A PERFECT ALLIANCE.

ODU AMC® HIGH-DENSITY

Innovation in a Compact Package

MINIATURE CONNECTORS

ODU AMC® HIGH-DENSITY

OCTOBER 2016 EDITION

ODU AMC®

odu-usa.com

COMPANY OVERVIEW:

- More than 70 years of connector experience
- Over 1,650 employees worldwide
- 9 sales subsidiaries: USA, Germany, China, Denmark, France, Italy, Sweden, UK and Japan
- Technologies: Design and development, machine tool and special machine construction, injection, stamping, turning, surface technology, assembly and cable assembly
- We operate in the following markets: military and security, medical, test & measurement, industrial, energy, and automotive

ADVANCED CUSTOMER BENEFITS:

- Competitive lead time
- Rapid prototyping & product development
- Local one-to-one engineering support
- Cable assembly integrated solutions
- Custom connector capabilities
- German engineered for over 70 years
- Factory direct

CERTIFICATIONS

- DIN EN ISO 9001
- DIN ISO TS 16949
- DIN EN ISO 14001
- ISO 13485
- Vast range of UL, CSA, SCA, VG, MIL and VDE approvals
- UL-certified cable assembly

Status: October 2016

CREATING CONNECTIONS, BUILDING ALLIANCES, RELYING ON EACH OTHER

TECHNOLOGY THAT UNITES; CONNECTIONS THAT INSPIRE

For the past 70 years, this commitment has enabled us to innovate and provide solutions that respond to continuously changing market needs. We provide high-quality electrical connectors that create added value for our customers and any market player seeking a reliable connector solution to enable the transmission of power, signals, media and data transmission.

A PERFECT ALLIANCE is our guiding principle. It represents the synergy between our high-quality connector solutions and the strong partnerships we build with our staff and business partners across the globe – partnerships based on trust, reliability and mutual respect.

ODU is one of the world's leading suppliers of connector systems today, employing over 1,650 people worldwide and generating approximately €146 million in sales. To ensure the very highest quality standards in our cutting-edge products, we continuously invest in their development and production – and ultimately, in our very unique expertise. Over the past few years, our development of customer- and application-specific connectors has led to the sustained growth of our standard product range so that today, we cover a broad range of application areas. a balance between project-specific business, including customized developments, and standard connector design will continue to shape our business into the future. This holds true for emerging and future markets, such as medical, military and security, and energy, as well as for the special requirements of measurement and testing, eMobility and industrial electronics.

A PERFECT ALLIANCE – The future of ODU will continue to find solid ground for growth: in our focus on providing reliable connector solutions for a variety of challenging applications and in our commitment to continuously expanding our technology portfolio. It's what we do and who we are – around the globe. This brochure is an invitation for you to become even better acquainted with ODU, an internationally active technology company devoted to creating high-quality customized connector solutions.

We are actively shaping the future of our company with creativity, imagination and innovation in order to serve our valued customers around the world.

ODU – A PERFECT ALLIANCE.

Dr. Joachim Belz and **Dr.-Ing. Kurt Woelfl**
Managing Directors

ODU AMC® HIGH-DENSITY

From medical technology to consumer electronics to automotive technology: the trend towards miniaturization continues. High-Density connectors provide the highest possible number of contacts in the most compact space. They offer new possibilities and solutions while simultaneously challenging the manufacturer. At all time the connectors' reliability and electrical and mechanical robustness must remain intact despite its compact size.

ODU AMC® product portfolio was created to improve the capabilities of the next generation military systems. ODU AMC® and ODU AMC® High-Density are advanced miniature connector solution for military applications that require significant weight and space reduction such as: helmet mounted-cameras, group voice and data radios, headsets, GPS antennas and navigation modules, battery packs, computer/PAN, wrist –worn displays or rifle mounted systems and vehicle adaptations.

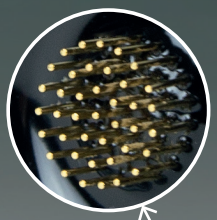
The ODU AMC® High-Density connector series offer high performance data transmission, high reliability and easy handling. The product portfolio includes a USB 3.0, USB 2.0, Ethernet and an HDMI option.

Providing significantly reduced weight up to 70% and fully integrated cable assembly solutions, and in shell diameters as small as 10mm up to 18.5mm (40 contacts), the ODU AMC® High-Density includes numerous high density signal configurations and tailored versions for power (up to 15A) and data transfer (USB 3.0 with 5A power) in a very compact package.

The shells are keyed and color-coded to ensure reliable and simple handling. Other product features include watertight protection class IP 68 (up to 20 meters), 5000 mating cycles durability, a Break-Away function for maximum safety, rugged & non-reflective surfaces, salt spray resistance, high-speed data transfer capability and an operating temperature range of -51° C (-60° F) to +125° C (+257° F).

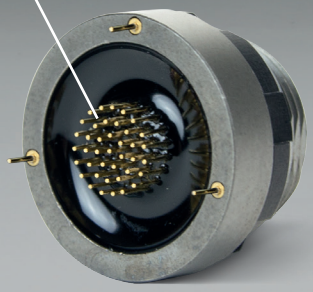
ODU provides the full suite of complementary products and services including innovative options for cable assembly, rapid prototyping and product development, local engineering support, as well as overmolding and turn-key system solutions.

