A PERFECT ALLIANCE.

ODU-MAC® Silver-Line
ODU DOCK Silver-Line

Compact modular connector system

Up to 6,300 V, 25 bar, 10 Gbit/s, 100,000 mating cycles and 9.0 GHz

AUTOMATIC DOCKING

SHORT OVERVIEW

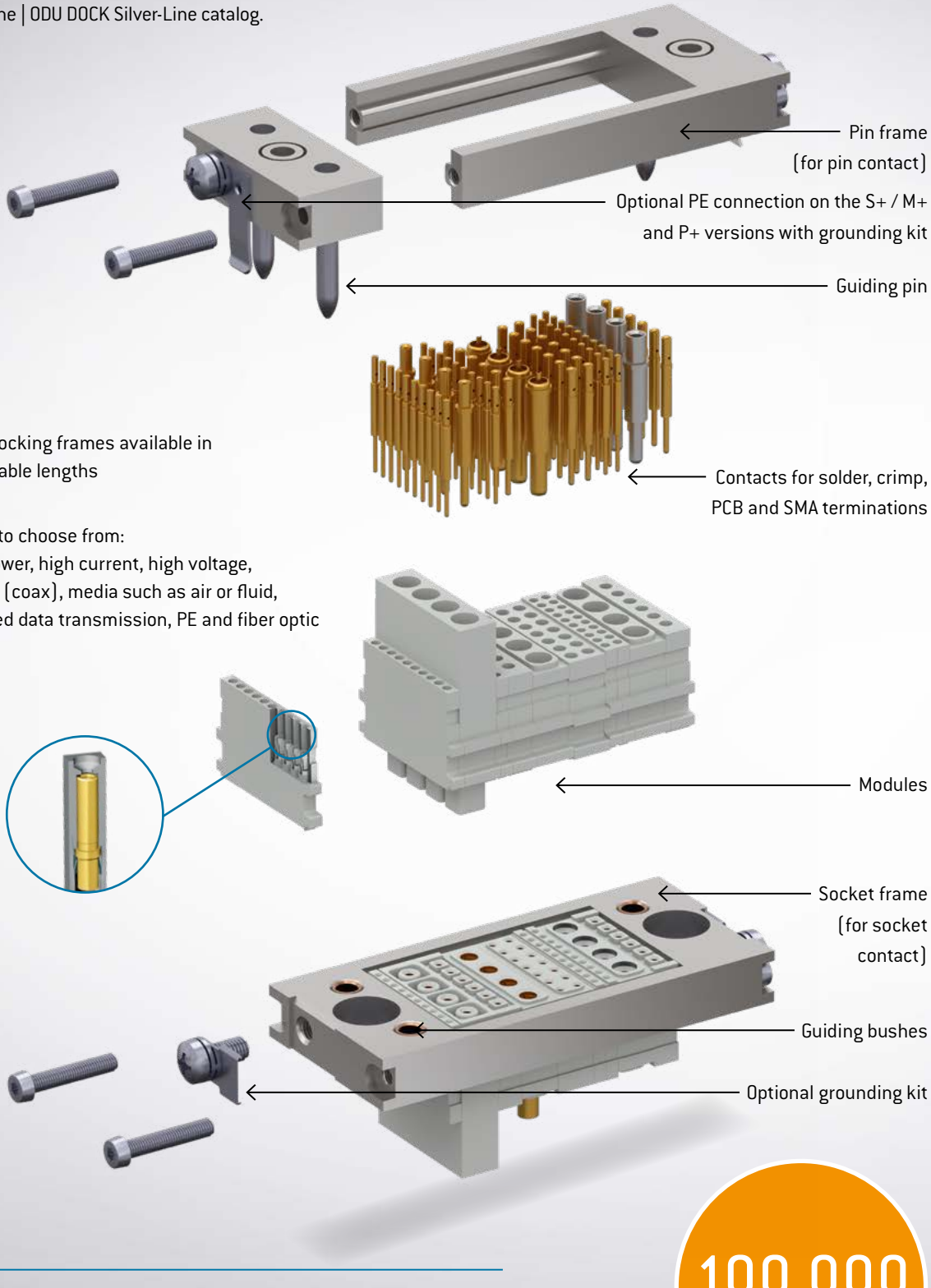
ODU-MAC® SILVER-LINE | ODU DOCK SILVER-LINE

ODU-MAC® WHITE-LINE

ODU-MAC® BLUE-LINE

THE PRINCIPLE OF ODU-MAC®

This overview provides you with an insight into the modularity of ODU-MAC®.
For more detailed information, please visit our website or consult our
ODU-MAC® Silver-Line | ODU DOCK Silver-Line catalog.



7 various docking frames available in customizable lengths

36 modules to choose from:
signal, power, high current, high voltage,
RF-signal (coax), media such as air or fluid,
high-speed data transmission, PE and fiber optic

100.000
Mating cycles
and more

OUTSTANDING – FOR EVERY NEED

Take a closer look at the following pages to discover the variety of transmission methods we offer, such as USB® 1.1[1], USB® 2.0[1], USB® 3.2 Gen 1x1[1], HDMI®[1], FireWire®[1], CAT [1], CAT 6_A and Ethernet.

[1] These ODU specific connectors can transmit common data transmission protocols such as USB® 1.1, USB® 2.0, USB® 3.2 Gen 1x1, HDMI® and FireWire®, but they are not USB®-, HDMI®- and FireWire®-standard connectors.

INDIVIDUALLY CONFIGURED FOR YOUR REQUIREMENTS

The flexible, modular design of ODU-MAC® enables multiple connection types to be combined within single contacts.

Configure your ODU-MAC® Silver-Line online: **www.odu-mac.com**

ODU-MAC® Silver-Line AUTOMATIC DOCKING.

Depending upon your requirements for automatic docking, you can choose from 7 different frame types as a basis for your assembly of modules.

