ODU AMC® SERIES T

Miniaturized 38999 type connectivity solution

HDMI

ODU HIGH-SPEED DATA TRANSMISSION

www.odu-connectors.com

ODU AMC® SERIES T

FEATURES

- Submersibility (20 m / 120 Min)
- 3 locking mechanisms
- Optimized field assembly capability
- Compact design
- Reversed gender option
- Mechanical / color coding
- Crimp termination technology
- EMI shielding
- Tested according MIL standards
- High vibration resistance
- Rugged design
- International protection class IP6K9K
- Standard cable assemblies

MILITARY APPLICATIONS

- Active protection systems (APS)
- Counter drone sytems (CUAV)
- Electronic warfare
- Jammer and counter IED systems
- Power distribution devices
- Radar systems
- Remote controlled weapon stations
- Tactical radios
- Training and simulation systems
- Robotics and autonomous systems (RAS)

CIVIL APPLICATIONS

- Deep foundation machinery and equipment
- Forestry
- Heavy construction
- Mining
- Waste industry

All shown connectors and cable assemblies are according to IEC 61984:2008 (VDE 0627:2009-11)connectors without breaking capacity (COC). All shown connectors and cable assemblies are rated to a safety extra low voltage (SELV) of less than 50 V AC /75 V DC, according to IEC 61140:2016 (VDE 0140-1:2016). For more details, please refer to page 84.

All dimensions are in mm.
Some figures are for illustrative purposes only. Subject to change without notice. Errors and omissions excepted. We reserve the right to change our products and their technical specifications at any time in the interest of technical improvement. This publication supersedes all prior publications.

This publication is also available as a PDF file that can be downloaded from www.odu-connectors.com

DATA TRANSMISSION PROTOCOLS

Unless explicitly confirmed otherwise the contact arrangement of an ODU data transmission connector differs from a standard data transmission connector due to the robust ODU specific design. However, the ODU design meets the electrical specifications of the respective standard data transmission protocol.

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ODU AMC® CONNECTORS AT A GLANCE

The ODU AMC® series has been designed especially for use under extreme conditions. This incredibly robust series of metal circular connectors leave absolutely nothing to be desired in terms of toughness and transmission reliability.

They truly excel under extreme field conditions: rugged, watertight and easy to clean. Low weight, low light reflection surfaces, excellent EMC properties and a compact construction make these connectors the ideal choice for military and security technology applications.

These connectors are available as system solutions with cable assemblies for harsh environments and with straight or right-angled overmolding.

ODU CONNECTOR APPLICABILITY

Extreme enviromental conditions

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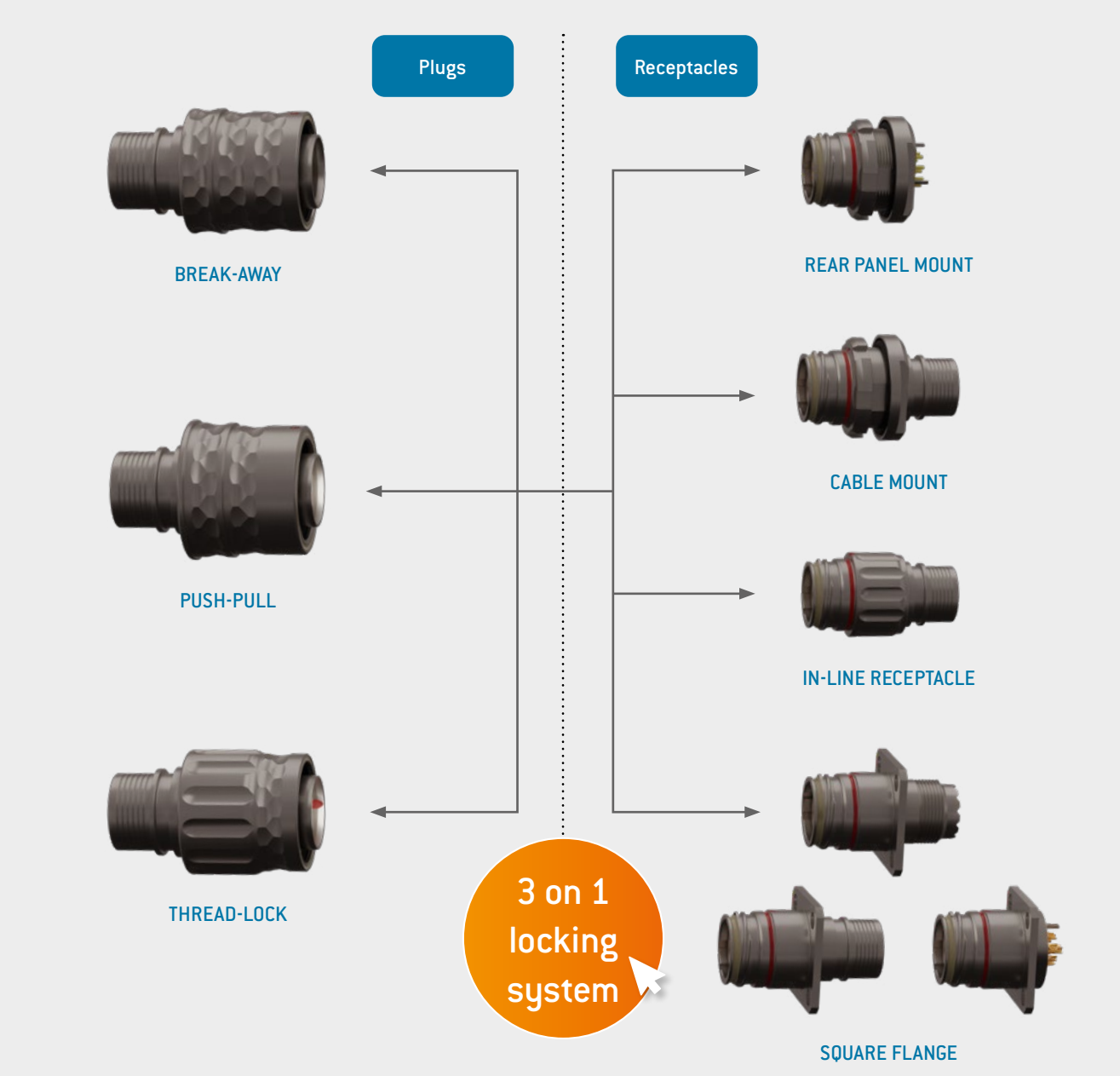
ODU AMC® SERIES T

A higher level of flexibility



ODU AMC® SERIES T – FEATURES

- 2 shell sizes (09 / 12)
- From 5 to 22 contacts
- Miniaturized 38999 type
- Multiple sealed mechanical components
- Waterproof in accordance with MIL-Standard 810 (up to 20 m)
- International protection class IP6K8 and IP6K9K
- Standard cable assemblies with UL rated cables and single wires
- High-speed data transmission versions
- Operating temperature range from –65 °C to +175 °C
- Compatible with MIL-STD crimp contacts
- Compatible with MIL-DTL-85049 backshells
- Customizable with MIL-STD sealing plugs
- Highly flexible & field repairable solution

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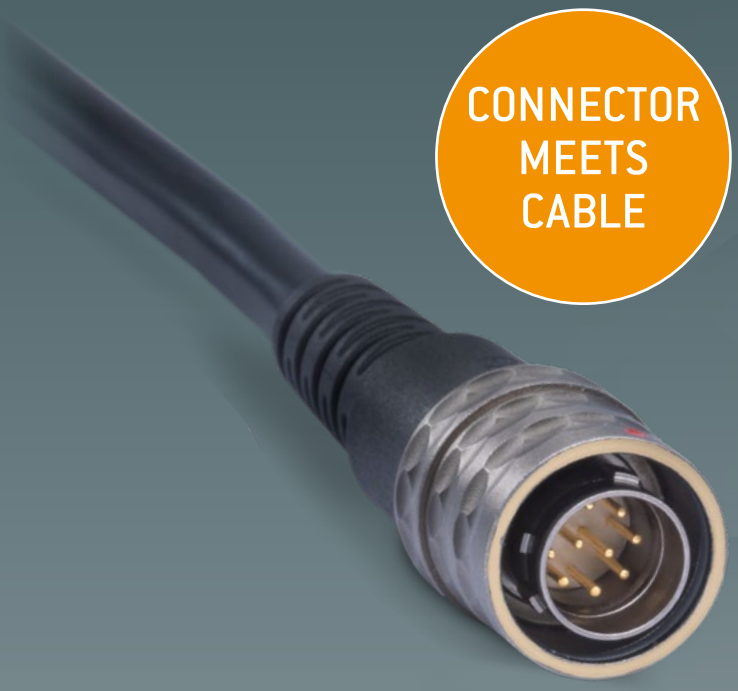
CIRCULAR CONNECTORS

Complete with cable assembly



CONNECTOR MEETS CABLE

ODU AMC® Series T is the ideal circular connector for a wide range of applications. Whether used for transmitting power, signals or data with special data transmission protocols, this circular connector in its robust metal housing impresses customers – with its exceptional quality, high reliability and ideal handling characteristics, all in accordance to the 38999 qualification.

The MIL 38999 type circular connector is available with three different locking mechanisms that all connect to a single receptacle. With the break-away function, the connection can be cut by simply pulling on the cable, perfect for emergencies. If needed, the Series T connectors come with a push-pull mechanism, that ensures that the connector will not come loose during use. For applications where high vibrations are common, the thread-lock function is the best way to secure the connection.

Protection against water, dirt and dust: ODU AMC® Series T can be configured entirely in accordance with your application and requirements. You can choose from connectors in two sizes – the cable connection is available both as a molded variant and with standard MIL backshells (MIL standard 38999). The plugs can be easily assembled in the field, even under difficult conditions – the individual connector can be easily replaced or repaired on site by military personnel.

COMPLETE SYSTEM SOLUTIONS

Every connection has a unique cable requirement. Make no compromise when it comes to the quality of the complete interconnect system. ODU gives you the complete system solution from one source, without the need for an intermediary supplier.

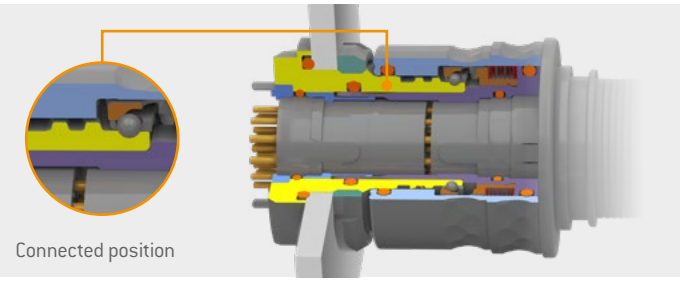
Services include:

- One point of contact for a complete system
- High technical expertise in the processing of third-party products
- Express availability
- Custom labeling and cable printing
- Close collaboration with leading cable manufacturers
- Process-controlled solder and crimp monitoring from initial samples to full production
- Production in accordance with UL possible (File: E333666)
- Inhouse Technology Test Center for the development of technologies for customer-specific requirements
- Production according to IPC standards

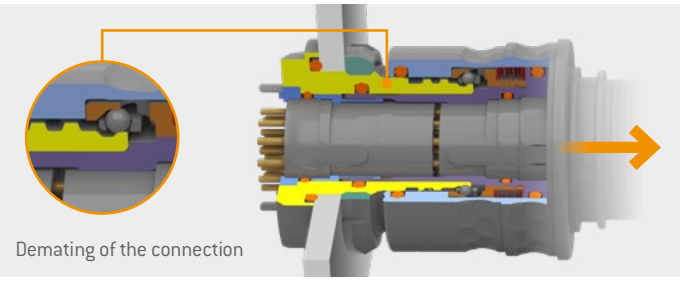
ODU AMC® SERIES T LOCKING MECHANISMS

PUSH-PULL LOCKING

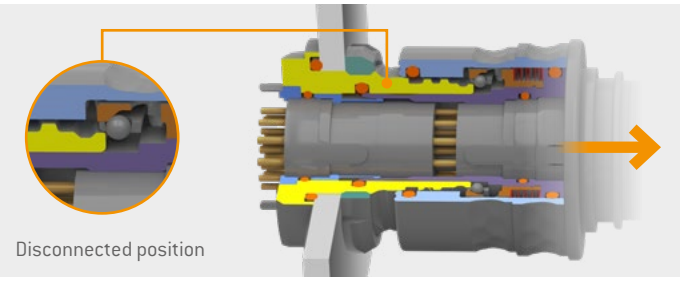
The innovative push-pull ball-locking principle ensures reliable and precise mechanical mating and demating within a compact, radial design with small external dimensions.



During the mating process, the balls are pressed into the locking groove on the receptacle by the wave spring. The connection can only be released by manually actuating (pulling back) the outer sleeve of the connector.



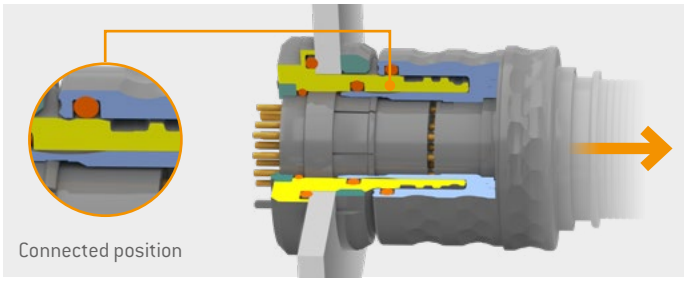
Pulling on the cable has no affect on the locking mechanism. For demating in an emergency, the connector can be cleanly unplugged by simply pulling back the outer sleeve, even if the cable is under tension, thus preventing personal injury and damage to equipment.



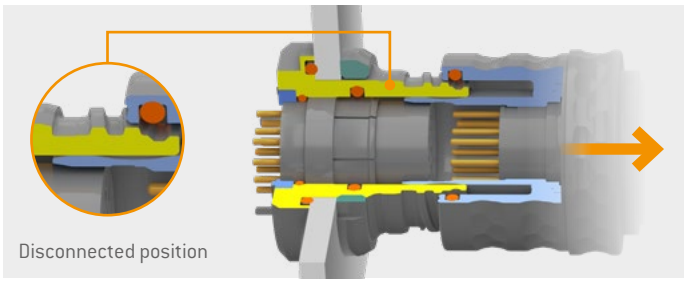
ODU AMC® SERIES T LOCKING MECHANISMS

BREAK-AWAY LOCKING

The break-away function allows connectors to be mated and unmated quickly and reliably. During the mating process, a locking ring inside the receptacle engages corresponding grooves on the plug. Once established, the connection will be maintained as long as axial tension on the plug is less than the release limit of the connector system.
The retention mechanism is strong enough to resist minor tension. Pulling lightly on the plug or cable assembly will have no impact on the connection.



If the plug or cable assembly is pulled forcefully, and the release limit of the connector is exceeded then the connectors will separate.
Design features within the connector allow a damage-free demating if either the plug or the cable assembly is pulled away from the receptacle with enough force to overcome the retention mechanism.

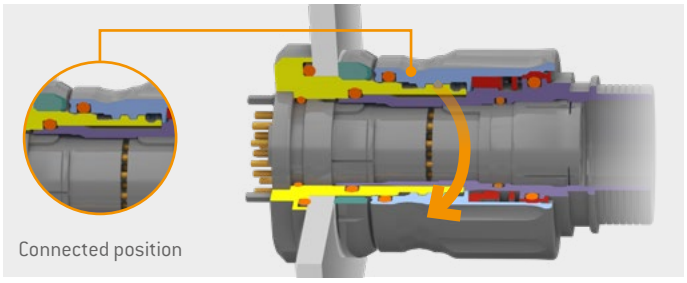


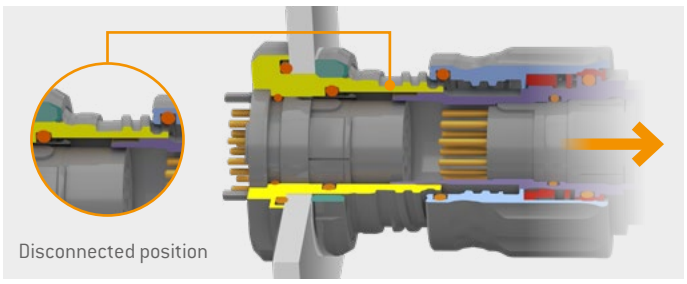
THREAD-LOCK FUNCTION

The thread-lock connector features a triple-start thread that allows it to be securely connected to the receptacle via a 180° turn.

Positive engagement and force closure within the locking mechanism are ensured by means of an integrated stainless steel wave spring and a ratchet mechanism made of high-performance polymers.

The interaction of locking ring, connector housing, and thread thus ensures an extremely secure and vibration resistant connection.



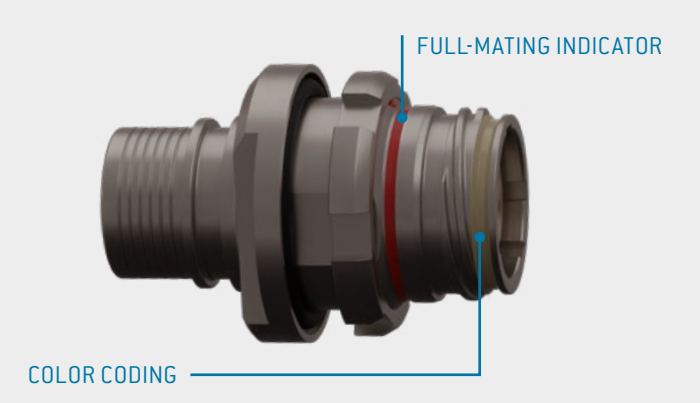


ODU AMC® SERIES T – CODING OPTIONS

	A	B	C	D
Mechanical coding: receptacle front view				
Color coding				
	Light Brown	Red	Blue	Green

FULL-MATING INDICATOR

The full-mating indicator shows if the plug is completely and correctly connected. Once connected, the fullmate indicator should no longer be visible.



ODU FIBER OPTIC

Expanded Beam Performance

OPTICAL CHARACTERISTICS

		Typical	Max.
Insertion loss	SM	< 0.35 dB	< 0.7 dB
	MM	< 0.15 dB	< 0.3 dB

		Typical	Min.
Return loss	SM	> 60 dB	≥ 55 dB
	MM	> 45 dB	≥ 35 dB

MECHANICAL CHARACTERISTICS / ENVIRONMENTAL DATA

Mating cycles	5,000*
IP class in mated condition	IP6K8
Operating temperature	–40 °C to +85 °C
Vibration	MIL 810G 20 g

*Contact transition allows up to 25,000 mating cycles with cleaning every 5,000 mating cycles under controlled conditions. Specifics of the connector series may deviate. Mating cycles only valid for Fiber Optic solution Expanded Beam Performance with thread-lock. Connectors with MIL contacts have a reduced number of mating cycles.

The ODU AMC® Series T Expanded Beam Performance is an advanced fiber optic solution. It offers high-end transmission characteristics over many mating cycles.

The excellent optical performance remains unchanged even under mechanical stress, environmental influences and harsh ambient conditions.

CABLE SPECIFICATION

	Singlemode	Multimode
Fiber	G.657A2	OM4
Jacket	LSZH black	
Cable diameter	6.0 ± 0.2 mm	
Crush resistance	300 N / 10 cm (operation)	
Min. bending radius (static)	60 mm	
Min. bending radius (dynamic)	120 mm	

- Fiber types: Singlemode and Multimode
- Configurations: 2 to 12 fibers
- Outstanding optical performance

CLEANING INSTRUCTION

WATCH OUR VIDEO

ODU AMC® SERIES T

ODU-PRODUCT-FINDER.COM

CONFIGURATION

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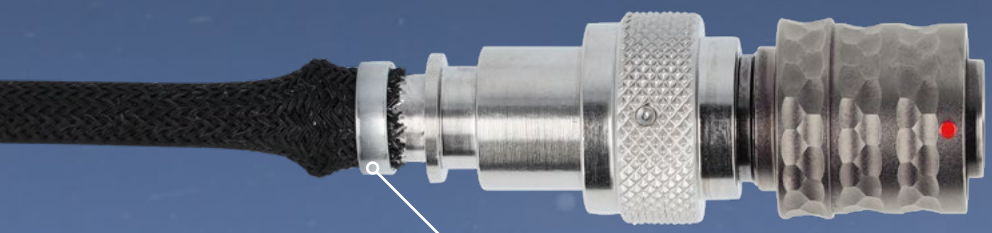
ODU AMC® SERIES T
Field assembly capability



ODU
PRO ADVICE

SERVICE LOOP

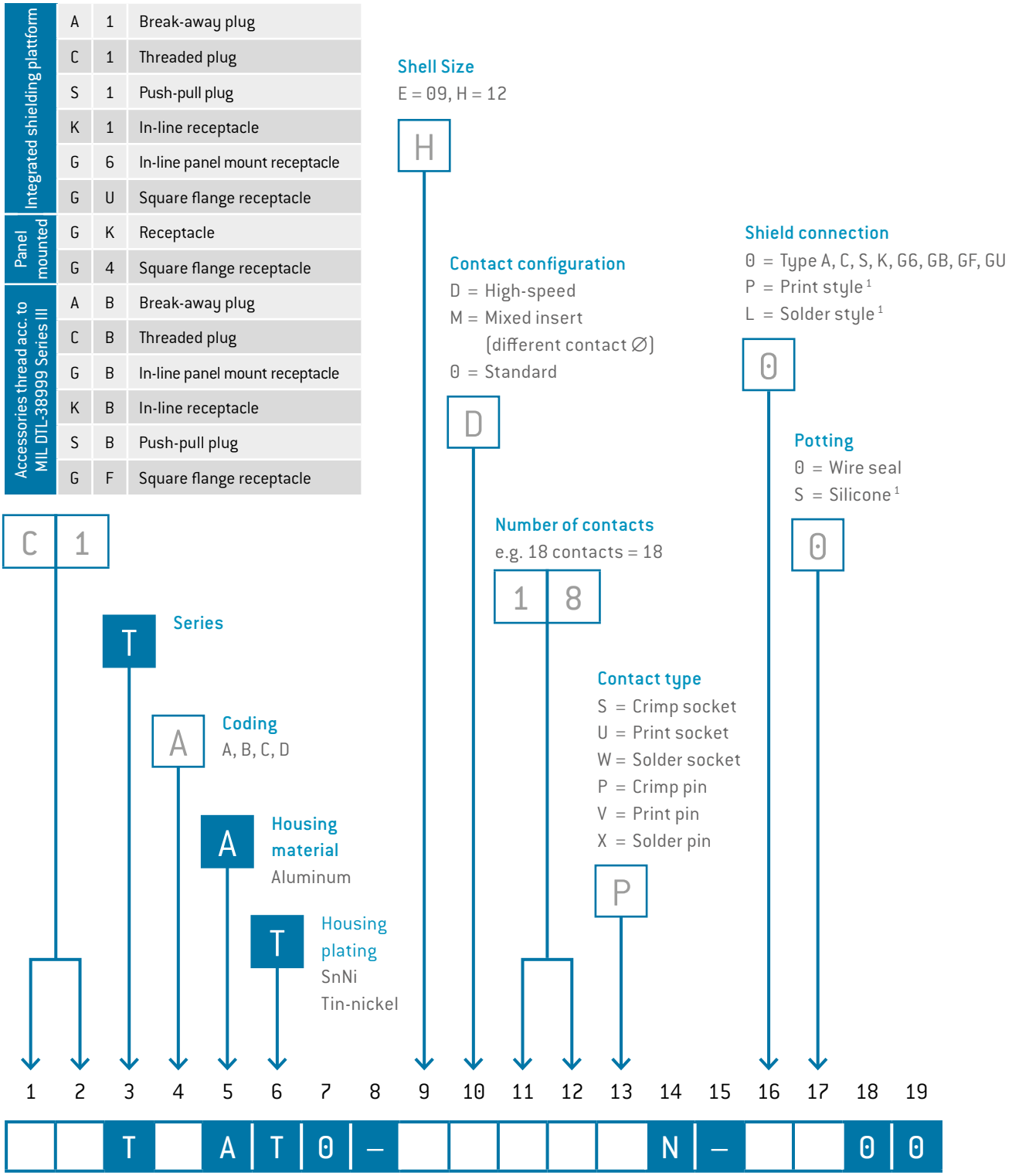
For better field assembly, include a service loop in the cable design. The additional length of cable or wire simplifies field assembly or damage repair. For example, damaged components can be replaced without replacing the entire cable installation.

YOUR WAY TO AN INDIVIDUAL CONNECTION

How to configure with the Connector part number key

This shows you how ODU's part number key is composed. In the first part of the configuration, select the connector plug housing (such as style and size) of the connector. In the middle part of the part number key, you configure the contact insert and in the last part the cable entry.