INNOVATION IN A COMPACT PACKAGE



HIGH CONTACT DENSITY

Contact density up to 40 contacts in a minimum design



SYSTEM SOLUTION

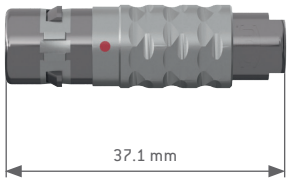
Innovative options for assembly and extrusion for the cable strain relief

THE EVOLUTION OF MINIATURIZATION

2000

ODU MINI-SNAP® Series K

Size 0/7 contacts/IP 68

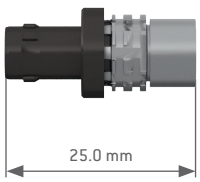


2010

ODU AMC® Series

Size 0/7 contacts/IP 68

45% smaller than ODU MINI-SNAP series K

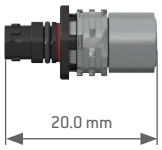


2014

ODU AMC® High-Density

Size 00/7 contacts/IP 68

35% smaller than ODU AMC series



ODU AMC® HIGH-DENSITY AT A GLANCE

Salt Spray resistance

Tested according MIL Standards

Power up to 15A

Rugged solid construction

watertight IP 68 up to 20M

Break-Away for maximum safety

Up to 5,000 mating cycles

Mechanical Keying with matched color code

USB 2.0 + USB 3.0 data transmission

Up to 40 Contacts (size 1.5)

FOUR SHELL SIZES FOR MAXIMUM FLEXIBILITY

SIZE 00
- 2 way
- 4 way
- 7 way
- 4 way USB 2.0

SIZE 0
- 9 way (15A Power + USB 2.0)
- 12 way (USB 3.0 + 5A Power)
- 16 way (Signal + Data)

SIZE 1
- 27 way (Signal + Data)

SIZE 1.5
- 40 way
- Multi I/O (Signal + Data)

