

CONNECTOR SOLUTIONS

Fast product availability | Easy access to technical content | 1-to-1 engineering support

HDMI   
ODU HIGH SPEED DATA TECHNOLOGY

Available
with **cable**
assembly!



ODU GROUP – FACTS & FIGURES



- Over 80 years of experience in the connector technology
- Over 2,500 employees worldwide
- 140 R&D employees
- 140 apprentices and dual students
- 90,000 different products
- Vertical integration: 75 %
- Approx 5,500 customers worldwide

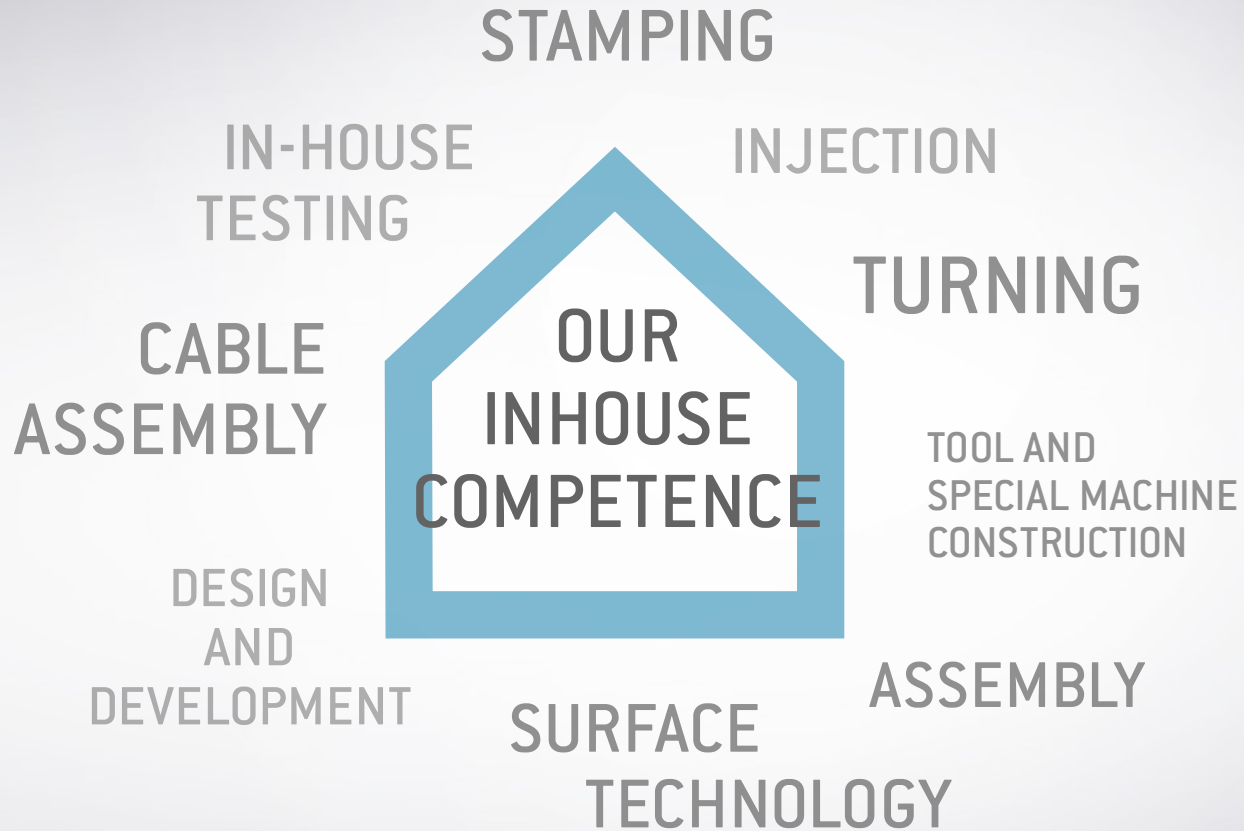
● Production and logistics sites

● Sales locations

● Product development center

● Sales partner

EVERYTHING UNDER ONE ROOF



PLASTIC CIRCULAR CONNECTORS

	Coding	Sizes	No. of possible mechanical coding	Diameter plug (mm)	Max. cable diameter (mm)	Max. No. of contacts	Solder	Crimp	Print
ODU MEDI-SNAP® PUSH-PULL <ul style="list-style-type: none"> Up to IP68 Autoclavable & fully sterilizable IEC 60601-1 compliant housings¹ Right angle version available 	Pin and groove	1	6	13.7	6.5	14	•	•	•
		2	3	18.5	9.2	34	•		
		3.5	2	23	10.5	41	•		•
ODU MEDI-SNAP® BREAK-AWAY <ul style="list-style-type: none"> Up to IP68 Autoclavable & fully sterilizable Up to 5,000 mating cycles 	Pin and groove	1	6	15.8	7.5	14	•		
		2	1	19	11.5	26			
ODU MEDI-SNAP® HIGH-VOLTAGE <ul style="list-style-type: none"> Touch proof according to IEC 60664-1 2x HV, 2x signal interlock, 1x ground/FMLB Nominal voltage up to 1,000 V AC / 16 A Hot-plugging prevention 	Pin and groove	2	3	18.5	9.2	5	•		
ODU MINI-MED® <ul style="list-style-type: none"> Space saving design Pre-assembled solution Up to 1,000 mating cycles 	Pin and groove	1	1	11.5/ 11.2	4.4	6	•		

¹ Up to 2 MOPP / 2 MOOP – working voltage of medical device max. 250 V AC



