

Amphenol SOCAPEX

SL61 & "SOCA"

Circular connectors for Showbiz & Industry



ABOUT AMPHENOL SOCAPEX



Proven excellence in interconnect solutions

Since 1947, Amphenol Socapex has prescribed, designed and manufactured reliable and innovative interconnection solutions for harsh environments, specializing in standard and customized electrical and fiber optic connectors, contacts, accessories and cabling solutions.

Located in the Mont Blanc region of France and Pune in India, Amphenol Socapex has a presence in over 100 countries around the world.

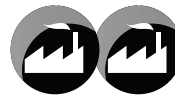
Amphenol Socapex is part of the international Amphenol Corporation.



600+ employees



Net Sales 2017: **65.3 M€**
64% Export - 36% France



Two facilities :
Thyez (France), **Pune** (India)

Our history

1947



- Socapex creation in Suresnes, France
- 1st radio connector

1956-57



- Manufacturing unit in Cluses (74), France
- Thomson-CSF becomes primary shareholder

Early 1960's



- 1st board level connectors: HE8
- 1st "licence Bendix" manufactured connectors
- Series SOCAPEX launch

1973



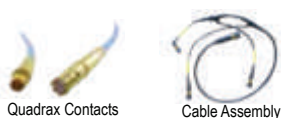
- New factory 13 000 m² in Thyez (74) France with 250 people

1975



- Production of 38999 connectors

2014-2017



- New Cable Assembly workshop
- New Contact Manufacturing workshop

Today and tomorrow ...



New technologies:

Fiber optics

High-speed signals

Miniaturization

Rugged Ethernet

Power

ROHS solutions

Advanced Materials (composite)

INTERNATIONAL EXPERTISE



Our expertise has no boundaries

Integrated Production in France & India

- 11 000 m² manufacturing capacity on 2 sites
- Design centers in France and India
- State-of-the-art manufacturing technology



Our markets



Military

Communication Systems - Radios - C4ISR / Ground vehicles - Vetrionics / Marine / Missiles



Aviation

Commercial & military / Avionics / Engines / Landing gear / Actuators



Industrial

Oil & Gas / Railways / Stage lighting

1986

Amphenol
Socapex

- Amphenol becomes primary shareholder

1995-96



- Expanded Beam connector CTOS launch
- Headquarters transferred to Theyz

2004



- RJ Field launch, "Award Electronica"

2005



- Opening of manufacturing site in Pune, India

2010's



- LuxBeam™ and HDAS launch

Today and tomorrow ...



Sustainable development:

Recycling
Waste Management

Respect for nature and the environment

Optimization of natural resources

Goodwill

PRODUCING FASTER, SMALLER, STRONGER CONNECTORS...



Technologies & innovation

Technological Center	High-Speed Expertise	Materials Expertise	Eco-responsibility
			
<p>Engineering Laboratory for product testing and qualification, product expertise and metrology</p> <ul style="list-style-type: none"> - Mechanical and electrical skills - RF and fiber optics expertise 	<p>Strong expertise in high-speed signals</p> <ul style="list-style-type: none"> - 3D EM simulation software & EM models - Time Domain and frequency domain (VNA 20GHz, TDR and eye diagram) 	<p>Focus on materials expertise and manufacturing techniques to produce faster, smaller and stronger products</p> <ul style="list-style-type: none"> - 3D CAD mechanical software, simulation & analysis - Disruptive metal alloys, additive manufacturing 	<p>Sustainable environment approach, with pro-active management of regulations (REACH / RoHS / Conflict minerals...)</p> <ul style="list-style-type: none"> - New materials development, plating, and suitable processes - Recycling and rational resources consumption

Our workshops

Our workshops located in France & India provide consistent quality adapted to your volume requirements.