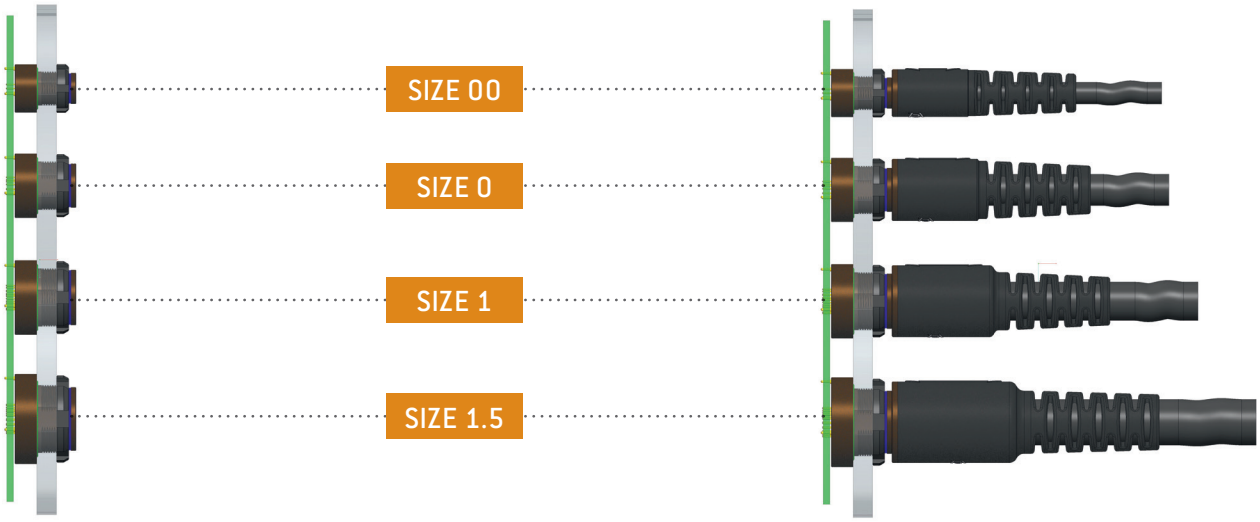
fig. approx. 1:1

PANEL CUT-OUT DIAMETER

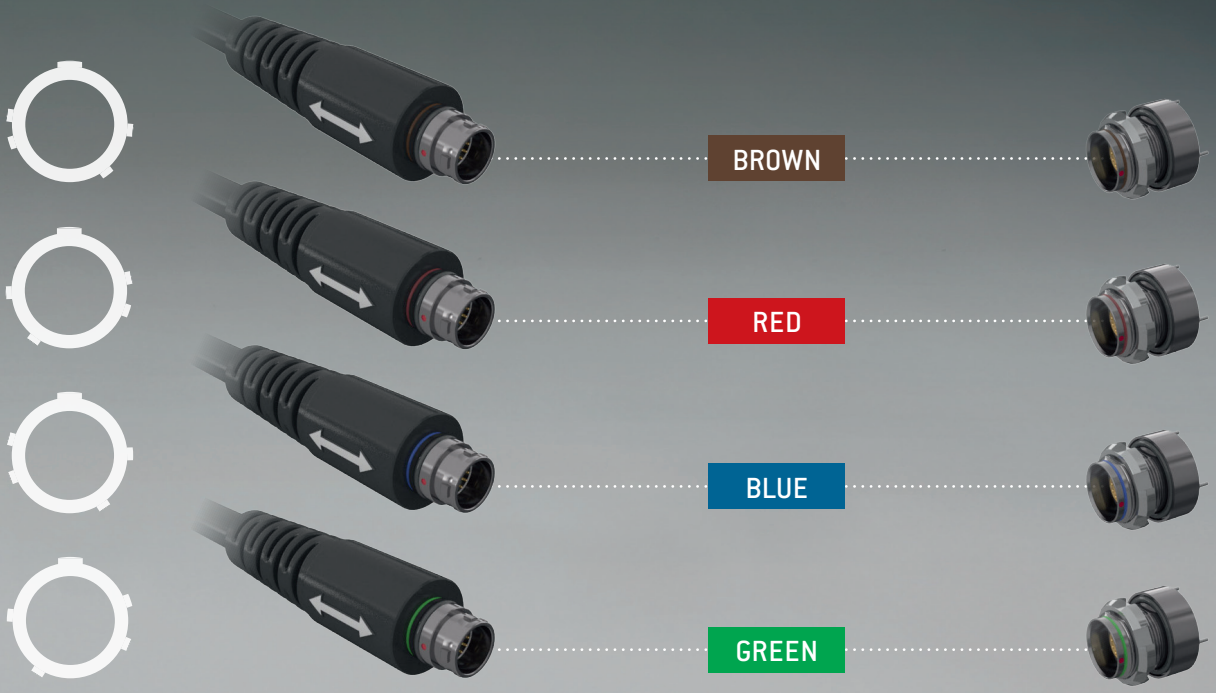
ONE PC-BOARD FOR ALL SIZES

All standard sizes can be processed at the same connection level.

This allows us to place signals, data and power in various connector sizes on one PCB height – as a basic requirement for a compact system design.



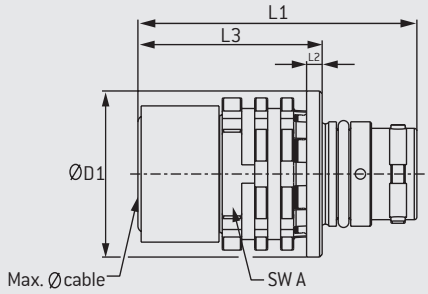
RELIABLE AND ROBUST CODING



A1: BREAK-AWAY PLUG

DIMENSIONS AND DETAILS

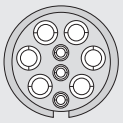
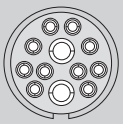
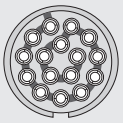
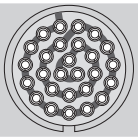
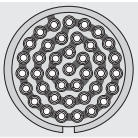
A1: Break-Away-Plug



Dimensions in mm

Size	L1	L2	L3	D1	SW A	Max. Ø cable
00	20.0	1.2	12.8	9.8	8.0	5.0
0	21.5	1.2	14.2	12.8	10.0	7.0
1	25.2	1.2	18.0	14.8	12.0	8.5
1.5	29.2	1.2	22.0	16.8	14.0	10.5

CONTACT CONFIGURATIONS

Shell size	Part number	Layout	Number of contacts	Max. current[2] Single contact load	Max. wire size Soldercup	Suitable for
00	A1CW*M-P02XCE0-0000		02	3 A	2 x AWG 24 (Power)	Power
	A1CW*M-P04XBC0-0000		04	1 A	4 x AWG 28	Signal
	A1CW*M-PU4XBM0-0000		04	1 A	2 x AWG 28 (Signal Lines)	USB 2.0
				3 A	2 x AWG 24 (Power)	
	A1CW*M-P07XBC0-0000		07	1 A	7 x AWG 28	Signal
0	A10W*M-P09XMM0-0000		09	1 A	3 x AWG 28 (Signal Lines)	USB 2.0 + Power
				5 A	6 x AWG 22 (Power)	
	A10W*M-P12XMM0-0000		12	1 A	10 x AWG 28 (Signal Lines)	SS USB 3.0 + Power
				5 A	2 x AWG 22 (Power)	
	A10W*M-PI6XBC0-0000		16	1 A	16 x AWG 28	Signal
1	A11W*M-P27XBC0-0000		27	1 A	27 x AWG 28	Signal
1.5	A1AW*M-P40XBC0-0000		40	1 A	40 x AWG 28	Signal

Notes:
Substitute "*" for desired keying/color-coding option: A, B, C or D (see key to right)
Consult factory for availability.

All connectors meet or exceed 750V AC test / 250V AC operational voltage when tested according to SAE 13441.
Maximum operating voltage at sea level up to 2000m acc. to SAE 13441.
For various application the safety requirement regarding the operating voltage is even more severe. This must be evaluated during the time of equipment engineering

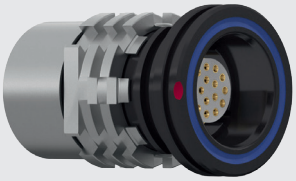
Consult factory for additional information and options.

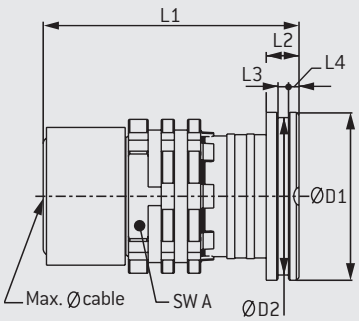
A	BROWN
B	RED
C	BLUE
D	GREEN

K1: IN-LINE RECEPTACLE

DIMENSIONS AND DETAILS

K1: In-Line Receptacle

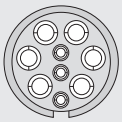
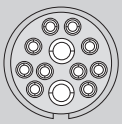
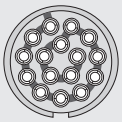
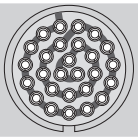
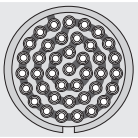




Dimensions in mm

Size	L1	L2	L3	L4	D1	D2	SW A	Max. Ø cable
00	18.7	2.5	0.8	0.8	9.8	9.0	8.0	5.0
0	19.5	2.5	0.8	0.8	12.8	12.0	10.0	7.0
1	23.5	2.5	0.8	0.8	14.8	14.0	12.0	8.5
1.5	27.5	2.5	0.8	0.8	16.8	16.0	14.0	10.5