	IP Class in mated condition	IP Class in unmated condition	Mating cycles plug	Mating cycles receptacle	Locking principle	Coding options (optical)	Transmission options
ODU MEDI-SNAP® PUSH-PULL	Up to IP64	Up to IP68	> 2,000	> 5,000	Push-pull	Arrow marking, color coding	Signal, power, fluids, fiber optic
	Up to IP68	Up to IP68					
ODU MEDI-SNAP® BREAK-AWAY	Up to IP67	Up to IP68	> 5,000	> 5,000	Break-away	Arrow marking, color coding	Signal, power
	Up to IP64		> 2,000				
ODU MEDI-SNAP® HIGH-VOLTAGE	Up to IP64	IP50	> 2,000	> 5,000	Push-pull	Arrow marking, color coding	High-voltage
ODU MINI-MED®	IP67	IP50	> 1,000	> 1,000	Break-away	Arrow marking	Signal

Available online at



ODU MEDI-SNAP® Size 3.5

METAL CIRCULAR CONNECTORS

	Coding	Sizes	No. of possible mechanical coding	Diameter plug (mm)	Max. cable diameter (mm)	Max. no. of contacts	Solder	Crimp	Print
ODU MINI-SNAP® L <ul style="list-style-type: none"> • IP50 • 5,000 mating cycles • IEC 60601-1 compliant option • USB® 3.2 Gen 1x1 + USB® 2.0 + Ethernet 	Pin and groove	00	8	6.4	3.5	04	•	•	•
		0		9	5.6	10			
		1		11.5	7.7	16			
		2		14.5	9.9	26			
		3		17.5	11.9	30			
		4		25.0	16.0	40			
ODU MINI-SNAP® K <ul style="list-style-type: none"> • IP68 • 5,000 mating cycles • IEC 60601-1 compliant option • USB® 3.2 Gen 1x1 + USB® 2.0 + Ethernet 	Pin and groove	0	8	11.0	5.0	10	•	•	•
		1		13.0	7.0	16			
		2		16.0	9.0	26			
		3		19.0	10.5	30			
		4		25.0	14.0	40			
		ODU MINI-SNAP® B <ul style="list-style-type: none"> • IP68 • 5,000 mating cycles • USB® 3.2 Gen 1x1 + USB® 2.0 + Ethernet 		Pin and groove	0	8			
1	12.0		7.0		16				
2	15.0		9.0		26				
3	18.0		10.5		30				

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.

