



wieland

podis[®] CON 5G6

podis[®] CON power bus system

Installation system for decentralized power distribution

Manual

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INFO

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1 ABOUT THIS MANUAL

Please read this chapter carefully before working with this user manual or the podis® CON power bus system.

1.1 Function of this document

This manual provides you with support regarding the project planning of electrical facilities as well as the installation and commissioning of podis® CON modules. We provide information on 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 and how to use the system components.

1.2 Target group

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

Therefore, the system manual is targeted at the following:

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

1.3 Symbols and notations

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



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!



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



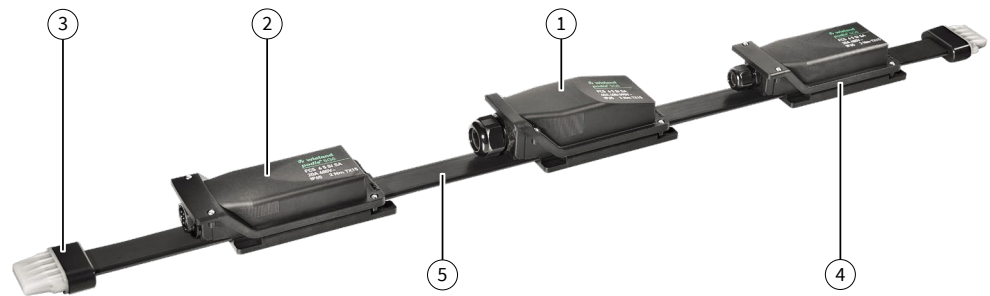
The symbol "ATTENTION" indicates a potential threat. If it is not avoided, slight or minor injury can result.

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 | Feed-in and tap-off connecting module M32 | 3 | Cable end cap |
| 2 | Connecting module, pluggable with RST20i5 | 4 | Connecting module M25 for use as tap-off |
| 5 | Tray cable | | |