CONTACT CONFIGURATIONS

Shell size	Part number	Layout	Number of contacts	Max. current[2] Single contact load	Max. wire size Soldercup	Suitable for
00	K1CW*M-P02WCE0-0000		02	3 A	2 x AWG 24 (Power)	Power
	K1CW*M-P04WBC0-0000		04	1 A	4 x AWG 28	Signal
	K1CW*M-PU4WBM0 · 0000		04	1 A	2 x AWG 28 (Signal Lines)	USB 2.0
				3 A	2 x AWG 24 (Power)	
	K1CW*M-P07WBC0-0000		07	1 A	7 x AWG 28	Signal
0	K10W*M-P09WMM0-0000		09	1 A	3 x AWG 28 (Signal Lines)	USB 2.0 + Power
				5 A	6 x AWG 22 (Power)	
	K10W*M-P12WM M0-0000		12	1 A	10 x AWG 28 (Signal Lines)	SS USB 3.0 + Power
				5 A	2 x AWG 22 (Power)	
	K10W*M-P16WBC0-0000		16	1 A	16 x AWG 28	Signal
1	K11W*M-P27WBC0-0000		27	1 A	27 x AWG 28	Signal
1.5	K1AW*M-P40WBC0-0000		40	1 A	40 x AWG 28	Signal

Notes:
Substitute "*" for desired keying/color-coding option: A, B, C or D (see key to right)
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All connectors meet or exceed 750V AC test / 250V AC operational voltage when tested according to SAE 13441.
Maximum operating voltage at sea level up to 2000m acc. to SAE 13441.
For various application the safety requirement regarding the operating voltage is even more severe. This must be evaluated during the time of equipment engineering
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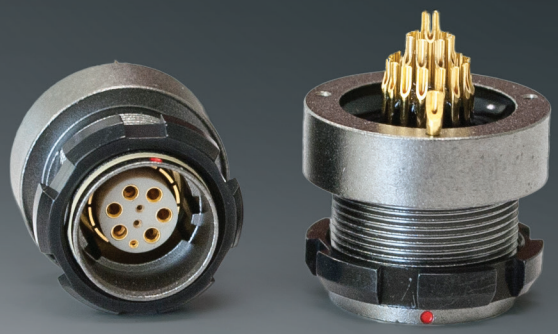
A	BROWN
B	RED
C	BLUE
D	GREEN

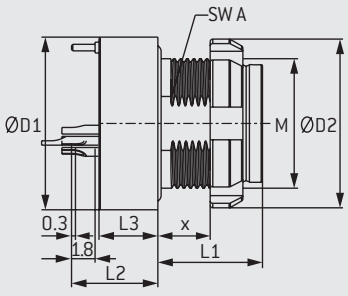
GK: PANEL MOUNT RECEPTACLE

FOR WIRE TERMINATION



DIMENSIONS AND DETAILS

GK: Receptacle

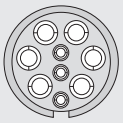
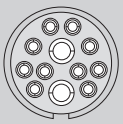
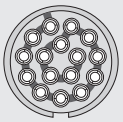
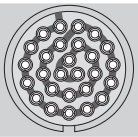
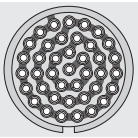


Dimensions in mm

PANEL CUT-OUT

Size	L1	L2[1]	L3	X max.	D1	D2	SW A	M	Panel cut-out SW	Panel cut-out Ø
00	8.0	6.6	4.5	4.0	10.0	10.0	6.5	7x0.5	6.6	7.1
0	8.0	6.6	4.5	4.0	13.2	13.0	9.0	10x0.5	9.1	10.1
1	8.0	6.6	4.5	4.0	15.3	15.0	11.5	12x0.5	11.6	12.1
1.5	8.0	6.6	4.5	4.0	18.5	18.0	13.0	14x0.5	13.1	14.1

CONTACT CONFIGURATIONS

Shell size	Part number	Layout	Number of contacts	Max. current[2] Single contact load	Max. wire size Soldercup	Suitable for
00	GKCW*M-P02WCE0-000L		02	3 A	2 x AWG 24 (Power)	Power
	GKCW*M-P04WBC0-000L		04	1 A	4 x AWG 28	Signal
	GKCW*M-PU4WBM0-000L		04	1 A	2 x AWG 28 (Signal Lines)	USB 2.0
				3 A	2 x AWG 24 (Power)	
	GKCW*M-P07WBC0-000L		07	1 A	7 x AWG 28	Signal
0	GK0W*M-P09WMM0-000L		09	1 A	3 x AWG 28 (Signal Lines)	USB 2.0 + Power
				5 A	6 x AWG 22 (Power)	
	GK0W*M-P12WMM0-000L		12	1 A	10 x AWG 28 (Signal Lines)	SS USB 3.0 + Power
				5 A	2 x AWG 22 (Power)	
	GK0W*M-P16WBC0-000L		16	1 A	16 x AWG 28	Signal
1	GK1W*M-P27WBC0-000L		27	1 A	27 x AWG 28	Signal
1.5	GKAW*M-P40WBC0-000L		40	1 A	40 x AWG 28	Signal

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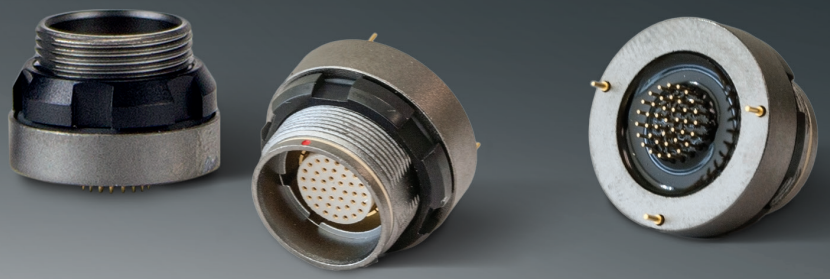
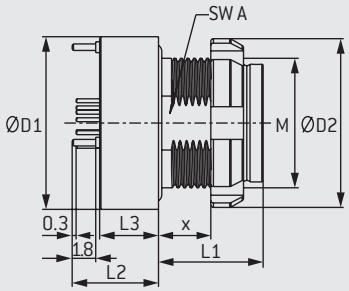
FOR PCB TERMINATION



