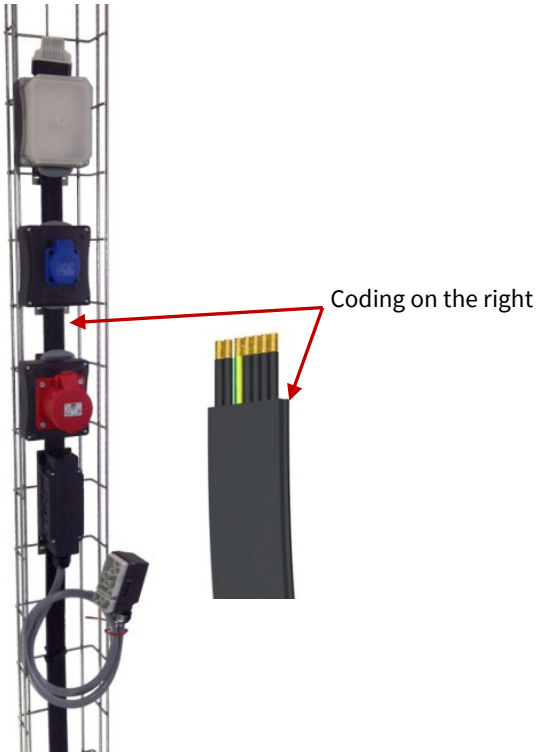
The connection module and tray cable outlet are fitted with a rapid assembly panel on the rear side. The rapid assembly panel simplifies the attachment of components inside basket trays. The components are firmly connected to the basket tray by bending the clamping loops. If there are large gaps between the components, the tray cable must be additionally fixated using cable ties.

The assembly panels are suitable for grids with mesh sizes of 100 mm in the longitudinal direction of the basket tray.

More mounting plates can be found in the section "Mounting plates" on page 35.

CAUTION

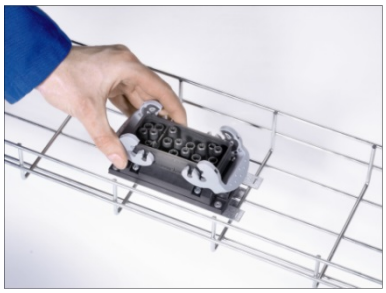
- Ensure the correct mounting position of the components!
- For vertical installations, start routing the components from the top.
- The coding of the tray cable must be located on the right.



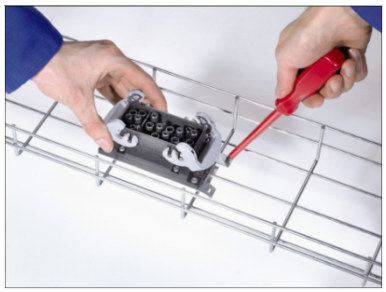
Item No.	Image	Description
99.801.4866.1		**Connecting module FCS 4 7 SI FK FM** with rapid assembly panel for mounting inside basket trays; 7-pin, 20 A; 277/480 V 4 kV/3 (VDE); 600 V (UL, CSA); protection class IP65; insulation-piercing termination; connection of 1.5…6 mm² finely stranded/single-wire through spring terminals.
99.801.4866.1		**Tray cable outlet FCS 4 7 SI BU FM** with rapid assembly panel for basket trays; 7-pin, 20 A; 277/480 V 4 kV/3 (VDE); 600 V (UL, CSA); socket with plastic locking bolt; protection class IP65, plugged or with protective lid 07.409.7256.0.

8.1 Example using tray cable outlet

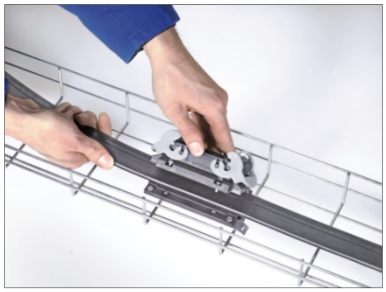
1. Attach the component on assembly panel.



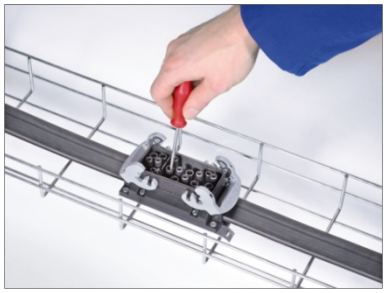
2. Bend the clamping loops on the assembly panel.