	IP Class in mated condition	IP Class in unmated condition	Mating cycles	Transmission options
ODU MINI-SNAP® L	IP50	Up to IP68 (only for receptacles)	> 5,000	Signal, data, power
ODU MINI-SNAP® K	IP68	Up to IP68	> 5,000	Signal, data, power
ODU MINI-SNAP® B	IP68	Up to IP68	> 5,000	Signal, data, power

Available online at



METAL CIRCULAR CONNECTORS

ODU MINI-SNAP® F

- IP50 and IP68
- 5,000 mating cycles
- Ethernet + USB® 2.0



Coding	Sizes	No. of possible mechanical coding	Diameter plug (mm)	Max. cable diameter (mm)	Max. no. of contacts	Solder	Crimp	Print
Half shell	0	3	9.4	5.0	09	•	•	•
	1		12.0	7.5	14			
	1.5		13.0	7.5	19			
	2		15.0	9.5	19			
	3		18.0	11.5	27			

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.

ODU MINI-SNAP® F	IP Class in mated condition	IP Class in unmated condition	Mating cycles	Transmission options
	Up to IP68	Up to IP68	> 5,000	Signal, data, power

Available online at



HIGH-SPEED & HIGH-DENSITY CONNECTORS

ODU AMC® HIGH-DENSITY

- 70% weight and size reduction
- IP6K8 (20 m submersion)
- Chrome plated version available
- USB® 3.2 Gen 1x1 + USB® 2.0 + HDMI® + Ethernet



ODU AMC® HIGH-DENSITY SCREW-LOCK

- High vibration resistance
- 70% weight and size reduction
- IP6K8 (20 m submersion)
- USB® 3.2 Gen 1x1 + USB® 2.0 + HDMI® + Ethernet



ODU AMC® PUSH-PULL

- IP68 / IP6K9K
- > 5,000 mating cycles
- High speed data technology
- Quick and easy mating and locking



ODU AMC® BREAK-AWAY

- IP68 / IP6K9K
- > 5,000 mating cycles
- High speed data technology
- Quick and easy demating and locking

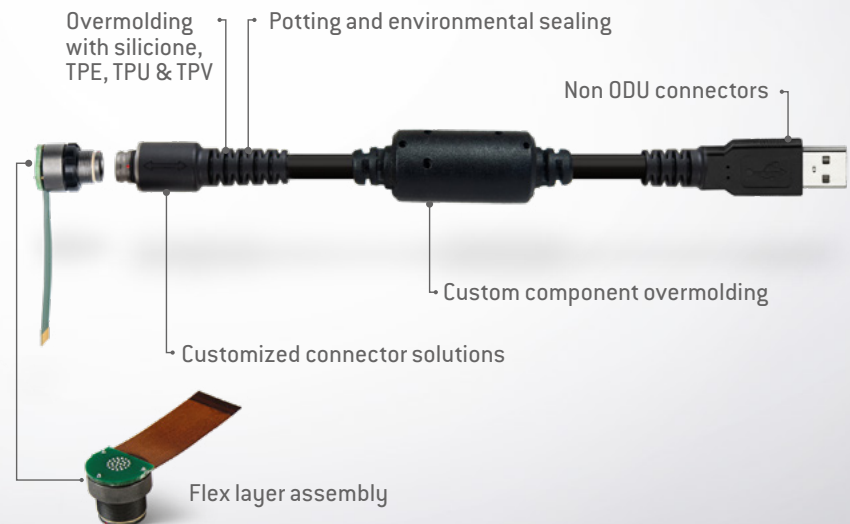


Coding	Sizes	No. of possible mechanical coding	Diameter plug (mm)	Max. cable diameter (mm)	Max. no. of contacts
Pin and groove	00	4	9.8	5.0	7
	0		12.8	7.0	16
	1		14.8	8.5	27
Pin and groove	00	4	9.8	5.0	7
	0		12.8	7.0	16
	1		14.8	8.5	27
Pin and groove	0	4	14.0	5.5	10
	1		15.9	6.5	16
	1.5		16.5	8.0	19
	2		19.6	10.0	26
	3		23.9	11.5	37
	4.5		33.0	17.5	55
Pin and groove	0	4	11.9	5.5	10
	1		13.9	6.5	16
	1.5		15.9	8.0	19
	2		17.6	10.0	26
	3		21.9	11.5	37

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.