DIMENSIONS AND DETAILS

GK: Receptacle



Dimensions in mm

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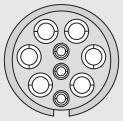
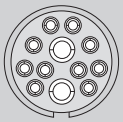
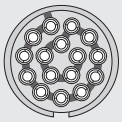
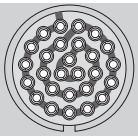
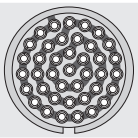
0	8.0	6.6	4.5	4.0	13.2	13.0	9.0	10 x 0.5	9.1	10.1
1	8.0	6.6	4.5	4.0	15.3	15.0	11.5	12 x 0.5	11.6	12.1
1.5	8.0	6.6	4.5	4.0	18.5	18.0	13.0	14 x 0.5	13.1	14.1

CONTACT CONFIGURATIONS

Shell size	Part number	Layout	Number of contacts	Max. current[2] Single contact load	Suitable for
00	GKCW*M-P02UC00-000L		02	3 A	Power
	GKCW*M-P04UB00-000L		04	1 A	Signal
	GKCW*M-PU4UB00-000L		04	1 A 3 A	USB 2.0
	GKCW*M-P07UB00-000L		07	1 A	Signal
0	GK0W*M-P09UM00-000L		09	1 A 5 A	USB 2.0 + Power
	GK0W*M-P12UM00-000L		12	1 A 5 A	SS USB 3.0 + Power
	GK0W*M-P16UB00-000L		16	1 A	Signal
1	GK1W*M-P27UB00-000L		27	1 A	Signal
1.5	GKAW*M-P40UB00-000L		40	1 A	Signal

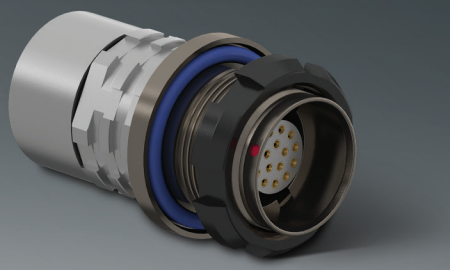
Notes:
Substitute "*" for desired keying/color-coding option: A, B, C or D (see key to right)
Consult factory for availability.

All connectors meet or exceed 750V AC test / 250V AC operational voltage when tested according to SAE 13441.
Maximum operating voltage at sea level up to 2000m acc. to SAE 13441.
For various application the safety requirement regarding the operating voltage is even more severe. This must be evaluated during the time of equipment engineering
Consult factory for additional information and options.

A	BROWN
B	RED
C	BLUE
D	GREEN

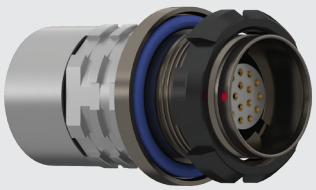
G6: PANEL MOUNT RECEPTACLE

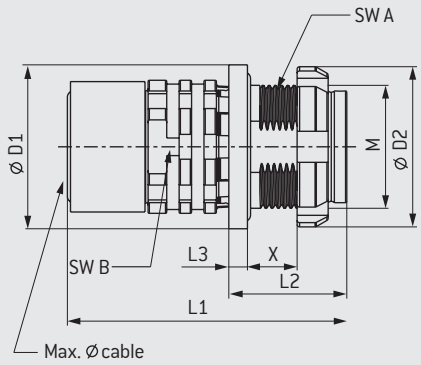
FOR CABLE TERMINATION



DIMENSIONS AND DETAILS

G6: Receptacle



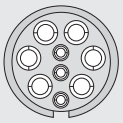
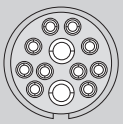
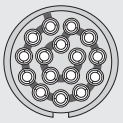
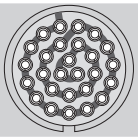
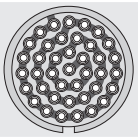


Dimensions in mm

PANEL CUT-OUT

Size	L1	L2[1]	L3	X max.	D1	D2	SW A	SW B	M	MAX Ø CABLE	Panel cut-out SW	Panel cut-out Ø
00	21	1.5	8	4	9.9	10	6.5	8	7 x 0.5	5	6.6	7.1
0	22.5	1.5	8	4	13.2	12.9	9	10	10 x 0.5	7	9.1	10.1
1	26.5	1.5	8	4	15.3	14.9	11.5	12	12 x 0.5	8.5	11.6	12.1
1.5	30.5	1.5	8	4	18.5	17.9	13	14	14 x 0.5	10.5	13.1	14.1

CONTACT CONFIGURATIONS

Shell size	Part number	Layout	Number of contacts	Max. current[2] Single contact load	Max. wire size Soldercup	Suitable for
00	G6CW*M-P02WCE0-0000		02	3 A	2 x AWG 24 (Power)	Power
	G6CW*M-P04WBC0-0000		04	1 A	4 x AWG 28	Signal
	G6CW*M-PU4WBM0-0000		04	1 A	2 x AWG 28 (Signal Lines)	USB 2.0
				3A	2 x AWG 24 (Power)	
	G6CW*M-P07WBC0-0000		07	1 A	7 x AWG 28	Signal
0	G60W*M-P09WMM0-0000		09	1 A	3 x AWG 28 (Signal Lines)	USB 2.0 + Power
				5A	6 x AWG 22 (Power)	
	G60W*M-P12WMM0-0000		12	1 A	10 x AWG 28 (Signal Lines)	USB 3.0 + Power
				5 A	2 x AWG 22 (Power)	
	G60W*M-P16WBC0-0000		16	1 A	16 x AWG 28	Signal
1	G61W*M-P27WBC0-0000		27	1 A	27 x AWG 28	Signal
1.5	G6AW*M-P40WBC0-0000		40	1 A	40 x AWG 28	Signal

Notes:
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Consult factory for availability.