Tolerance compensation from +/– 0.6 mm to +/– 2.5 mm available

CONVINCING – THE ODU-MAC® SYSTEM

- Versions in the **docking frame** for **automatic docking**
- **Many different module options** available
- Extremely compact due to the **high contact density**
- **Connection cross-sections** from 0.08 mm² to 50 mm² available
- Complete solutions incl. **Cable assembly**

ODU-MAC® L (LARGE)

Frame with higher tolerance compensation and reinforced guiding bushes, as well as extended guiding pins

Tolerance compensation: +/– 1.2 mm

ODU-MAC® S (STANDARD)

Standard solution for docking tasks

Tolerance compensation: +/– 0.6 mm

ODU-MAC® S+ (SPECIAL)

The new standard for docking tasks

Tolerance compensation: +/– 1.2 mm

ODU-MAC® QCH (QUICK CHANGE HEAD)

Docking frames for the highest requirements with regard to mating cycles (connector saver) with the lowest maintenance time and expense thanks to easy exchange of the replacement parts

Tolerance compensation: +/– 0.6 mm

ODU-MAC® P+ (POWER)

The frame for the highest requirements thanks to reinforced frame design

Tolerance compensation: +/– 2.5 mm

ODU-MAC® M+ (MINI)

Compact size with the smallest space requirement

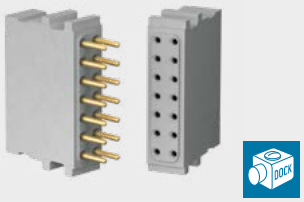
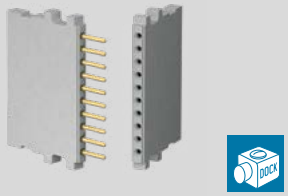
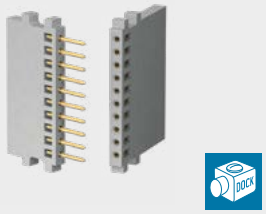
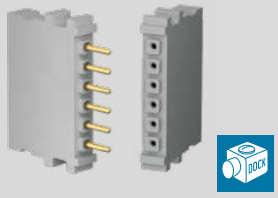
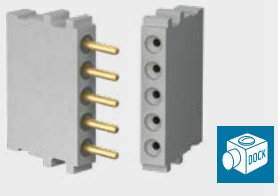
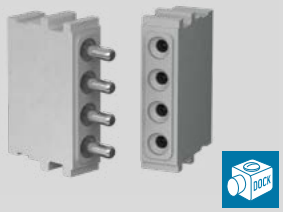
Tolerance compensation: +/– 0.6 mm

ODU-MAC® T (TRANSVERSE)

Transverse frames for installation in customized housing solutions or where low clearance heights make this necessary.

OVERVIEW OF ALL MODULES

Modules marked with this symbol can be used in the ODU DOCK Silver-Line; note the space requirements.

	Modules	Description	Units / width	Features
Signal		14 contacts for turned contacts Contact-Ø: 1.02 mm	3 Units 7.62 mm	Operating voltage[1] 320 V Rated impulse voltage1 2,500 V Max. continuous current[2] 13.5 A for 0.5 mm² Degree of pollution[1] 2 Mating cycles minimum 100,000 High contact density
		10 contacts for turned contacts Contact-Ø: 0.76 mm	1 Unit 2.54 mm	Operating voltage[1] 250 V Rated impulse voltage[1] 1,500 V Max. continuous current[2] 11 A for 0.38 mm² Degree of pollution[1] 2 Mating cycles minimum 100,000 Highest contact density
		10 contacts for stamped contacts Contact-Ø: 0.7 mm	1 Unit 2.54 mm	Operating voltage[1] 32 V Rated impulse voltage[1] 1,500 V Max. continuous current[2] 6 A for 0.38 mm² Degree of pollution[1] 2 Mating cycles minimum 5,000 Economical solution
		6 contacts for turned contacts Contact-Ø: 1.02 mm	2 Units 5.08 mm	Operating voltage[1] 400 V Rated impulse voltage[1] 3,000 V Max. continuous current[2] 13.5 A for 0.5 mm² Degree of pollution[1] 2 Mating cycles minimum 100,000
		5 contacts for turned contacts Contact-Ø: 1.5 mm	2 Units 5.08 mm	Operating voltage[1] 500 V Rated impulse voltage[1] 2,500 V Max. continuous current[2] 27 A for 1.5 mm² Degree of pollution[1] 2 Mating cycles minimum 100,000
Power		4 contacts for turned contacts Contact-Ø: 2.41 mm	3 Units 7.62 mm	Operating voltage[1] 500 V Rated impulse voltage[1] 3,000 V Max. continuous current[2] 41 A for AWG 12 Degree of pollution[1] 2 Mating cycles minimum 100,000

[1] Acc. to IEC 60664-1:2007 (VDE 0110-1:2008) for degree of pollution 2.
[2] Definition max. continuous current see ODU-MAC® Silver-Line | ODU DOCK Silver-Line catalog page 197 under **www.odu-connectors.com/downloads/catalogues**

OVERVIEW OF ALL MODULES

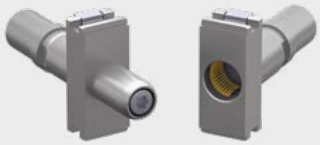
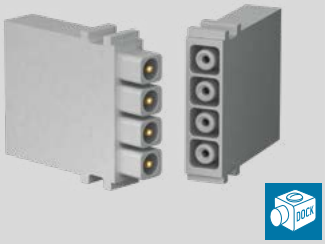
Modules marked with this symbol can be used in the ODU DOCK Silver-Line; note the space requirements.