	Solder	Crimp	Print	IP Class in mated condition	IP Class in unmated condition
ODU AMC® HIGH-DENSITY	•		•	IP6K9K	IP68
ODU AMC® HIGH-DENSITY SCREW-LOCK	•		•	IP6K9K	IP68
ODU AMC® PUSH-PULL	•		•	Up to IP6K9K	IP68
ODU AMC® BREAK-AWAY	•		•	Up to IP6K9K	IP68

Available online at



HIGH-SPEED & HIGH-DENSITY CONNECTORS

ODU AMC® Easy-Clean

- Fast and easy cleaning
- Break-away function
- > 5,000 mating cycles
- Contact inserts with pogo pins



ODU AMC® Series T

- 3-way lock to 1 receptacle: push-pull, break-away or thread-lock
- High vibration resistance
- Waterproof in accordance with MIL-Standard 810
- Field assembly capability



ODU AMC® NP

- Current rating up to 7.5 A per contact
- > 2,000 mating cycles
- Break-away function



Coding	Sizes	No. of possible mechanical coding	Diameter plug (mm)	Max. cable diameter (mm)	Max. no. of contacts
Pin and groove	0	4	11.9	5.5	7
	1		13.9	6.5	16
	1.5		15.9	8.0	19
Pin and groove	9	4	18.4	7.6	10
			18.5		
			21		
	12		24.2	14.6	18
			24.9		
	26				
Pin and groove	6	11	12.4	6.65	7

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.

	Solder	Crimp	Print	IP Class in mated condition	IP Class in unmated condition
ODU AMC® Easy-Clean	•		•	Up to IP6K9K	IP6K8
ODU AMC® Series T	•	•	•	Up to IP6K9K	IP68
ODU AMC® NP	•	•	•	IP68 20 m (120 min.)	IP68 20 m (120 min.)



Available online at



Thread-lock



Push-pull



Break-away



MODULAR CONNECTORS



	ODU-MAC® Blue-Line Flexible universal solution	ODU-MAC® PUSH-LOCK Easy one handed operation	ODU-MAC® White-Line Manual mating
Mating cycles	> 10,000	5,000	> 100,000
Mating type	Manual mating, automatic docking	Manual mating	Manual mating
Automatic docking	1 frame, 4 sizes		
Locking	Spindle / lever locking	Push-pull (PUSH-LOCK)	Per spindle / Locking lever / Snap-In (ZERO)
Housing	Available in plastic and metal	Plastic Plastic sleeve / Metal frame	Available in plastic and metal
Non-magnetic version			•



	ODU-MAC® Silver-Line Connector for docking systems	ODU DOCK Silver-Line Automatic docking for robots
Mating cycles	100,000 up to 10 million	100,000 up to 10 million
Mating type	Automatic docking	Automatic docking
Automatic docking	8 frame varieties, individual length, quick change head option	3 sizes quick change head option
Locking		
Housing	Strain relief housing	3 housing varieties available in plastic and metal
Non-magnetic version	•	