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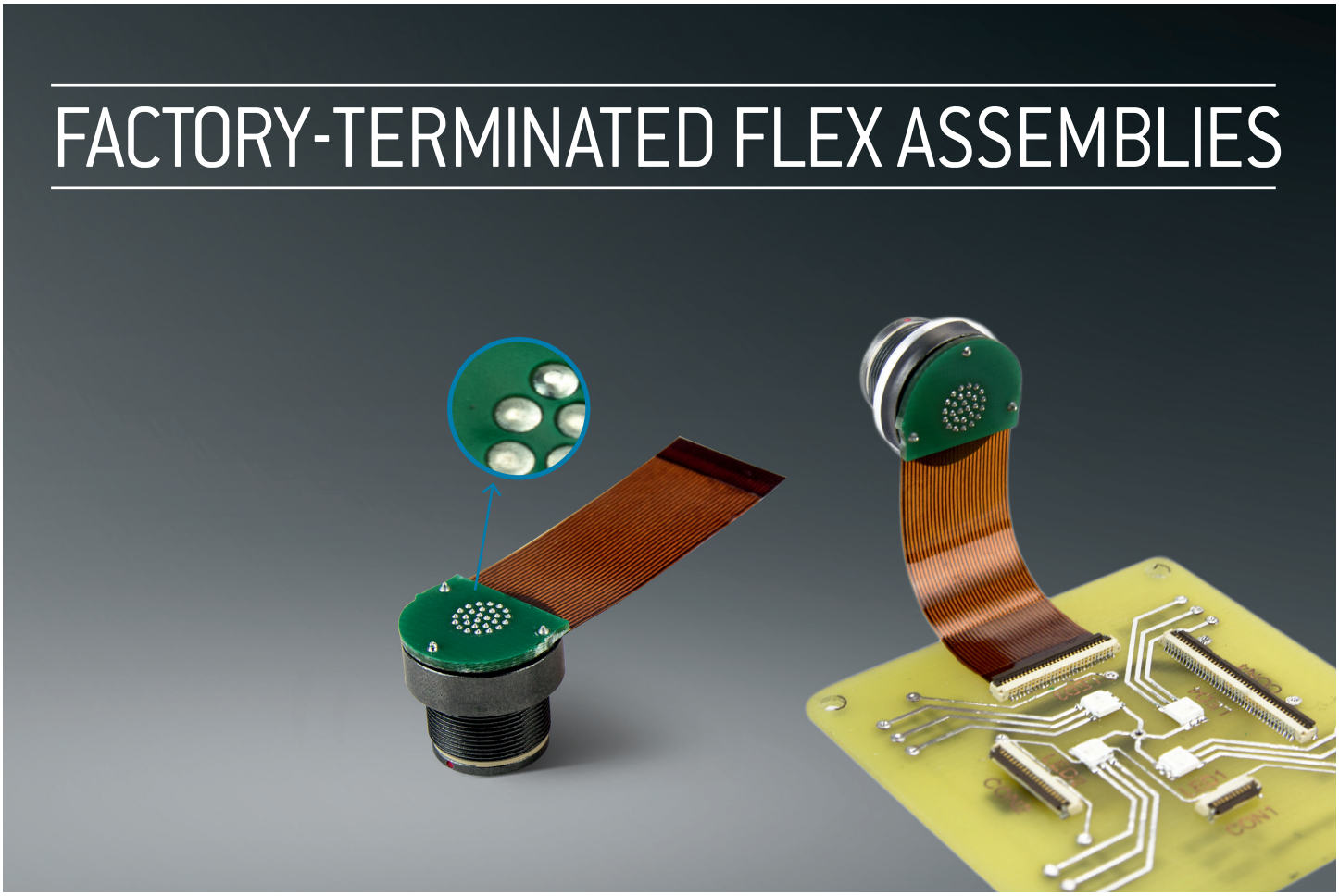
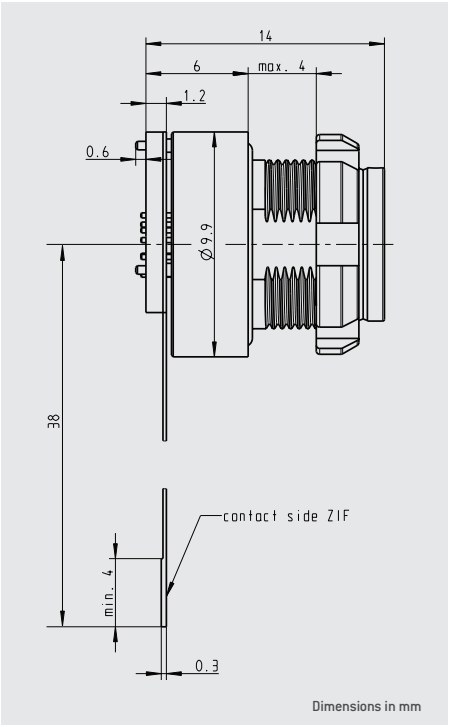
Consult factory for additional information and options.