- Molding** : Solid expertise in thermoplastic elastomer and thermoset molding
- Machining** : Manufacturing of cylindrical shells from 10 to 90 mm in diameter and rectangular shells
- Screw Machining** : Cylindrical production parts up to 10 mm in diameter
- Plating** : Plating with cadmium, nickel, electroless nickel, silver, black zinc nickel, gold
- Assembly** : Sub-assembly, harnessing, cabling, bonding and marking for small & large volumes

Our certifications



Certified Management System



Certified Management System



Certified Management System



Certified Management System

Product certifications : MIL-DTL38999, EN3645, EN3155, VG

Our memberships



AEROSPACEcluster
RHONE-ALPES





Member of CMG (Connecting Manufacturing Group) Consortium

DELIVERING GREAT CUSTOMER EXPERIENCE



► We have a strong reputation for helping customers solve their toughest challenges. This approach of serving your needs is ingrained in our company – from our sales team to our product development engineers.

A partner you can trust

Customer Proximity	Design Expertise	Quality Commitment	On Time Delivery Performance	Compliance manager

Buy our solutions

You can access our solutions through our global network of sales offices or through our distributors.

Field Sales Team :

- 12 in France
- 15 in Europe
- 100+ in North America and rest of the world.
- 5 Business Development Managers supporting local sales force Europe, North America and the rest of the world

Technical Support & Multilingual Customer Service :

- 14 people

Worldwide Distribution Network :

Including qualified distributors (QPL approved) for assembling : MIL-DTL-38999, PT/451/VG95328 & Fiber Optics connectors



SL61 & SLG419AR “SOCAPEX”

Circular Connectors for Showbiz & Industry



Description

Connectors made of aluminum alloy, with excellent reliability and robustness for In/Out applications & power supply

Main features

- ROBUSTNESS AND RELIABILITY**
- HIGH STRENGTH-WEIGHT RATIO**
- UL RECOGNIZED (419AR & 37Y)**
- CONNECTOR BODY VERSIONS**
 - Plug
 - Receptacle
 - Receptacle with locking ring
 - Inline receptacle
- SPLIT BACKSHELL & MONOPIECE BACKSHELL AVAILABLE**
- BACKSHELL OPTIONS**
 - **Two-part backshells**
 - Efficient cable clamp
 - Simple wiring and maintenance
 - Straight or right angle, all sizes
 - **IP67 monopiece backshell for 419AR**
 - Outdoor application

- ORIGINAL MANUFACTURER OF “SOCAPEX” CONNECTORS**
- STAGE LIGHTNING / ENTERTAINMENT : THE “SOCA”**
 - 19 pins SLG 419AR for stage lightning and dimmers
 - 7 pins SL 37Y (particulary for hoist motor applications)
- INDUSTRIAL ARRANGEMENTS**
 - 4 shell sizes (#10, #20, #30, #40)
 - 14 arrangements available including grounding version of 419AR (SLG 419AR)
- NON CONDUCTIVE AND CONDUCTIVE SHELLS**
 - **ROHS versions**
 - Black non conductive coating
 - Nickel conductive plating
 - **Non ROHS**
 - White conductive cadmium for connector body
 - Green conductive cadmium for backshell

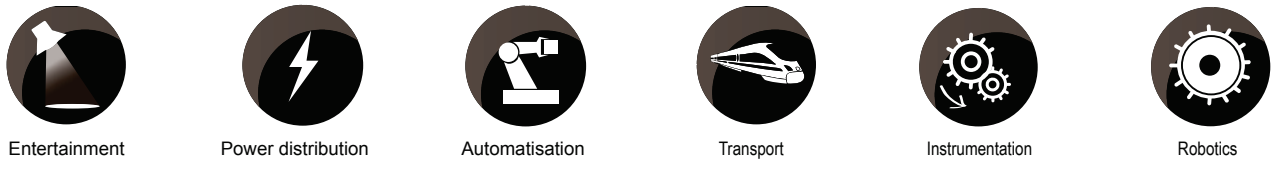
Product range

Receptacle		Plug body*
Regular		 right angle backshell or  straight backshell
	mates with	

Receptacle		Inline receptacle body*
Locking ring		 straight backshell
	mates with	

*connector body or kit (connector body + 2 part backshell)

SL61 & SLG419AR “SOCAPEX” SERVE VARIOUS APPLICATIONS, INCLUDING:



TECHNICAL CHARACTERISTICS - SL

Circular Connectors for Showbiz & Industry

Material and platings

SHELL:

- Light aluminum alloy, molded

INSERTS:

- Molded in PPS

SOLDER CUP CONTACTS

- Copper alloy
- Gold plated
- Socket contact:
 - Protected by a closed entry
 - To ensure an outstanding safety in use

ACCESSORIES:

- Caps: plastic
- Sealing sleeve: neoprene

Technical characteristics

Working temperature: - 40°C / + 85°C

Current capability: 7.5, 10, 25 and 50

Working voltage:

Up to 500 V_{RMS}

UL recognition n° E160967(01)

Monopiece backshell available with IP67 rating

Solder cup contacts

Contact size (AWG)	Nominal current (A)	Contact resistance	Maximum permissible wire Ø
20	7.5	≤ 5mΩ	0.75mm
16	10	≤ 2mΩ	1.75mm
12	25	≤ 2mΩ	5.1mm
8	50	≤ 2mΩ	13mm

Platings



Black coating



Nickel



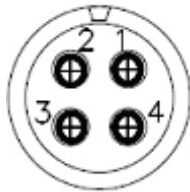
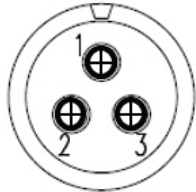
Green cadmium

SL61 - INSERT ARRANGEMENTS

Front face of socket insert shown

Contact size (AWG)	⊖	⊕	●	●
Caption	20	16	12	8

Size 10

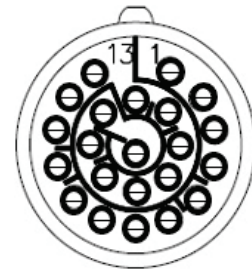
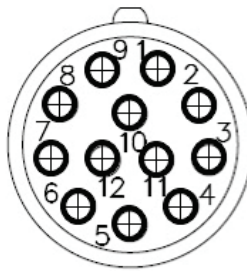
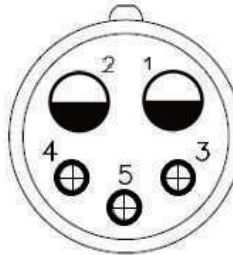


SL61	13 U
Contact size	16
Working voltage (Vrms)	280
Test voltage at sea level (Vrms)	1400

SL61	14 V
Contact size	16
Working voltage (Vrms)	225
Test voltage at sea level (Vrms)	1400

SL61	17 P
Contact size	20
Working voltage (Vrms)	150
Test voltage at sea level (Vrms)	1050

SL61	23 C
Contact size	12
Working voltage (Vrms)	440
Test voltage at sea level (Vrms)	1400



Size 20

SL61	25 D
Contact size	16 & 12
Working voltage (Vrms)	380
Test voltage at sea level (Vrms)	1400

SL61	212 AF
Contact size	16
Working voltage (Vrms)	280
Test voltage at sea level (Vrms)	1050

SL61	222 P
Contact size	20
Working voltage (Vrms)	150
Test voltage at sea level (Vrms)	1050

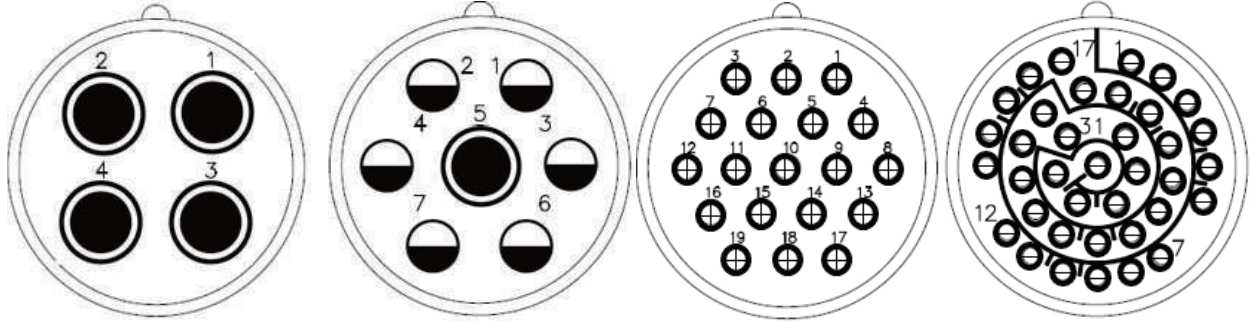
SL61	23 C
Contact size	12
Working voltage (Vrms)	440
Test voltage at sea level (Vrms)	1400