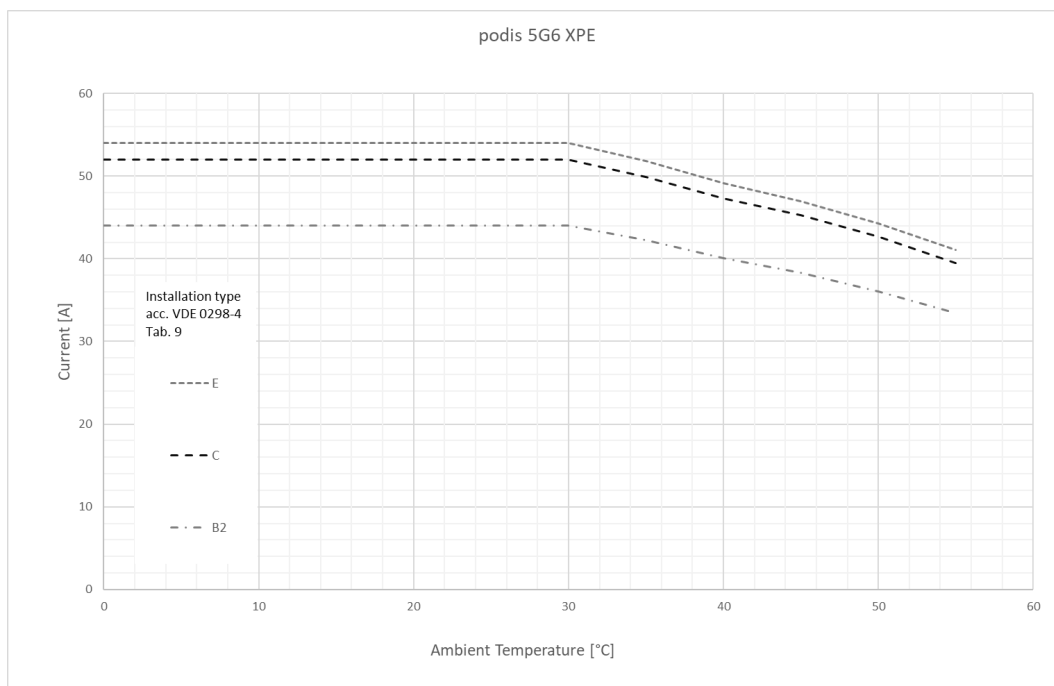
3 PODIS® CON TRAY CABLE

Item no.	Product image	Description
00.729.0305.1		Tray cable XPE 5G6 BLACK - UL Tray cable PODIS CON XPE 5G6; power ratings according to VDE 41 A; 690 V; 6kV/3; Halogen free, resistant to oils and acids, ozone and UV resistant; permanent installation; color: black; UL 1277 TC-ER (600V UL rating).
Z6.563.6053.0		Cable end cap podis 5G6

3.1 Current-carrying capacity of tray cable

Chart 1

Maximum permissible power load of the cable and contacts for load currents applied to L1, L2 and L3, for tray cable podis 5G6 XPE (00.729.0305.1).



3.2 Notes on routing the tray cable

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

3.2.1 General instructions and precautionary measures

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



- The tray cable may only be operated if it is in a faultless condition and does not exhibit any damage to, or openings in, the sheath.
- Unused connections, outlets or devices on the tray cable must be sealed off using the corresponding seals (covers, blind plugs, etc.). It is not permitted to work on or operate the tray cable with open connections, outlets or devices.
- When conducting any work 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 specified here.

NOTE

Openings in the sheath caused by insulation-piercing termination must be sealed using cable patches Z6.563.7800.0 (see 5 Accessories, p. 19).

3.2.2 Monitoring and safety devices

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

The assignment of safety devices to provide protection from short-circuits for cables and leads in the main or auxiliary circuits outside of switchgear assemblies must be conducted taking the loop impedance into account. National installation rules and standards, such as IEC 60364-4-43 (DIN VDE 0100 Part 430) have to be applied in this regard.

- The tray cable must be protected against overloads and short-circuits using a three-phase circuit breaker.
- When determining the nominal current, observe the information in chapter 3.1 Current-carrying capacity of tray cable, p.6.
- The circuit breakers must correspond to tripping characteristic C. In this case, the tripping current is between 8 and 10 I_{rated} (EN 60898, DIN VDE 0641 Part 11 and IEC 898).
- Emergency stop devices (in accordance with IEC 204, complies with DIN VDE 113) must be available. Their function must not be impaired in any way.
- The feed must be grounded (TN-S network). The system into which the podis® systems are to be integrated must 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 via a protective conductor. The diameter of the protective conductor must be at least 6 mm². The protective conductor must not be looped through the consumers.
- Effective lightning protection measures must be fitted to the system to prevent damage to electronic devices.
- When connecting motor/contactors made by third-party manufacturers, make sure that electric separation is guaranteed for these devices (separation voltage of at least 2.5 kV AC).

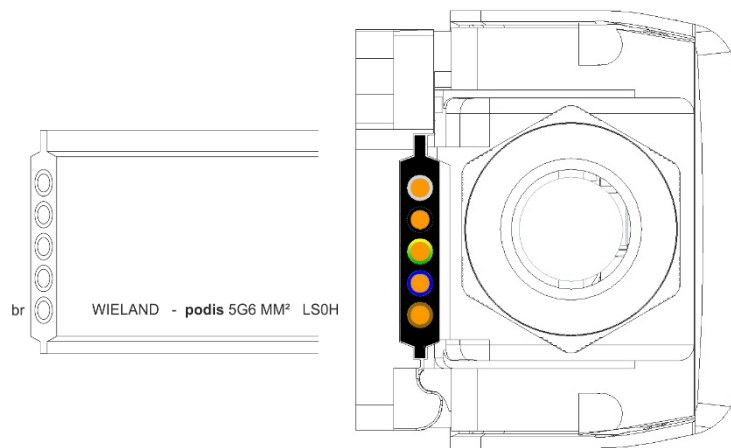
3.2.3 Conductor assignment

	Conductor	Color	assignment
	3	grey	L3
	2	black	L2
	PE	green/yellow	PE
	N	blue	N
	1	brown	L1

3.2.4 Coding of the tray cable



The tray cable is protected against polarity reversal via coding. The two edges of the tray cable are tapered in different ways to each other. 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 short taper lies opposite the hinge.