	Modules	Description	Units / width	Features
Power		3 contacts for turned contacts Contact-Ø: 3 mm	3 Units 7.62 mm	Operating voltage[1] 500 V Rated impulse voltage[1] 3,000 V Max. continuous current[2] 58 A for 6 mm² Degree of pollution[1] 2 Mating cycles minimum 100,000
		3 contacts for turned contacts Contact-Ø: 3 mm	4 Units 10.16 mm	Operating voltage[1] 2,500 V Rated impulse voltage[1] 10,000 V Max. continuous current[2] 58 A for 6 mm² Degree of pollution[1] 2 Mating cycles minimum 100,000 High voltage
		2 contacts for turned contacts Contact-Ø: 5 mm	5 Units 12.7 mm	Operating voltage[1] 1,000 V Rated impulse voltage[1] 4,000 V Max. continuous current[2] 119 A for 16 mm² Degree of pollution[1] 2 Mating cycles minimum 100,000
High current		2 contacts for turned contacts with ODU SPRINGTAC®[3] Contact-Ø: 8 mm	6 Units 15.24 mm	Operating voltage[1] 500 V Rated impulse voltage[1] 3,000 V Max. continuous current[2] 142 A for 25 mm² Degree of pollution[1] 2 Mating cycles minimum 100,000
		2 contacts for turned contacts with ODU LAMTAC®[4] Contact-Ø: 8 mm	6 Units 15.24 mm	Operating voltage[1] 500 V Rated impulse voltage[1] 3,000 V Max. continuous current[2] 154 A for 25 mm² Degree of pollution[1] 2 Mating cycles minimum 10,000
		1 contact for turned contacts with ODU LAMTAC®[4] Contact-Ø: 10 mm or Contact-Ø: 12 mm	7 Units 17.78 mm for both versions	Model 10 mm 12 mm Operating voltage[1] 500 V 400 V Rated impulse voltage[1] 4,000 V 3,000 V Max. continuous current[2] 179 A for 35 mm² 225 A for 50 mm² Degree of pollution[1] 2 2 Mating cycles min. 10,000 min. 10,000 Highest current

[1] Acc. to IEC 60664-1:2007 (VDE 0110-1:2008) for degree of pollution 2. [2] Definition max. continuous current see ODU-MAC® Silver-Line | ODU DOCK Silver-Line catalog page 197 under **www.odu-connectors.com/downloads/catalogues** [3] Contact with springwire technology [4] Contact with lamella technology

OVERVIEW OF ALL MODULES

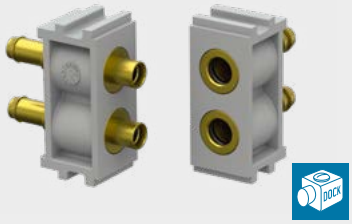
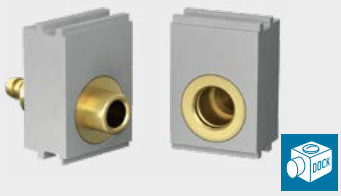
Modules marked with this symbol can be used in the ODU DOCK Silver-Line; note the space requirements.

	Modules	Description	Units /width	Features
PE		1 contact for turned contacts with ODU LAMTAC®[3] Contact-Ø: 10 mm	5 Units 12.7 mm	Mating cycles: minimum 10,000 Conductor cross-section: 10 / 16 / 25 mm²
High voltage		4 contacts for turned contacts Contact-Ø: 1.5 mm	3 Units 7.62 mm	Operating voltage[1]: 2,500 V Rated impulse voltage[1]: 10,000 V Max. continuous current[2]: 27 A for 1.5 mm² Degree of pollution[1]: 2 Mating cycles: minimum 100,000 ⊕ High contact density, high voltage
		1 contact Contact-Ø: 2 mm	8 Units 20.32 mm	Operating voltage[1]: 6,300 V Rated impulse voltage[1]: 20,000 V Degree of pollution[1]: 2 Mating cycles: minimum 10,000 ⊕ High voltage
RF-signal (coax)		4 contacts for 50 Ω RF-signal (coax) contacts	3 Units 7.62 mm	Frequency range: 0 to 1.3 GHz Mating cycles: minimum 60,000 ⊕ High contact density
		2 contacts for 50 Ω RF-signal (coax) contacts SMA termination	5 Units 12.7 mm	Frequency range: 0 to 9.0 GHz Mating cycles: minimum 100,000 ⊕ 9.0 GHz
		2 contacts for 50 Ω RF-signal (coax) contacts	5 Units 12.7 mm	Frequency range: 0 to 2.4 GHz Mating cycles: minimum 100,000

[1] Acc. to IEC 60664-1:2007 (VDE 0110-1:2008) for degree of pollution 2. [2] Definition max. continuous current see ODU-MAC® Silver-Line | ODU DOCK Silver-Line catalog page 197 under **www.odu-connectors.com/downloads/catalogues** [3] Contact with lamella technology

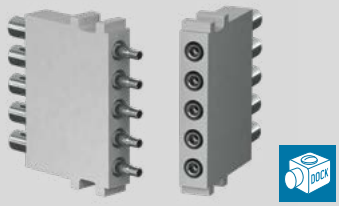
OVERVIEW OF ALL MODULES

Modules marked with this symbol can be used in the ODU DOCK Silver-Line; note the space requirements.

	Modules	Description	Units / width	Features	
RF-signal (coax)		2 contacts for 50 Ω RF-signal (coax) contacts	5 Units 12.7 mm	Frequency range Mating cycles + High voltage	0 to 2.8 GHz minimum 100,000
		2 contacts for 75 Ω RF-signal (coax) contacts	5 Units 12.7 mm	Frequency range Mating cycles	0 to 3.0 GHz minimum 100,000
Compressed air and fluid modules		2 contacts for compressed air valves	5 Units 12.7 mm	Tube diameter Mating cycles + 20 bar	M5 or max. 4 mm minimum 100,000
		2 contacts for compressed air valves	16 Units 40.64 mm	Tube diameter Inner diameter tube Mating cycles + 12 bar	max. 6 mm max. 6 mm minimum 100,000
		1 contact for compressed air valve	8 Units 20.32 mm	Tube diameter Inner diameter tube Mating cycles + 12 bar	max. 6 mm max. 6 mm minimum 100,000
		2 contacts for fluid coupling plug	5 Units 12.7 mm	Tube diameter Mating cycles + 16 bar	M5 internal thread minimum 100,000

OVERVIEW OF ALL MODULES

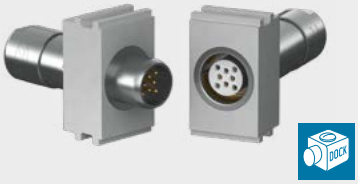
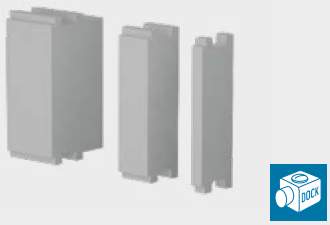
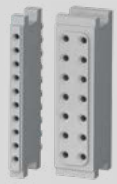
Modules marked with this symbol can be used in the ODU DOCK Silver-Line; note the space requirements.