SL61	25 D
Contact size	16 & 12
Working voltage (Vrms)	380
Test voltage at sea level (Vrms)	1400

SL61 - INSERT ARRANGEMENTS

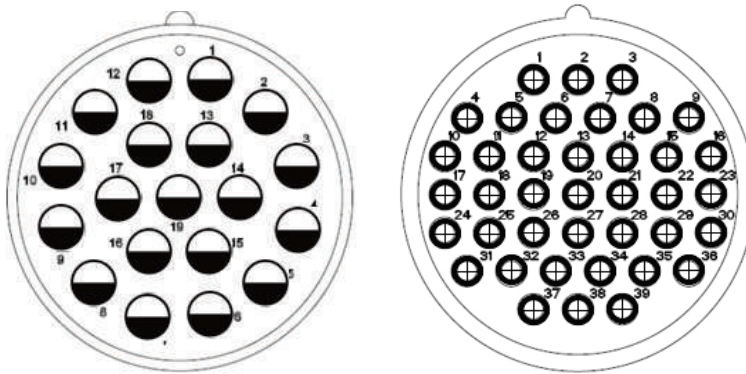
Front face of socket insert shown

Contact size (AWG)	⊖	⊕	◐	●
Caption	20	16	12	8



Size 30

SL61	34 H	37 Y	319 L	337 P
Contact size	8	8 & 12	16	20
Working voltage (Vrms)	500	480	400	175
Test voltage at sea level (Vrms)	1750	1750	1750	1050



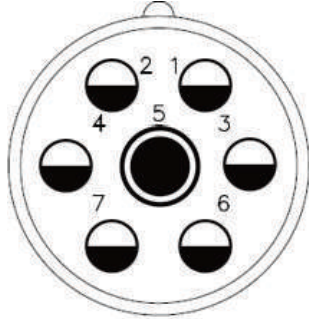
Size 40

SL61	419 AR	439 R
Contact size	12	16
Working voltage (Vrms)	400	280
Test voltage at sea level (Vrms)	1750	1750

SL SHOWBIZ “SOCA” - INSERT ARRANGEMENTS

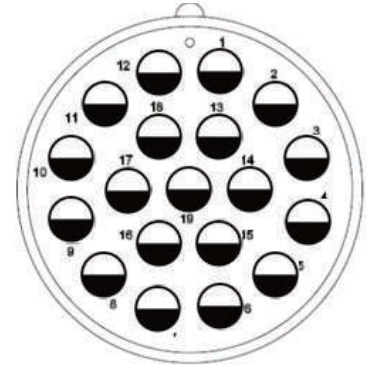
Front face of socket insert shown

Contact size (AWG)	⊖	⊕	●	●
Caption	20	16	12	8



Size 30

SL61	37 Y
Contact size	8 & 12
Working voltage (Vrms)	480
Test voltage at sea level (Vrms)	1750

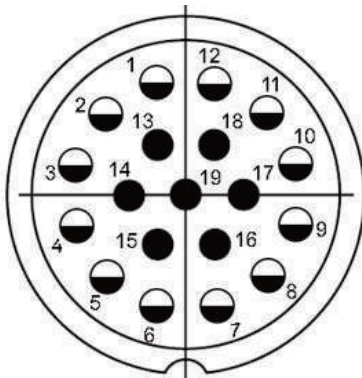


Size 40

SL61	419 AR
Contact size	12
Working voltage (Vrms)	400
Test voltage at sea level (Vrms)	1750