Integrated shielding platform	A	1	Break-away plug
	C	1	Threaded plug
	S	1	Push-pull plug
	K	1	In-line receptacle
	G	6	In-line panel mount receptacle
	G	U	Square flange receptacle
Panel mounted	G	K	Receptacle
	G	4	Square flange receptacle
Accessories thread acc. to MIL DTL-38999 Series III	A	B	Break-away plug
	C	B	Threaded plug
	G	B	In-line panel mount receptacle
	K	B	In-line receptacle
	S	B	Push-pull plug
	G	F	Square flange receptacle



[1] Only for GK & G4 receptacle

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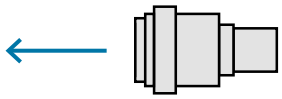
SAMPLE CONFIGURATION STEP BY STEP

The perfect product in just a few steps. These step-by-step instructions show you how to configure your own individual product with the ODU part number key based on a sample configuration.

Plug with thread-lock function, ODU AMC® Series T, coding A, aluminum housing with SnNi tin-nickel plating, shell size 12, mixed insert, 18-position, pin (crimp contacts)

Step 1: Series (see position 3)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
		T				0	–						N	–			0	0



SERIES T

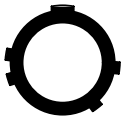
Step 2: Type / style (see positions 1, 2) PAGE 30

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
C	1	T				0	–						N	–	0	0	0	0

SERIES T, TYPE THREAD-LOCK,
standard cable termination

Step 3: Coding (see position 4) PAGE 12

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
C	1	T	A			0	–						N	–	0	0	0	0



CODING A

Step 4: Housing material (see position 5)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
C	1	T	A	A		0	–						N	–	0	0	0	0

HOUSING MATERIAL
Aluminum

Step 5: Housing plating (see position 6)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
C	1	T	A	A	T	0	–						N	–	0	0	0	0

HOUSING PLATING
Tin-nickel

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Step 6: Shell size (see position 9)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
C	1	T	A	A	T	0	–	H					N	–	0	0	0	0

SHELL SIZE 12

Step 7: Contact configuration (see position 10)

PAGE 54

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
C	1	T	A	A	T	0	–	H	M				N	–	0	0	0	0

MIXED INSERT

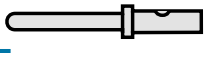
Step 8: Number of contacts (see position 11, 12)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
C	1	T	A	A	T	0	–	H	M	1	8		N	–	0	0	0	0

18 CONTACTS

Step 9: Contact type (see position 13)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
C	1	T	A	A	T	0	–	H	M	1	8	P	N	–	0	0	0	0



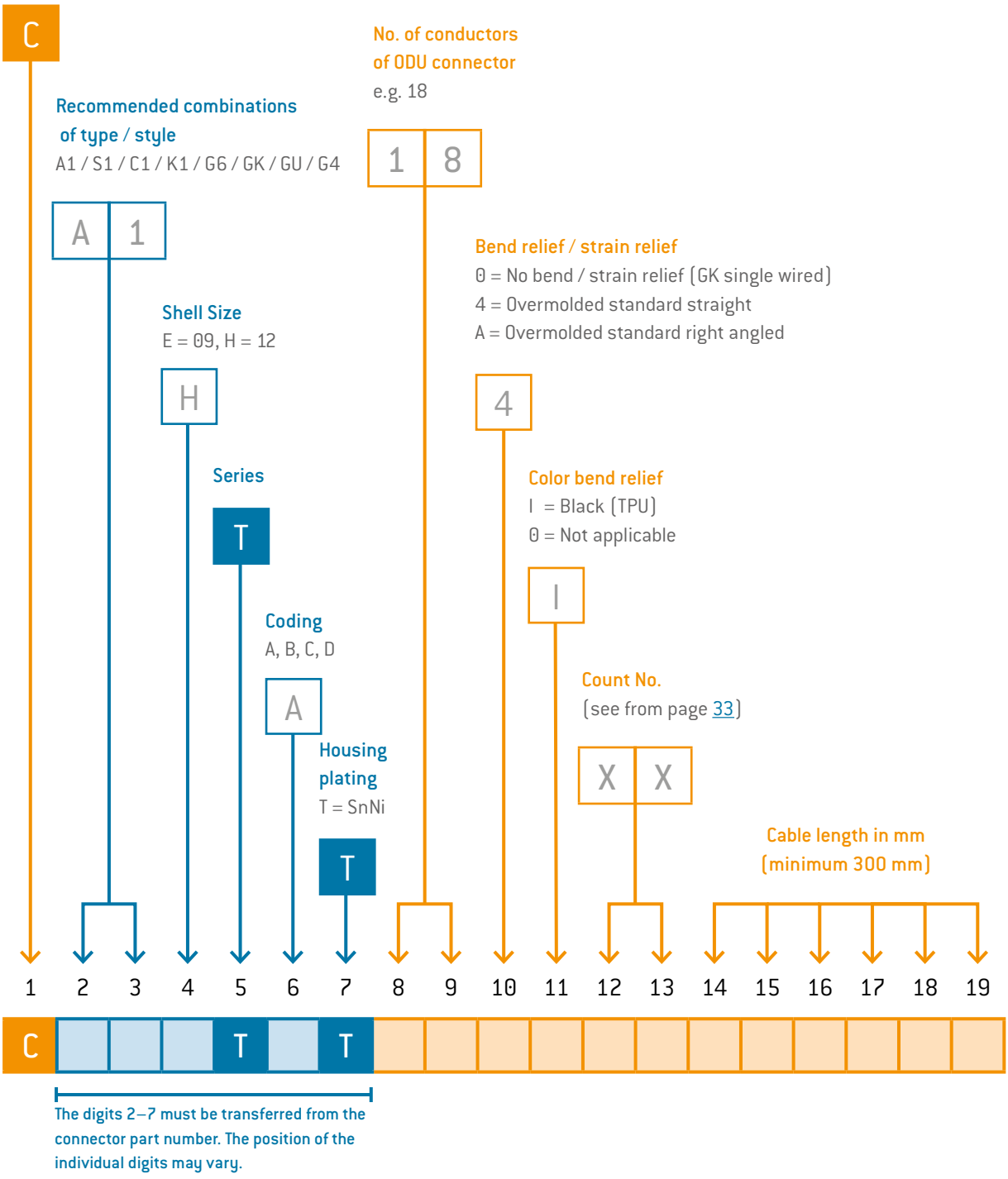
CRIMP PIN

YOUR WAY TO AN INDIVIDUAL CABLE ASSEMBLY SOLUTION

How to configure with the Cable number key

This shows to you how ODU's Cable number key is composed. First part of the configuration is "C" for cable.
The digits 2–7 must be transferred from the connector part number.
In the middle part of the cable number key, you configure bend relief, color and count number.
The last 6 positions determine the length of the cable in mm.

Cable assembly



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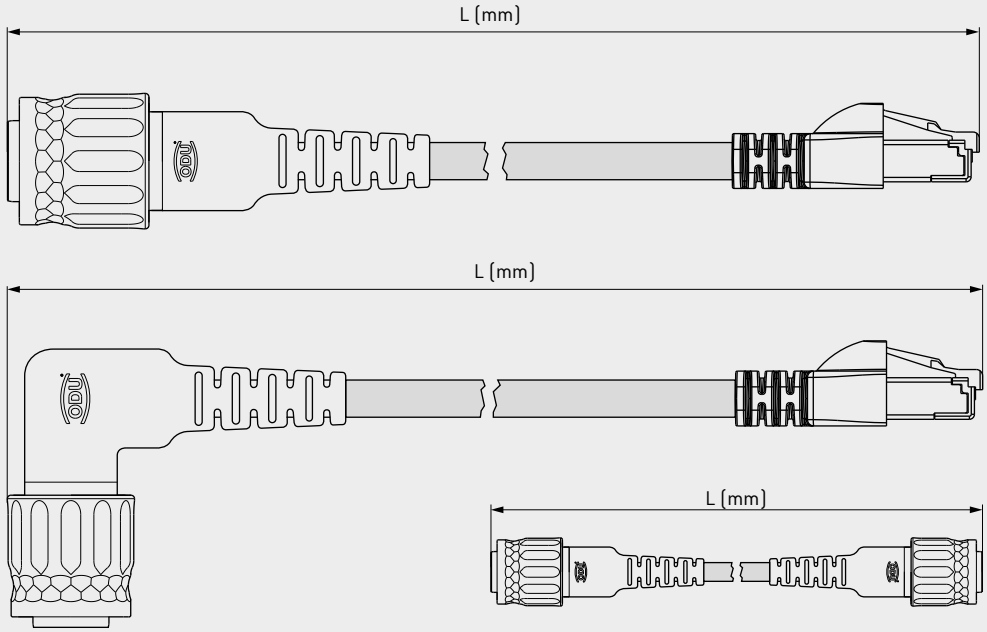
CABLE ASSEMBLY – ODU AMC® SERIES T

Ethernet® up to 25,000 mm per single side assembly

Schematic drawing



In configurations with ODU connectors on both ends, the connector configured on side A is always identical to the one on side B.
[1] Configurations with two ODU connectors are only available in connector types A1, S1, and C1.

Pos. 2–3	Connector type [1]
A1	Break-away plug
S1	Push-pull plug
C1	Threaded plug
K1	In-line receptacle
G6	Panel mount receptacle
GU	Square flange receptacle

Pos. 12–13	Data rate [2]	Pin/Socket	2nd side
ZJ	10 Gbit / s	Pin	RJ45 plug
ZH			ODU Connector
ZI	10 Gbit / s	Socket	RJ45 plug

[2] Data rates mentioned are based on the respective standard data transmission protocol.

Pos. 6	Coding
A	Light brown
B	Red
C	Blue
D	Green

Pos. 10	Bend relief / strain relief
4	Overmolded standard straight
A	Overmolded standard right angled

Pos. 14–19	Length
Length L of assembly in mm (minimum cable length 300 mm) Example: 1,000 mm = 001000	

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
C			E	T		T	0	8		I								

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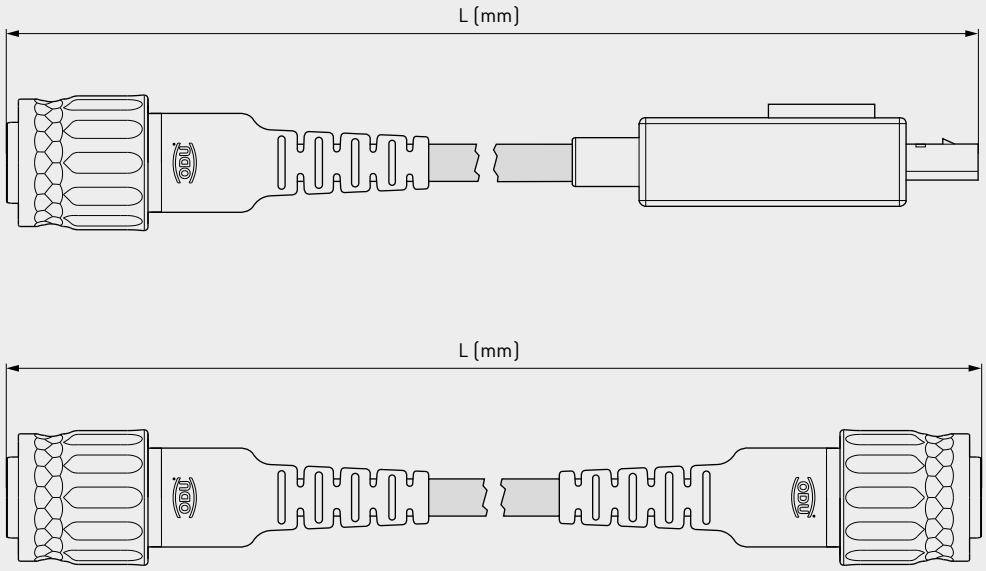
CABLE ASSEMBLY – ODU AMC® SERIES T

DisplayPort® up to 4,800 mm per single side assembly

Schematic drawing



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Pos. 2–3	Connector type [1]
A1	Break-away plug
S1	Push-pull plug
C1	Threaded plug
K1	In-line receptacle
G6	Panel mount receptacle
GU	Square flange receptacle

Pos. 6	Coding
A	Light brown
B	Red
C	Blue
D	Green

Pos. 12–13	Pin/Socket	Data rate [2]	2nd side
ZG	Pin	32.4 Gbit / s	DP plug
ZE			ODU Connector
ZF	Socket		DP plug

[2] Data rates mentioned are based on the respective standard data transmission protocol.

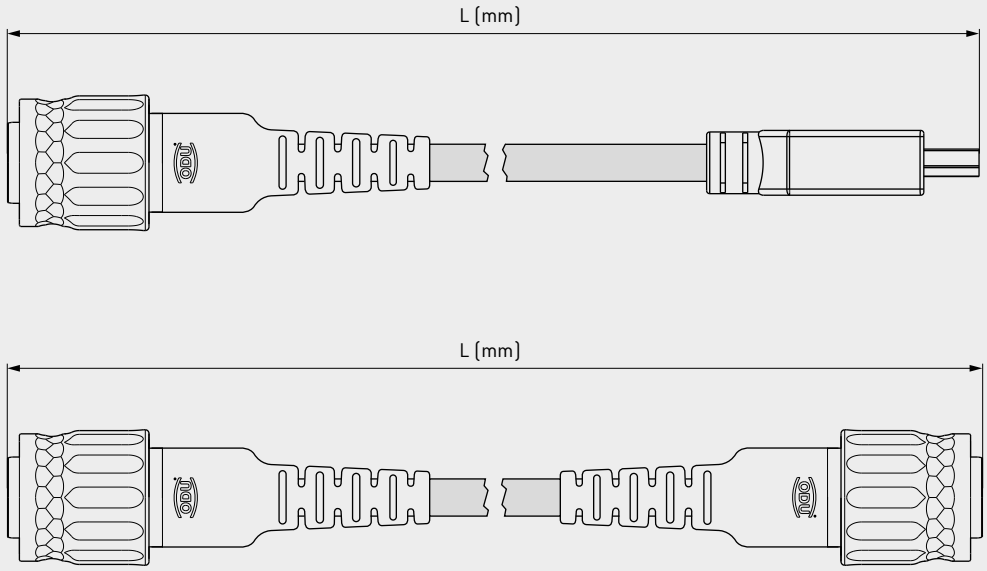
Pos. 16–19	Length
Length L of assembly in mm (minimum cable length 300 mm) Example: 1,000 mm = 1000	

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
C			E	T		T	2	0	4	I			0	0				

CABLE ASSEMBLY – ODU AMC® SERIES T

HDMI® up to 3,000 mm per single side assembly

Schematic drawing



In configurations with ODU connectors on both ends, the connector configured on side A is always identical to the one on side B.
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Pos. 2–3	Connector type [1]
A1	Break-away plug
S1	Push-pull plug
C1	Threaded plug
K1	In-line receptacle
G6	Panel mount receptacle
GU	Square flange receptacle

Pos. 6	Coding
A	Light brown
B	Red
C	Blue
D	Green

Pos. 12–13	Pin/Socket	Data rate [2]	2nd side
ZD	Pin	10.2 Gbit / s	HDMI® A plug
ZB			ODU Connector
ZC	Socket		HDMI® A plug

[2] Data rates mentioned are based on the respective standard data transmission protocol.

Pos. 16–19	Length
Length L of assembly in mm (minimum cable length 300 mm) Example: 1,000 mm = 1000	

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
C			E	T		T	2	0	4	I			0	0				

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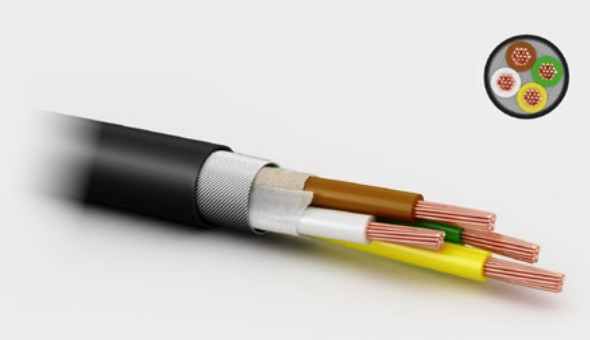
CABLE SPECIFICATIONS
Technical Data

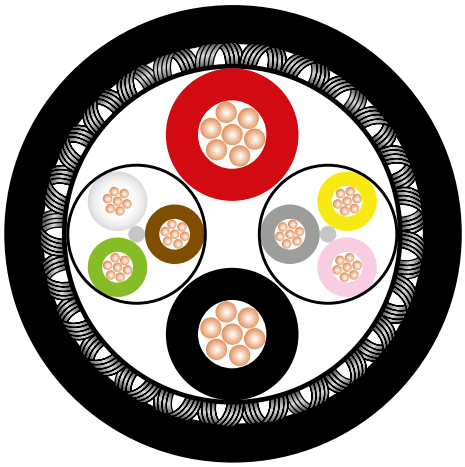


MULTI-CONDUCTOR CABLES PUR – SHIELDED [1]
UL / cUL – Style 20233/10042

Conductor	Bare copper acc. to EN 13602
Insulation	TPE (12Y) thermoplastic compound (core) PUR – (11Y) / UL-AWM758 / Black (jacket)
Shielding	Spiral shield tinned copper
Temperature range in motion	–40 °C up to +80 °C
Temperature range at rest	–50 °C up to +80 °C
Test voltage	1,500 V / AC
Operating voltage UL	300 V
Wire colors	Acc. to DIN 47100

SINGLE WIRE PVC
UL-Style 1061 / 10002 | UL-Style 1007 / 1569 | UL-Style 1015

Conductor	TPC – tin plated copper acc. to EN 13602
Insulation	UL-PVC semi rigid (UL-Style 1061 / 10002) UL-PVC 105 °C (UL-Style 1007 / 1569 & 1015)
Temperature range in motion	–10 °C up to +105 °C (UL-Style 10002 / 1569 / 1015) –10 °C up to +80 °C (UL-Style 1007) –30 °C up to +80 °C (UL-Style 1061)
Temperature range at rest	–30 °C up to +105°C (UL-Style 10002/1569/1015) –30 °C up to +80°C (UL-Style 1007 /1061)
Test voltage	1,500 V / AC (UL-Style 1061 / 10002) 3,000 V / AC (UL-Style 1007 / 1569) 2,000 V / AC (UL-Style 1015 / AWG 12 – 4) 2,500 V / AC (UL-Style 1015 / AWG 2 – 1)
Operating voltage UL	300 V (UL-Style 1061 / 10002 & 1007 / 1569) 600 V (UL-Style 1015)



MULTI-CONDUCTOR HYBRID CABLE PUR – SHIELDED [1]
Technical data

Conductor	TPC – tin plated copper acc. to DIN EN 13602 AWG 12 / AWG 22
Insulation	TPE ∅ 1.3 mm (core – AWG 22) TPE ∅ 3.1 mm (core – AWG 12) PUR ∅ 9.4 mm – Black (jacket)
Shielding	Tinned copper braid
Temperature range in motion	–30 °C up to +80 °C
Temperature range in rest	–40 °C up to +90 °C
Test voltage	1,200 V / AC (AWG 22) 2,500 V / AC (AWG 12)
Operation voltage	240 V (AWG 22) 300 / 500 V (AWG 12)

[1] Wiring layout may vary due to hybrid pole configuration.

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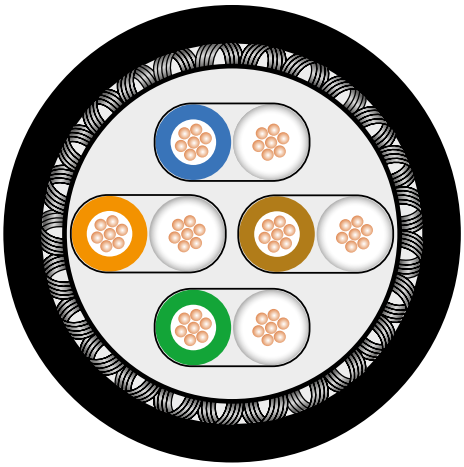


PATCH CABLES – PRE-ASSEMBLED

Technical data

Conductor	Bare copper wire, ∅ 0.46 mm AWG 27 / 7
Insulation	PE ∅ 1.02 mm (core) LSZH (jacket) / PVC (bend relief) – Black
Shielding	Tinned copper braid
Particle Intrusion	IP2X
Water / Submerge	IPX0
Ambient temperature	–40 °C to +75 °C
Halogen free	IEC 60754-2
Flame retardant	IEC 60332-1; UL 444 CM
Transmission characteristics	Suitable for 10 Gbit Ethernet Category 6A: ISO / IEC 11801; DIN EN 50173-1 Class EA: ISO / IEC 11801; DIN EN 50173-1 Category 6A: ANSI / TIA / EIA-568-C.2
ULlisted	E244889
Pin assignment	Acc. to TIA 568 B

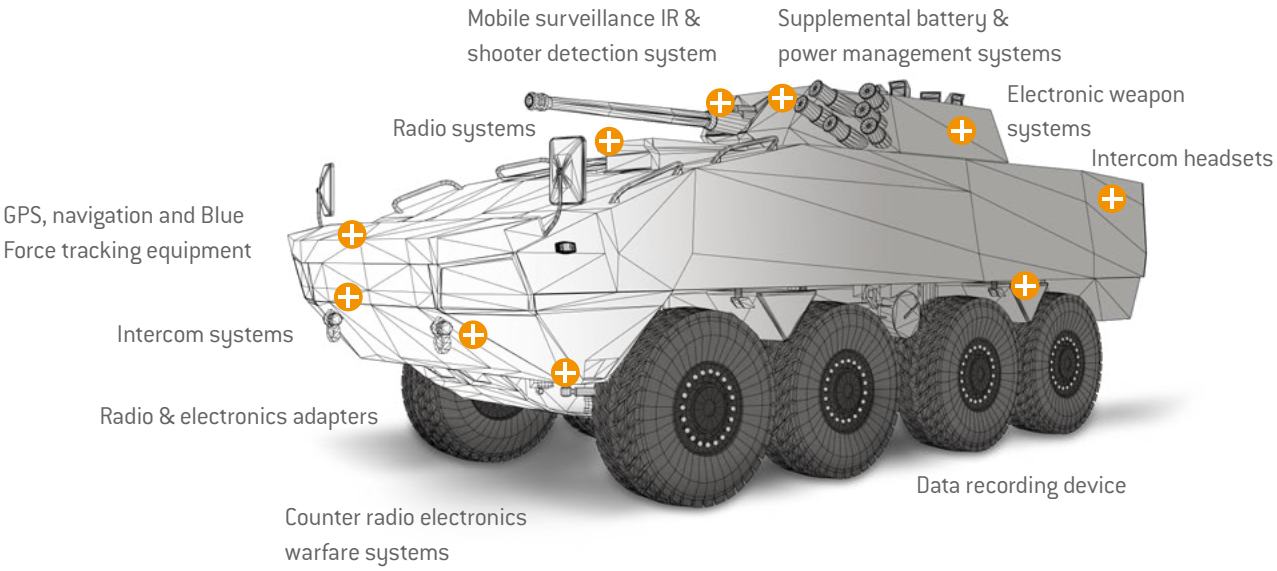
OVERMOLDING

Technical data

Material	TPU
Color	Black
Operating temperature	–40 °C to +85 °C
Flamability	UL 94 (HB)

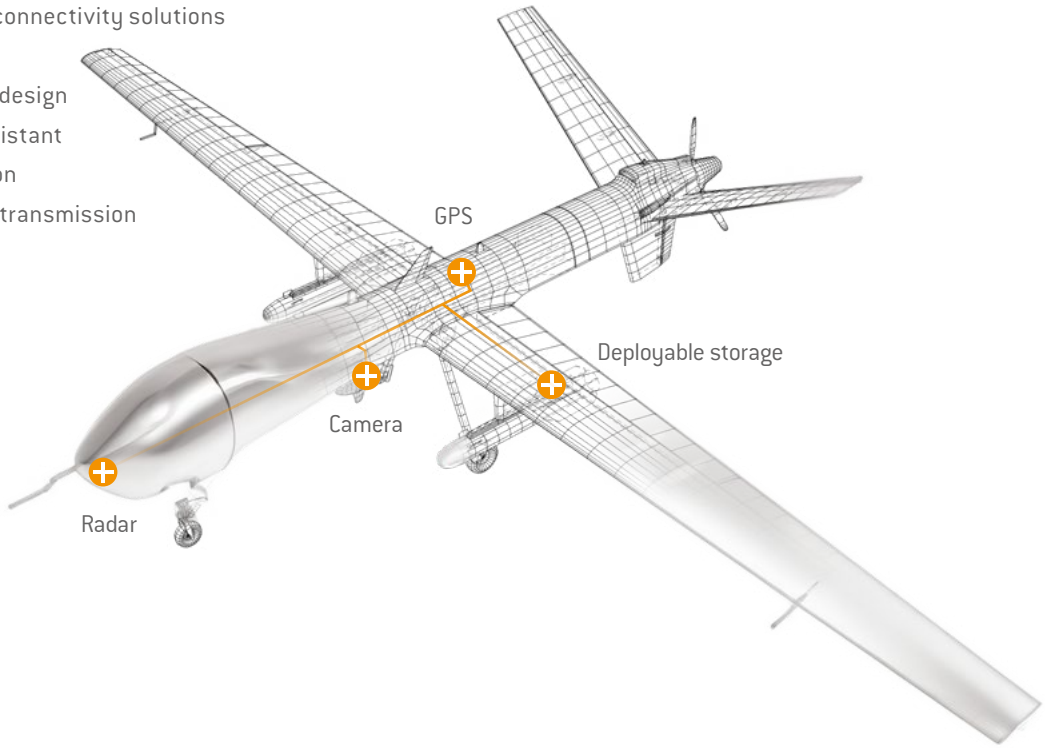
MILITARY VEHICLES

- Miniaturized 38999 type
- Shock and vibration resistant
- Ergonomic shape and rapid mate/demate capable
- 3 on 1 locking option
- MIL-STD-1472 and MIL-STD-810
- Field assembly capabilities
- IP6K9K with submersibility (20 m / up to 2 hrs)
- REACH & RoHS compliant
- Cable assembly integrated solutions



UNMANNED SYSTEMS: UAV / UGV / UAS

- Customized connectivity
- Rugged and reliable optical connectivity solutions
- Various locking systems
- Lightweight & space saving design
- High vibration and shock resistant
- Video and signal transmission
- Interference-free fiber optic transmission



MORE THAN A CONNECTION

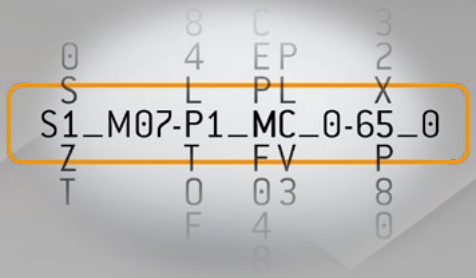
Contacts, connectors and cable assembly system solutions meeting the most demanding technical market requirements – ODU's connector solutions and value-added services are characterized by their exclusive focus on meeting the customer's requirements.