	Modules	Description	Units/width	Features
Compressed air and fluid modules		1 contact for fluid coupling plug	9 Units 22.86 mm	Inner diameter tube G1/4 Mating cycles minimum 100,000 + 25 bar
Fiber optic		5 contacts for fiber optic contacts for plastic fiber (POF)	2 Units 5.08 mm	Insertion loss typical 1.5 dB for 670 nm Mating cycles minimum 40,000 + High contact density
		2 contacts for fiber optic contacts for plastic fiber (POF)	5 Units 12.7 mm	Mating cycles minimum 100,000 Insertion loss typical 1.5 dB for 670 nm
		3 contacts for fiber optic contacts for fiber glass (GOF)	4 Units 10.16 mm	Mating cycles minimum 100,000 Insertion loss typical 1 dB for 670 nm
Shielded implementation / high-speed connector		2 to 10 contacts for inserts size 0	5 Units 12.7 mm	Mating cycles minimum 10,000 Suitable for all common bus systems USB® 1.1[1], USB® 2.0[1], USB® 3.2 Gen 1x1[1], FireWire®[1], Ethernet, CAT 5
		2 to 14 contacts for inserts size 1	6 Units 15.24 mm	Suitable for all common bus systems USB® 2.0[1], Ethernet, CAT 5 + Mating cycles with ODU TURNTAC® min. 10,000 + Mating cycles with ODU SPRINGTAC® min. 60,000

[1] These ODU specific connectors can transmit common data transmission protocols such as USB® 1.1, USB® 2.0, USB® 3.2 Gen 1x1, HDMI® and FireWire®, but they are not USB®-, HDMI®- and FireWire®-standard connectors.

OVERVIEW OF ALL MODULES

Modules marked with this symbol can be used in the ODU DOCK Silver-Line; note the space requirements.

	Modules	Description	Units / width	Features
Shielded implementation / high-speed connector		4 to 16 contacts for inserts size 2	7 Units 17.78 mm	Suitable for all common bus systems HDMI®[1], Ethernet, CAT 5, CAT 6_A ⊕ Mating cycles with ODU TURNTAC® min. 10,000 ⊕ Mating cycles with ODU SPRINGTAC® min. 60,000
		10 to 30 contacts for inserts size 3	8 Units 20.32 mm	Mating cycles minimum 10,000 Suitable for all common bus systems Ethernet[1]
Blank modules/spacer modules / coding modules / pin protection modules		Blank modules	1 Unit 2.54 mm 3 Units 7.62 mm 5 Units 12.7 mm	Used to fill incomplete frames.
		Spacer module	1 Unit 2.54 mm 2 Units 5.08 mm 3 Units 7.62 mm 5 Units 12.7 mm	Not equipped with retaining clips. The populated pin modules on mating connectors can still be inserted into these spacers without interference. For information on the individual spacer modules please look at the corresponding modules in the ODU-MAC® Silver-Line | ODU DOCK Silver-Line catalog.
		Coding modules	1 Unit 2.54 mm	Arranged between the modules to create keyed guiding system.
		Pin protection modules	1 Unit 2.54 mm	Used to protect the pins in conjunction with small pin diameters.

[1] These ODU specific connectors can transmit common data transmission protocols such as HDMI®, but they are not HDMI®-standard connectors.

THE PRINCIPLE OF ODU DOCK

Silver-Line

This overview provides you with an insight into the modularity of ODU DOCK Silver-Line. For more detailed information, please visit our website or consult our ODU-MAC® Silver-Line | ODU DOCK Silver-Line catalog.

100,000
Mating cycles and more

ODU DOCK SILVER-LINE AT A GLANCE

3

Available docking plate thicknesses: 10 mm, 14 mm, 20 mm

2

Contact surfaces

32

Modules to choose from:
Signal, power, high current, high voltage, RF-signal (coax), media such as air or fluid, high-speed data transmission or fiber optic