SLG 419AR grounding receptacle

- Derived from SL series
- Safety of the user and the equipment (ground)
- 7 socket first mate last break earth contacts (grounding function)
 - Identified by their plating
 - Improved cabling process
 - Quick visual differentiation from regular SL419AR
- 2x6 sockets, nominal current 25A each (power supplies of 6 brand-lights with independent grounding)
- Mating by reinforced screwing system
- Nominal current: 25 A
- Contact resistance < 0.002 Ohm
- Solder pot internal diameter: 2.5 mm



Size 40

SLG	419AR
Contact size	12
Working voltage (Vrms)	400
Test voltage at sea level (Vrms)	1750

First mate last break earth contacts ●

SL61 & «SOCA»

Straight plug

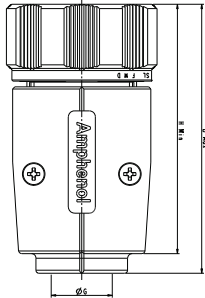


Pin

Socket

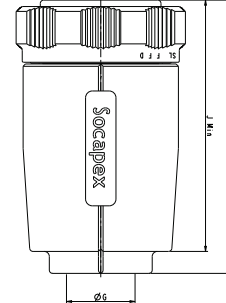
How to order page 17

SL*FMD**



How to order page 17

SL*FFD**



Size	B _{MIN}	C _{MIN}	ØG*	H _{MIN}	J _{MIN}	ØG ⁺⁰ _{-0.2}
10	62,2	52,85	5-9	54,7	48,45	27,5
20	65,9	59,7	6-14	58,4	55,2	36,5
30	87,7	80,5	10-20	81,2	74	51,5
40	85,9	78,7	14-30	76,4	71,2	64,5

*G: flanges equipped with different clamping pads delivered with the backshell.

Right angle plug

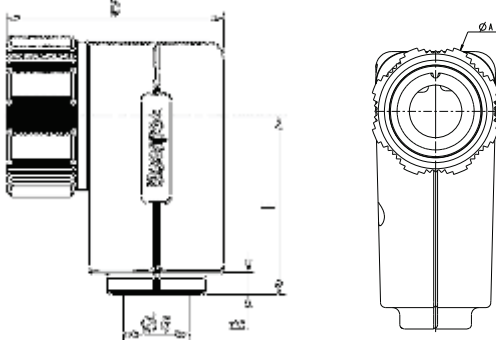


Pin

Socket

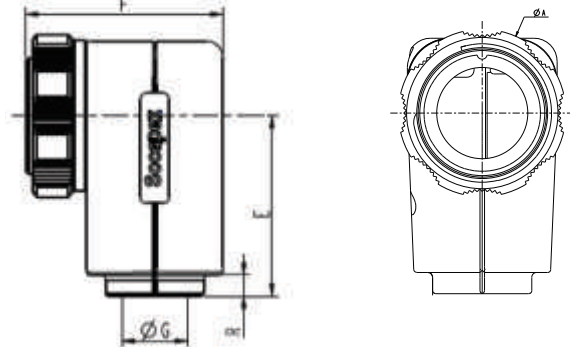
How to order page 17

SL*FMC**



How to order page 17

SL*FFC**



Size	D _{MIN}	E _{MIN}	F _{MIN}	ØG*	R _{MIN}	ØA ⁺⁰ _{-0.2}
10	48,1	45,5	38,55	5-9	4,3	27,5
20	54,9	51,5	48,7	6-14	4,3	36,5
30	67,9	55,5	60,7	10-20	6,3	51,5
40	76	62,5	68,7	14-30	7,3	64,5

*G: flanges equipped with different clamping pads delivered with the backshell.