- The cable labeling is printed on the side with the short taper.
- The brown core is positioned on the side of the short taper.

3.2.5 Routing instructions

The cables are intended to be permanently installed and are not designed for mobile applications.



The tray cables are not trailing cables.

Mounting	XPE 5 × 6 mm ² (00.729.0305.1)
Bending radius	> 38 mm
Mounting temperature	-5 °C...+70°C
Routing type	Cable duct, platform with cable clamps, wall and ceiling mounting (see section 3.2.6 Fastening and routing the tray cable with cable clamps, p. 9)

3.2.6 Fastening and routing the tray cable with cable clamps

The cable clamps (07.432.8100.0) are screwed onto the mounting surfaces. It is normal for the cable clips to bend in the process.

This type of fastening can be used for horizontal and vertical routing of the tray cable.



3.3 Cutting the tray cable to length and stripping it

To cut the podis® CON tray cables to length, the tray cable is separated with a cutting tool.

- Cut the tray cable to the required length using the cutting tool (F0.000.0051.9).
- Ensure a clean, square cut.
- Avoid fraying of the copper cores.
- Larger cables are easier to cut in two partial cuts.



Fig. 1: Cutting tool F0.000.0051.9

3.3.1 Stripping the tray cable

For certain applications, the podis® CON tray cable must be stripped. This is required for:

- assembling tray cable end caps (Z6.563.6053.0),
- connecting to terminal blocks in control cabinets.

Score the lead sheath on the front and rear sides of the tray cable in the transverse and longitudinal directions to a depth of max. 1.0 mm as shown in the following images.



ATTENTION

Scoring too deeply into the tray cable can damage the conductor insulation. Score the rubber sheath to a max. depth of 1.0 mm.

When using stripping knife (95.350.0800.0), the blade protrudes by exactly 1.0 mm to prevent damage to the insulation. The stripping knife is supplied with instructions for use.

Tools required:

- Cutting tool F0.000.0051.9
- Stripping knife 95.350.0800.0
- Flat pliers



1. Cut the tray cable straight (straight cut).



2. Section lines:

Cut the sheath on the front and back of the tray cable as shown with these markings.



3. Cut the cable sheath with the tip of the blade of the stripping knife.



4. Cut the sides of the cable with the recessed blade piece.



5. Break open the sheath using the flat pliers. To do so, place the flat pliers on the side.



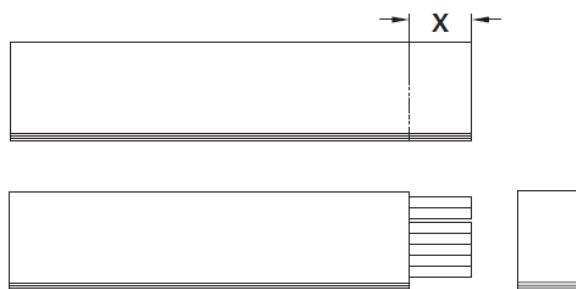
6. Remove any remaining pieces of sheath.



Result:



3.3.2 Wire strip length



	Wire strip length (X mm)
Cable end cap	26...30 mm
Terminal blocks in the control cabinet	> 50 mm (depending on the specific connection conditions)

3.3.3 Training video

A training video showing how to strip the cable and mount the cable end caps is available at:

<https://www.youtube.com/watch?v=SMx9gl7TGZE>



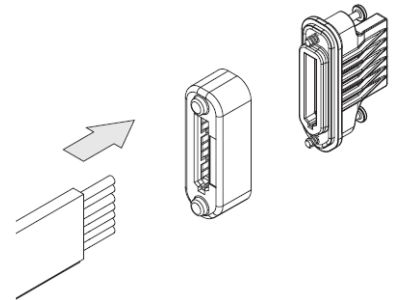
3.4 Termination of the tray cable



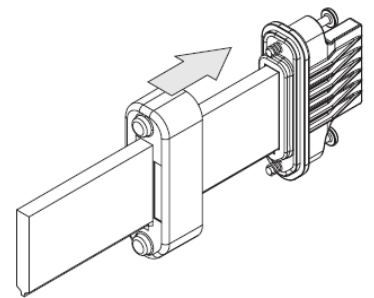
Due to the required air gaps and creepage distances, podis® CON tray cables must always be terminated by end caps on both ends.