15

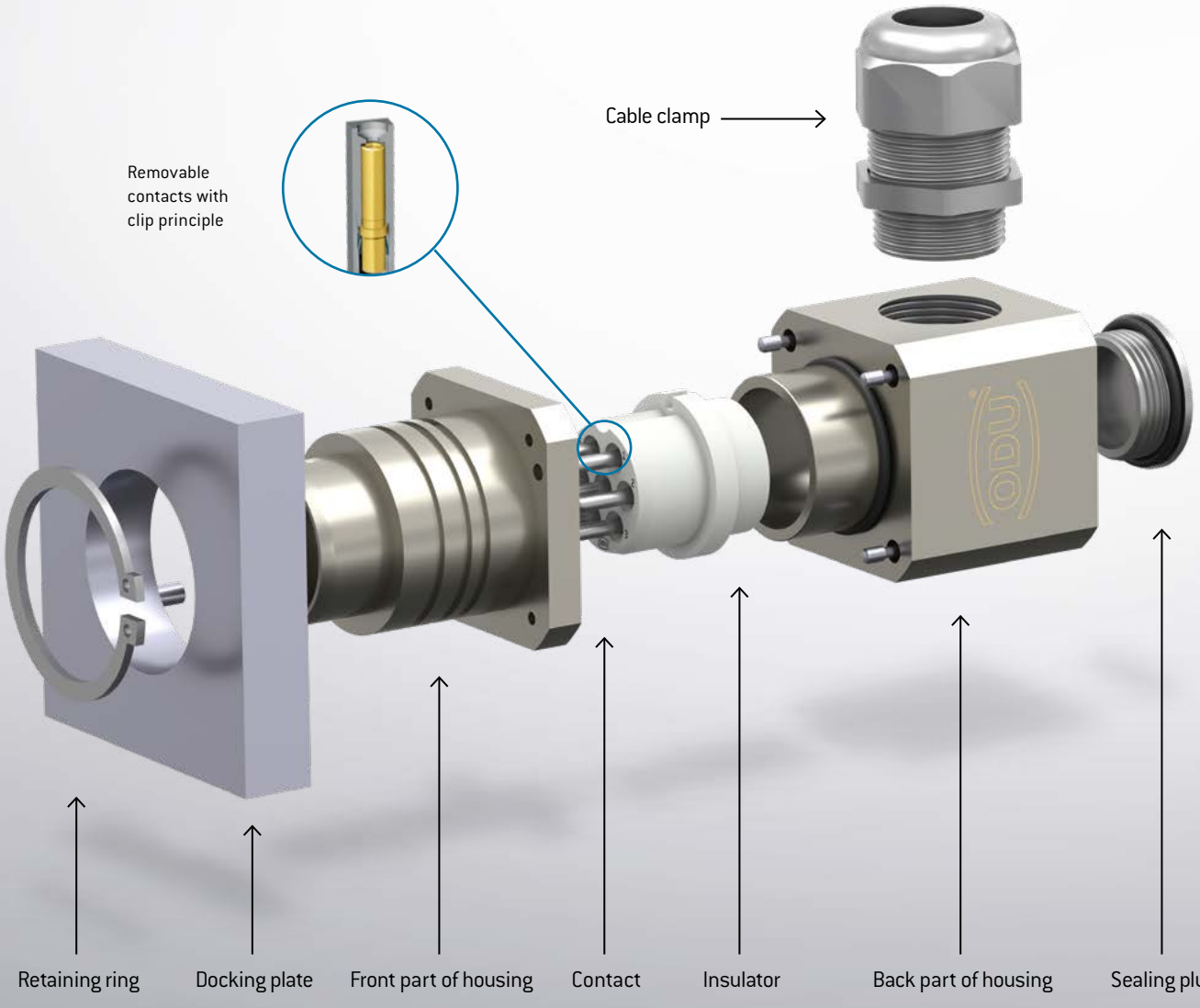
Versions with different numbers of contacts for signal, power, and hybrid transmission

2

Housing versions:
(optional with EMC protection)

Aluminum nickel-plated

Plastic



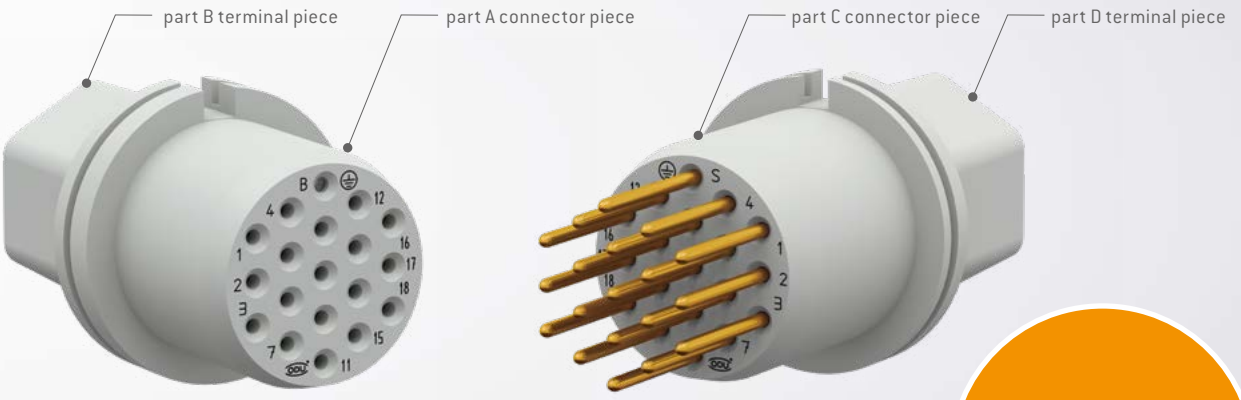
ODU DOCK Silver-Line

FOR AUTOMATIC DOCKING AND ROBOT SYSTEMS

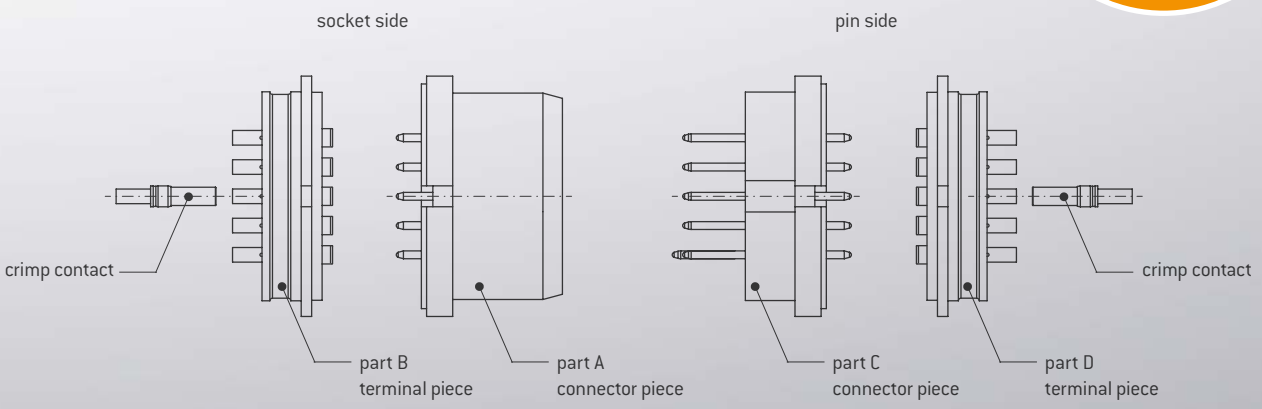
The high load requires an especially robust connection system with contact stability. The ODU DOCK Silver-Line connectors with their unique spring-wire technology offer a perfect solution here that has been designed for 100,000 mating cycles and more.