All the dimensions are in mm except as otherwise specified

SL61 & «SOCA»

Receptacle

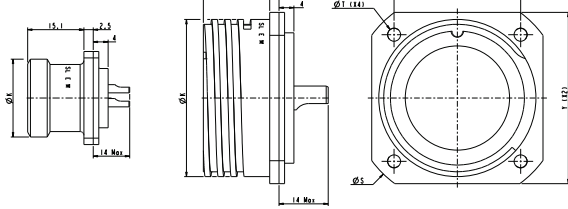


Pin

Socket

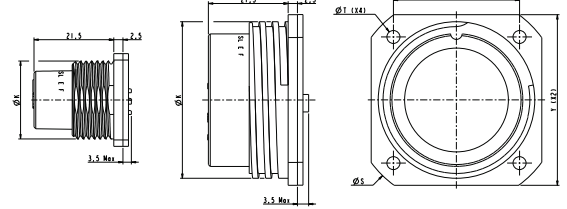
How to order page 16

SL*EM**



How to order page 16

SL*EF**



Size	ØK _{MIN}	W	Y	ØT	ØS
10	21	19	25	3,2	33
20	28,1	24	31	3,5	40
30	42,2	34	46	3,5	57
40	52,2	41	56	3,5	67

Receptacle with locking ring

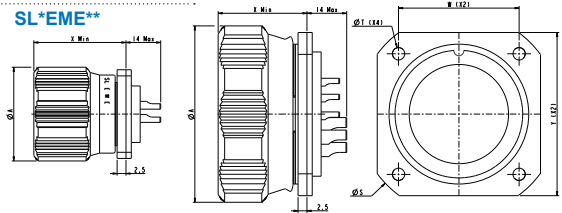


Pin

Socket

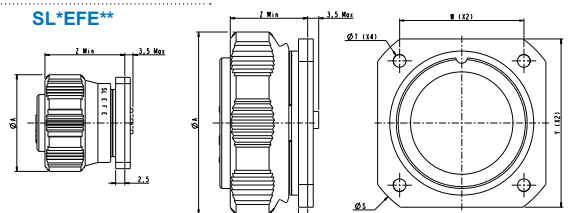
How to order page 16

SL*EME**



How to order page 16

SL*EFE**



Size	ØA	W	Y	ØS	ØT	X _{Min}	Z _{Min}
10	27,5	19	25	33	3,2	25,9	21,2
20	36,5	24	31	40	3,5	24,2	20,2
30	51,5	34	46	57	3,5	24,4	20,2
40	64,5	41	56	67	3,5	29,15	22,43

In line receptacle

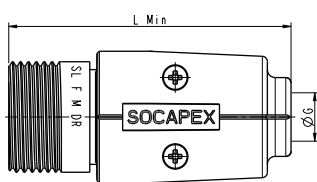


Pin

Socket

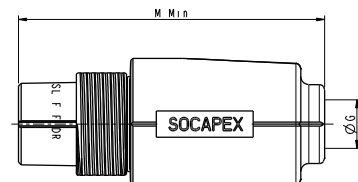
How to order page 17

SL*FMDR**



How to order page 17

SL*FFDR**



Size	L _{MIN}	M _{MIN}	ØN _{MIN}	ØG*
10	53,5	57,75	25	5-9
20	61,15	59,7	33	6-14
30	81,95	80,5	46	10-20
40	80,15	79,5	55	14-30

*G: flanges equipped with different clamping pads delivered with the backshell.
All the dimensions are in mm except as otherwise specified

SL61 & «SOCA» - ACCESSORIES

Two-Part backshell



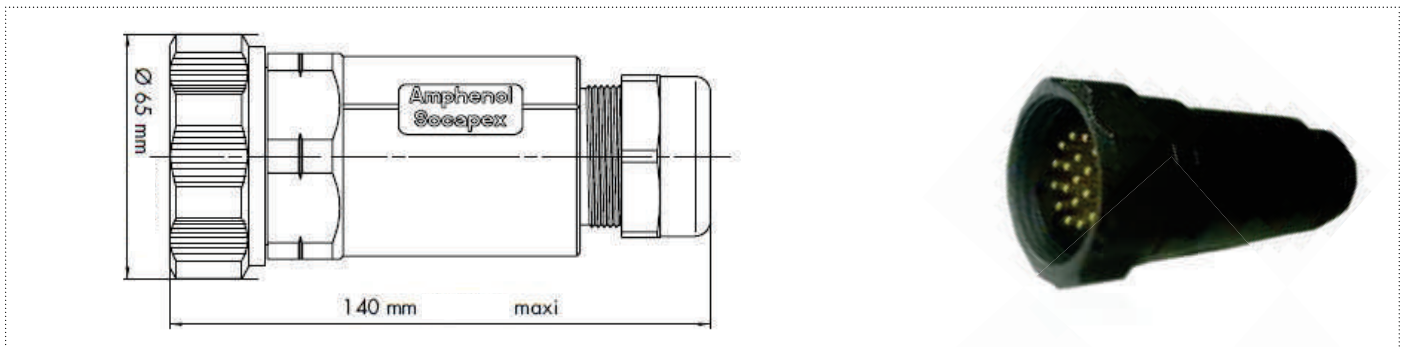
Size	Straight backshell			Right angle backshell		
	Non conductive	Conductive		Non conductive	Conductive	
	Black*	Nickel*	Green cadmium	Black*	Nickel*	Green cadmium
10	47377N	47377NI	21458N	47381N	47381NI	21462N
20	47378N	47378NI	21459N	47382N	47382NI	21463N
30	47379N	47379NI	21460N	47383N	47383NI	21464N
40	47380N	47380NI	21461N	47384N	47384NI	21465N