After the tray cable has been routed, all free cable ends must be safely terminated and sealed in accordance with IP65. Use cable end caps (Z6.563.6053.0) for this purpose. They are composed of a shorter part (cover) and a longer part which contains the screws, seal and insulation ducts. The following images illustrate how to terminate the tray cable.

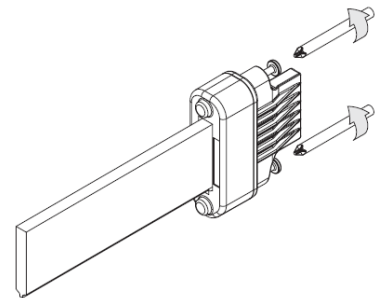
1. Push the counter part with sealing over the stripped tray cable. To make this easier, the plates in the counterpart can be pushed outwards.



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.



NOTE

A training video showing how to strip the cable and mount the cable end caps is available at:

<https://www.youtube.com/watch?v=SMx9gl7TGZE>

4 ATTACHING THE CONNECTING MODULES

The connecting 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. Mounting is demonstrated by means of the connecting module for fixed wiring. The pluggable outlet is mounted in the same way except for the connection of the single cores.

4.1 Making the connection

The feed-in and tap-off modules can be installed at any point along the tray cable. The tray cable conductors remain uninterrupted. The connection from the clamp for the connecting wire and the conduction in the cable is made using contact screws.



Fig. 2: Microsection of a contact point

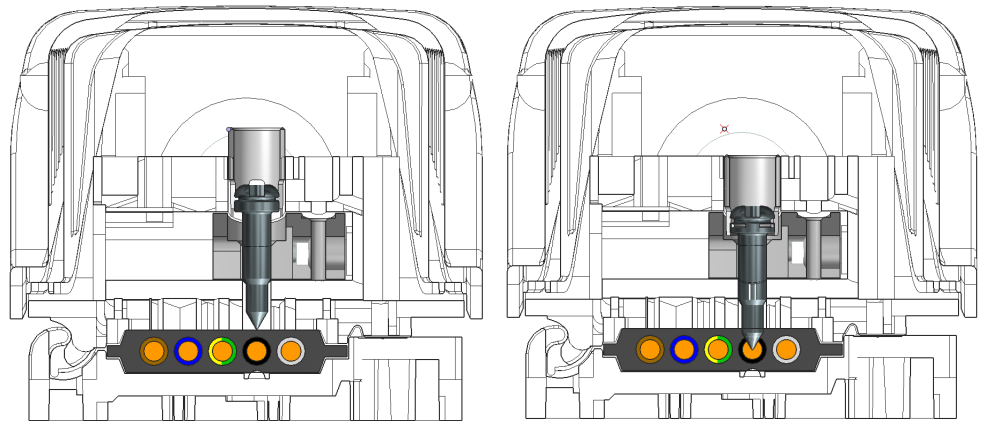


Fig. 3: Penetration of the sheath and the insulation, contact with the conductor through the contact screw

4.2 Connecting modules for permanent wiring

The permanently connected podis® CON connecting modules are used both for feeding into the power bus and as a tap for supplying permanently connected devices. The connecting module is also used for connecting two power bus segments. The module is electrically connected to the tray cable through insulation-piercing contacts. The connecting modules contact all five cores.

Coding the leads makes it impossible to mix up the conductors. The permanent connection of the connecting module and the tray cable via the inserted seal also provides strain relief.



Only contact the connecting module with the lead when the power is switched off.