- Precise implementation of application-specific requirements regarding design, functionality, cost and exclusivity
- Modified connector solutions derived from standard products
- One-to-one local expertise and fair, friendly consulting
- Short product development and production paths

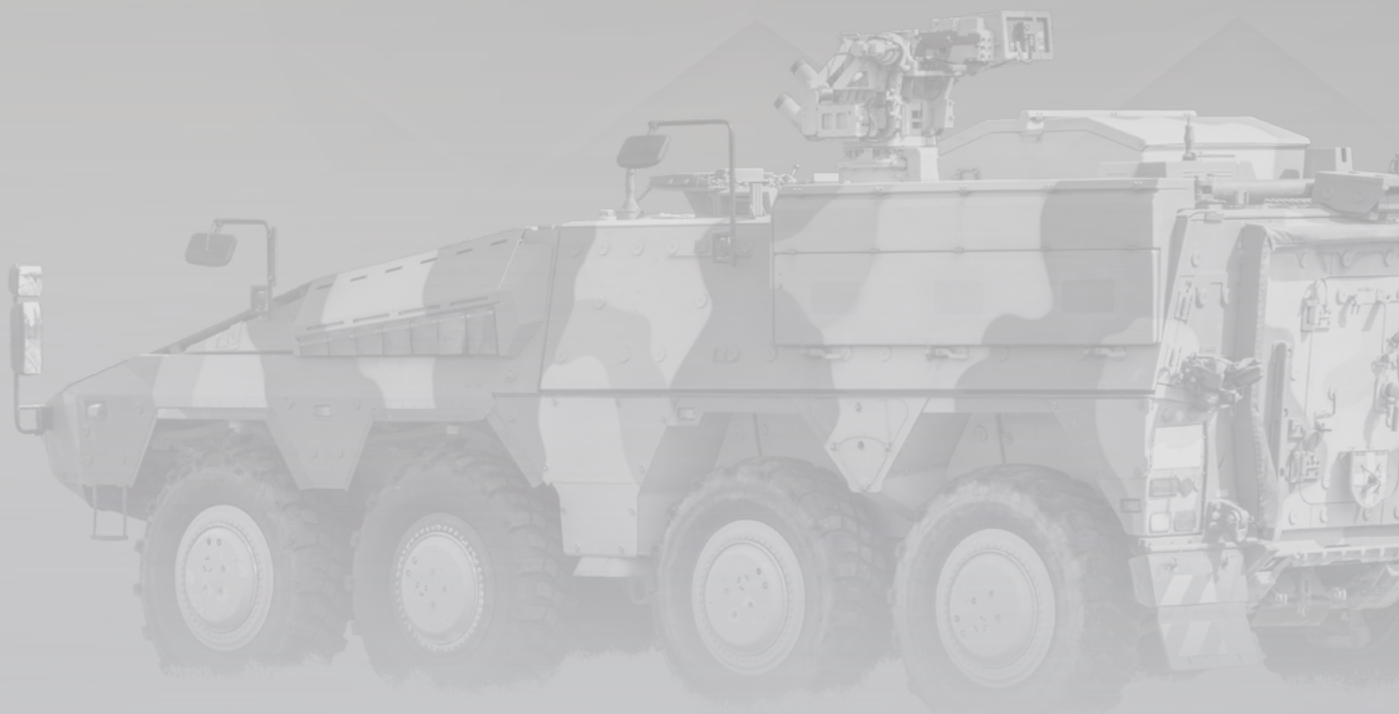
ODU PRODUCT FINDER

Use the intelligent part number and keyword search of the ODU Product Finder at: www.odu-productfinder.com to obtain information about the ODU product portfolio.

In the detailed product presentation you will find information on suitable assembly tools and accessories. accessories.



The buttons on the following pages lead directly to the **corresponding products** and **cable assemblies** in the **Product Finder.**
CONFIGURE YOUR PRODUCT AND CABLE ASSEMBLY ONLINE!



ODU AMC® SERIES T

ODU AMC® SERIES T

Summary ODU AMC® Series T 30

Plugs and cable assemblies 32

Receptacles and cable assemblies 38

Plugs with backshell terminations and cable assemblies 48

Receptacles with backshell terminations and cable assemblies 51

Contact inserts and PCB layouts 54

SUMMARY ODU AMC® SERIES T

The ODU AMC® Series T includes three compatible locking variants: push-pull, break-away or thread-lock. These connectors offer even greater robustness and density for all kinds of demanding applications. Choose the appropriate locking system, size, cable connection, insert and number of contacts to suit your requirements.

- Waterproof in accordance with MIL standard 810 up to 20 m
- Operating temperature range from –65 °C to +175 °C
- Sealed mechanical components, thus completely protected
- Highly flexible solution
- Suitable for MIL backshell and MIL crimp contacts
- Field assembly capability

PUSH-PULL PLUG WITH INTEGRATED SHIELDING PLATFORM P. 32

S 1

BREAK-AWAY PLUG WITH INTEGRATED SHIELDING PLATFORM P. 34

A 1

THREADED PLUG WITH INTEGRATED SHIELDING PLATFORM P. 36

C 1

IN-LINE RECEPTACLE WITH INTEGRATED SHIELDING PLATFORM P. 38

K 1

PANEL MOUNT RECEPTACLE WITH INTEGRATED SHIELDING PLATFORM P. 40

G 6

PANEL MOUNT RECEPTACLE WITH PCB & SOLDER TERMINATION P. 42

G K

SQUARE FLANGE RECEPTACLE WITH INTEGRATED SHIELDING PLATFORM P. 44

G U

SQUARE FLANGE RECEPTACLE WITH PCB & SOLDER TERMINATION P. 46

G 4

PUSH-PULL PLUG WITH BACKSHELL TERMINATION P. 48

S B

BREAK-AWAY PLUG WITH BACKSHELL TERMINATION P. 49

A B

THREADED PLUG WITH BACKSHELL TERMINATION P. 50

C B

IN-LINE RECEPTACLE WITH BACKSHELL TERMINATION P. 51

K B

PANEL MOUNT RECEPTACLE WITH BACKSHELL TERMINATION P. 52

G B

SQUARE FLANGE RECEPTACLE WITH BACKSHELL TERMINATION P. 53

G F

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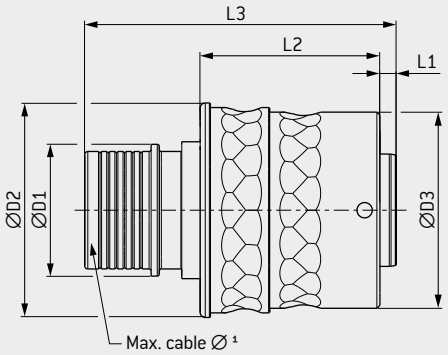
PUSH-PULL PLUG

With integrated shielding platform

STYLE: 1



Shell size		L1 mm	L2 mm	L3 mm	D1 mm	D2 mm	D3 mm	Max. cable Ø in mm ¹
9	E	1.6	17.6	30.5	12.9	21.0	19.2	7.6
12	H	4.5	21.4	37.0	18.6	26.0	24.2	14.6

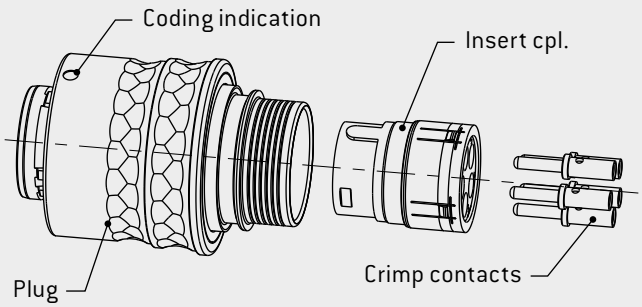
TECHNICAL DATA

- Technical data see page 78
- Contact configuration see page 54
- Accessories for cable termination (e.g. crimp sleeve or band it) must be ordered separately
- For assembly instructions please refer to our website: odu-connectors.com/downloads

[1] Only for variants with ODU Over-molding

[2] Water resistance 20 m / 120 min. The protection is only assured when crimp sleeve style 1 is potted during cable assembly according to ODU AMC® Series T assembly instructions. Operating temperature for 20 m solution from –65 °C up to +85 °C.

DELIVERY CONDITION



	Performance specifications – Plug in combination with		
	Receptacle with solder / PCB termination	Receptacles with integrated shielding platforms or backshell termination	In-line receptacles with integrated shielding platforms or backshell termination
Vibration	Sine 30 g	Sine 30 g	Sine 30 g
Shock	300 g	300 g	300 g
Water Immersion [2]	20 m / 120 min mated condition	20 m / 120 min mated condition	20 m / 120 min mated condition

Values in table refer to the connector only.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
S	1	T		A	T	0	–						N	–	0	0	0	0

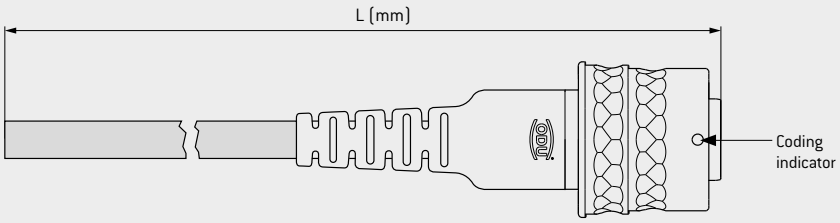
ODU PRODUCT FINDER

CABLE ASSEMBLY – PUSH-PULL PLUG

S 1 4

STYLE: 1 With standard overmolding straight

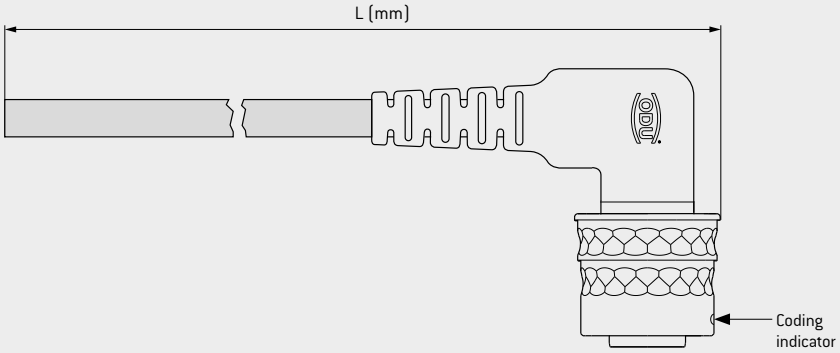
Schematic drawing



S 1 A

STYLE: 1 With standard overmolding right angled

Schematic drawing



Shell size	Number of contacts	Contact	Multi conductor cable PUR shielded	Outer cable ∅ in mm	Wire-∅ in mm	AWG
9	8	Socket	ZX	5.60 ± 0.25	0.95 ± 0.10	26
9	8	Pin	ZZ	5.60 ± 0.25	0.95 ± 0.10	26
9	10	Socket	ZP	7.00 ± 0.25	1.30 ± 0.15	22
9	10	Pin	ZR	7.00 ± 0.25	1.30 ± 0.15	22
9	20	Socket	ZA	7.00 ± 0.20	1.00 ± 0.10	26
9	20	Pin	Z9	7.00 ± 0.20	1.00 ± 0.10	26
12	5	Socket	ZT	5.95 ± 0.20	1.50 ± 0.10	20
12	5	Pin	ZV	5.95 ± 0.20	1.50 ± 0.10	20
12	8	Socket	Z6	9.40 ± 0.25	3.10 ± 0.15 1.30 ± 0.10	12 / 22
12	8	Pin	Z5	9.40 ± 0.25	3.10 ± 0.15 1.30 ± 0.10	12 / 22
12	18	Socket	ZL	8.15 ± 0.25	1.30 ± 0.15	22
12	18	Pin	ZN	8.15 ± 0.25	1.30 ± 0.15	22
12	22	Socket	Z8	7.45 ± 0.25	0.95 ± 0.10	26
12	22	Pin	Z7	7.45 ± 0.25	0.95 ± 0.10	26

Shell size	
09	E
12	H

L (mm)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
C	S	1		T		T				I								

ODU PRODUCT FINDER

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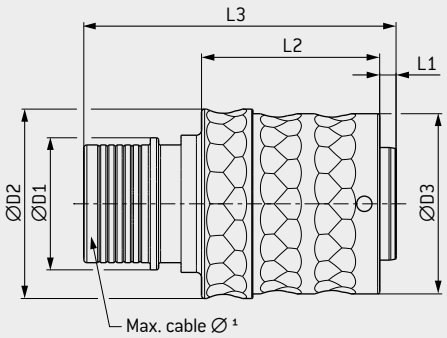
BREAK-AWAY PLUG

With integrated shielding platform

STYLE: 1



Shell size		L1 mm	L2 mm	L3 mm	D1 mm	D2 mm	D3 mm	Max. cable Ø in mm ¹
9	E	1.6	17.4	30.5	12.9	18.5	17.6	7.6
12	H	4.5	23.0	37.0	18.6	24.2	23.3	14.6

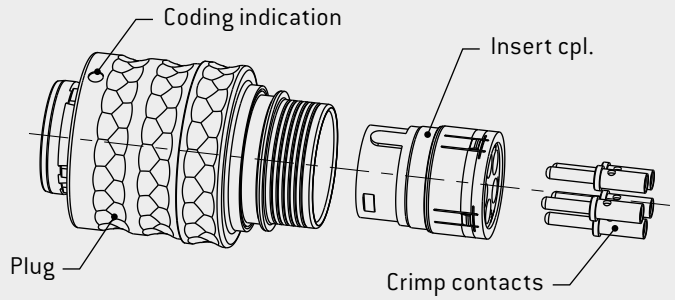
TECHNICAL DATA

- Technical data see page 78
- Contact configuration see page 54
- Accessories for cable termination (e.g. crimp sleeve or band it) must be ordered separately
- For assembly instructions please refer to our website: odu-connectors.com/downloads

[1] Only for variants with ODU Overmolding

[2] Water resistance 20 m / 120 min. The protection is only assured when crimp sleeve style 1 is potted during cable assembly according to ODU AMC® Series T assembly instructions. Operating temperature for 20 m solution from –65 °C up to +85 °C.

DELIVERY CONDITION



	Performance specifications – Plug in combination with		
	Receptacle with solder / PCB termination	Receptacles with integrated shielding platforms or backshell termination	In-line receptacles with integrated shielding platforms or backshell termination
Vibration	Sine 20 g	Sine 20 g	Sine 20 g
Shock	100 g	100 g	100 g
Water Immersion [2]	20 m / 120 min mated condition	20 m / 120 min mated condition	20 m / 120 min mated condition

Values in table refer to the connector only.

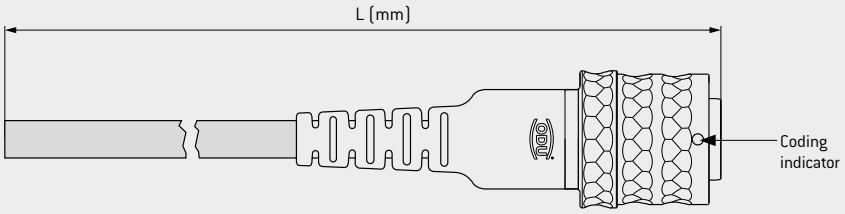
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
A	1	T		A	T	0	–						N	–	0	0	0	0

ODU PRODUCT FINDER

CABLE ASSEMBLY – BREAK-AWAY PLUG

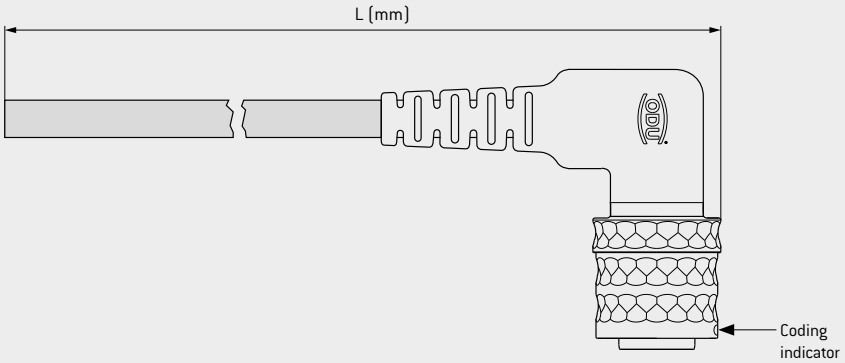
A 1 4

STYLE: 1 With standard overmolding straight — Schematic drawing



A 1 A

STYLE: 1 With standard overmolding right angled — Schematic drawing



Shell size	Number of contacts	Contact	Multi conductor cable PUR shielded	Outer cable ∅ in mm	Wire-∅ in mm	AWG
9	8	Socket	ZX	5.60 ± 0.25	0.95 ± 0.10	26
9	8	Pin	ZZ	5.60 ± 0.25	0.95 ± 0.10	26
9	10	Socket	ZP	7.00 ± 0.25	1.30 ± 0.15	22
9	10	Pin	ZR	7.00 ± 0.25	1.30 ± 0.15	22
9	20	Socket	ZA	7.00 ± 0.20	1.00 ± 0.10	26
9	20	Pin	Z9	7.00 ± 0.20	1.00 ± 0.10	26
12	5	Socket	ZT	5.95 ± 0.20	1.50 ± 0.10	20
12	5	Pin	ZV	5.95 ± 0.20	1.50 ± 0.10	20
12	8	Socket	Z6	9.40 ± 0.25	3.10 ± 0.15 1.30 ± 0.10	12 / 22
12	8	Pin	Z5	9.40 ± 0.25	3.10 ± 0.15 1.30 ± 0.10	12 / 22
12	18	Socket	ZL	8.15 ± 0.25	1.30 ± 0.15	22
12	18	Pin	ZN	8.15 ± 0.25	1.30 ± 0.15	22
12	22	Socket	Z8	7.45 ± 0.25	0.95 ± 0.10	26
12	22	Pin	Z7	7.45 ± 0.25	0.95 ± 0.10	26

Shell size	
09	E
12	H

L (mm)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
C	A	1		T		T				I								

ODU PRODUCT FINDER

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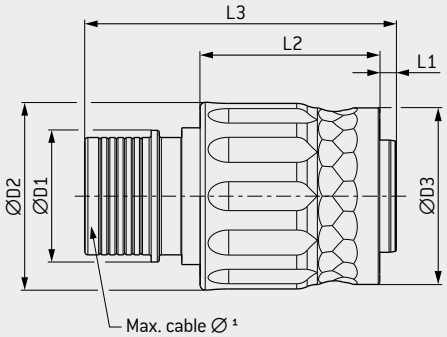
THREADED PLUG

With integrated shielding platform

STYLE: 1



Shell size		L1 mm	L2 mm	L3 mm	D1 mm	D2 mm	D3 mm	Max. cable Ø in mm ¹
9	E	1.6	17.6	30.5	12.9	18.4	17.3	7.6
12	H	4.5	21.2	37.0	18.6	24.9	23.3	14.6

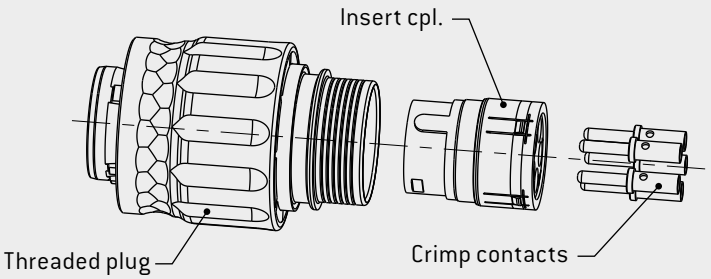
TECHNICAL DATA

- Technical data see page 78
- Contact configuration see page 54
- Accessories for cable termination (e.g. crimp sleeve or band it) must be ordered separately
- For assembly instructions please refer to our website: odu-connectors.com/downloads

[1] Only for variants with ODU Overmolding

[2] Water resistance 20 m / 120 min. The protection is only assured when crimp sleeve style 1 is potted during cable assembly according to ODU AMC® Series T assembly instructions. Operating temperature for 20 m solution from –65 °C up to +85 °C.

DELIVERY CONDITION



	Performance specifications – Plug in combination with		
	Receptacle with solder / PCB termination	Receptacles with integrated shielding platforms or backshell termination	In-line receptacles with integrated shielding platforms or backshell termination
Vibration	Sine 30g, random 37.8 g	Sine 30g, random 37.8 g	Sine 30 g, random 37.8 g
Shock	300 g	300 g	300 g
Water Immersion [2]	20 m / 120 min mated condition	20 m / 120 min mated condition	20 m / 120 min mated condition

Values in table refer to the connector only.