MODULAR CONNECTORS – VARIETY OF MODULES



	ODU-MAC® Blue-Line Flexible universal solution	ODU-MAC® PUSH-LOCK Easy one handed operation	ODU-MAC® White-Line Manual mating
Signal	Up to 33 A / 2.5 mm ²	Up to 33 A / 2.5 mm ²	Up to 27 A / 1.5 mm ²
Power	Up to 58 A / 6 mm ²	Up to 58 A / 6 mm ²	Up to 119 A / 16 mm ²
High current	Up to 225 A / 50 mm ²	Up to 58 A / 6 mm ²	Up to 225 A / 50 mm ²
High voltage	Up to 4 kV / 1 mm ²	Up to 4 kV / 1 mm ²	Up to 6.3 kV / 1.5 mm ²
Coax	Up to 12 GHz	Up to 12 GHz	Up to 9.0 GHz
Compressed air	-0,8 up to 12 bar	-0,8 up to 12 bar	-0,8 up to 25 bar
Fluid	Up to 10 bar	Up to 10 bar	Up to 25 bar
Fiber optic POF/GOF	•	•	•
Transfer rates/high-speed	CAT 6 _A / USB® / HDMI®	CAT 6 _A / USB® / HDMI®	CAT 6 _A / USB® / HDMI®
Optional pin protection	Integrated with 20-pin signal module	Integrated with 20-pin signal module	Module can be freely positioned
Termination technology	Crimp/solder/print through PCB termination modules	Crimp/solder/print through PCB termination modules	Crimp / solder / print

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.

	ODU-MAC® Silver-Line Connector for docking systems	ODU DOCK Silver-Line Automatic docking for robots
Signal	Up to 27 A/ 1.5 mm ²	Up to 27 A/ 1.5 mm ²
Power	Up to 119 A/ 16 mm ²	Up to 119 A/ 16 mm ²
High current	Up to 225 A/ 50 mm ²	Up to 225 A/ 50 mm ²
High voltage	Up to 6.3 kV/ 1.5 mm ²	Up to 2.5 kV/ 1.5 mm ²
Coax	Up to 9.0 GHz	Up to 9.0 GHz
Compressed air	-0,8 up to 25 bar	-0,8 up to 20 bar
Fluid	Up to 25 bar	Up to 10 bar
Fiber optic POF/GOF	•	•
Transfer rates/high-speed	CAT 6 _A /USB®/HDMI®	CAT 6 _A /USB®/HDMI®
Optional pin protection	Module can be freely positioned	
Termination technology	Crimp / solder / print	Crimp / solder

Tolerance compensation
up to +/- 4 mm



ELECTRICAL CONTACTS



	ODU SPRINGTAC®	ODU SPRINGTAC® Flatsocket	ODU LAMTAC®
Primary attribute	High mating cycles	Test & measurement	High current
Contact technology	Springwire technology	Springwire technology	Lamella technology
Contact security	● ● ●	● ● ●	● ●
Points of contact	360° circular	Double sided	360° circular
Contact diameter	From 0.76 mm	From 0.64 x 0.64 mm	From 1.0 mm
Mating cycles	> 100,000 (up to 1 million)	> 50,000	> 10,000
Operating temperature range	-40° C to +125° C	-40° C to +125° C	-40° C to +150° C
High temperature range	Up to +300° C [on request]		
Surfaces	Ag / Au	Ag / Au	Ag / Au
Termination technologies	Crimp / screw / solder	Crimp / solder / QCH (quick change head)	Crimp / screw / solder
Current (Ø 6 mm / 16 mm²) per IEC 60512-5-2:2002	110 A		115 A
Contact material	CuSn alloy or CuBe	CuSn	CuBe alloy

GET YOUR SOLUTION
engineering@odu.de



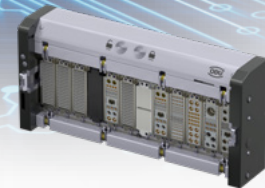
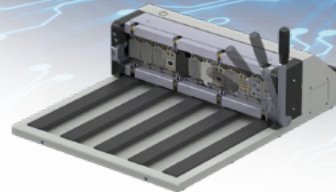
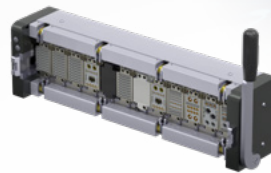
ODU TURNTAC®

Primary attribute	High volume
Contact technology	Turned, slotted contacts
Contact security	•
Points of contact	4 and 6 tines circular
Contact diameter	From 1.5 mm
Mating cycles	> 10,000
Operating temperature range	-40° C to +125° C
High temperature range	
Surfaces	Ag / Au
Termination technologies	Crimp / screw / solder
Current (Ø 6 mm / 16 mm ²) per IEC 60512-5-2:2002	100 A
Contact material	CuZnPb