Item no.	Product image	Description
75.250.0053.1		Connecting module FCS 6 5 SI SA M32 Connecting module PODIS CON 5G6 for permanent wiring; for M32 cable screw gland; 5-pole; power ratings according to VDE 41 A; 690 V; 6kV/3; power ratings according to UL 32 A; 600 V protection class IP65; insulation-piercing termination; Torx 15; screw terminals max. 16 mm ² single-stranded/fine-stranded; max. cable diameter 25 mm; black housing; operator definable mounting position; UL 2238, CSA 182.3 and UL 2875 listed/certified; outer dimensions (L × W × H) 218 × 84 × 74 mm
75.256.0053.1		Connecting module FCS 6 5 SI SA M25 Connecting module PODIS CON 5G6 for permanent wiring; for M25 cable screw gland; 5-pole; power ratings according to VDE 41 A; 690 V; 6kV/3; power ratings according to UL 32 A; 600 V protection class IP65; insulation-piercing termination; Torx 15; screw terminals max. 16 mm ² single-stranded/fine-stranded; max. cable diameter 18 mm; black housing; operator definable mounting position; UL 2238, CSA 182.3 and UL 2875 listed/certified ; outer dimensions (L × W × H) 218 × 84 × 74 mm
75.256.0153.1		Connecting module FCS 6 5 SI SA M25 LH Connecting module PODIS CON 5G6 for permanent wiring; for M25 cable screw gland; 5-pole; power ratings according to VDE 20A; 690 V; 6kV/3; power ratings according to UL 32 A; 600 V protection class IP65; insulation-piercing termination; Torx 15; screw terminals max. 16 mm ² single-stranded/fine-stranded; max. cable diameter 18 mm; black housing; operator definable mounting position; UL 2238, CSA 182.3 and UL 2875 listed/certified ; outer dimensions (L × W × H) 218 × 84 × 59 mm

Connecting modules FCS 6 5 SI SA M25 and FCS 6 5 SI SA M32 can be used both for feed-in and for tap-off.

The terminals for the single wires of the connecting cable (16 mm² acc. IEC, 10 AWG acc. UL) and the insulation-piercing contacts are identical in all connecting modules. Therefore, the outer diameter of the connecting cable determines the type of connecting module to use.

Connecting module FCS 6 5 SI SA M32 is regularly recommended for feed-in, as large cable cross-sections are often used in the supply line and cables with an outer diameter of up to 25 mm can be connected to this module.

In contrast, connecting modules FCS 6 5 SI SA M25 are more suitable for tap-off from the power bus due to the smaller cable screw glands.

Due to the connection of smaller cable cross-sections to types with a reduced assembly height FCS 6 5 SI SA ... LH, and the pluggable connecting module FCS 6 5 SI SA RST (LH), these are marked with a lower current carrying capacity.

Cable screw glands are not included in the delivery. Suitable gland nuts can be found in chapter 5 Accessories on page 19.

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

4.3 Connecting modules for pluggable connections

Connectors from the Wieland series RST® 20i5 can be connected to the connecting module podis® FCS 5 6 SI SA RST.

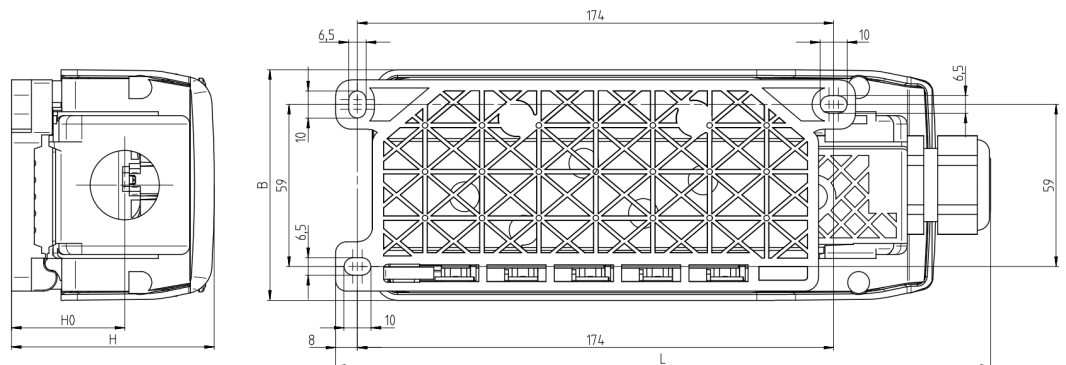
The podis® CON tray cable outlet is the connection interface (tap-off) on the power bus for supplying pluggable devices. The tray cable outlet is connected to the tray cable via the insulation-piercing termination.