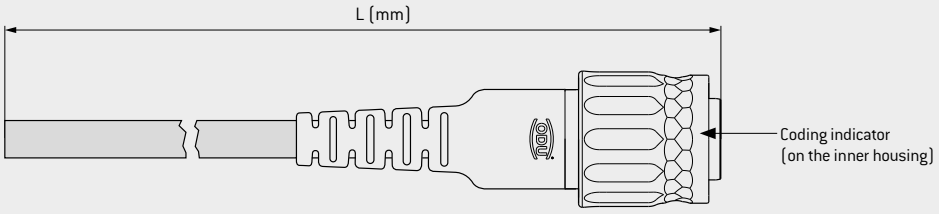
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
C	1	T		A	T	0	–						N	–	0	0	0	0

ODU PRODUCT FINDER

CABLE ASSEMBLY – THREADED PLUG

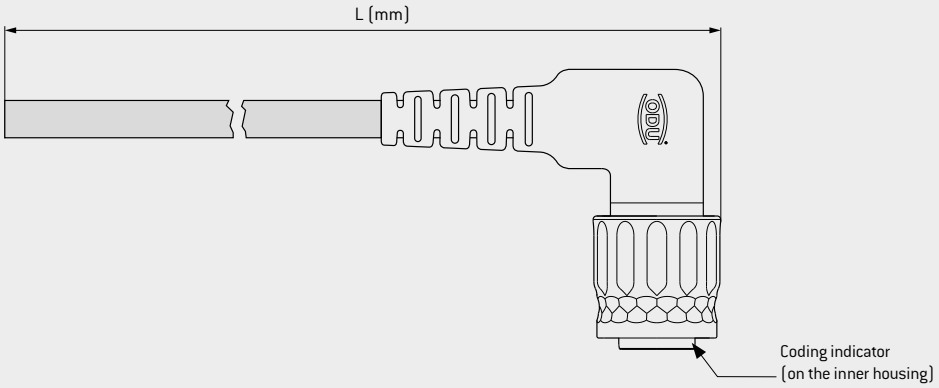
C 1 4

STYLE: 1 With standard overmolding straight — Schematic drawing



C 1 A

STYLE: 1 With standard overmolding right angled — Schematic drawing



Shell size	Number of contacts	Contact	Multi conductor cable PUR shielded	Outer cable ∅ in mm	Wire-∅ in mm	AWG
9	8	Socket	ZX	5.60 ± 0.25	0.95 ± 0.10	26
9	8	Pin	ZZ	5.60 ± 0.25	0.95 ± 0.10	26
9	10	Socket	ZP	7.00 ± 0.25	1.30 ± 0.15	22
9	10	Pin	ZR	7.00 ± 0.25	1.30 ± 0.15	22
9	20	Socket	ZA	7.00 ± 0.20	1.00 ± 0.10	26
9	20	Pin	Z9	7.00 ± 0.20	1.00 ± 0.10	26
12	5	Socket	ZT	5.95 ± 0.20	1.50 ± 0.10	20
12	5	Pin	ZV	5.95 ± 0.20	1.50 ± 0.10	20
12	8	Socket	Z6	9.40 ± 0.25	3.10 ± 0.15 1.30 ± 0.10	12 / 22
12	8	Pin	Z5	9.40 ± 0.25	3.10 ± 0.15 1.30 ± 0.10	12 / 22
12	18	Socket	ZL	8.15 ± 0.25	1.30 ± 0.15	22
12	18	Pin	ZN	8.15 ± 0.25	1.30 ± 0.15	22
12	22	Socket	Z8	7.45 ± 0.25	0.95 ± 0.10	26
12	22	Pin	Z7	7.45 ± 0.25	0.95 ± 0.10	26

Shell size	
09	E
12	H

L (mm)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
C	C	1		T		T				I								

ODU PRODUCT FINDER

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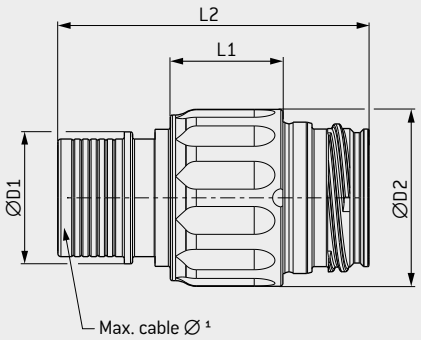
IN-LINE RECEPTACLE

With integrated shielding platform

STYLE: 1



Shell size		L1 mm	L2 mm	D1 mm	D2 mm	Max. cable Ø in mm [1]
9	E	11.0	30.4	10.5	17.3	7.6
12	H	11.8	35.0	18.6	23.3	14.6

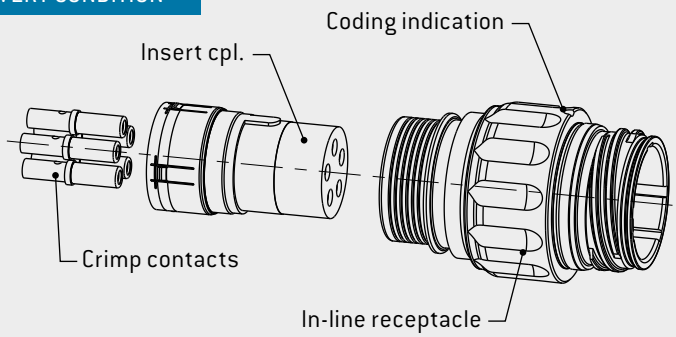
TECHNICAL DATA

- Technical data see page 78
- Contact configuration see page 54
- Accessories for cable termination (e.g. crimp sleeve or band it) must be ordered separately
- For assembly instructions please refer to our website: odu-connectors.com/downloads

[1] Only for variants with ODU Overmolding

[2] Water resistance 20 m / 120 min. The protection is only assured when crimp sleeve style 1 is potted during cable assembly according to ODU AMC® Series T assembly instructions. Operating temperature for 20 m solution from –65 °C up to +85 °C.

DELIVERY CONDITION



	Performance specifications – In-line receptacle in combination with		
	Push-pull plug	Break-away plug	Threaded plug
Vibration	Sine 30 g	Sine 20 g	Sine 30 g , random 37.8 g
Shock	300 g	100 g	300 g
Water Immersion [2]	20 m / 120 min mated condition	20 m / 120 min mated condition	20 m / 120 min mated condition

Values in table refer to the connector only.

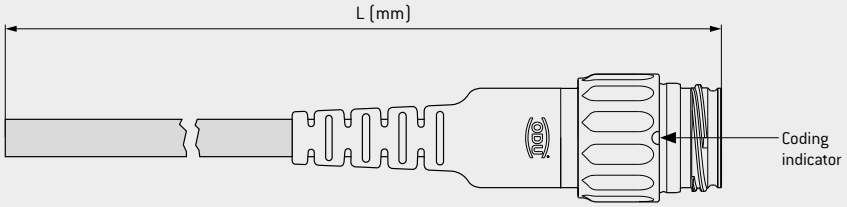
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
K	1	T		A	T	0	–						N	–	0	0	0	0

ODU PRODUCT FINDER

CABLE ASSEMBLY – IN-LINE RECEPTACLE

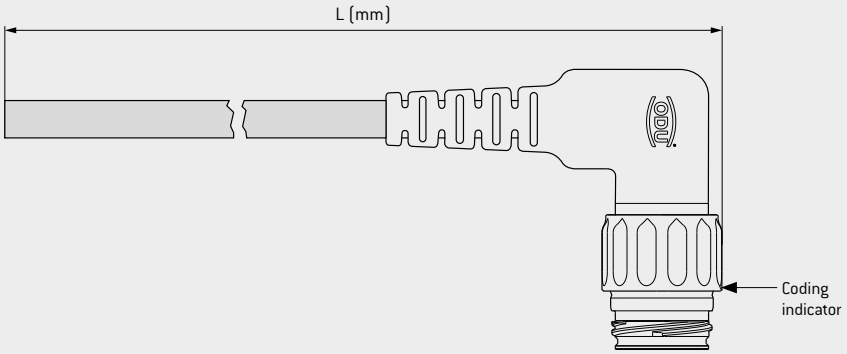
K 1 4

STYLE: 1 With standard overmolding straight — Schematic drawing



K 1 A

STYLE: 1 With standard overmolding right angled — Schematic drawing



Shell size	Number of contacts	Contact	Multi conductor cable PUR shielded	Outer cable ∅ in mm	Wire-∅ in mm	AWG
9	8	Socket	ZX	5.60 ± 0.25	0.95 ± 0.10	26
9	8	Pin	ZZ	5.60 ± 0.25	0.95 ± 0.10	26
9	10	Socket	ZP	7.00 ± 0.25	1.30 ± 0.15	22
9	10	Pin	ZR	7.00 ± 0.25	1.30 ± 0.15	22
9	20	Socket	ZA	7.00 ± 0.20	1.00 ± 0.10	26
9	20	Pin	Z9	7.00 ± 0.20	1.00 ± 0.10	26
12	5	Socket	ZT	5.95 ± 0.20	1.50 ± 0.10	20
12	5	Pin	ZV	5.95 ± 0.20	1.50 ± 0.10	20
12	8	Socket	Z6	9.40 ± 0.25	3.10 ± 0.15 1.30 ± 0.10	12 / 22
12	8	Pin	Z5	9.40 ± 0.25	3.10 ± 0.15 1.30 ± 0.10	12 / 22
12	18	Socket	ZL	8.15 ± 0.25	1.30 ± 0.15	22
12	18	Pin	ZN	8.15 ± 0.25	1.30 ± 0.15	22
12	22	Socket	Z8	7.45 ± 0.25	0.95 ± 0.10	26
12	22	Pin	Z7	7.45 ± 0.25	0.95 ± 0.10	26

Shell size	
09	E
12	H

L (mm)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
C	K	1		T		T				I								

ODU PRODUCT FINDER

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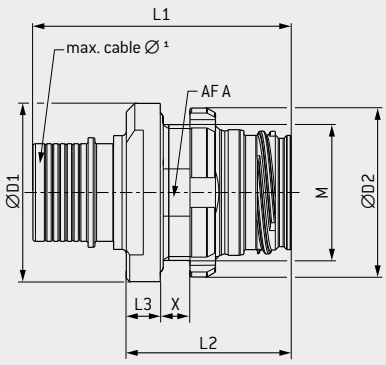
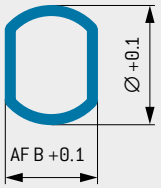
PANEL MOUNT RECEPTACLE

With integrated shielding platform

STYLE: 6

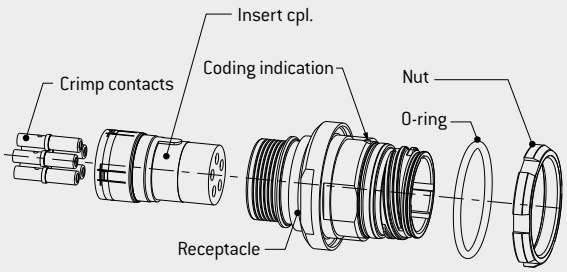


PANEL CUT OUT



Shell size		L1 mm	L2 mm	L3 mm	X max.	D1 mm	D2 mm	M	AF A mm	Max. cable Ø in mm ¹	AF B in mm	Ø in mm
9	E	30.4	19.4	4	3.5	21.0	19.9	M16 × 0.75	15.0	7.6	15.1	16.1
12	H	35	22.5	4.5	3.5	26.0	24.9	M21 × 1.0	19.5	14.6	19.6	21.1

DELIVERY CONDITION



TECHNICAL DATA

- Technical data see page 78
- Contact configuration see page 54
- Accessories for cable termination (e.g. crimp sleeve or band it) must be ordered separately
- Nut driver for slotted nut see page 73
- For assembly instructions please refer to our website: odu-connectors.com/downloads

[1] Only for variants with ODU Overmolding

[2] Water ressistance 20 m / 120 min. The protection is only assured when crimp sleeve is potted during cable assembly according to ODU AMC® Series T assembly instructions. Operating temperature for 20 m solution from –65 °C up to +85 °C.

	Performance specifications – Receptacle in combination with		
	Push-pull plug	Break-away plug	Threaded plug
Vibration	Sine 30 g	Sine 20 g	Sine 30 g , random 37.8 g
Shock	300 g	100 g	300 g
Water Immersion [2]	20 m / 120 min mated condition	20 m / 120 min mated condition	20 m / 120 min mated condition

Values in table refer to the connector only.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
G	6	T		A	T	0	–						N	–	0	0	0	0

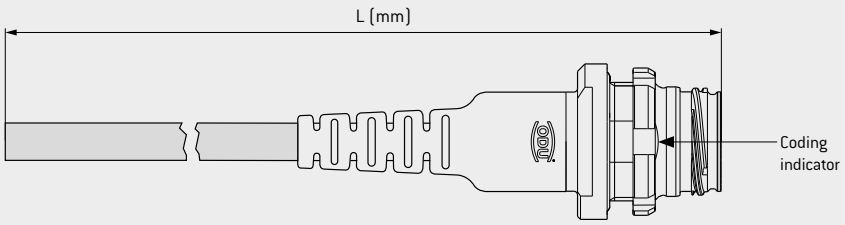
ODU PRODUCT FINDER

CABLE ASSEMBLY – PANEL MOUNT RECEPTACLE

G 6 4

STYLE: 6 With standard overmolding straight

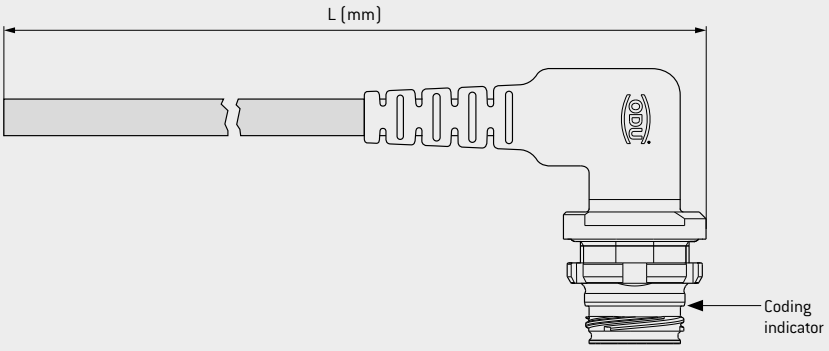
Schematic drawing



G 6 A

STYLE: 6 With standard overmolding right angled

Schematic drawing



Shell size	Number of contacts	Contact	Multi conductor cable PUR shielded	Outer cable ∅ in mm	Wire-∅ in mm	AWG
9	8	Socket	ZX	5.60 ± 0.25	0.95 ± 0.10	26
9	8	Pin	ZZ	5.60 ± 0.25	0.95 ± 0.10	26
9	10	Socket	ZP	7.00 ± 0.25	1.30 ± 0.15	22
9	10	Pin	ZR	7.00 ± 0.25	1.30 ± 0.15	22
9	20	Socket	ZA	7.00 ± 0.20	1.00 ± 0.10	26
9	20	Pin	Z9	7.00 ± 0.20	1.00 ± 0.10	26
12	5	Socket	ZT	5.95 ± 0.20	1.50 ± 0.10	20
12	5	Pin	ZV	5.95 ± 0.20	1.50 ± 0.10	20
12	8	Socket	Z6	9.40 ± 0.25	3.10 ± 0.15 1.30 ± 0.10	12 / 22
12	8	Pin	Z5	9.40 ± 0.25	3.10 ± 0.15 1.30 ± 0.10	12 / 22
12	18	Socket	ZL	8.15 ± 0.25	1.30 ± 0.15	22
12	18	Pin	ZN	8.15 ± 0.25	1.30 ± 0.15	22
12	22	Socket	Z8	7.45 ± 0.25	0.95 ± 0.10	26
12	22	Pin	Z7	7.45 ± 0.25	0.95 ± 0.10	26

Shell size	
09	E
12	H

L (mm)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
C	G	6		T		T				I								

ODU PRODUCT FINDER

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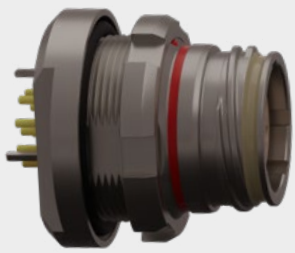
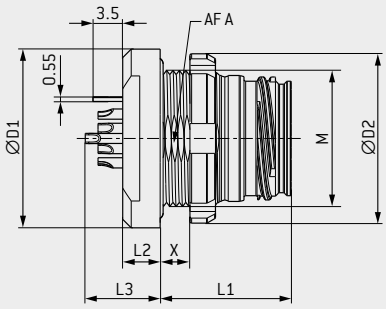
PANEL MOUNT RECEPTACLE

With PCB & solder termination

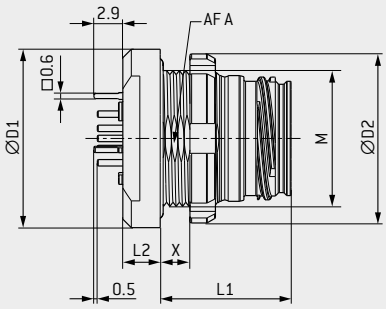
STYLE: K



SOLDER

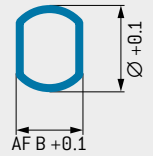


PCB



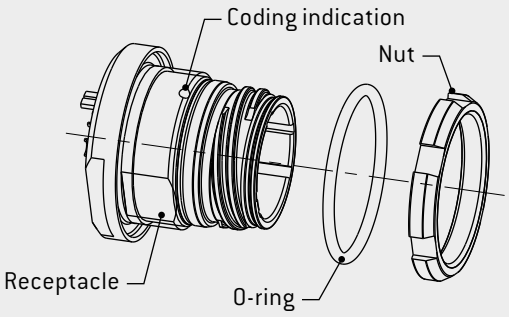
Shell size		L1 mm	L2 mm	L3 mm	X max.	D1 mm	D2 mm	M	AF A mm
9	E	15.4	4.4	7.3	3.5	21.0	19.9	M16 × 0.7	15.0
12	H	18.0	4.5	10.4	3.5	26.0	24.9	M21 × 1.0	19.5

PANEL CUT OUT



AF B in mm	Ø in mm
15.1	16.1
19.6	21.1

DELIVERY CONDITION



TECHNICAL DATA

- Technical data see page 78
- Contact configuration see page 54
- Nut driver for slotted nut see page 73
- For assembly instructions please refer to our website: odu-connectors.com/downloads

[1] Water resistance 20 m / 120 min. Protection is only assured if the receptacle is fitted with a metal protective cap or in mated condition with a ODU AMC® Series T plug. Operating temperature for 20 m solution from –65 °C up to +85 °C.

	Performance specifications – Receptacle in combination with		
	Push-pull plug	Break-away plug	Threaded plug
Vibration	Sine 30 g	Sine 20 g	Sine 30 g , random 37.8 g
Shock	300 g	100 g	300 g
Water Immersion [1]	20 m / 120 min	20 m / 120 min	20 m / 120 min

Values in table refer to the connector only.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
G	K	T		A	T	0	–						N	–	0	0	0	0

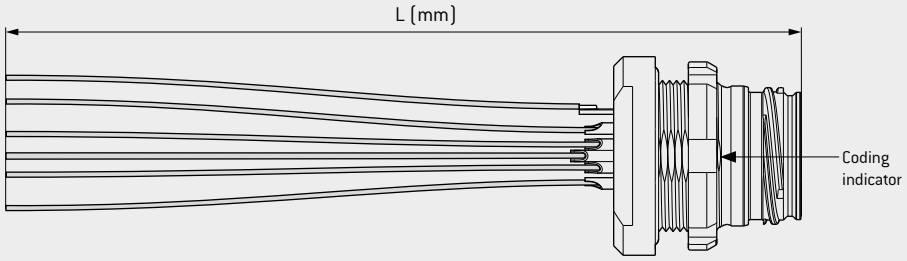
ODU PRODUCT FINDER

PANEL MOUNT RECEPTACLE WITH SINGLE WIRES

G K 0

STYLE: K With single wires

Schematic drawing



Shell size	Number of contacts	Contact	Single wires	Wire-Ø in mm	AWG
9	8	Socket	ZY	1.00 ± 0.05	26
9	8	Pin	ZW	1.00 ± 0.05	26
9	10	Socket	ZU	1.30 ± 0.05	22
9	10	Pin	ZS	1.30 ± 0.05	22
9	20	Socket	ZA	1.00 ± 0.05	26
9	20	Pin	Z9	1.00 ± 0.05	26
12	5	Socket	ZQ	1.50 ± 0.05	20
12	5	Pin	ZO	1.50 ± 0.05	20
12	8	Socket	Z6	4.00 ± 0.10 1.30 ± 0.05	12 / 22
12	8	Pin	Z5	4.00 ± 0.10 1.30 ± 0.05	12 / 22
12	18	Socket	ZM	1.30 ± 0.05	22
12	18	Pin	ZK	1.30 ± 0.05	22
12	22	Socket	Z8	1.00 ± 0.05	26
12	22	Pin	Z7	1.00 ± 0.05	26

Shell size	
09	E
12	H

L (mm)

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19

C G K T T 0 0

ODU PRODUCT FINDER

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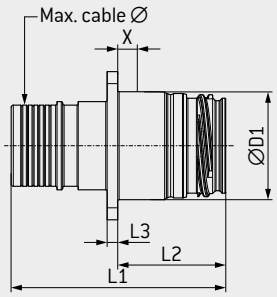
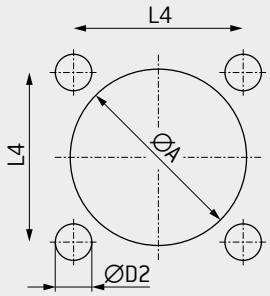
SQUARE FLANGE RECEPTACLE

With integrated shielding platform

STYLE: U



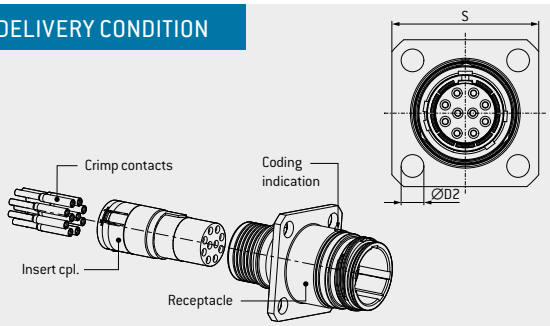
PANEL CUT OUT



Shell size		L1 mm	L2 mm	L3 mm	D1 mm	S mm	X max. panel thickness in mm	Max. cable Ø in mm [1]
9	E	30.4	15.3	1.5	15.3	21.0	3.5	7.6
12	H	35.0	17.6	1.5	21.0	26.0	3.5	14.6

Shell size	Mounting type	L4 mm	D2 mm	Ø A mm
09	Front panel	15.1	3.25	13.1
	Back panel			15.5
12	Front panel	20.6	3.25	19.1
	Back panel			21.2

DELIVERY CONDITION



TECHNICAL DATA

- Technical data see page 78
- Contact configuration see page 54
- Accessories for receptacle installation and cable termination (e.g. crimp sleeve, band-it, flange gaskets, screws) must be ordered separately
- For assembly instructions please refer to our website: odu-connectors.com/downloads

[1] Only for variants with ODU Overmolding

[2] Water resistance 20 m / 120 min. The protection is only assured when crimp sleeve style 1 is potted during cable assembly according to ODU AMC® Series T assembly instructions. It is necessary to use flange seals and blind holes to secure the flange housings. Operating temperature for 20 m solution from –65 °C up to +85 °C.

	Performance specifications – Receptacle in combination with		
	Push-pull plug	Break-away plug	Threaded plug
Vibration	Sine 30 g	Sine 20 g	Sine 30 g, random 37.8 g
Shock	300 g	100 g	300 g
Water Immersion [2]	20 m / 120 min	20 m / 120 min	20 m / 120 min

Values in table refer to the connector only.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
G	U	T		A	T	0	–						N	–	0	0	0	0

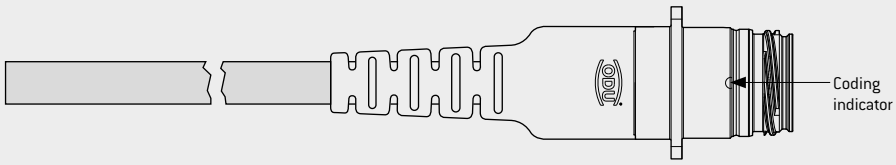
ODU PRODUCT FINDER

CABLE ASSEMBLY – PANEL MOUNT SQUARE FLANGE

G U 4

STYLE: U With standard overmolding straight

Schematic drawing



Shell size	Number of contacts	Contact	Multi conductor cable PUR shielded	Outer cable ∅ in mm	Wire-∅ in mm	AWG
9	8	Socket	ZX	5.60 ± 0.25	0.95 ± 0.10	26
9	8	Pin	ZZ	5.60 ± 0.25	0.95 ± 0.10	26
9	10	Socket	ZP	7.00 ± 0.25	1.30 ± 0.15	22
9	10	Pin	ZR	7.00 ± 0.25	1.30 ± 0.15	22
9	20	Socket	ZA	7.00 ± 0.20	1.00 ± 0.10	26
9	20	Pin	Z9	7.00 ± 0.20	1.00 ± 0.10	26
12	5	Socket	ZT	5.95 ± 0.20	1.50 ± 0.10	20
12	5	Pin	ZV	5.95 ± 0.20	1.50 ± 0.10	20
12	8	Socket	Z6	9.40 ± 0.25	3.10 ± 0.15 1.30 ± 0.10	12 / 22
12	8	Pin	Z5	9.40 ± 0.25	3.10 ± 0.15 1.30 ± 0.10	12 / 22
12	18	Socket	ZL	8.15 ± 0.25	1.30 ± 0.15	22
12	18	Pin	ZN	8.15 ± 0.25	1.30 ± 0.15	22
12	22	Socket	Z8	7.45 ± 0.25	0.95 ± 0.10	26
12	22	Pin	Z7	7.45 ± 0.25	0.95 ± 0.10	26

Shell size	
09	E
12	H

L (mm)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
C	G	U		T		T			4	I								

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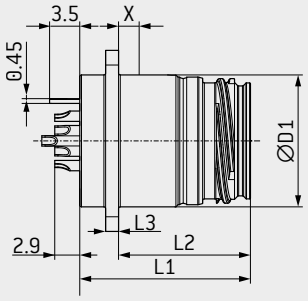
SQUARE FLANGE RECEPTACLE

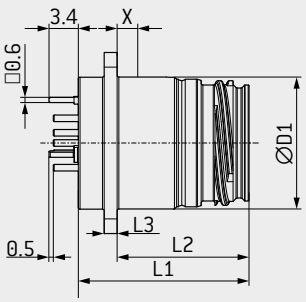
With PCB & solder termination

STYLE: 4

SOLDER

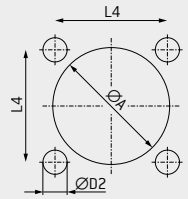


PCB



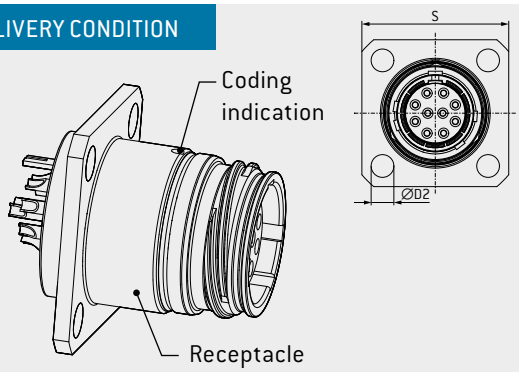
Shell size		L1 mm	L2 mm	L3 mm	D1 mm	S mm	X max. panel thickness in mm
9	E	19.8	15.3	1.5	15.3	21.0	3.5
12	H	22.5	17.6	1.5	21.0	26.5	3.5

PANEL CUT OUT



Shell size	Mounting type	L4 mm	D2 mm	Ø A mm
09	Front panel	15.1	3.25	15.5
	Back panel			
12	Front panel	20.6	3.25	21.2
	Back panel			

DELIVERY CONDITION



TECHNICAL DATA

- Technical data see page 78
- Contact configuration see page 54
- Accessories for receptacle installation and cable termination (e.g. crimp sleeve, band-it, flange gaskets, screws) must be ordered separately
- For assembly instructions please refer to our website: odu-connectors.com/downloads

[1] Water resistance 20 m / 120 min. The protection is only assured when crimp sleeve style 1 is potted during cable assembly according to ODU AMC® Series T assembly instructions. It is necessary to use flange seals and blind holes to secure the flange housings. Operating temperature for 20 m solution from –65 °C up to +85 °C.