MASS INTERCONNECT SOLUTIONS

- + Reliable contacting due to multi-stage guiding
- + 8 tensioning points ensure an even and safe connection
- + Flexible and optimal interface configuration thanks to the modular connector system
- + Short delivery time



	12-Flex TWO M	12-Flex TWO M Tabletop	12-Flex FOUR A
Mating principle	Hand lever	Hand lever	Electromechanical [Remote possible]
Configuration	Rack mount	Tabletop	Rack mount / Inline tester
Max. signals	2,304	2,304	4,608
Resistance & RFID coding [optional]	•	•	•
Condition monitoring [optional]	•	•	•
Slide mount [optional]	•		•
Platform [optional]	•	already integrated	•

CUSTOM CONNECTOR SOLUTIONS

Requirements	Achievements
High-current	2,400 A
High-voltage	56 kV (DC) 36 kV (AC)
Water protection	IP67 / IP68 / IP69K / IP6K9K
Vacuum tightness	1×10^{-9} mbar l/s
Salt spray	700 hours
EMC / EMI protection	> 75 dB (0 – 5 MHz) / > 65 dB (5 MHz – 500 MHz)
High-speed data rate	USB® 3.2 Gen 1x1 – 10 Gbit/s / HDMI® – 14.4 Gbit/s / 10 Gbit Ethernet – 10 Gbit/s
Operating temperature	Up to 300 °C
Pressure	650 bar (9427 psi) operating receptacle / 500 bar (7251 psi) operating mated condition / 1,000 bar (14503 psi) burst
Vibration	LV214 Severity Level 4 (20 g, 10 – 2000 Hz, 22 h) Four-time multisinus per three-dimensional axis (16 g, 20 – 2000 Hz, 65 h per axis)
Mating cycles	> 1 Million
Hydraulic connection	25 bar (362 psi) operating
Pneumatic connection	20 bar (290 psi) operating
Fiber optic	Insertion loss >0,7 dB (Singlemode) / >0,3 dB (Multimode) with 25.000 mating cycles (Expanded Beam Performance)
Magnetic permeability	Magnetic permeability $\mu r < 1.0005$
Environmental	Salt spray / fog, chemical resistance, UV, Arizona dust, radiation, sterilization
Shock	1,000 g
Contact density	1 contact / mm ²
Smallest contact diameter	0.3 mm
Smallest circular connector diameter	5 mm
On driving test	Electric vehicle adapter
Self finding solutions	± 5 mm float (shield and tight)



SYSTEM SOLUTIONS FROM ONE SOURCE

GET YOUR SOLUTION
cable-assembly@odu.de

Standard cables and accessories

- + For circular and modular connectors assembled by ODU
- + Standard cables and accessories from a predefined pool of purchases
- + Quick and easy offer
- + Fast delivery and fast samples



Silicone-overmolded system solutions

- + Specified up to 500 autoclaving cycles
- + Hygienic surface with prevention of the stick-slip effect
- + Bend protection due to special shape of overmolding
- + Medical technology testing according to DIN EN ISO 10993-5
- + Individual laser marking possible (in accordance with the UDI)



Customer-specific overmoldings

- + Very cost-effective tooling
- + Customer-specific shapes of overmolding
- + Worldwide availability
- + Short delivery times



FIBER OPTIC SYSTEM SOLUTIONS

GET YOUR SOLUTION
engineering@odu.de

When it comes to challenging applications, our expanded beam performance as well as our expanded beam technology offers high-end transmission characteristics over a high number of mating cycles. The excellent optical performance remains unchanged even under mechanical stress, environmental influences and harsh ambient conditions.

The portfolio also includes reliable physical contact technology that is characterized by very low insertion loss, which makes up to 1,000 mating cycles possible.

For short transmission distances, polymer optical fiber (POF) system solutions are also available as a cost-efficient optical connection.