A	BROWN
B	RED
C	BLUE
D	GREEN

FACTORY-TERMINATED FLEX ASSEMBLIES



DIMENSIONS AND DETAILS



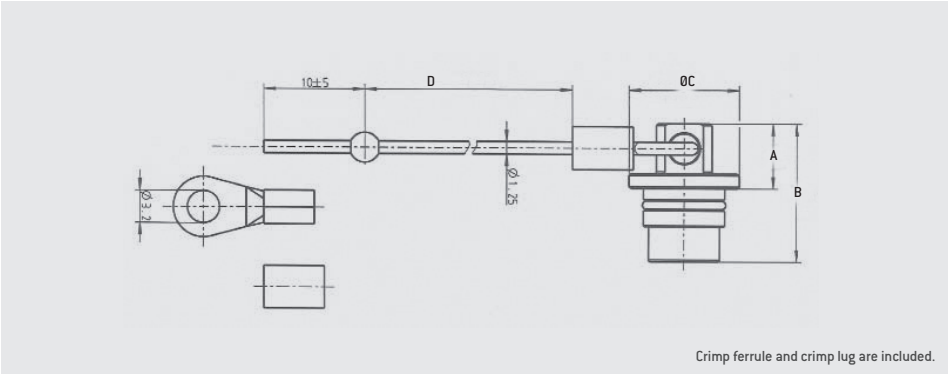
Part number	AMC High Density Connector (Included)	Number of contacts	Connector Shell Size	Connector Keying
C00.71C.100.040.001	GKCWAM-P04UB00-000L	04	00	A
C00.71C.100.070.001	GKCWAM-P07UB00-000L	07	00	A
C00.701.100.160.001	GK0WAM-P16UB00-000L	16	0	A
C00.716.100.400.001	GKAWAM-P40UB00-000L	40	1.5	A
C00.711.100.270.001	GK1WAM-P27UB00-000L	27	1	A

Notes:
Additional lengths, configurations and keyings available on request.
Contact ODU for more information.

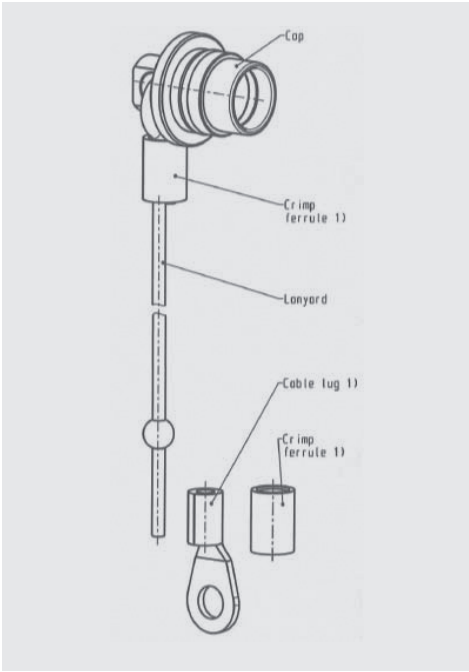
Flex is designed to work with suitable ZIF connector (not supplied).
Contact ODU for more information.

PROTECTIVE CAPS

FOR RECEPTACLE GK AND IN-LINE RECEPTACLE

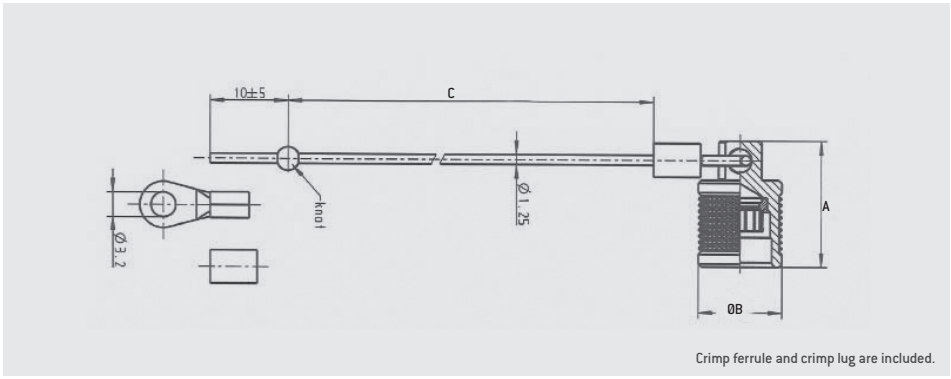


Crimp ferrule and crimp lug are included.

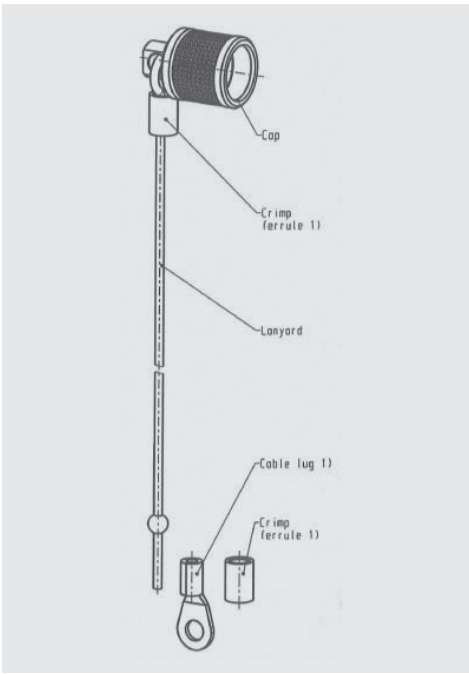


Size	Part Number	Dimensions in mm			
		A	B	C	D
00	713.650.097.002.359	6.5	13.8	8.5	200
0	700.650.097.002.359	6.5	13.8	10.9	200
1	701.650.097.002.359	6.5	13.8	13.5	200
1.5	715.650.097.002.359	6.5	13.8	14.9	200

FOR BREAK-AWAY PLUG



Crimp ferrule and crimp lug are included.