	Performance specifications – Receptacle in combination with		
	Push-pull plug S1 / SB	Break-away plug A1 / AB	Thread-lock plug C1 / CB
Vibration	Sine 30 g	Sine 20 g	Sine 30 g, random 37.8 g
Shock	300 g	100 g	300 g
Water immersion[1]	20 m / 120 min	20 m / 120 min	20 m / 120 min

Values in table refer to the connector only.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
G	4	T		A	T	0	–						N	–			0	0

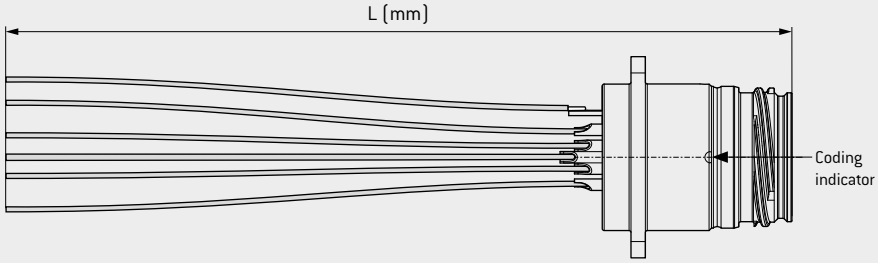
ODU PRODUCT FINDER

CABLE ASSEMBLY – PANEL MOUNT SQUARE FLANGE

G | 4 | 0

STYLE: 4 With single wires

Schematic drawing



Shell size	Number of contacts	Contact	Single wires	Wire-Ø in mm	AWG
9	8	Socket	ZY	1.00 ± 0.05	26
9	8	Pin	ZW	1.00 ± 0.05	26
9	10	Socket	ZU	1.30 ± 0.05	22
9	10	Pin	ZS	1.30 ± 0.05	22
9	20	Socket	ZA	1.00 ± 0.05	26
9	20	Pin	Z9	1.00 ± 0.05	26
12	5	Socket	ZQ	1.50 ± 0.05	20
12	5	Pin	ZO	1.50 ± 0.05	20
12	8	Socket	Z6	4.00 ± 0.10 1.30 ± 0.05	12 / 22
12	8	Pin	Z5	4.00 ± 0.10 1.30 ± 0.05	12 / 22
12	18	Socket	ZM	1.30 ± 0.05	22
12	18	Pin	ZK	1.30 ± 0.05	22
12	22	Socket	Z8	1.00 ± 0.05	26
12	22	Pin	Z7	1.00 ± 0.05	26

Shell size	
09	E
12	H

L (mm)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
C	G	4		T		T			0	0								

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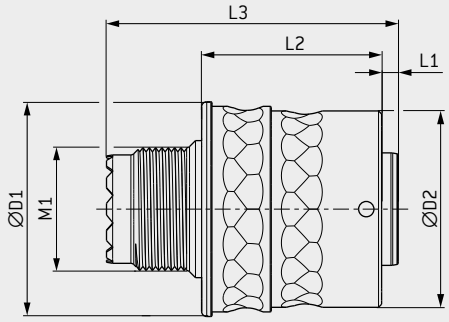
PUSH-PULL PLUG

With backshell termination

STYLE: B



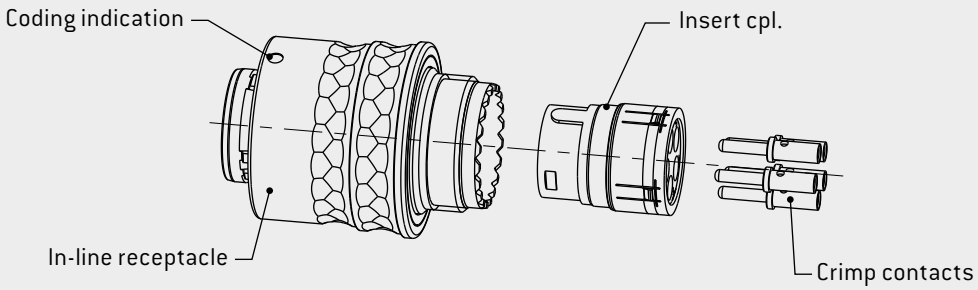
Shell size		L1 mm	L2 mm	L3 mm	D1 mm	D2 mm	M1 [1]
9	E	1.6	17.6	28.5	21.0	19.2	M12 × 1
12	H	4.5	21.4	35.0	26.0	24.2	M18 × 1

TECHNICAL DATA

- Technical data see page 78
- Contact configuration see page 54
- Accessories for cable termination (e.g. backshell or band-it) must be ordered separately
- For assembly instructions please refer to our website: odu-connectors.com/downloads

[1] Accessory thread according to MIL-DTL-38999 Series III, for shell size see page 60

DELIVERY CONDITION



	Performance specifications – Plug in combination with		
	Receptacle with solder / PCB termination	Receptacles with integrated shielding platforms or backshell termination	In-line receptacles with integrated shielding platforms or backshell termination
Vibration	Sine 30 g	Sine 30 g	Sine 30 g
Shock	300 g	300 g	300 g
Water immersion	1 m / 120 min	1 m / 120 min	1 m / 120 min

Values in table refer to the connector only.

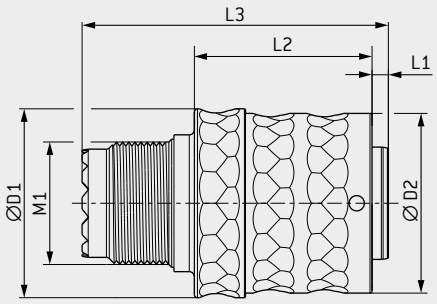
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
S	B	T		A	T	0	–						N	–	0	0	0	0

ODU PRODUCT FINDER

BREAK-AWAY PLUG

With backshell termination

STYLE: B



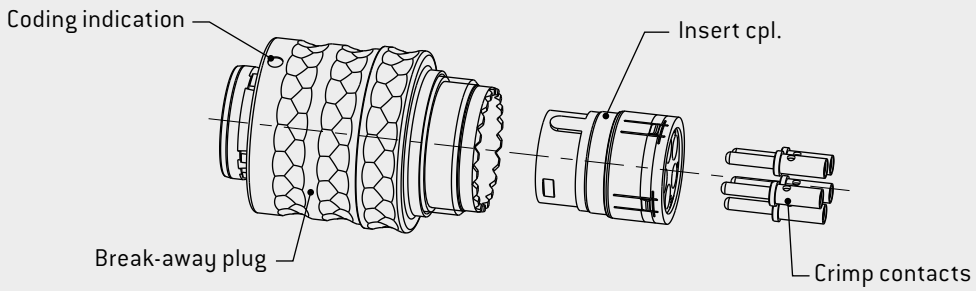
Shell size		L1 mm	L2 mm	L3 mm	D1 mm	D2 mm	M1 [1]
9	E	1.6	17.4	30.0	18.5	17.6	12 × 1
12	H	4.5	23.0	35.0	24.2	23.3	18 × 1

TECHNICAL DATA

- Technical data see page 78
- Contact configuration see page 54
- Accessories for cable termination (e.g. backshell or band-it) must be ordered separately
- For assembly instructions please refer to our website: odu-connectors.com/downloads

[1] Accessory thread according to MIL-DTL-38999 Series III, for shell size see page 60

DELIVERY CONDITION



	Performance specifications – Plug in combination with		
	Receptacle with solder / PCB termination	Receptacles with integrated shielding platforms or backshell termination	In-line receptacles with integrated shielding platforms or backshell termination
Vibration	Sine 20 g	Sine 20 g	Sine 20 g
Shock	100 g	100 g	100 g
Water immersion	1 m / 120 min	1 m / 120 min	1 m / 120 min

Values in table refer to the connector only.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
A	B	T		A	T	0	–						N	–	0	0	0	0

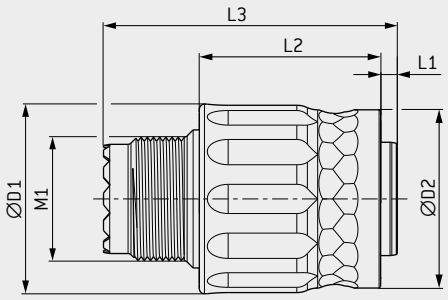
ODU PRODUCT FINDER

Table of contents

THREADED PLUG

With backshell termination

STYLE: B



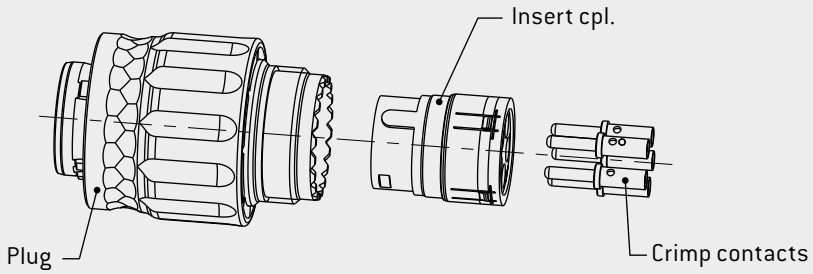
Shell size		L1 mm	L2 mm	L3 mm	D1 mm	D2 mm	M1 [1]
9	E	1.6	17.6	28.5	18.4	17.3	12 × 1
12	H	4.5	21.2	35.0	24.9	23.3	18 × 1

TECHNICAL DATA

- Technical data see page 78
- Contact configuration see page 54
- Accessories for cable termination (e.g. backshell or band-it) must be ordered separately
- For assembly instructions please refer to our website: odu-connectors.com/downloads

[1] Accessory thread according to MIL-DTL-38999 Series III, for shell size see page 60

DELIVERY CONDITION



	Performance specifications – Plug in combination with		
	Receptacle with solder / PCB termination	Receptacles with integrated shielding platforms or backshell termination	In-line receptacles with integrated shielding platforms or backshell termination
Vibration	Sine 30 g, random 37.8 g	Sine 30 g, random 37.8 g	Sine 30 g, random 37.8 g
Shock	300 g	300 g	300 g
Water immersion	1 m / 120 min	1 m / 120 min	1 m / 120 min

Values in table refer to the connector only.

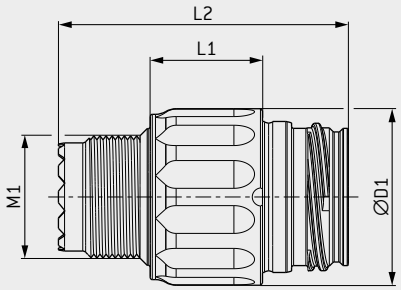
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
C	B	T		A	T	0	–						N	–	0	0	0	0

ODU PRODUCT FINDER

IN-LINE RECEPTACLE

With backshell termination

STYLE: B



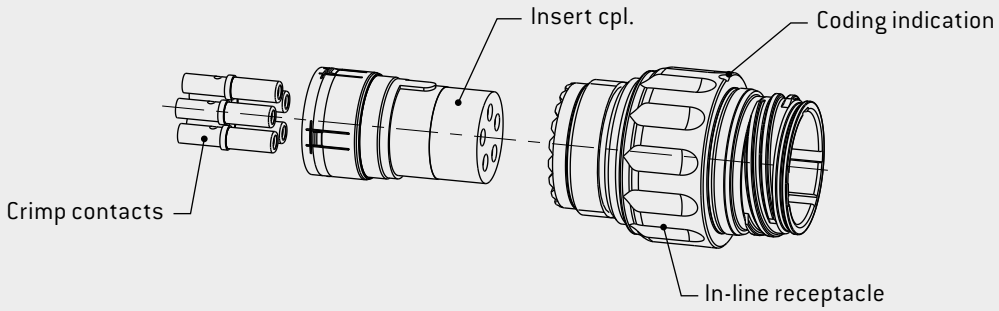
Shell size		L1 mm	L2 mm	D1 mm	M1 [1]
9	E	11.0	28.4	17.3	12 × 1
12	H	11.8	33.0	18.6	18 × 1

TECHNICAL DATA

- Technical data see page 78
- Contact configuration see page 54
- Accessories for cable termination (e.g. backshell or band-it) must be ordered separately
- For assembly instructions please refer to our website: odu-connectors.com/downloads

[1] Accessory thread according to MIL-DTL-38999 Series III, for shell size see page 60

DELIVERY CONDITION



	Performance specifications – Plug in combination with		
	Push-pull plug	Break-away plug	Threaded plug
Vibration	Sine 30 g	Sine 20 g	Sine 30 g , random 37.8 g
Shock	300 g	100 g	300 g
Water immersion	1 m / 120 min	1 m / 120 min	1 m / 120 min

Values in table refer to the connector only.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
K	B	T		A	T	0	–						N	–	0	0	0	0

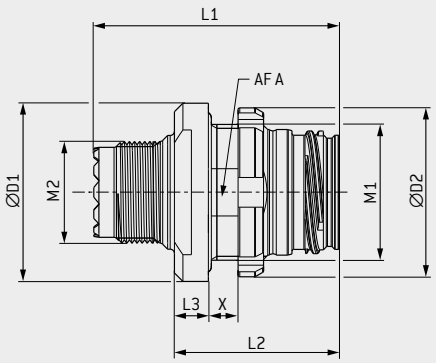
ODU PRODUCT FINDER

Table of contents

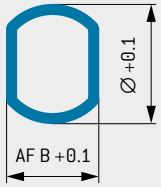
PANEL MOUNT RECEPTACLE

With backshell termination

STYLE: B



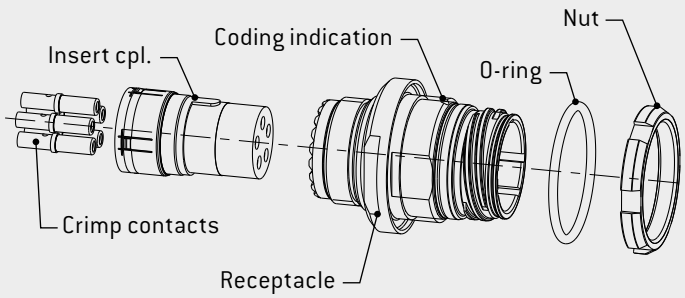
PANEL CUT OUT



Shell size		L1 mm	L2 mm	L3 mm	X max.	D1 mm	D2 mm	M1	M2[1]	AF A mm
9	E	28.9	19.4	4	3.5	21.0	19.9	16 × 0.75	12 × 1.0	15.0
12	H	33.0	22.5	4.5	3.5	26.0	24.9	21 × 1.0	18 × 1.0	19.5

AF B in mm	Ø in mm
15.1	16.1
19.6	21.1

DELIVERY CONDITION



TECHNICAL DATA

- Technical data see page 78
- Contact configuration see page 54
- Accessories for cable termination (e.g. backshell or band-it) must be ordered separately
- Nut driver for slotted nut see page 73
- Accessory thread according to MIL-DTL-38999 Series III, for shell size see page 60
- For assembly instructions please refer to our website: odu-connectors.com/downloads

[1] Accessory thread according to MIL-DTL-38999 Series III, for shell size see page 60

	Performance specifications – Plug in combination with		
	Push-pull plug	Break-away plug	Threaded plug
Vibration	Sine 30 g	Sine 20 g	Sine 30 g, random 37.8 g
Shock	300 g	100 g	300 g
Water immersion	1 m / 120 min	1 m / 120 min	1 m / 120 min

Values in table refer to the connector only.

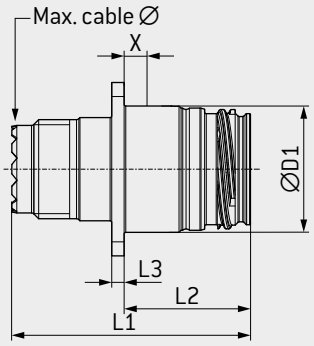
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
G	B	T		A	T	0	–						N	–	0	0	0	0

ODU PRODUCT FINDER

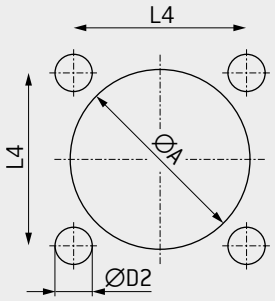
SQUARE FLANGE RECEPTACLE

With backshell termination

STYLE: F



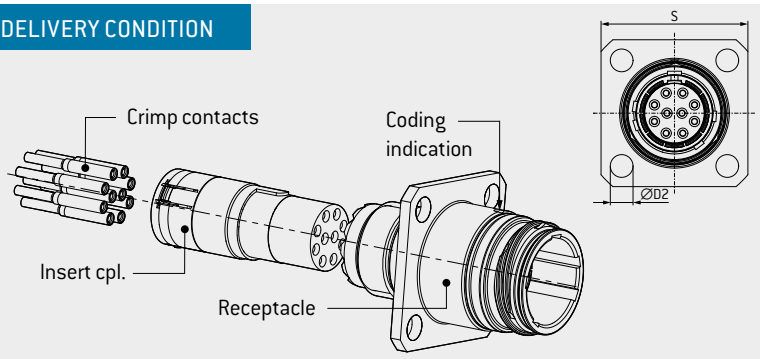
PANEL CUT OUT



Shell size		L1 mm	L2 mm	L3 mm	D1 mm	S mm	X max. panel thickness	Max. cable Ø in mm
9	E	28.9	15.3	1.5	15.3	21.0	3.5	7.6
12	H	33.0	17.6	1.5	21.0	26.5	3.5	14.6

Shell size	Type	L4 mm	D2 mm	Ø A mm
09	Front panel	15.1	3.25	13.1
	Back panel			15.5
12	Front panel	20.6	3.25	19.1
	Back panel			21.2

DELIVERY CONDITION



TECHNICAL DATA

- Technical data see page 78
- Contact configuration see page 54
- Accessories for receptacle installation and cable termination (e.g. crimp sleeve, band-it, flange gaskets, screws) must be ordered separately
- Accessory thread according to MIL-DTL-38999 Series III, for shell size see page 60
- For assembly instructions please refer to our website: odu-connectors.com/downloads

	Performance specifications – In-line receptacle in combination with		
	Push-pull plug S1 / SB	Break-away plug A1 / AB	Thread-lock plug C1 / CB
Vibration	Sine 30 g	Sine 20 g	Sine 30 g, random 37.8 g
Shock	300 g	100 g	300 g
Water immersion	1 m / 120 min	1 m / 120 min	1 m / 120 min

Values in table refer to the connector only.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
G	F	T		A	T	0	–						N	–	0	0	0	0

ODU PRODUCT FINDER

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CONTACT INSERTS AND PCB LAYOUTS

Shell size 9

Number of contacts	Available connector styles				Contact type	Termination	Part number key				Contact size	Contact Ø in mm	Single contact nominal current A	Test voltage [1] Veff	Nominal voltage [2] Vms	Termination cross section AWG
8	GK	G4			Socket	Solder	D	0	8	W	#22 D	0.76	5	750	50	22–26
	GU / GF	G6 / GB	K1 / KB	S1 / SB A1 / AB C1 / CB		Crimp	D	0	8	S						
	GK	G4				Print	D	0	8	U						
	GK	G4			Pin	Solder	D	0	8	X						
	GU / GF	G6 / GB	K1 / KB	S1 / SB A1 / AB C1 / CB		Crimp	D	0	8	P						
	GK	G4				Print	D	0	8	V						
10	GK	G4			Socket	Solder	0	1	0	W	#22 D	0.76	5	750	50	22–26
	GU / GF	G6 / GB	K1 / KB	S1 / SB A1 / AB C1 / CB		Crimp	0	1	0	S						
	GK	G4				Print	0	1	0	U						
	GK	G4			Pin	Solder	0	1	0	X						
	GU / GF	G6 / GB	K1 / KB	S1 / SB A1 / AB C1 / CB		Crimp	0	1	0	P						
	GK	G4				Print	0	1	0	V						
20	GK	G4			Socket	Solder	0	2	0	W	#26	0.50	2	500	50	26–30
	GU / GF	G6 / GB	K1 / KB	S1 / SB A1 / AB C1 / CB			0	2	0							
	GK	G4				Print	0	2	0	U						
	GK	G4			Pin	Solder	0	2	0	X						
	GU / GF	G6 / GB	K1 / KB	S1 / SB A1 / AB C1 / CB			0	2	0							
	GK	G4				Print	0	2	0	V						

Values in table refer to the connector only.

[1] Acc. to EIA-364-20F:2019-02, further information on voltage rating on page 84

[2] In case that other standards rule a specific use of the connector, the application specific safety criteria shall be considered first. In this context, lower voltage ratings may be valid.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
		T		A	T	0	–	E					N	–			0	0

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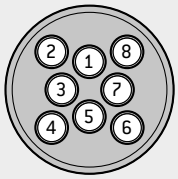
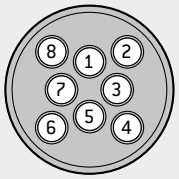
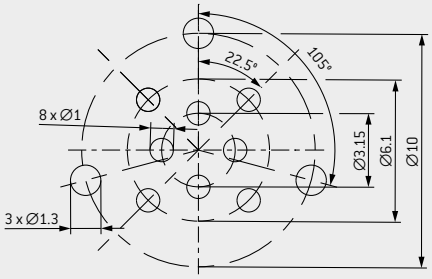
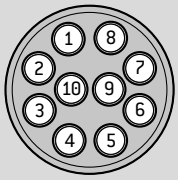
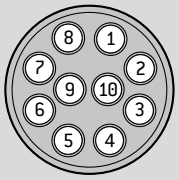
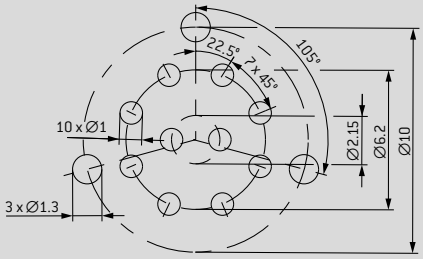
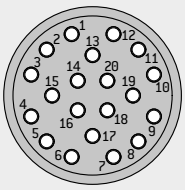
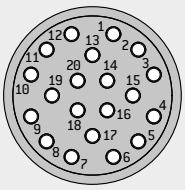
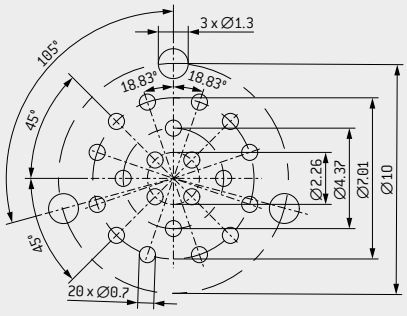
CONTACT INSERTS AND PCB LAYOUTS

Shell size 9

View on termination area: Pin piece	View on termination area: Socket piece	Data transmission protocols	PCB layout (view in mating direction)
		Class EA (10 Gbit [1])	
		–	
		HDMI up to 10.2 Gbit/s Displayport up to 21.6 Gbit/s	

[1] ISO / IEC 11801:2017, further information on request

CONTACT INSERTS AND PCB LAYOUTS

Shell size 12

Number of contacts	Available connector styles				Contact type	Termination	Part number key				Contact size	Contact ∅ in mm	Single contact nominal current A	Test voltage [1] Veff	Nominal voltage [2] Vms	Termination cross section AWG
5	GK	G4			Socket	Solder	0	0	5	W	#16	1.6	13	1.800	50	16–20
	GU / GF	G6 / GB	K1 / KB	S1 / SB A1 / AB C1 / CB		Crimp	0	0	5	S						
	GK	G4				Print	0	0	5	U						
	GK	G4			Pin	Solder	0	0	5	X						
	GU / GF	G6 / GB	K1 / KB	S1 / SB A1 / AB C1 / CB		Crimp	0	0	5	P						
	GK	G4				Print	0	0	5	V						
8	GK	G4			Socket	Solder	M	0	8	W	2 × #12 6 × #22D	2 × 2.41 6 × 0.76	23 5	750	50	2 × 12–14 6 × 22–26
	GU / GF	G6 / GB	K1 / KB	S1 / SB A1 / AB C1 / CB		Crimp	M	0	8	S						
	GK	G4				Print	M	0	8	U						
	GK	G4			Pin	Solder	M	0	8	X						
	GU / GF	G6 / GB	K1 / KB	S1 / SB A1 / AB C1 / CB		Crimp	M	0	8	P						
	GK	G4				Print	M	0	8	V						
18	GK	G4			Socket	Solder	M	1	8	W	14 × #22D 4 × #20MD	14 × 0.76 4 × 0.9	14 × 5 4 × 7.5	750	50	14 × 22–26 4 × 20–24
	GU / GF	G6 / GB	K1/ KB	S1 /SB A1 / AB C1 / CB		Crimp	M	1	8	S						
	GK	G4				Print	M	1	8	U						
	GK	G4			Pin	Solder	M	1	8	X						
	GU / GF	G6 / GB	K1/ KB	S1 /SB A1 / AB C1 / CB		Crimp	M	1	8	P						
	GK	G4				Print	M	1	8	V						
22	GK	G4			Socket	Solder	0	2	2	W	#26	0.5	2	500	50	26–30
	GU / GF	G6 / GB	K1 / KB	S1 / SB A1 / AB C1 / CB		Crimp	0	2	2	S						
	GK	G4				Print	0	2	2	U						
	GK	G4			Pin	Solder	0	2	2	X						
	GU / GF	G6 / GB	K1 / KB	S1 / SB A1 / AB C1 / CB		Crimp	0	2	2	P						
	GK	G4				Print	0	2	2	V						

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
		T		A	T	0	–	H					N	–			0	0

Values in table refer to the connector only.