ADVANTAGES OF ODU DOCK SILVER-LINE

- **Robust aluminum** or **plastic** housing
- **3 sizes** available
- 3 – 37 contact inserts
- **Durability** by ODU SPRINGTAC®
- **IP65** in mated condition
- **EMC protection** available
- **Contacts with clip-principle for easy assembly**
- **Quick Change Head (QCH)** for **low maintenance**

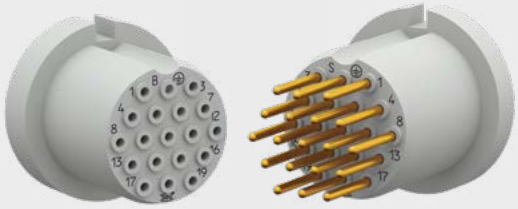
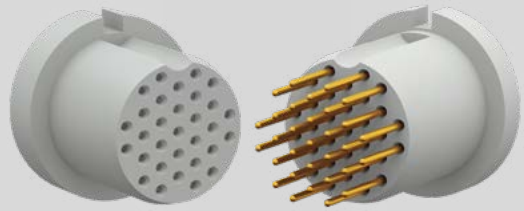
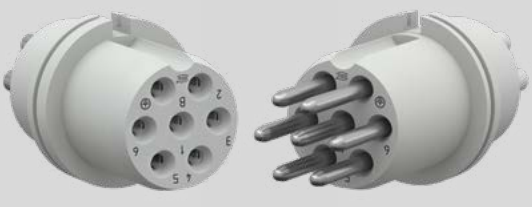
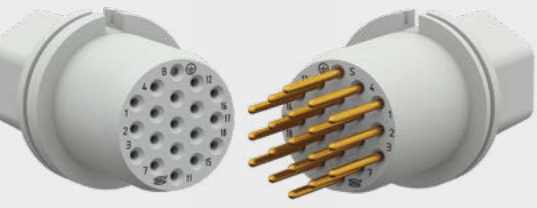


10 Million
Mating cycles
and more



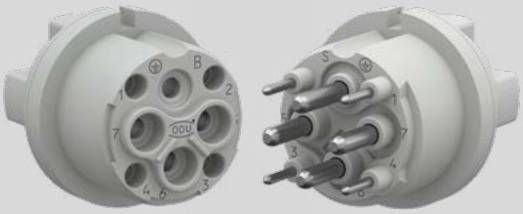
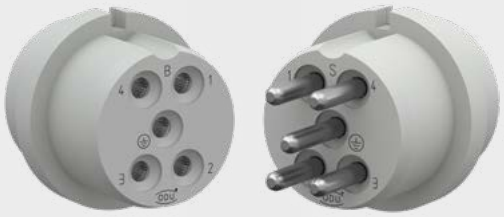
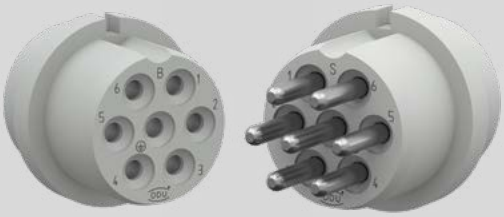
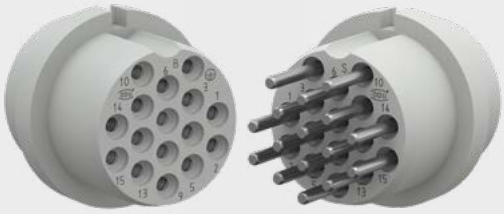
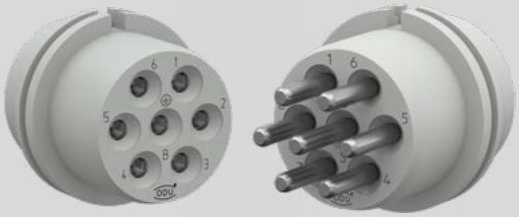
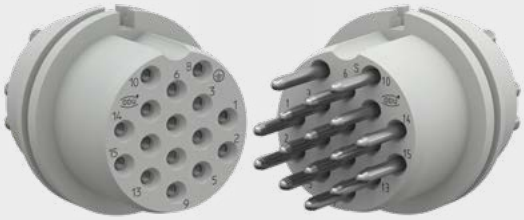
Base parts stay wired. The exchangeable connector pieces are plugged in. The contacts on terminal piece B and D are crimp contacts..
For possible Quick Change Head (QCH) inserts see insert overview.

OVERVIEW OF ALL CONTACT INSERTS

Size	Contact insert	Features
1		**2+PE** Contact-Ø 3 mm Conductor cross-section 2.5 / 1.5 mm² Operating voltage[1] 630 V Rated impulse voltage[1] 4,000 V Nominal current[2] 25 A
		**6+PE** Contact-Ø 2 mm Conductor cross-section 1.5 / 1 mm² Operating voltage[1] 500 V Rated impulse voltage[1] 3,000 V Nominal current[2] 18 A
		**18+PE** Contact-Ø 1.02 mm Conductor cross-section 1 / 0.38 – 0.5 mm² Operating voltage[1] 630 V Rated impulse voltage[1] 3,000 V Nominal current[2] 12 A
		**31** Contact-Ø 0.76 mm Conductor cross-section 0.38 / 0.08 – 0.25 mm² Operating voltage[1] 320 V Rated impulse voltage[1] 2,500 V Nominal current[2] 7.5 A
		**2+PE+9** Contact-Ø 1.5 /1.02 mm Conductor cross-section 1.5 / 0.38 – 0.5 mm² Operating voltage[1] 800 V Rated impulse voltage[1] 4,000 V Nominal current[2] 18 A
		**6+PE Quick Change Head** Contact-Ø 2 mm Conductor cross-section 0.5 – 1.5 mm² Operating voltage[1] 160 V Rated impulse voltage[1] 2,500 V Nominal current[2] 16 A
		**18+PE Quick Change Head** Contact-Ø 1 mm Conductor cross-section 0.5 – 1 mm² Operating voltage[1] 400 V Rated impulse voltage[1] 3,000 V Nominal current[2] 12 A