3. Bend the tray cable and close the tray cable outlet.

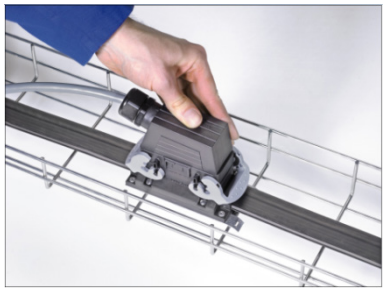


4. Terminate of the outlet with the tray cable by screwing in the contact screws.



5. Connect the plug or functional module and lock it.

   Done!



CAUTION

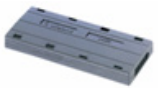
- The contact screws must be screwed in until they meet the stop! The maximum tightening torque may not exceed 1 Nm.
- The use of an electric or pneumatic torque driver is recommended. Phillips-head screwdriver, size 1, shaft length at least 45 mm. Matching screwdriver blade in accordance with DIN 3128, PH 1, Item No. 06.502.5200.0 The minimum connection temperature for the EVA 7G4 mm² tray cable is -5 °C. for the XLPE 7G4 tray cable, the minimum assembly temperature is +5 °C.

A training video showing the mounting of the connection components, the insertion of the tray cable and the termination of conductors is available at:
https://www.youtube.com/watch?v=LZKgNO11-kA

9 ACCESSORIES

9.1 Sealing sleeve

If a connection module has to be removed from the tray cable, a sealing sleeve is used to seal off the contact point. Usage of the sealing sleeve ensures compliance with protective class IP65.

Item No.	Image	Description
Z1.005.6553.1		**Sealing sleeve for podis® CON** tray cable to seal off contacts. Protection class IP65; black.

9.2 Protective lid

If a tap of the pluggable outlet (75.015.5153.1; 99.800.4866.1) is no longer required, it can be closed using a protective lid. When using the protective lid, protection class IP65 is ensured.

Required modules:

Item No.	Image	Description
07.409.7256.0		**Protective lid** Protective lid without locking bolt, without seal, size 16

9.3 Cable bushing

In order to terminate the RST round conductor bus line, the socket on the outlet side is closed up with an end cap on the last LED light. When using the end cap, protection class IP65 is ensured.

Item No.	Image	Description
Z5.563.6553.1		**Housing bushing** for podis® CON 7 × 2.5 mm² and 7 × 4 mm² tray cables; protection class IP65; black

9.4 Cable glands

Item No.	Image	Description
Z5.507.1353.1		Cable gland M20x1.5, black
Z5.505.0653.1		Cable gland M20x1.5 WITH AS-i insert, black
05.505.0153.1		Locknut M20x1.5 black
Z5.507.1453.1		Cable gland M25x1.5 (for 9…16 mm cable), black
Z5.507.1553.1		Cable gland M25x1.5 (for 13…18 mm cable), black
05.505.0253.1		Locknut M25x1.5, black

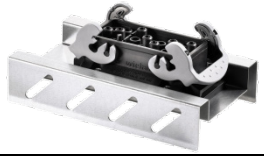
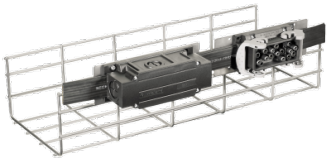
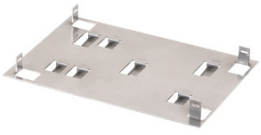
9.5 Cable clip

For mounting of podis® tray cables

Item No.	Image	Description
05.562.3000.0		Fastening clamp, light gray

9.6 Mounting plates

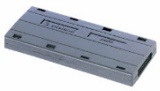
For the fast assembly of podis® CON 7G4 connection modules.