Only contact the connecting module with the lead when the power is switched off.

T	Product image	Description
75.252.0053.1		Connecting module FCS 6 5 SI SA RST20i5 Connecting module PODIS CON 5G6 for pluggable connection; with RST20i5; 5-pole; power ratings according to VDE 20A; 690 V; 6kV/3; power ratings according to UL 20 A; 600 V protection class IP65; insulation-piercing termination; Torx 15; single-stranded/finely stranded; max. cable diameter; black housing; operator definable mounting position; UL 2238, CSA 182.3 and UL 2875 listed/certified ; outer dimensions (L × W × H) 218 × 84 × 74 mm
75.252.0153.1		Connecting module FCS 6 5 SI SA RST20i5 LH Connecting module PODIS CON 5G6 for pluggable connection; with RST20i5; 5-pole; power ratings according to VDE 20A; 690 V; 6kV/3; power ratings according to UL 20 A; 600 V protection class IP65; insulation-piercing termination; Torx 15; single-stranded/finely stranded; max. cable diameter; black housing; operator definable mounting position; UL 2238, CSA 182.3 and UL 2875 listed/certified ; outer dimensions (L × W × H) 218 × 84 × 59 mm

4.4 Installation dimensions for connecting module



Type	L × B × H [mm]	H ₀ [mm]
podis® FCS 6 5 SI SA M32	248 × 84 × 74	41
podis® FCS 6 5 SI SA RST	218 × 84 × 74	41
podis® FCS 6 5 SI SA M25	243 × 84 × 74	41
podis® FCS 6 5 SI SA RST LH	218 × 84 × 59	34
podis® FCS 6 5 SI SA M25 LH	243 × 84 × 59	34

4.5 Male connector for round conductor connection

Electrical devices can be easily connected to the power bus using a round conductor and the RST® male connector. The RST® male connector (example shown below) is suitable for supplying devices away from the power bus in an easily interchangeable way.

Item no.	Product image	Description
96.052.4053.1		Connector RST20i5S S1 ZR1 V SW RST25i5 connector, 5-pole, screw technology male connector, 250/400 V application with PE, 20 A, for cable diameter 6–10 mm, black coding color, black sheath

More information and products in the RST® connector series can be found at:

<https://eshop.wieland-electric.com/categorie/en/circular-connector-system-in-raised-degree-of-protection-ip6x-rst/1000008683>

4.6 Preparing the connecting module

1. Loosen the outer screws and open the housing cover. Tools required:
Torx 15, shaft length min. 70 mm
(Item no. 06.502.6410.0)

2. Fasten the cable screw gland for the round conductor.

M25: 3.5 Nm
M32: 5.0 Nm

3. Insert the round conductor and tighten the gland nut.

4. Connect the single cores to the respective screw terminals.

Torque: 1.2 Nm



4.7 Preparing the connecting cable

The round cable to be connected with the connection module has to be dismantled and cut to the following lengths. Remove 12 mm of insulation from the single conductor wires.



Wire	Color	Length
L1	brown	140 mm
L2	black	80 mm
L3	gray	120 mm
N	blue	90 mm
PE	green/yellow	180 mm

When using stranded wires, ferrules may help to ensure a proper assembly if the single wires.

NOTE

For North American installations: Do not use ferrules.

4.8 Connection to the tray cable



- The contact screws must be screwed in until they meet the stop. The maximum tightening torque must not exceed 2.0 Nm.
- Use of an electric or pneumatic torque driver is recommended. Torx 15 tool, shaft length min. 70 mm, Item no. 06.502.6410.0
- The minimum connection temperature for the XPE 5 G 6 mm² tray cable is +5 °C.

1. Screw the module to the substrate with two fastening screws M5 or M6.

Alternative: Fix the connecting module in a cable tray. Loosen the two screws on the lower housing section.