[1] Acc. to EIA-364-20F:2019-02, further information on voltage rating on page 84

[2] In case that other standards rule a specific use of the connector, the application specific safety criteria shall be considered first. In this context, lower voltage ratings may be valid.

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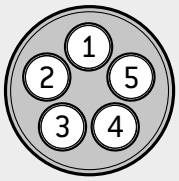
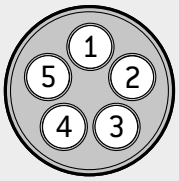
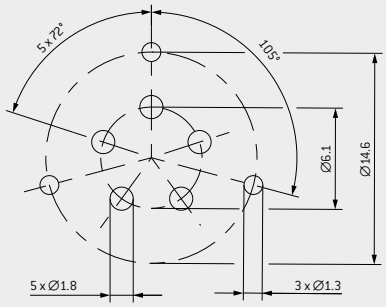
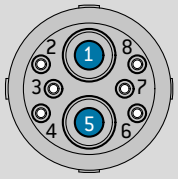
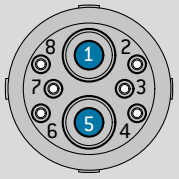
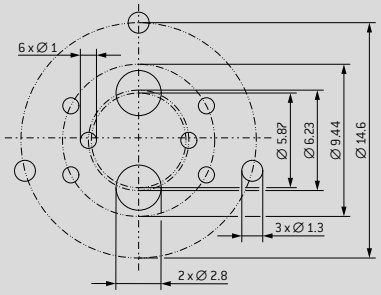
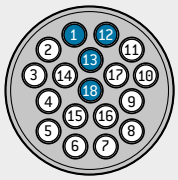
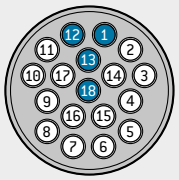
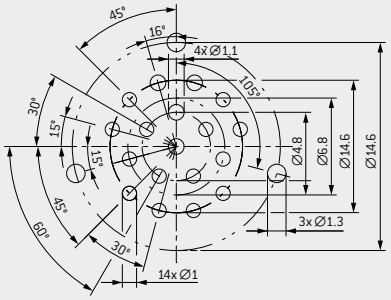
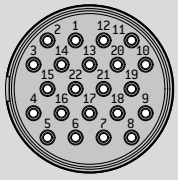
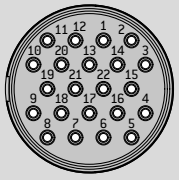
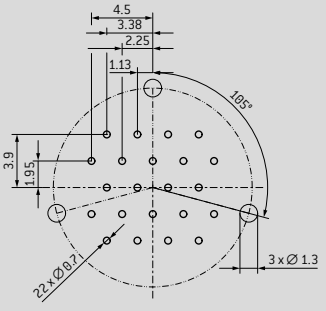
CONTACT INSERTS AND PCB LAYOUTS

Shell size 12

View on termination area		Data transmission protocols	PCB layout (view in mating direction)
Pin piece	Socket piece		
		–	
 ○ #22D	 ● #12	–	
 ○ #22D	 ● #20MD	–	
		–	

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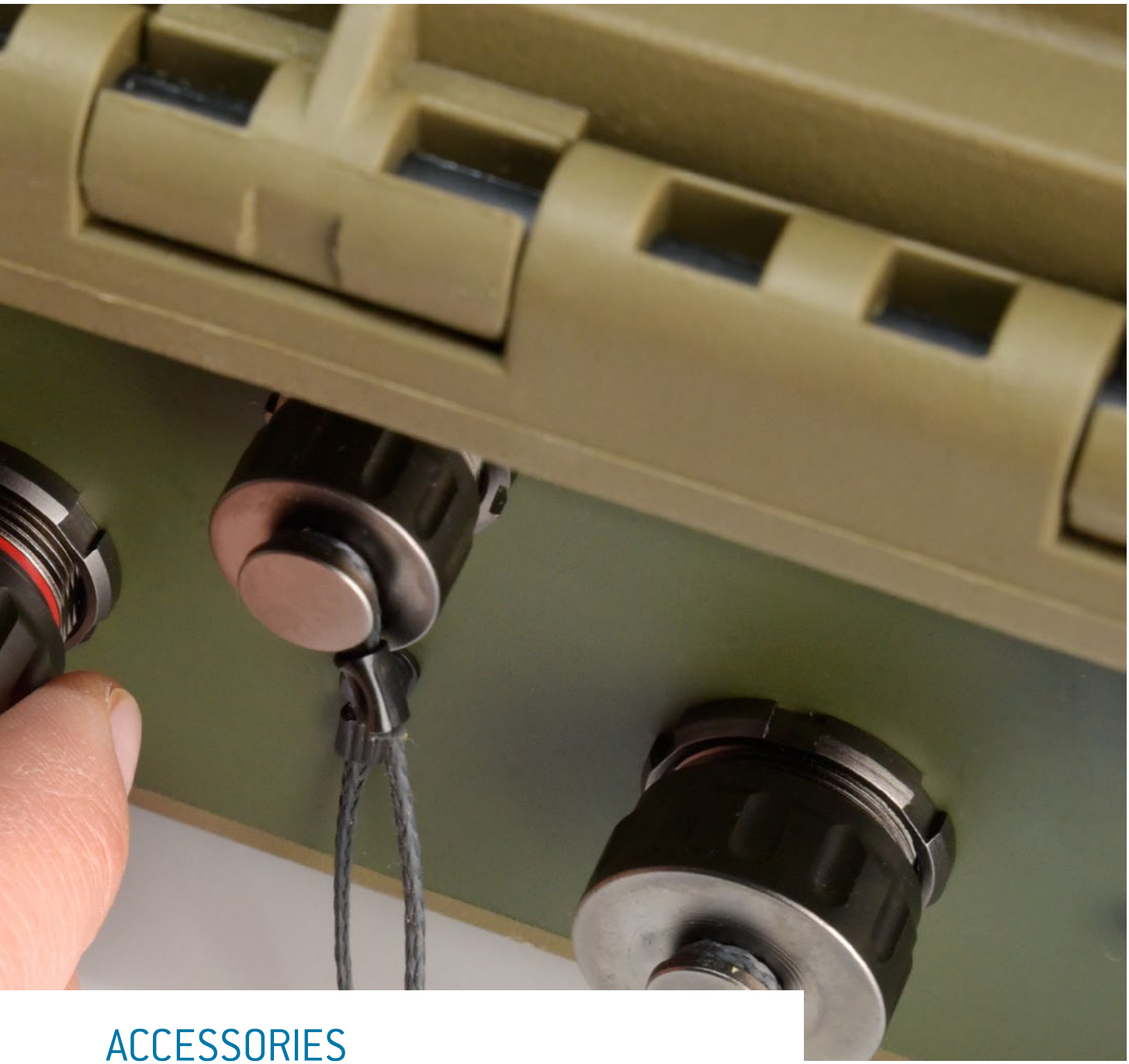
ODU AMC® SERIES T



ACCESSORIES

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Crimp sleeves 61

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Sealing plugs 67

MIL-STD CONTACTS

GENERAL INFORMATION

AS39029 crimp contacts are standard contacts for a wide variety of military circular connector applications. For platforms such as the ODU AMC® Series T, the AS39029 crimp contacts provide reliable power and signal transmission under heavy mechanical stress even in harsh environmental conditions.

The contacts are defined by the max. termination cross section:

Contact size #16 ⟶ AWG 16–20
Contact size #20 ⟶ AWG 20–24
…

ADVANTAGES

- Long proven and reliable components
- Interchangeable for repair and modification
- Field assembly possible
- Easy identification of contacts

CONTACT DESCRIPTION

BIN (Basic Identification Number):

MIL contacts have a BIN (Basic Identification Number) code consisting of three color bands around the crimp barrel. There are 10 colors, which designate a number.

0 Black	1 Brown	2 Red	3 Orange	4 Yellow
5 Green	6 Blue	7 Violet	8 Gray	9 White

MIL SPECIFICATION CRIMP CONTACTS

Size	AWG	Type	ODU Number	MIL-Part No.	BIN color		
#12	12–14	Socket	923.000.005.000.333	M39029/57-359	Orange	Green	White
		Pin	923.000.005.000.426	M39029/58-365	Orange	Blue	Green
#16	16–20	Socket	923.000.005.000.299	M39029/57-358	Orange	Green	Gray
		Pin	923.000.005.000.427	M39029/58-364	Orange	Blue	Yellow
#20	20–24	Socket	923.000.005.000.300	M39029/57-357	Orange	Green	Violet
		Pin	923.000.005.000.428	M39029/58-363	Orange	Blue	Orange
#22D	22–26	Socket	923.000.005.000.292	M39029/57-354	Orange	Green	Yellow
		Pin	923.000.005.000.429	M39029/58-360	Orange	Blue	Black

ODU SPECIFIC CRIMP CONTACTS

Can be used in special contact cavaties for higher contact density.
ODU contacts are without BIN color and cannot be used in MIL-STD cavities.

Size	AWG	Type	ODU Number
#20MD	20–24	Socket	923.000.005.000.301
		Pin	185.967.000.306.000
#26	26–30	Socket	923.000.005.000.303
		Pin	185.A21.000.306.000

CRIMP SLEEVES

Accessories for cable termination are not included and have to be ordered separately

CRIMP SLEEVE – LONG VERSION

Style 1

For a submersible cable assembly solution up to 20 meters [1]

Crimp sleeve		
Shell size	ODU number	Style
9	7TE.440.101.304.000	1
	7TE.440.101.304.001	2
12	7TH.440.101.304.000	1
	7TH.440.101.304.001	2

Material	CuTeP
Plating	Nickel

CRIMP SLEEVE – SHORT VERSION

Style 2

For a ODU cable assembly with right-angle overmolding and immersion capability up to 1 meter [2]

IMMERSION CAPABILITY:

Depending on the used crimp sleeve style and used overmolding types, different immersion capabilities can be achieved.

Style	Overmolding straight	Overmolding 90°
1	20 m [1]	1 m [2]
2	1 m	1 m

[1] Immersion capability depends on potting material in accordance with ODU Assembly process. See page 83.
[2] Customer specific solution possible.

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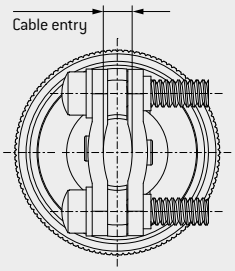
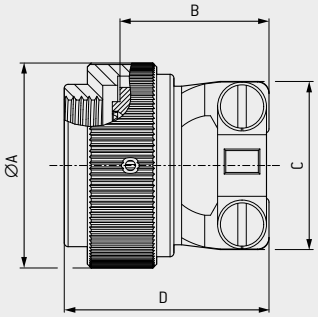
BACKSHELLS

Accessories for cable termination are not included and have to be ordered separately

STRAIGHT STRAIN RELIEF

Suitable for CB / SB / AB / GB / KB / GF





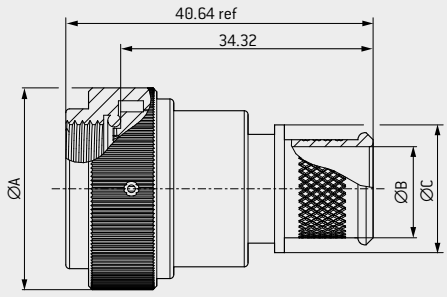
Shell size		ODU number	MIL-Part No.	Dimensions in mm				Cable entry	
Connector	Backshell			Ø A	B	C	D	min.	max.
9	9	921.000.006.000.290	M85049/38S9N	19.1	23.1	21.6	27.9	2.5	5.9
12	13	921.000.006.000.296	M85049/38S13N	25.4	25.7	27.9	30.8	4.8	8.3

Material	Aluminum
Plating	Nickel

For further information see: Assembly instruction – Series T - Backshell termination (D00016304)

STRAIGHT BANDING BACKSHELL

Suitable for CB / SB / AB / GB / KB / GF



Shell size		ODU number	MIL-Part No.	Ø in mm		
Connector	Backshell			A	B (+0.0 / −0.50)	C
9	9	921.000.006.000.292	M85049/88-9N03	21.82	6.60	14.22
12	13	921.000.006.000.298	M85049/88-13N03	25.04	8.13	16.00

Material	Aluminum
Plating	Nickel

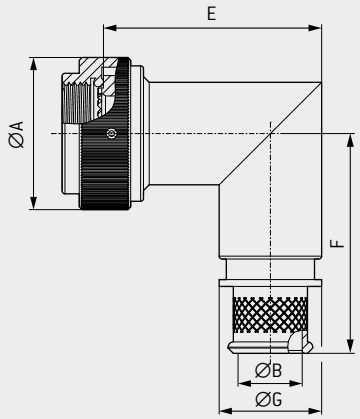
For further information see: Assembly instruction – Series T - Backshell termination (D00016304)

BACKSHELLS

Accessories for cable termination are not included and have to be ordered separately

90° BENDING BACKSHELL

Suitable for CB / SB / AB / KB / GB / GF



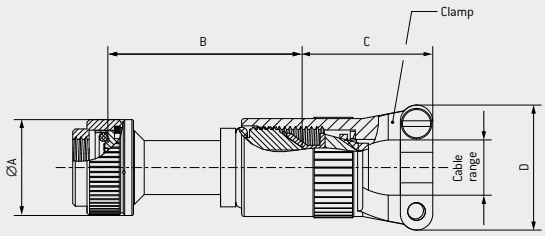
Shell size		ODU number	MIL-Part No.	Dimensions in mm				
Connector	Backshell			Ø A	Ø B (+0.0 / −0.50)	Ø G	E	F
9	9	921.000.006.000.293	M85049/90-9N03	21.8	6.6	14.2	34.9	36
12	13	921.000.006.000.299	M85049/90-13N03	29.4	11.4	19.0	39.7	39.5

Material	Aluminum
Plating	Nickel

For further information see: Assembly instruction – Series T - Backshell termination (D00016304)

STRAIGHT EMI / RFI ENVIRONMENTAL BACKSHELL

Suitable for CB / SB / AB / GB / KB / GF



Shell size		ODU number	MIL-Part No.	Cable range	Dimensions in mm			
Connector	Backshell				Ø A	B	C	D
9	9	921.000.006.000.294	M85049/189N02	3.18 mm – 6.35 mm	19.1	38.9	31.8	20.3
12	13	921.000.006.000.402	M85049/1813N02	3.18 mm – 6.35 mm	25.4	38.9	31.8	25.4
		921.000.006.000.403	M85049/1813N03	6.35 mm – 9.53 mm	25.4	38.9	31.8	25.4
		921.000.006.000.404	M85049/1813N04	9.53 mm – 12.70 mm	25.4	38.9	31.8	25.4

Material	Aluminum
Plating	Nickel

For further information see: Assembly instruction – Series T - Backshell termination (D00016304)

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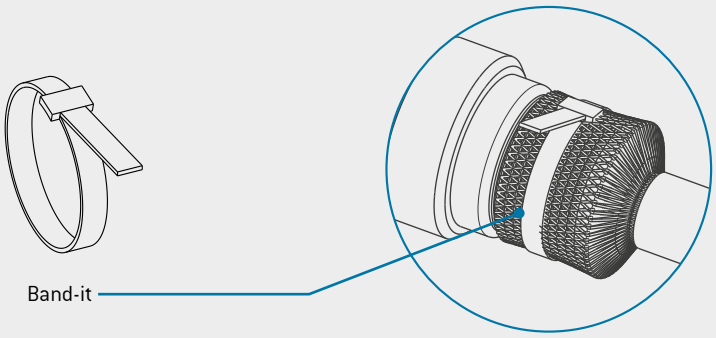
BAND-IT

Accessories for cable termination are not included and have to be ordered separately

SUITABLE FOR C1 / CB / S1 / SB / A1 / AB / K1 / KB / G6 / GB / GU / GF



Shell size	ODU number	Material
All	921.000.004.000.248	Stainless-steel

HEAT-SHRINK TUBES

Heat shrinkable tubes are used to insulate cables and wires and provide additional protection against abrasion and environmental influences, especially in the connection area of the connector.

Material	Polyester-elastomer
Temperature range	Up to +150 °C

HEATSHRINKABLE STRAIGHT

Shell size	ODU number	Hellermann	TE Connectivity
All	921.000.010.008.084	401-52880	202D121-3-60

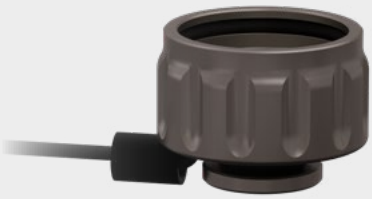
HEATSHRINKABLE RIGHT-ANGLED

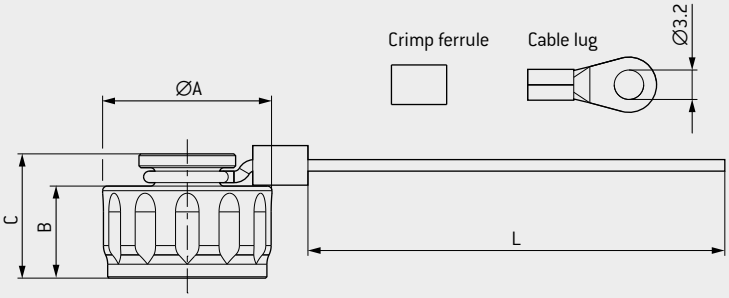
Shell size	ODU number	Hellermann
All	921.000.010.008.087	411-52480

PROTECTION CAPS

Part	Material	Surface
Cap	Aluminum	Tin-nickel over electroless nickel
Crimp ferrule	Brass	Black zinc-nickel over nickel
Lanyard	Black aramid	–
Cable lug	Copper	Black zinc-nickel

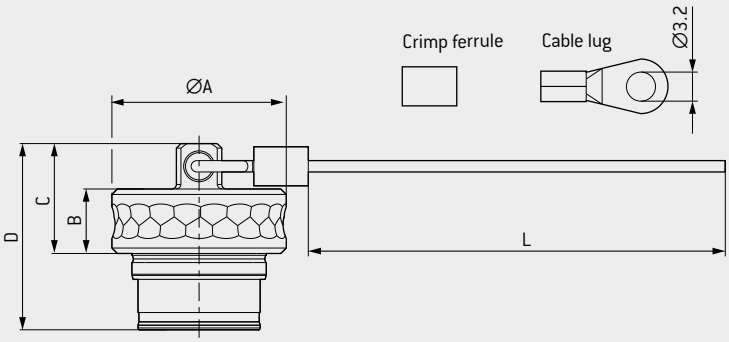
METAL CAPS FOR RECEPTACLES GK / G6 / GB / K1 / KB / GU / G4 / GB





Shell size	ODU number	Dimensions in mm			
		Ø A	B	C	L
9	7TE.197.001.661.000	18.4	13.5	10	200
12	7TH.197.001.661.000	23.3	15.5	12	200

FOR PLUGS S1 / SB / A1 / AB



Shell size	ODU number	Dimensions in mm				
		Ø A	B	C	D	L
9	7TE.297.001.661.000	19.4	14.4	19.2	20.5	200
12	7TH.297.001.661.000	22.6	17.6	24.2	25.0	200

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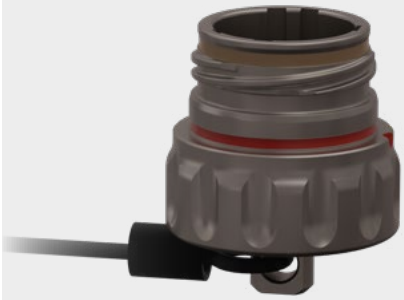
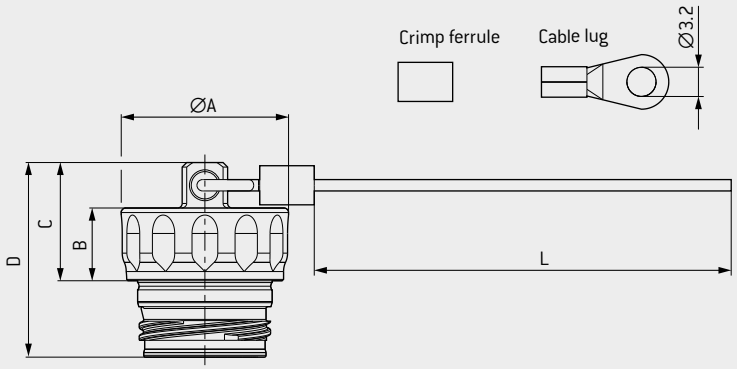
PROTECTION CAPS

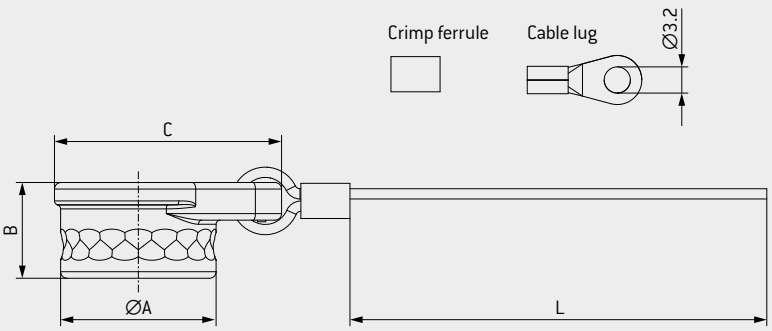
FOR PLUGS C1 / CB





Shell size	ODU number	Coding	Dimensions in mm				
			Ø A	B	C	D	L
9	7TE.597.001.661.00A	A	18.4	8.0	13.0	21.4	200
	7TE.597.001.661.00B	B					
	7TE.597.001.661.00C	C					
	7TE.597.001.661.00D	D					
12	7TH.597.001.661.00A	A	24.9	12.0	17.0	27.7	200
	7TH.597.001.661.00B	B					
	7TH.597.001.661.00C	C					
	7TH.597.001.661.00D	D					

RUBBER CAPS FOR RECEPTACLES

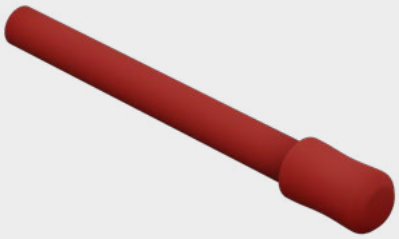


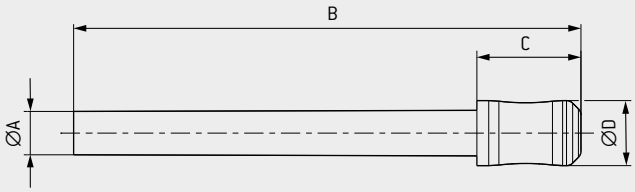
Shell size	ODU number	Coding	Dimensions in mm				
			Ø A	B	C	D	L
9	7TE.197.001.945.000	A	18.4	8.0	13.0	21.4	200
12	7TH.197.001.945.000	A	24.9	12.0	17.0	27.7	200

SEALING PLUGS

The sealing plugs are used to close open or unused contact positions in ODU AMC® series T connectors. The appropriate sealing plug can be identified by the contact size.