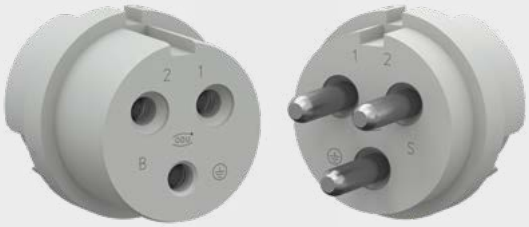
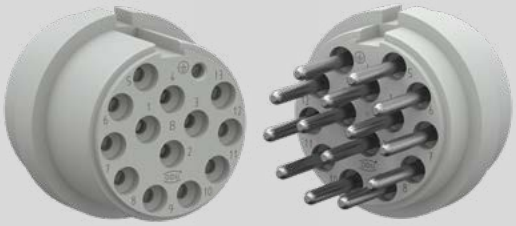
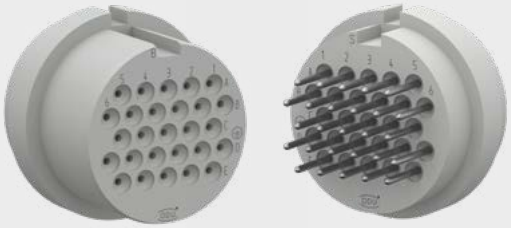
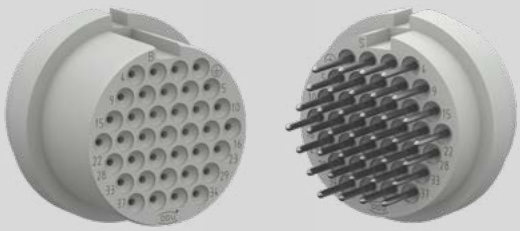
[1] Acc. to IEC 60664-1:2007 (VDE 0110-1:2008) for degree of pollution 2. [2] Determined acc. to IEC 60512-5-1:2002 (DIN EN 60512-5-1:2003) at a temperature increase of 45 K: When determining the current-carrying capacity for a fully equipped insert, take the reduction factor into account.

OVERVIEW OF ALL CONTACT INSERTS

Size	Contact insert	Features
2		**3+PE+4** Contact-Ø: 3 / 1.5 mm Conductor cross-section: 4 / 2.5 / 1.5 mm² Operating voltage[1]: 1,600 V Rated impulse voltage[1]: 8,000 V Nominal current[2]: 35 A
		**4+PE** Contact-Ø: 3 mm Conductor cross-section: 2.5 / 1.5 mm² Operating voltage[1]: 800 V Rated impulse voltage[1]: 4,000 V Nominal current[2]: 25 A
		**6+PE** Contact-Ø: 3 mm Conductor cross-section: 2.5 / 1.5 mm² Operating voltage[1]: 800 V Rated impulse voltage[1]: 4,000 V Nominal current[2]: 25 A
		**15+PE** Contact-Ø: 2 mm Conductor cross-section: 1 / 1.5 mm² Operating voltage[1]: 400 V Rated impulse voltage[1]: 3,000 V Nominal current[2]: 18 A
		**6+PE Quick Change Head** Contact-Ø: 3 mm Conductor cross-section: 0.5 – 1.5 mm² Operating voltage[1]: 400 V Rated impulse voltage[1]: 4,000 V Nominal current[2]: 18 A
		**15+PE Quick Change Head** Contact-Ø: 2 mm Conductor cross-section: 0.5 – 1.5 mm² Operating voltage[1]: 160 V Rated impulse voltage[1]: 2,500 V Nominal current[2]: 16 A

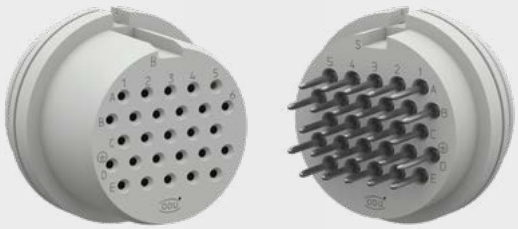
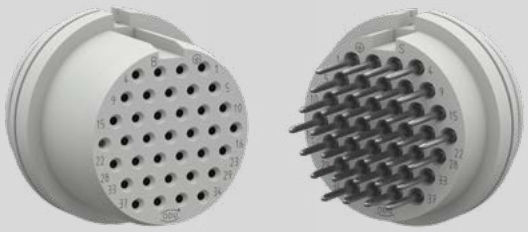
[1] Acc. to IEC 60664-1:2007 (VDE 0110-1:2008) for degree of pollution 2. [2] Determined acc. to IEC 60512-5-1:2002 (DIN EN 60512-5-1:2003) at a temperature increase of 45 K: When determining the current-carrying capacity for a fully equipped insert, take the reduction factor into account.