2. Fold the hood upwards.

Important: Make sure that the tray cable is in the correct position and insert it.

3. Fold the hood back and tighten the two screws. Torque 1.2 Nm

4. Screw all contact screws into the tray cable. Torque 2.0 Nm



Attaching the connecting modules

5. Close the cover of the connecting module and tighten all four screws. Torque: 1.2 Nm

Important: Make sure that no cables are squashed.



A training video showing how to mount the connection components, insert the tray cable and contact the conductors can be found at: <https://www.youtube.com/watch?v=ln1tqmQ4IRM>



5 ACCESSORIES

5.1 Insulating tape

If a connecting module needs to be removed from the tray cable, an insulation tape must be used to seal the contact point. Consider a clean and dry sticking area and apply it without wrinkles to ensure protection class IP65.

Item no.	Product image	Description
Z6.653.7800.0		Insulation tape for podis® tray cable for sealing the contact pots on the cable. Protection class IP65; approx. 152 x 140 mm, black.

5.2 Cable screw glands

Item no.	Product image	Description
Z5.507.1453.1		Cable screw gland M25x1.5, (for cable 9...16 mm) black
Z5.507.1553.1		Cable screw gland M25x1.5, (for cable 13...18 mm) black
05.505.0253.1		Nut M25x1.5 black
Z5.507.1753.1		Cable screw gland M32x1.5, (for cable 10...21 mm) black
Z5.507.1653.1		Cable screw gland M32x1.5, (for cable 18...25 mm) black
05.505.0353.1		Nut M32x1.5 black
05.512.4883.0		Multiple feed-through for M25, Z5.507.1553.1, 3 × 8 mm
05.512.5083.0		Multiple feed-through for M25, Z5.507.1553.1, 4 × 7 mm
05.512.4383.0		Multiple feed-through for M32, Z5.507.1653.1, 2 × 8 mm

5.3 Cable clip

Clamp for fastening the podis® tray cable:

Item no.	Product image	Description
05.562.3000.0		Cable clip, plastic, black

6 UL APPROVALS

The podis® power bus system is UL-listed according to UL 2875, the standard for Modular Cable System Assemblies and Fittings for Industrial Control, Signal and Power Distribution.

In addition to the system certification, all the connection modules shown below are UL listed for USA and Canada and have been evaluated against UL 2238 and CSA 182.3 respectively.

6.1 Overview of certificates / approvals

Item no.	Product image	Description	UL File No.	UL CCN
00.729.0305.1		Tray cable podis 5G6 XPE	E480715 E492844	PQUR QPOR
75.250.0053.1		Connection module FCS 6 5 SI SA M32	E480715 E247489	PQUR CYJV CYJV7
75.256.0053.1		Connection module FCS 6 5 SI SA M25	E480715 E247489	PQUR CYJV CYJV7
75.256.0153.1		Connection module FCS 6 5 SI SA M25 LH	E480715 E247489	PQUR CYJV CYJV7
75.252.0053.1		Connection module FCS 6 5 SI SA RST20i5	E480715 E247489	PQUR CYJV CYJV7
75.252.0153.1		Connection module FCS 6 5 SI SA RST20i5 LH	E480715 E247489	PQUR CYJV CYJV7
Z6.563.6053.0		Cable end cap podis 5G6	E480715 E247489	PQUR

6.2 Rating tables from UL E247489

Type	Size AWG Feeder and Load	Voltage max. (V DC/AC)	Current max. (A)
FCS 6 5 SI SA M25, FCS 6 5 SI SA M32	10 AWG str.	120 DC, 600 AC	32
FCS 6 5 SI SA 25, FCS 6 5 SI SA 25 LH	10 AWG str.	120 DC, 600 AC	20
FCS 6 5 SI SA RST, FCS 6 5 SI SA RST LH	14 AWG str.	120 DC, 600 AC	20

The latest information about the status of certificates / approvals is available here:

<https://iq.ulprospector.com/en>

7 SERVICE AND SUPPORT

Service hotline:

Contact person for technical questions regarding accessories, function, product properties, and usage options

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