Material	Polyphenylsulfone (PPSU)





Size	ODU number	MIL-Part No.	Color	Dimensions in mm			
				Ø A	B	C	Ø D
#12	021.315.924.937.000	MS27488-12-2	Orange	3.0	21.7	2.2	4.2
#16	021.315.951.937.000	MS27488-16-2	Green	1.8	21.7	2.3	3.2
#20	021.315.901.937.000	MS27488-20-2	Red	1.25	21.7	2.3	2.24
#20MD	021.315.949.937.000	–	Orange	1.1	21.7	2.5	1.6
#22D	021.315.942.937.000	MS27488-22-2	Black	1.0	11.7	2.4	1.5
#26	021.315.941.937.000	–	Red	0.7	11.7	4.2	1.1

Make sure that all cavities without function are equipped with unconnected contacts.
Install the sealing plug with head towards bottom of the crimp barrel.

MIL-STD GASKET

Size	ODU number	Type	Material
09	922.000.005.000.016	EMI / RFI	FSA70
12	922.000.005.000.017	EMI / RFI	FSA70
09	922.000.005.000.018	FVMQ	FVMQ
12	922.000.005.000.019	FVMQ	FVMQ

MOUNTING SCREW SET EN ISO 4762

ODU number	Thread size	Length in mm	Material
901.000.912.001.192	M3	16	Burnished stainless steel

The set contains four screws for fastening the square flange variants.

ODU AMC® SERIES T

TOOLS

Tools for shielded termination 70

Contact crimp tools 70

Insertion and removal tools 71

Contact retention tools 72

Insert retention tools 72

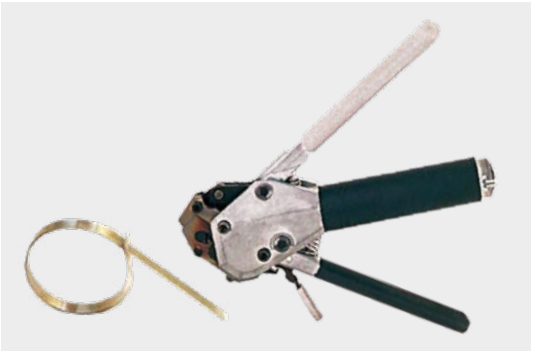
Nutdriver for slotted nut 73

Complete your connector system 74

Order information for possible cable termintion types 75

TOOLS FOR SHIELD TERMINATION

ODU Number	Name	Shell size
080.000.058.000.000	Band-it tool	universal
080.000.026.000.000	Housing cable crimp tool	universal
080.000.026.7TE.001	Crimp die	9
080.000.026.7TH.001	Crimp die	12



CONTACT CRIMP TOOLS

The 8-point crimping tool is used to crimp turned contacts on to a conductor. The special features of the handcrimping tool are a user-friendly display, ergonomic design and an optimum force transmission for comfortable working.

ODU Number	MIL-Part No.	Name	Contact size
080.000.073.000.000	M22520/1-01	Contact crimp tool	#12 / #16 / #20
080.000.073.101.000	M22520/1-04	Positioner	#12 / #16 / #20

For further information see: ODU Crimp instruction 080.000.073.000.000

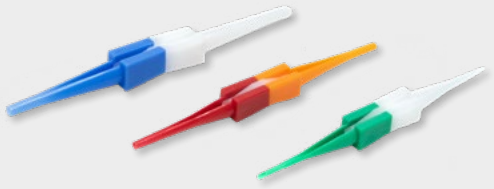
ODU Number	MIL-Part No.	Name	Contact size
080.000.072.000.000	M22520/7-01	Contact crimp tool	#20MD #22D #26
080.000.072.104.000	–	Positioner sockets	#26
080.000.072.103.000	–	Positioner pins	#26
080.000.072.102.000	M22520/7-06	Positioner sockets	#20MD #22D
		Positioner pins	#20MD
080.000.072.101.000	M22520/7-07	Positioner pins	#22D

For further information see: ODU Crimp instruction 080.000.072.000.000

INSERTION AND REMOVAL TOOLS

ODU provides insertion & removal tools for all listed contacts. The use of the correct insertion tool ensures the correct seating of the contact in the connector. Using the correct removal tool ensures that the contact can be removed without causing damage. In addition to the plastic tools, which are mainly intended for use in a field assembly situation, ODU also offers MIL-Standard metal tweezers as a more durable option.

MIL STANDARD PLASTIC TOOLS



Size	ODU Number	MIL-Part No.	Color code insertion side	Color code removal side	Min. wire Ø in mm	Max. wire Ø in mm
#12	085.613.100.010.000	M81969/14-04	Yellow	White	2.46	3.61
#16	085.613.100.020.000	M81969/14-03	Blue	White	1.65	2.77
#20	085.613.100.040.000	M81969/14-10	Red	Orange	1.02	2.11
#22D	085.613.100.060.000	M81969/14-01	Green	White	0.76	1.27

Size	Type	ODU Number	MIL-Part No.	Min. wire Ø in mm	Max. wire Ø in mm
#12	insertion	085.613.100.080.000	M81969/8-09	2.46	3.61
	removal	085.613.100.080.001	M81969/8-10		
#16	insertion	085.613.100.070.000	M81969/8-07	1.65	2.77
	removal	085.613.100.070.001	M81969/8-08		
#20	insertion	085.613.100.050.000	M81969/8-05	1.02	2.11
	removal	085.613.100.050.001	M81969/8-06		
#22D	insertion	085.613.100.030.000	M81969/8-01	0.76	1.27
	removal	085.613.100.030.001	M81969/8-02		

MIL STANDARD METAL TWEEZERS

Size	ODU Number	Color code insertion side	Color code removal side
#20MD	085.613.100.090.000	Purple	White
#26	085.613.100.110.000	Black	White

ODU SPECIFIC INSERTION & REMOVAL TOOLS

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RETENTION TOOL

ODU Retention tools are recommended for use when checking the connectors for proper seating of the contacts or the insert. Due to the simple handling, the test can be carried out in a matter of seconds. By pressing the tool against the mating face, the retention of pins and sockets and inserts is tested. Through a visualization on the tool the result can be easily identified.

CONTACT RETENTION TOOL

ODU Number	Contact size
7TH.098.004.000.000	#20, #20MD, #22D, #26, #28
7TH.098.004.000.001	#12, #16

ODU Number	Type	Contact size	Color 1	Color 2	Color 3
7TH.098.004.K01.000	pin	#12	Yellow	Red	Black
	socket		Black	Red	Black
7TH.098.004.K02.000	Pin	#16	Yellow	Red	Green
	Socket		Black	Red	Green
7TH.098.004.K07.000	Pin	#20 / #20MD	Yellow	Yellow	Yellow
	Socket		Black	Yellow	Yellow
7TH.098.004.K09.000	Pin	#22D	Yellow	Blue	Black
	Socket		Black	Blue	Black
7TH.098.004.K11.000	Pin	#26	Yellow	Green	Blue
	Socket		Black	Green	Blue

INSERT RETENTION TOOL

ODU Number (tool)	Shell size
7TH.098.003.000.000	universal

ODU Number (inserts)	Shell size
7TH.098.003.E00.000	9
7TH.098.003.H00.000	12

ODU Number	Shell size	Connector type	Contact type	Color 1	Color 2	Color 3
7TH.098.003.E00.000	9	Plug	Socket	Black	Green	Red
		Plug	Pin	Black	Green	Yellow
		Receptacle	Socket	Black	Blue	Red
		Receptacle	Pin	Black	Blue	Yellow
7TH.098.003.H00.000	12	Plug	Socket	Red	Green	Red
		Plug	Pin	Red	Green	Yellow
		Receptacle	Socket	Red	Blue	Red
		Receptacle	Pin	Red	Blue	Yellow

NUT DRIVER FOR SLOTTED NUT

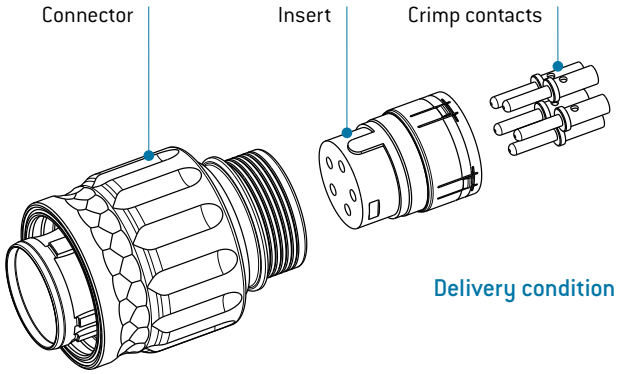
ODU Number	Name	Shell size
7TE.098.001.000.000	Nut driver	9
7TH.098.001.000.000	Nut driver	12

ASSOCIATED DOCUMENTS:

- D00016300 – Crimp contact specification
- D00016301 – Product specification
- D00016303 – Assembly instruction crimp termination
- D00016304 – Assembly instruction backshell termination

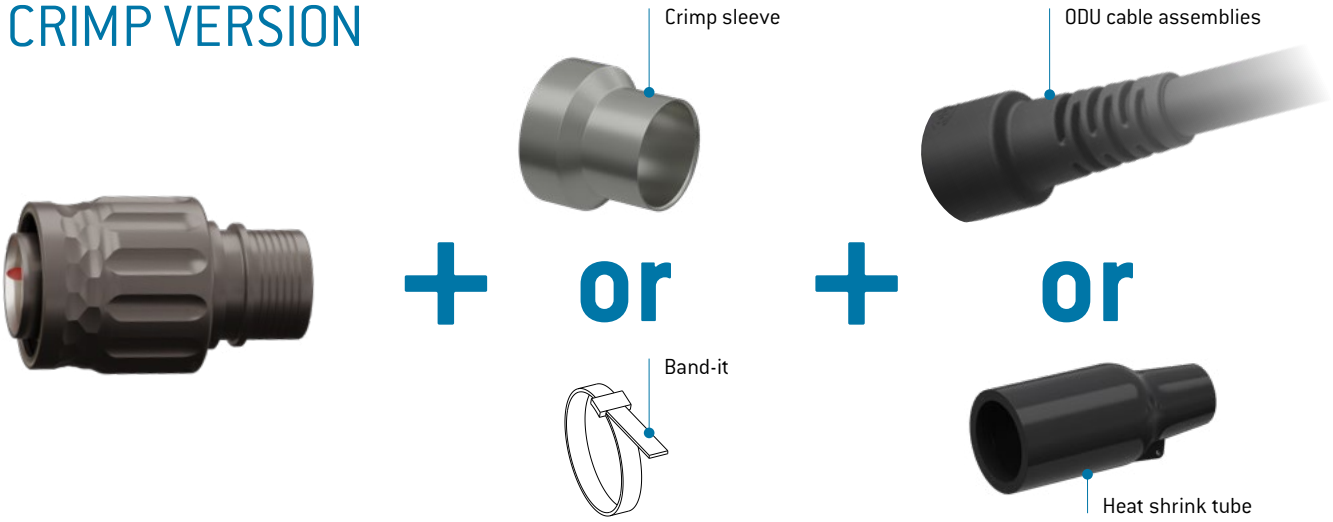
COMPLETE YOUR CONNECTOR SYSTEM

Needed accessories for cable termination (e.g. crimp sleeve or band-it) must be ordered separately.

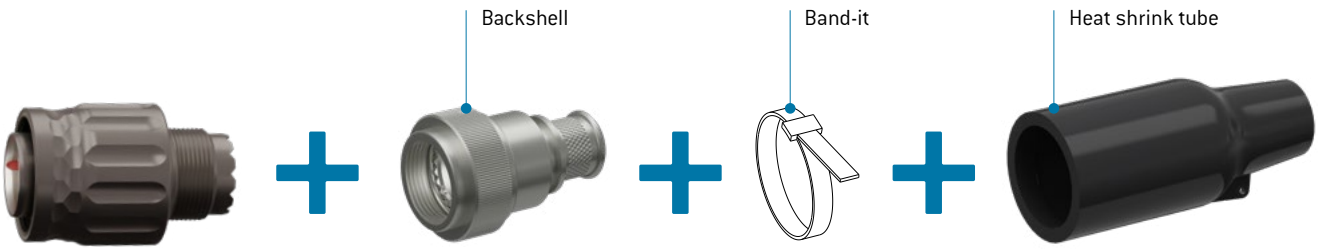


Delivery condition

CRIMP VERSION



BACKSHELL VERSION



For people who like to take things into their own hands, we offer all the necessary assembly tools. See page 69

The illustrated variants are only examples and may vary depending on the application or termination system being used

ORDER INFORMATION

For possible cable termination types

Connector type		Page	Housing termination type		Overmolding possible	Additional or alternative	
			Crimp sleeve [1]	Backshell		Band-it [1,2]	Heatshrink [3]
S1		32	✓	–	✓	✓	✓
A1		34	✓	–	✓	✓	✓
C1		36	✓	–	✓	✓	✓
K1		38	✓	–	✓	✓	✓
G6		40	✓	–	✓	✓	✓
GU		44	✓	–	✓	✓	✓
SB		48	–	✓	–	✓	✓
AB		49	–	✓	–	✓	✓
CB		50	–	✓	–	✓	✓
KB		51	–	✓	–	✓	✓
GB		52	–	✓	–	✓	✓
GF		53	–	✓	–	✓	✓

Accessories for cable termination are not included and have to be ordered separately.

[1] Band-it can be used instead of a Crimp sleeve for cable screen termination

[2] A Band-It may be required for the cable shield connection depending on the used backshell.

[3] Heat shrink tubes are used instead of overmolding as additional protection of crimp termination solutions.

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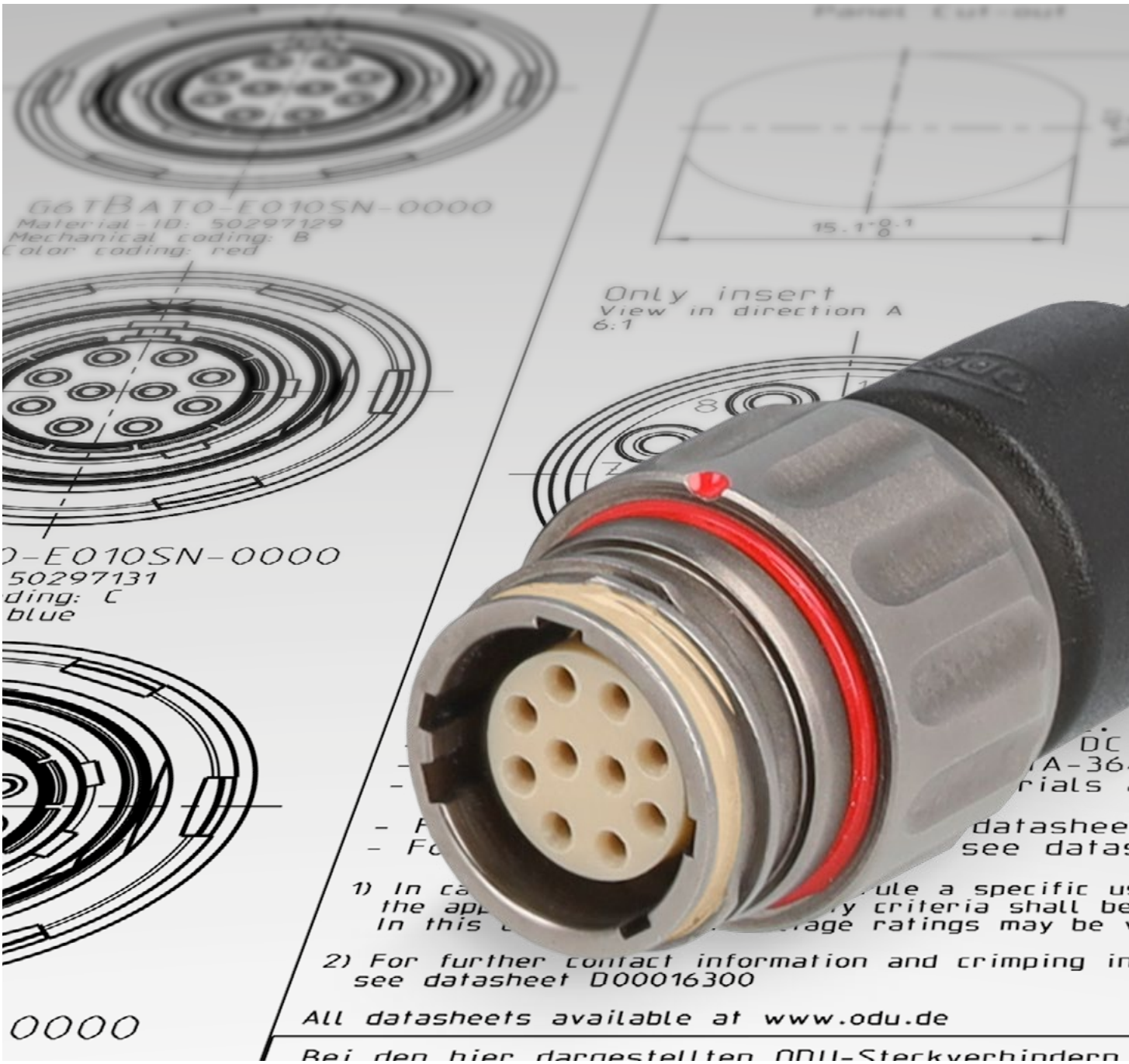
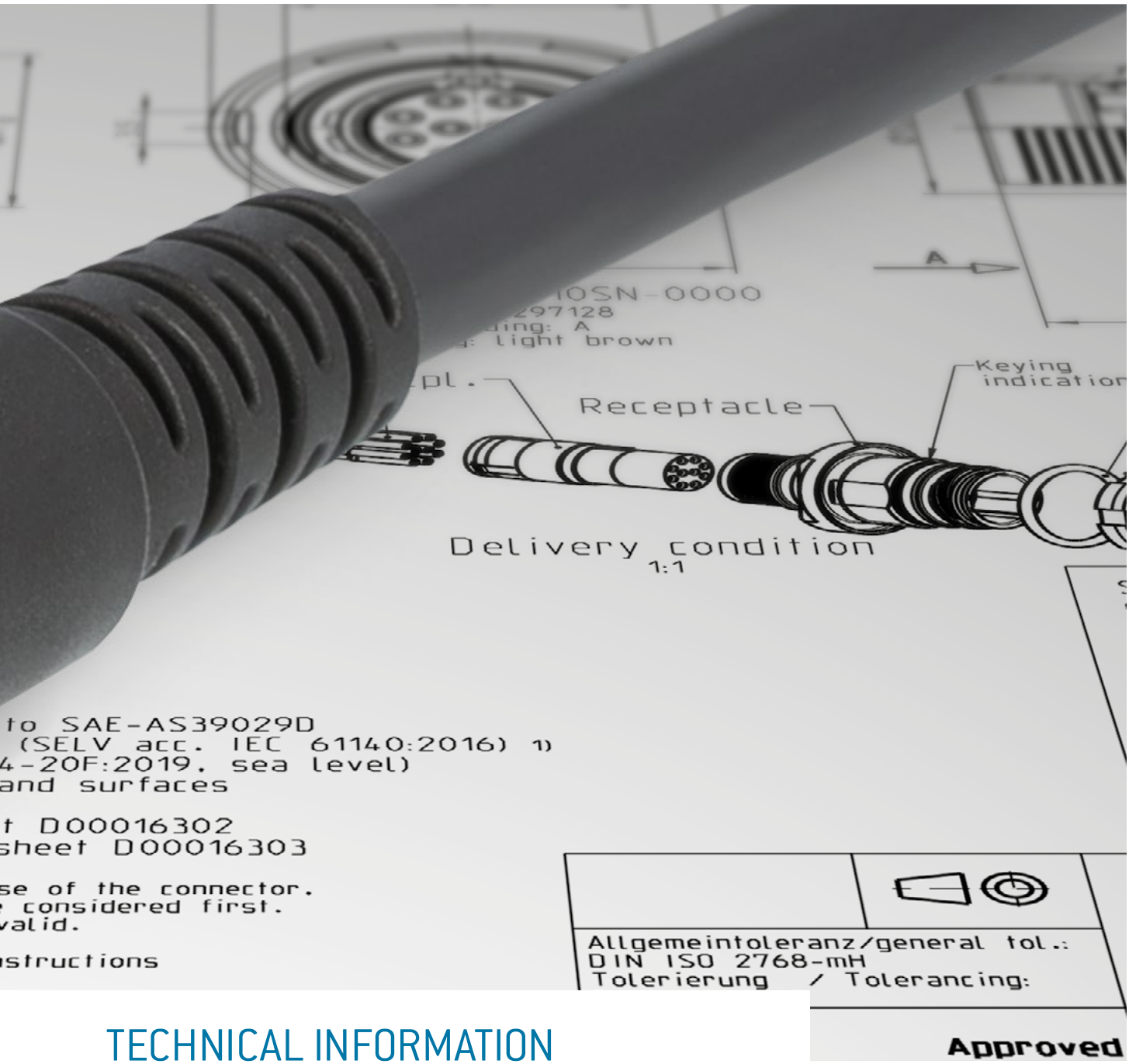


ODU AMC® SERIES T



TECHNICAL INFORMATION

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ODU AMC® SERIES T
Environmental and testing

Description	Requirement	Procedure
Water resistance	IPX8 / 20 m 120 min [1] IPX9K	ISO 20653:2013-02 / MIL-STD-810G: 2008 512.5 ISO 20653:2013-02
Dust or fine sand	Uncoupling and recoupling torque shall not exceed the values specified by more than 25 percent. IP6KX (settling dust)	MIL-STD-202-110 ISO 20653:2013-02
Temperature cycling	−65 °C up to +175 °C No blistering, peeling or separation of plating or other damage detrimental to the operation of the connector	EIA-364-32G, method A, test duration A, test condition V
Salt spray	96 h salt mist Unmated connectors shall show no lifting of plating or exposure of basis material.	EIA-364-26C:2014-03, test condition A
Altitude low temperature	50,000 feet simulated altitude at −65 °C The specimens shall meet the requirements of dielectric withstanding voltage and insulation resistance.	EIA-364-105B:2015-01
Ice resistance	Uncoupling and recoupling torque shall not exceed the values specified by more than 25 percent.	MIL-DTL-38999M, para. 4.5.40

[1] The protection is only assured when crimp sleeve is potted during cable assembly according to ODU AMC® Series T assembly instructions. Operating temperature for 20 m solution from −65 °C up to +85 °C. Open face 1 m / 120 min.

ODU AMC® SERIES T

Electrical data

Description	Requirement			Procedure
Insulation resistance at ambient temperature	The insulation resistance between any pair of contacts and between any contact and the shell shall be greater than 5,000 MΩ			EIA-364-21E
Insulation resistance at elevated temperature	The insulation resistance between any pair of contacts and between any contact and the shell shall be greater than 1,000 MΩ at +175 °C			EIA-364-21E
Dielectric withstanding voltage at sea level	Contact size #12 #16 #20 #20MD #22D #26	DWV 1,800 V 1,800 V 1,000 V 1,000 V 750 V 500 V		EIA-364-20E AC rms 50 Hz
Dielectric withstanding voltage 50,000 feet altitude	Contact size #12 #16 #20 #20MD #22D #26	DWV 1,800 V 1,000 V 600 V 600 V 400 V 300 V		EIA-364-20E AC rms 50 Hz
Contact resistance, voltage drop	Wire size 12 16 20 22 24 26 28	Test current 23.0 A 13.0 A 7.5 A 5.0 A 3.0 A 2.0 A 1.5 A	Max. voltage drop 42 mV 49 mV 55 mV 73 mV 45 mV 52 mV 54 mV	EIA-364-06C:2006-03
Low level contact resistance	Wire size 12 16 20 22 24 26 28	Contact resistance 5 mOhm 5 mOhm 9 mOhm 15 mOhm 15 mOhm 15 mOhm 15 mOhm		EIA-364-23C:2006-06
Current carrying capacity	Contact size #12 #16 #20 #20MD #22D #26	Contact current 23.0 A 13.0 A 7.5 A 7.5 A 5.0 A 2.0 A		IEC 60512-5-2:2002
Shell-to-shell conductivity; inital [1]	Voltage drop 2.5 mV			EIA-364-83A:2017-11
Magnetic permeability	The relative permeability of the wired, assembled, and fully mated connector assembly is less than 2.0 µ.			EIA-364-54A:1999-05

Specifications only valid for connectors without cable assemblies.

[1] Specified values are tested with ODU AMC® Series T Connectors shell size 12.