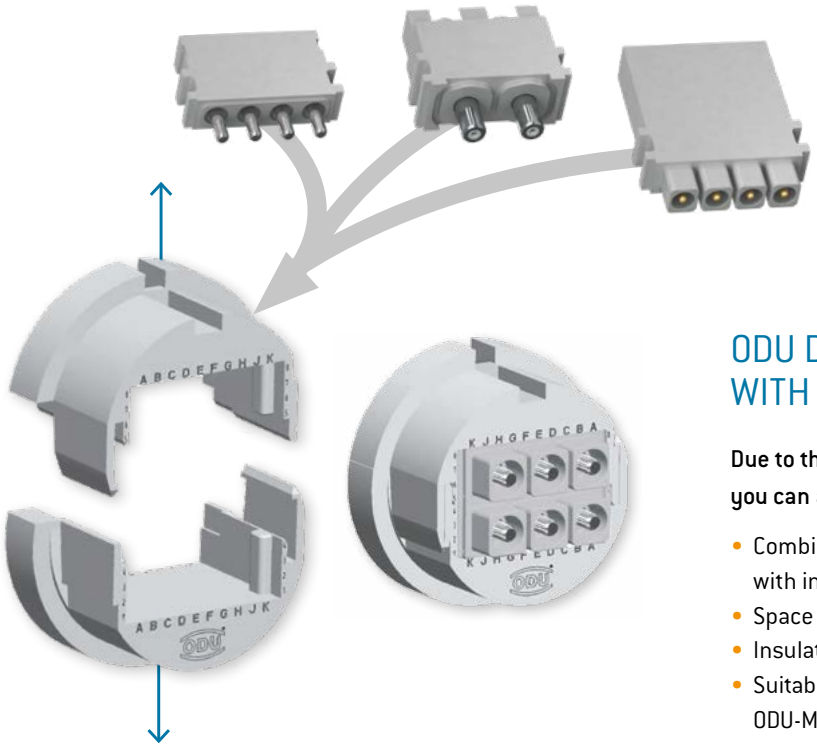
OVERVIEW OF ALL CONTACT INSERTS

Size	Contact insert	Features
3		**2+PE** Contact-Ø 6 mm Conductor cross-section 16 / 6 / 2.5 mm² Operating voltage[1] 1,600 V Rated impulse voltage[1] 6,000 V Nominal current[2] 80 A
		**4+PE** Contact-Ø 6 mm Conductor cross-section 16 mm² Operating voltage[1] 1,250 V Rated impulse voltage[1] 6,000 V Nominal current[2] 80 A
		**6+PE** Contact-Ø 3 mm Conductor cross-section 10 / 6 / 4 / 1.5 mm² Operating voltage[1] 1,600 V Rated impulse voltage[1] 6,000 V Nominal current[2] 65 A
		**13+PE** Contact-Ø 3 mm Conductor cross-section 4 / 2,5 / 1.5 mm² Operating voltage[1] 1,600 V Rated impulse voltage[1] 5,000 V Nominal current[2] 35 A
		**26+PE** Contact-Ø 1.5 mm Conductor cross-section 1.5 / 0.38 – 0.5 mm² Operating voltage[1] 800 V Rated impulse voltage[1] 4,000 V Nominal current[2] 18 A
		**36+PE** Contact-Ø 1.5 mm Conductor cross-section 1.5 / 0.38 – 0.5 mm² Operating voltage[1] 800 V Rated impulse voltage[1] 4,000 V Nominal current[2] 18 A

[1] Acc. to IEC 60664-1:2007 (VDE 0110-1:2008) for degree of pollution 2. [2] Determined acc. to IEC 60512-5-1:2002 (DIN EN 60512-5-1:2003) at a temperature increase of 45 K: When determining the current-carrying capacity for a fully equipped insert, take the reduction factor into account.

OVERVIEW OF ALL CONTACT INSERTS

Size	Contact insert	Features
3		**26+PE Quick Change Head** Contact-Ø 1.5 mm Conductor cross-section 0.5 – 1.5 mm² Operating voltage[1] 200 V Rated impulse voltage[1] 3,000 V Nominal current[2] 16 A
		**36+PE Quick Change Head** Contact-Ø 1.5 mm Conductor cross-section 0.5 – 1.5 mm² Operating voltage[1] 160 V Rated impulse voltage[1] 2,500 V Nominal current[2] 16 A
		**13+PE Quick Change Head** Contact-Ø 3 mm Conductor cross-section 2.5 – 4 mm² Operating voltage[1] 630 V Rated impulse voltage[1] 5,000 V Nominal current[2] 30 A



ODU DOCK Silver-Line WITH ODU-MAC® MODULES

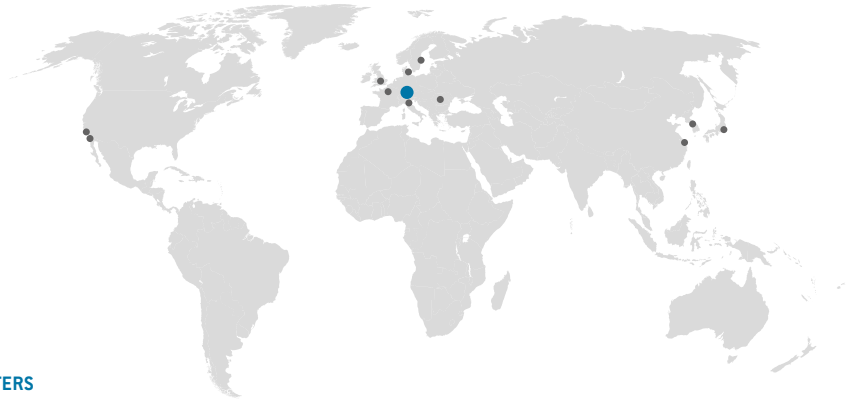
Due to the combination of two proven ODU products you can arrange the inserts individually:

- Combination of ODU DOCK Silver-line housings size 3 with integrated modules from the ODU-MAC® program
- Space for 8 units (1 unit = 2.54 mm)
- Insulator material: PBT
- Suitable modules are marked in the ODU-MAC® module overview →

[1] Acc. to IEC 60664-1:2007 (VDE 0110-1:2008) for degree of pollution 2. [2] Determined acc. to IEC 60512-5-1:2002 (DIN EN 60512-5-1:2003) at a temperature increase of 45 K: When determining the current-carrying capacity for a fully equipped insert, take the reduction factor into account.

A PERFECT ALLIANCE.

ODU GROUP WORLDWIDE



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