Item No.	Image	Description
05.569.4210.0	 Application example: 	To mount the connection modules 75.015.5153.1 and 75.018.0051.2 on cable trays, width 100 mm
05.560.3619.0 05.560.4219.0	 Application example: 	To mount the connection modules 75.015.5153.1 and 75.018.0051.2 outside on mesh cable trays, Mesh dimensions: 05.560.3619.0 50 × 100 mm, 35…40 × 100 mm 05.560.4219.0 50 × 100 mm, 25 × 100 mm
05.560.3419.0		To mount RST-Boxes, e.g. distributor box 96.050.0153.1, inside of mesh cable trays, mesh dimensions: 50 × 100 mm
G0.500.2041.5	 Application example: 	To mount RST-Boxes, e.g. distributor box 96.050.0153.1, inside of mesh cable trays, Mesh dimensions: 50 × 100 mm, 25 × 100 mm
05.560.3319.0 05.560.4019.0		To mount the podis® LED 20W, e.g. 83.24x.x1xx.x, 83.24x.x2xx.x, 99.80x.0220.0 outside on mesh cable trays. Mesh dimensions: 05.560.3319.0 50 × 100 mm, 35…40 × 100 mm 05.560.4019.0 50 × 100 mm, 25 × 100 mm

10 APPROVALS ACC. UL UND CSA

The podis® CON 7G4 power bus system is UL-listed according UL 2875 The Standard for Modular Cable System Assemblies and Fittings for Industrial Control, Signal and Power Distribution. Besides this system listing, there are specific approvals for USA and Canada.

10.1 Approvals overview

Item No.	Image	Description	UL File no.	UL CCN
00.729.0504.1		Tray cable 7G4 XLPE	E480715 E301973	PQUR QPOR
00.704.0504.1		Tray cable 7G4 PVC	E301973	PQUR QPOR QPOR7
75.010.0053.1		Distributor module FCS 4 7 SA	E480715 E247489	PQUR CYJV2 CYJV8
75.018.0051.2		Connection module FCS 4 7 SI FK	E480715 E247489	PQUR CYJV2 CYJV8
99.801.4866.1		Connection module FCS 4 7 SI FK FM	E480715 E247489	PQUR, CYJV2 CYJV8
Z5.563.6553.1		Housing gland	E480715 E247489	PQUR CYJV CYJV8
Z5.562.7553.1		Cable piece for podis® ribbon cable;	E480715 E247489	PQUR CYJV CYJV8
Z1.005.6553.1		FI sleeve	E247489	
05.562.3000.0		Cable clip	E480715	PQUR
75.015.5153.1		Tray cable outlet, pluggable FCS 4 7 SI BU	E480715 E247489	PQUR CYJV2 CYJV8
99.800.4866.1		Tray cable outlet, pluggable FCS 4 7 SI BU FM	E480715 E247489	PQUR CYJV2 CYJV8
75.015.0151.0		Plug complete FCS 4 7 ST SA SO0	E480715 E247489	PQUR CYJV CYJV8

Item No.	Image	Description	UL File no.	UL CCN
83.315.0004.1		podis® CON plug FCS NEMA 5-20 GFCI	E480715 E247489	PQUR CYJV2 CYJV8
83.240.0011.0		podis® LED FCS 24V DC 5W/ RST20i2	E480715 E350899	PQUR IFDR2 IFDR8
83.240.0010.0		podis® LED FCS 24V DC 5W	E480715 E350899	PQUR IFDR2 IFDR8
83.240.0030.0		podis® LED RST 24V DC 5W	E480715 E350899	PQUR IFDR2 IFDR8
83.240.0110.0		podis® LED FCS 24V DC 20W	E480715 E350899	PQUR IFDR2 IFDR8
83.240.0130.0		podis® LED RST 24V DC 20W	E480715 E350899	PQUR IFDR2 IFDR8
99.xxx.xxxx.x		podis® LED FCS90-250V AC 20W xx U	E480715 E364463	PQUR IFAM IFAM7
99.800.0624.5		podis® LED RST90-250V AC 20W LS U	E480715 E477748	PQUR QOVZ QOVZ7
99.800.0220.0		podis® LED RST90-250V AC 20W U	E480715 E477748	PQUR QOVZ QOVZ7
83.210.0005.2		podis® field distributor AS-i podis® MOT FA	E223156 new Section / UL 508	NRAQ2 NRAQ8

More updated information might be available under http://database.ul.com.

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