- + GOF (multimode/singlemode) and POF system solutions
- + Fiber-only and hybrid systems
- + High number of mating cycles
- + Available as a fully assembled solution

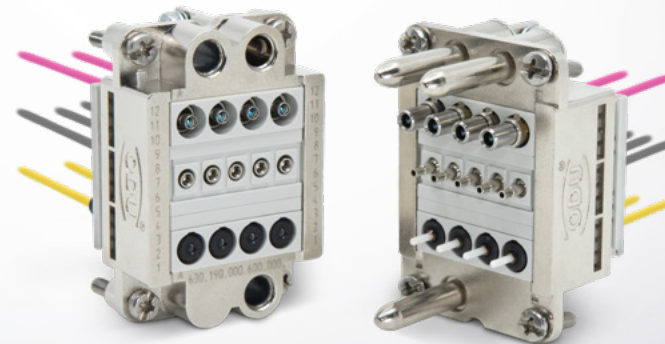


Expanded Beam
Performance

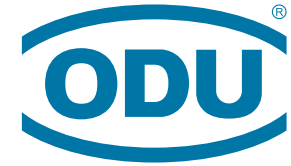
Expanded
Beam

Physical
Contact

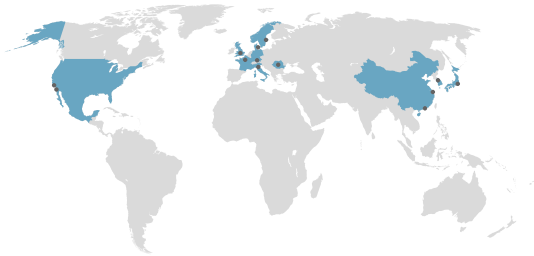
Polymer
Optical Fiber



Modular fiber optic
solutions



ODU GROUP WORLDWIDE



HEADQUARTERS

ODU GmbH & Co. KG

Pregelstraße 11 · 84453 Mühldorf a. Inn · Germany
 Phone: +49 8631 6156-0 · Fax: +49 8631 6156-49
 E-mail: sales@odu.de

PRODUCTION AND LOGISTICS SITES

Germany Otto Dunkel GmbH
China ODU (Shanghai) Connectors Manufacturing Co., Ltd.
Mexico ODU Mexico Manufacturing S. de R.L. de C.V.
Romania ODU Romania Manufacturing SRL
USA ODU North American Logistics Inc.

SALES LOCATIONS

ODU (Shanghai) International Trading Co., Ltd.
 Phone: +86 21 58347828-0
 E-mail: sales@odu.com.cn
www.odu.com.cn

ODU (HK) Trading Co., Ltd.
 Phone: +852 3963-9588
 E-mail: sales@odu.hk
www.odu.hk

ODU Denmark ApS
 Phone: +45 2233 5335
 E-mail: sales@odu-denmark.dk
www.odu-denmark.dk

ODU-France SARL
 Phone: +33 1 3935-4690
 E-mail: sales@odu.fr
www.odu.fr

ODU Italia S.R.L.
 Phone: +39 331 8708847
 E-mail: sales@odu-italia.it
www.odu-italia.it

ODU Japan K.K.
 Phone: +81 3 6441 3210
 E-mail: sales@odu.co.jp
www.odu.co.jp

ODU Korea Inc.
 Phone: +82 2 6964 7181
 E-mail: sales@odu-korea.kr
www.odu-korea.kr

ODU Romania Manufacturing SRL
 Phone: +40 269 704638
 E-mail: sales@odu-romania.ro
www.odu-romania.ro

ODU Scandinavia AB
 Phone: +46 176 18262
 E-mail: sales@odu.se
www.odu.se

ODU-UK Ltd.
 Phone: +44 330 002 0640
 E-mail: sales@odu-uk.co.uk
www.odu-uk.co.uk

ODU-USA Inc.
 Phone: +1 805 484-0540
 E-mail: sales@odu-usa.com
www.odu-usa.com

Further information and specialized representatives can be found at:
www.odu-connectors.com/contact

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Simply scan the QR code to download the entire publication.