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ODU AMC® SERIES T
Mechanical data

Description	Requirement		Procedure
Coupling and uncoupling torque	max. engagement and disengagement (acc. MIL-DTL-38999): ShellSize09 => 0.9 Nm; ShellSize12 => 1.8 Nm min. disengagement (acc. MIL-DTL-38999): ShellSize09 => 0.2 Nm; ShellSize12 => 0.2 Nm		EIA-364-114:2010-10
Mating cycles	500 cycles No mechanical or electrical defects detrimental to the operation of the connector after the specified number of cycles of mating and unmating		MIL-DTL-38999M, para. 4.5.8
Insert retention	111 N Insert shall retain in their proper location. No evidence of cracking, breaking, separation from the shell or loosening parts		EIA-364-35C:2012-04
Electrical engagement	Mated connectors shall provide a minimum of 0.050 inch (1.27 mm) electrical engagement		MIL-DTL-38999M, para. 4.5.15
Contact retention	Contact Size #12 #16 #20 #20MD #22D #26	Min. Newton 133 N 111 N 67 N 67 N 44 N 20 N	EIA-364-29C:2006-08
Random vibration [1]	37.8 g's, longitudinal and perpendicular direction, 8 h each No discontinuity of greater than 1 microseconds, no cracking, breaking or loosening of parts, plug shall not become disengaged from receptacle.		EIA-364-28F:2011-02, test condition V, Letter I
Sine Vibration [1]	30 g, 4 h in each of three direction for a total of 12 h No discontinuity of greater than 1 microseconds, no cracking, breaking or loosening of parts, plug shall not become disengaged from receptacle.		MIL-STD-202H Method 204, test condition G amplitude: 0.06 inch frequency: 10–2,000 Hz
Mechanical shock [1]	300 g, 3 ms, half sine, 18 shocks No discontinuity of greater than 1 microseconds, no cracking, breaking or loosening of parts, plug shall not become disengaged from receptacle.		EIA-364-27C:2011-06, test condition D

[1] Specified values are tested with ODU AMC® Series T threaded plug.

ODU AMC® SERIES T

Material and surface treatments

Part	Material	Standard		Surface	Standard	Flammability
		EU	US			
Housing / Nut	AlSi2Sn1MgBi	EN-AW 6023	–	Anthracite tin-nickel over nickel	SAE-AMS-2404J	–
EMI-locking ring	CuBe2	CW102C (2.1248)	C17300	Gold over nickel	–	–
Crimp sleeve	CuTeP	CW118C (2.1546)	C14500	Nickel	–	–
Grounding ring	CuZn39Pb3	CW614N (2.0401)	C38500	Tin over nickel	–	–
Insulator	PEEK	–	–	–	–	UL94 (V0)
Pin contact ODU specific	CuZn38Pb2	CW608N (2.0371)	C37000	1.27 µm gold over nickel	MIL-G-45204D	–
Pin contact MIL standard	CuZn35Pb2	CW601 (2.0331)	C34500	1.27 µm gold over nickel	ASTM B 488:2018, Type II, C	–
Socket contact body	CuZn35Pb2	CW601 (2.0331)	C34500	Gold over nickel	ASTM B 488:2018 , Type II	–
Socket contact clip	CuBe2	CW101 (2.1247)	C17200	1.27 µm gold over nickel	ASTM B 488:2018, Type II, C	–
Wave spring	Stainless steel	EN 10270-3 (1.4568)	S17700	–	–	–
Ratchet ring	PEEK	–	–	–	–	UL94 (V0)
Grommet	FVMQ (floursilikon)	–	–	–	–	–
Potting	Potting compound	–	–	–	–	UL94 (V0)
O-rings	FVMQ (floursilikon)	–	–	–	–	–
Shrink boots	Polyester-elastomer	–	–	–	–	acc. to VG95343
Overmolding material	TPU	–	–	–	–	UL94 (HB)

RoHS COMPLIANT ✓

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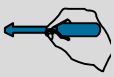
INTERNATIONAL PROTECTION CLASSES

ISO 20653:2013

Code letters (International Protection)	First code number (Degrees of protection against access to hazardous parts respectively against solid foreign objects)			Second code number (Degrees of protection against water)			
IP	6			5			
Code no.	Protection against access to hazardous parts / Protection against ingress of solid foreign objects			Code no.	Protection against harmful effects due to the ingress of water		
0	No protection		No protection against contact / no protection against solid foreign objects	0	No protection against water		No protection against water
1	Protection against contact with the back of hand (no protection against intentional contact)		Test probe with diameter 50 mm shall not penetrate completely and maintain sufficient distance from hazardous parts.	1	Protection against dripping water		Vertical drips shall not have any harmful effects or impair performance.
2	Protection against finger contact		Jointed test finger with diameter 12.5 mm may penetrate completely, but shall maintain a sufficient distance from hazardous parts.	2	Protection against dripping water (tilted)		Vertical drips shall not have any harmful effects or impair performance when the enclosure is tilted at any angle up to 15° on either side of the vertical
3	Protection against penetration of tools (e.g. screwdrivers)		Test probe with diameter 2.5 mm, may penetrate completely, but shall maintain a sufficient distance from hazardous parts.	3	Protection against spray water		Water spray at an angle up to 60° on either side of the vertical shall have no harmful effects or impair performance
4	Protection against granular foreign objects		Test probe with diameter 1.0 mm, may penetrate completely, but shall maintain a sufficient distance from hazardous parts	4	Protection against splashing water		Water which splashes against the enclosure from any direction with increased pressure shall not have any harmful effects or impair performance
				4K	Protection against splashing water with increased pressure		Water which splashes against the enclosure from any direction with increased pressure shall not have any harmful effects or impair performance
5K	Protection against dust		Dust shall only penetrate in quantities which do not impair performance and safety.	5	Protection against high-velocity water		Water which is directed against the enclosure from any direction as a jet shall not have any harmful effects or impair performance
				6	Protection against powerful water jet		Water which is directed against the enclosure from any direction as a strong jet shall not have any harmful effects or impair performance
6K	Protection against ingress of dust		Dust shall not penetrate	6K	Protection against strong high-velocity water with increased pressure		Water which is directed against the enclosure from any direction as a strong jet with increased pressure shall not have any harmful effects or impair performance
				7	Protection against the effects of temporary immersion in water		Water shall not penetrate in a quantity causing harmful effects or impair performance if the enclosure is immersed in water temporarily under specified pressure and time conditions
				8	Protection against the effects of continuous immersion in water		Water shall not penetrate in a quantity causing harmful effects if the enclosure is continuously immersed in water under conditions which shall be specified by the manufacturer
				9K	Protection against water during high-pressure / steam-jet cleaning		Water which is directed against the enclosure from any direction shall not have any harmful effects or impair performance

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PROTECTION OF ODU AMC® SERIES T

IP rating acc. to. ISO 20653:2013-02 · Immersion acc. to. MIL-STD-810H:2019 512.5 Sand and dust acc. to. MIL-STD-810H:2019 510.5

Open Face

IP rating	Type	
IP68 [1]	A1 / AB	
	S1 / SB	
	K1 / KB	
	GK	
	G6 / GB	
	GU / GF	

Mated with protection cap

IP rating	Type	
IP68 [1]	A1 / AB	
	S1 / SB	
	K1 / KB	
	GK / G6 / GB	
	GU / GF	

Illustration for visual reference only; may apply to several connector versions.

Mated

IP rating	Type	
IP6K8 [2] (IP6K9K for overmolded version) immersion sand and dust acc. to MIL-STD-202-110	Plug with in-line receptacle	
	Plug with panel-mount receptacle	

[1] Water ressistance 1 m / 120 min. Contact area is not IP protected.

[2] Water resistance 20 m / 120 min. The protection is only assured when crimp sleeve is potted during cable assembly according to ODU AMC® Series T assembly instructions. Operating temperature for 20 m solution from –65 °C up to +85 °C.

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EXPLANATIONS AND DETAILS OF SAFETY REQUIREMENTS

OPERATING VOLTAGE (RATED VOLTAGE)

All shown connectors and cable assemblies are rated to a safety extra low voltage (SELV) of less than 50 V AC / 75 V DC, according to IEC 61140:2016 (VDE 0140-1:2016) Protection against electric shock – common aspects for installation and equipment. In case other standards rule a specific use of the connectors and cable assemblies, the application specific safety criteria shall be considered first. In this context, lower voltage ratings may be valid. If a higher operating voltage is needed, please refer to chapter "Voltage rating according EIA-364-20F:2019".

VOLTAGE RATING ACCORDING EIA-364-20F:2019-02 (TEST VOLTAGE / WITHSTANDING VOLTAGE)

WARNING:

Danger to life for operating voltages above 50 V AC / 120 V DC! The subsequently explained procedure according EIA-364-20F:2019 does not consider protection against electric shock. Suitable precautions (protective measures) such as touch protection, protective insulation, protective separation, protective earth conductor etc. must be implemented.

In case other standards rule a specific use of the connectivity solutions, the application specific safety criteria shall be considered first. This must be evaluated by the customer during the equipment engineering process.
For any advice on how the proper connectors and cable assemblies shall be chosen, please consult us and indicate the safety standard which your product has to meet.

EIA-364-20F:2019-02 "WITHSTANDING VOLTAGE – TEST PROCEDURE FOR ELECTRICAL CONNECTOR, SOCKETS AND COAXIAL CONTACTS"

The test voltage values in the catalog are determined according to EIA-364-20F:2019-02 method A, test condition I (sea level up to 2,000 m) "Withstanding Voltage – Test Procedure for Electrical connectors, Sockets and Coaxial Contacts".
The test voltage represents the physical limit of the connector and is usually set at 75 % of the break-down voltage.
According to EIA-364-20F:2019-02 and former MIL-STD-1344 method 3001 it is specified to set the operating voltage (rated voltage) to ⅓ of the test voltage acc. to EIA-364-20F:2019-02.

Example:

Breakdown voltage	1,000V AC × 0.75 =
Test voltage	750V AC × 0.33 =
Operating voltage	250V AC

CONVERSIONS / AWG (AMERICAN WIRE GAUGE)

Circular wire					
AWG	Diameter		Cross-section mm²	Weight	Max. resistance
	Inch	mm		kg / km	Ω / km
10 (1)	0.1019	2.590	5.26	46.77	3.45
10 (37 / 26)	0.1150	2.921	4.74	42.10	4.13
12 (1)	0.0808	2.050	3.31	29.41	5.45
12 (19 / 25)	0.0930	2.362	3.08	27.36	6.14
12 (37 / 28)	0.0910	2.311	2.97	26.45	6.36
14 (1)	0.0641	1.630	2.08	18.51	8.79
14 (19 / 27)	0.0730	1.854	1.94	17.23	9.94
14 (37 / 30)	0.0735	1.867	2.08	18.870	10.50
16 (1)	0.0508	1.290	1.31	11.625	13.94
16 (19 / 29)	0.0590	1.499	1.23	10.928	15.70
18 (1)	0.0403	1.020	0.823	7.316	22.18
18 (19 / 30)	0.0052	1.321	0.963	8.564	20.40
20 (1)	0.0320	0.813	0.519	4.613	35.10
20 (7 / 28)	0.0390	0.991	0.563	5.003	34.10
20 (19 / 32)	0.0420	1.067	0.616	5.473	32.00
22 (1)	0.0253	0.643	0.324	2.883	57.70
22 (7 / 30)	0.0288	0.732	0.324	2.965	54.80
22 (19 / 34)	0.0330	0.838	0.382	3.395	51.80
24 (1)	0.0201	0.511	0.205	1.820	91.20
24 (7 / 32)	0.0250	0.635	0.227	2.016	86.00
24 (19 / 36)	0.0270	0.686	0.241	2.145	83.30
26 (1)	0.0159	0.404	0.128	1.139	147.00
26 (7 / 34)	0.0200	0.508	0.141	1.251	140.00
26 (19 / 38)	0.0220	0.559	0.154	1.370	131.00
28 (1)	0.0126	0.320	0.0804	0.715	231.00
28 (7 / 36)	0.0160	0.406	0.0889	0.790	224.00
28 (19 / 40)	0.0170	0.432	0.0925	0.823	207.00
30 (1)	0.0100	0.254	0.0507	0.450	374.00
30 (7 / 38)	0.0130	0.330	0.0568	0.505	354.00
30 (19 / 42)	0.0123	0.312	0.0720	0.622	310.00
32 (1)	0.0080	0.203	0.0324	0.288	561.00
32 (7 / 40)	0.0110	0.279	0.0341	0.303	597.10
32 (19 / 44)	0.0100	0.254	0.0440	0.356	492.00
34 (1)	0.0063	0.160	0.0201	0.179	951.00
34 (7 / 42)	0.0070	0.180	0.0222	0.197	1,491.00
36 (1)	0.0050	0.127	0.0127	0.1126	1,519.00
36 (7 / 44)	0.0060	0.150	0.0142	0.1263	1,322.00

The American Wire Gauge (AWG) is based on the principle that the cross-section of the wire changes by 26 % from one gauge number to the next. The AWG numbers decrease as the wire diameter increases, while the AWG numbers increase as the wire diameter decreases. This only applies to solid wire.

However, stranded wire is predominately used in practice. This has the advantage of a longer service life under bending and vibration as well as greater flexibility in comparison with solid wire.

Stranded wires are made of multiple, smaller-gauge wires (higher AWG number). The stranded wire then receives the AWG numbers of a solid wire with the next closest cross-section to that of the stranded wire. In this case, the cross-section of the stranded wire refers to the sum of the copper cross-sections of the individual wires.

Accordingly, strands with the same AWG number but different numbers of wires differ in cross-section. For instance, an AWG 20 strands of 7 AWG 28 wires has a cross-section of 0.563 mm², while an AWG 20 strand of 19 AWG 32 wires has a cross-section of 0.616 mm².

Source: ASTM

COLOR CODE ACC. TO DIN 47100

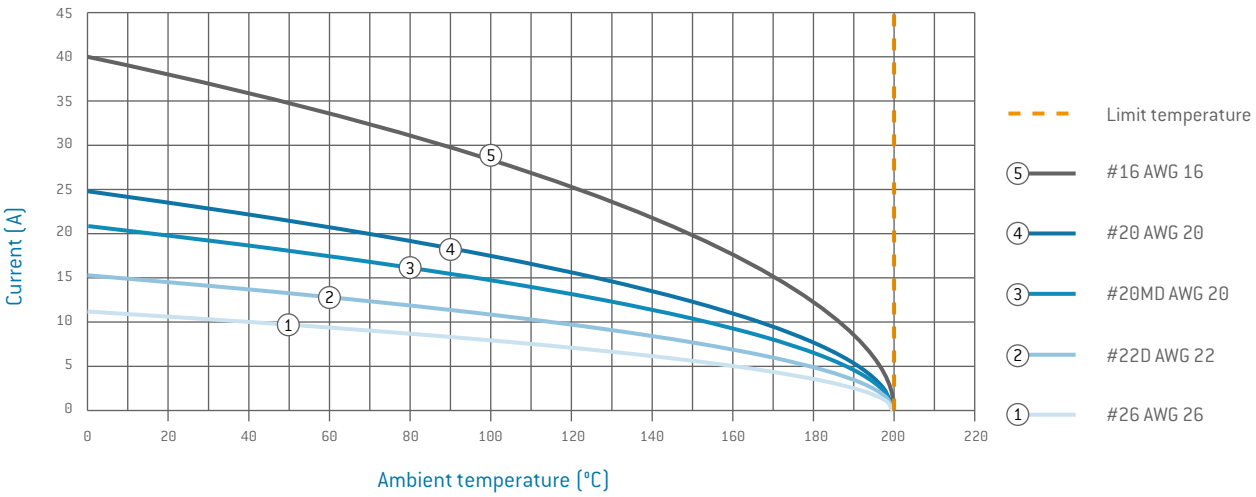
Cored without color repetition

Core	Core Color	Code
1	White	ws
2	Brown	br
3	Green	gn
4	Yellow	ge
5	Gray	gr
6	Pink	rs
7	Blue	bl
8	Red	rt
9	Black	sw
10	Violet	vio
11	Gray-Pink	grrs
12	Red-Blue	rtbl
13	White-Green	wsgn
14	Brown-Green	brgn
15	White-Yellow	wsge
16	Yellow-Brown	gebr
17	White-Gray	wsgr
18	Gray-Brown	grbr
19	White-Pink	wsrs
20	Pink-Brown	rsbr
21	White-Blue	wsbl
22	Brown-Blue	brbl
23	White-Red	wsrt
24	Brown-Red	brrt
25	White-Black	wssw
26	Brown-Black	brsw
27	Gray-Green	grgn
28	Yellow-Gray	gegr
29	Pink-Green	rsgn
30	Yellow-Pink	gers
31	Green-Blue	gnbl

Core	Core Color	Code
32	Yellow-Blue	gebl
33	Green-Red	gnrt
34	Yellow-Red	gert
35	Green-Black	gnsw
36	Yellow-Black	gesw
37	Gray-Blue	grbl
38	Pink-Blue	gsbl
39	Gray-Red	grrt
40	Pink-Red	rsrt
41	Gray-Black	grsw
42	Pink-Black	rssw
43	Blue-Black	blsw
44	Red-Black	rtsw
45	White-Brown-Black	wsbrsw
46	Yellow-Green-Black	gegnsw
47	Gray-Pink-Black	grrssw
48	Blue-Red-Black	blrtsw
49	White-Green-Black	wsgnsw
50	Green-Brown-Black	gnbrsw
51	White-Yellow-Black	wsgesw
52	Yellow-Brown-Black	gebrsw
53	White-Gray-Black	wsgrsw
54	Gray-Brown-Black	grbrsw
55	White-Pink-Black	wsrssw
56	Pink-Brown-Black	rsbrsw
57	White-Blue-Black	wsblsw
58	Brown-Blue-Black	brblsw
59	White-Red-Black	wsrtsw
60	Brown-Red-Black	brrtsw
61	Black-White	swws

- The cores are counted starting in the outer layer and continuing through all layers in the same direction. The first color is the base color
- The 2nd and 3rd color is applied in the form of abrasion-resistant color rings. For 2 and 3-colored cores, the characters of the color code are lined up directly next to each other
- For cables with color repetition, the color code starts again with White (1) from the 45th core onwards.
- For paired cores, always the two colors named in sequence are stranded. The color code is repeated from the 23rd and 45th pair onwards.

CURRENT LOAD OF CONTACTS



UPPER LIMIT TEMPERATURE OF SERIES T CONTACTS: +200 °C.

The wire cross-section shown in the legend was connected as test cable. In the case of multi-position connectors and cables, the heating is greater than it is with individual contacts. For that reason, it is calculated with a reduction factor. For connectors, the reduction factors for multi-core cables pursuant to DIN VDE 0298-4:2013-06 are applied. The reduction factor is factored in at 5 live wires and up.

DERATING CURVE

The corrected current-carrying capacity curve, derived from the base curve determined (0.8 × measured current). It factors in manufacturing tolerances as well as uncertainties in temperature measurement and measurement arrangement. See derating measurement method.

A current-carrying capacity curve metrologically determined according to the method described in IEC 60512-5-2:2002 (DIN EN 60512-5-2:2003-01) depending on the permissible limit temperature of the materials.

DERATING FACTOR

Number of loaded wires	Derating factor
5	0.75
7	0.65
10	0.55
14	0.50
19	0.45
24	0.40

Table of contents

TECHNICAL TERMS

AMBIENT TEMPERATURE

Temperature of the air or other medium in which a connector or a corresponding cable assembly is intended to be used.

AWG

American Wire Gauge (see page 85).

BASE CURVE

See page 87.

CHEMICAL RESISTANCE

Chemical resistance is the ability of a material to protect itself against chemical attack or solvent reaction. In contrast to corrosion, there is no material removal, which is particularly typical for plastics and elastomers.

Adhesives, cleaning agents or other chemicals are often used on our products within the scope of general deployment and further handling. Contact with unsuitable chemicals may have an adverse effect on the mechanical and electrical properties of the insulation and housing materials. The connector specifications may no longer be sustainable. Please observe our handling suggestions and technical instructions as given in this catalog or corresponding assembly instructions.

CLEARANCE DISTANCE

The shortest distance by air between two conductive parts.

CODING (MECHANICAL)

Geometry detail that prevents interchangeability of otherwise identical connectors.This is useful when two or more identical connectors are attached to the same device.

CONNECTOR WITH BREAKING CAPACITY (COC)

Connector that may be mated or unmated during intended use, live or under load
(according to IEC 61984:2008 (VDE 0627:2009-11)).

CONNECTOR WITHOUT BREAKING CAPACITY (COC)

Connector which is not deemed to be engagend or disengaged in normal use when live under load
(according to IEC 61984:2008 (VDE 0627:2009-11)).

CONNECTORS

An element which enables electrical conductors to be connected and is intended to create and/or separate connections with a suitable counterpart (according to IEC 61984:2008 (VDE 0627:2009-11)). If not otherwise specified, these are connectors without breaking capacity (COC).

CONTACT RESISTANCE

The contact resistance is the contact resistance at the contact zone of an electrical contact pair. The contact resistance is significantly lower than the total resistance (refer to total resistance). The specifications are average values.

CORES

Electrical conductor, solid wire or multi-wire strand, with insulation as well as any conductive layers. Cables or leads may have one or more cores.

CREEPAGE DISTANCES

The shortest distance between two conductive parts along the surface of a solid insulation material. This factors in all elevations and recesses in the insulator, as long as defined minimum dimensions are on hand.

CRIMP BARREL

A terminal sleeve which can accommodate one or more conductors and be crimped by a crimping tool.

CRIMP CONNECTION (CRIMP TERMINATION)

The permanent, non-detachable and solder-free mounting of a contact to a conductor via deforming or shaping under pressure to make a good electrical and mechanical connection. Executed with crimping tool, press or automatic crimping machine (see page 70).

CRIMPING AREA

The specified area of the crimp barrel in which the crimp termination is executed by means of deforming or shaping the barrel under pressure around the conductor.

DELIVERY FORM

Connectors can be delivered in assembled form or as individual parts.

TECHNICAL TERMS

DERATING CURVE

See page 87.

DERATING MEASUREMENT METHOD IN ACCORDANCE WITH IEC 60512-5-2:2002 (DIN EN 60512-5-2:2003-01)

According to VDE 0298-4:2013-06, with connectors and cables over 5 contacts, the heating is greater than it is with individual contacts. For that reason, the aforementioned standard is calculated with a derating factor.

INSERTION AND WITHDRAWAL FORCE

The force required to fully insert or withdraw pluggable elements without the influence of a coupling or locking device.

INSULATOR

Part of a connector that separates conductive parts with different potential, usually identical to the contact carrier.

MATING CYCLES

A mating cycle consists of one insertion and withdrawal action of both connector parts with each other. The given values are only valid under the following conditions: clean environment, adequate radial alignment, flawless counter contact pins.

NOMINAL VOLTAGE

The nominal voltage of the power source for which the connector is being used. The nominal voltage may not be higher than the rated voltage of the connector.

OPERATING TEMPERATURE

Permissable temperature range between the uppermost and lowermost limits. This includes contact heating through current-carrying capacity.

OPERATING VOLTAGE

The operating voltage is the voltage supply at the device.
The operating voltage may not be higher than the rated voltage of the connector.

PCB TERMINATION

A conductive connection between the PCB and an element in through-hole assembly, THT (through-hole technology).

PRINTED CIRCUIT BOARD (PCB)

A PCB is a carrier for electronic components. It serves the purposes of mechanical mounting and electrical connection.

RATED CURRENT (NOMINAL CURRENT)

See from page 87.

RATED VOLTAGE

The rated voltage which the manufacturer specifies for a connector and which the operating and performane features relate to.

REDUCTION FACTOR

Based on VDE 0298-4:2013-06, connectors and cables with more than 5 contacts have a higher heating rate compared to individual contacts. For this reason, the aforementioned standard is calculated with a reduction.

SOLDER CONNECTION (SOLDER TERMINATION)

Termination technology in which a molten additional metal (solder) with a lower melting point than the base materials to be connected is used to attach two metallic materials to one another.

STRANDED WIRE

The stranded wire is an electrical conductor consisting of thin individual wires and is therefore easy to bend.

TERMINATION CROSS-SECTION

The specified cross-sections correspond to a a “fine-wire” conductor structure (7 / 19 wire) according to AWG (ASTM B258-14) or to a “fine-wire” conductor structure pursuant to IEC 60228:2004 (VDE 0295:2005-09; Class 5), borderline conductor structures require a separate review.

TERMINATION TECHNOLOGIES

Methods for connecting the leads to the electro-mechanical element, such as solder-free connections pursuant to IEC 60352 (DIN EN 60352): crimp, screw connection etc. or soldering connection.

TEST VOLTAGE

The test voltage which a connector or a corresponding cable assembly can withstand under defined conditions without dielectric breakdown or flashover.

TECHNICAL TERMS

TIGHTNESS ISO 20653:2013-02 / MIL-STD-810G: 2008 512.5
ISO 20653:2013-02

See protection types on page 78.

TOTAL RESISTANCE

Total resistance value measured from terminal to terminal (e.g. without crimp resistance). The specifications are average values.

WIRE

Solid conductor

All dimensions are in mm.
Some figures are for illustrative purposes only. Subject to change without notice. Errors and omissions excepted. We reserve the right to change our products and their technical specifications at any time in the interest of technical improvement. This publication supersedes all prior publications.

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