Size	Part Number	Dimensions in mm		
		A	B	C
00	713.650.097.001.359	16.2	8.6	200
0	700.650.097.001.359	16.2	10.7	200
1	701.650.097.001.359	16.2	13.5	200
1.5	715.650.097.001.359	16.2	14.8	200

MATERIALS

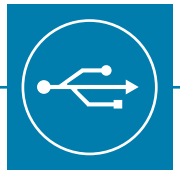
Part	Material
Cap	Brass / ruthenium coated nickel
Lanyard	Aramid / black
Crimp ferrule, cable lug	Brass, copper / zinc-nickel, black
Shrinktube	FPO (RNF -100) / black

ENVIRONMENTAL AND ELECTRICAL CHARACTERISTICS

Type	Performance
Tightness	IP68 (20 m)

HIGH SPEED DATA TRANSMISSION AT A GLANCE

SIZE 00
USB 2.0 480 MBit/s



USB 2.0

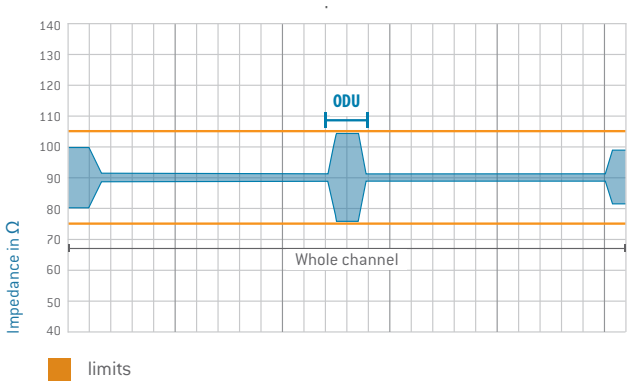
Size 0
USB 3.0 5 GBit/s

USB 3.0

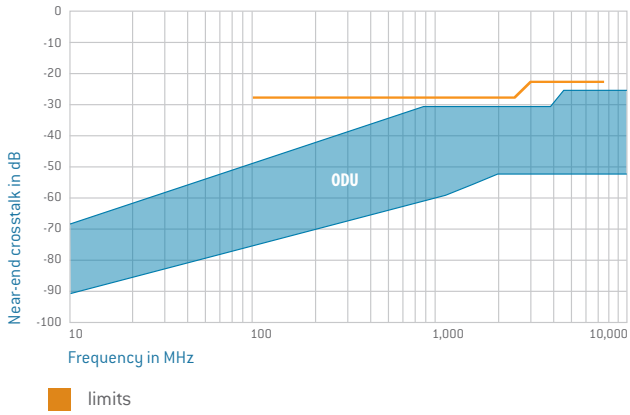
- USB 3.0 data transfer rates up to 5 Gbit/s
- USB 2.0 data transfer rates up to 480 Mbit/s
- Ethernet CAT5 data transfer rates up to 1 Gbit/s
- HDMI 2.0 data transfer rates up to 8.16 Gbit/s

CHARACTERISTIC IMPEDANCE

ODU AMC® High-Density connector with 3 m cable in total and 2x USB 3.0 Type A connector



NEAR-END CROSSTALK



SPECIAL APPLICATIONS NEED SPECIAL SYSTEM SOLUTIONS

Every connector also needs its cable. In addition to high quality connectors, ODU offers a comprehensive assembly service from one supplier which translates into innovative options for assembly and extrusion for the cable bend relief, as well as connections to flex and PCB solutions on the device side.

ADVANCED CONNECTOR SOLUTION APPLICABILITY

ODU ADVANCED PRODUCT PORTFOLIO:

ODU AMC® Break-Away

ODU AMC® Push-Pull

ODU AMC® High-Density

ODU AMC® Easy-Clean

PERSONAL COMPUTER

- Small and light

VEHICLE ADAPTION

- Robust and reliable

GROUP VOICE AND DATA RADIO

- Excellent shielding and data transmission up to 10 GBit

RIGHT-ANGLED CONNECTOR

- Compact design

NAVIGATION MODULE

- Easy-Clean version

SOLDIER CONTROL UNIT

- Cable-to-cable connection

ODU MINI-SNAP®

ODU MINI-SNAP® Series F

ODU MINI-SNAP® Series K

ODU MINI-SNAP® Series B Super-Shorty

ADVANCED CUSTOMER BENEFITS

- Close cooperation with our customers to find the optimal solution
- ODU handles the complete processing, from procuring the cable and assembly up to individual potting or overmolding
- 100% inspection
- Connectors can be assembled by the customer – ODU expertise available for assistance

A PERFECT ALLIANCE.

ODU AMC®

ODU GROUP

ODU-USA
4010 Adolfo Road
Camarillo, CA 93012
United States of America
Phone +1 805 484 0540
Fax +1 805 484 7458
E-Mail: sales@odu-usa.com

ODU HEADQUARTER

ODU GmbH& Co. KG
Phone +49 8631 6156-0
E-Mail zentral@odu.de
www.odu.de

ODU Denmark ApS
Phone +45 2233 5335
E-Mail odu.denmark@odu.de
www.odu-denmark.dk

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

ODU Italia S.R.L.
Phone +39 3318 7088 47
E-Mail sales@odu-italia.it
www.odu-italia.it

ODU Skandinavia AB
Phone +46 176 18261
E-Mail sales@odu.se
www.odu.se

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

ODU-UK Ltd.
Phone +44 1509 266433
E-Mail sales@odu-uk.co.uk
www.odu-uk.co.uk

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

Further information can be found at:
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