- *Black and Nickel backshells are ROHS compliant
- Straight or right-angle backshells are delivered with different clamping pads.
- Green backshells are delivered with conductive clamping pads

419AR monopiece backshell

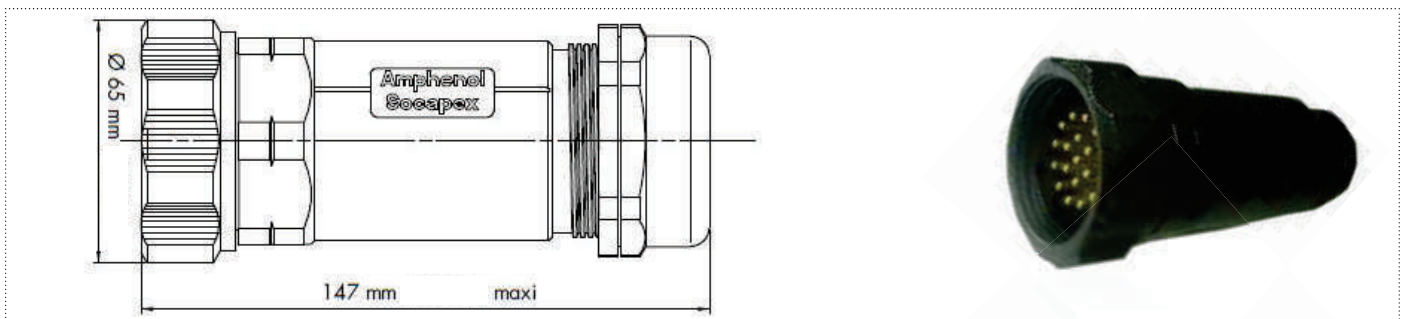
- IP67, compatible with 419AR receptacle
- Exclusive gland design
 - to ensure a high mechanical retention of the cable
 - available in size 29 or 36 according to the outside diameter of the cable
- Exclusive thread design
 - to avoid accidental unscrewing of the backshell while mating / unmating
- Built-in double insulation and black non conductive plating for safety
- Contacts size 12 (AWG14-12, conductor diameter up to 2,45 mm)
- Socapex split backshell (47380N) can be used with the new plug

PG size 29



Size 29 (cable diameter 15mm to 24mm)			
	Connector	Backshell	Set connector + backshell
Male plug	SLD BMPG 419AR		SLD FMD PG29 419AR
Female inline receptacle	SLD BFRPG 419AR	47029N	SLD FFDR PG29 419AR
Female grounded inline receptacle	SLGD BFRPG 419AR		SLGD FFDR PG29 419AR

PG size 36



Size 36 (cable diameter 24mm to 34mm)			
	Connector	Backshell	Set connector + backshell
Male plug	SLD BMPG 419AR		SLD FMD PG36 419AR
Female inline receptacle	SLD BFRPG 419AR	47036N	SLD FFDR PG36 419AR
Female grounded inline receptacle	SLGD BFRPG 419AR		SLGD FFDR PG36 419AR

All the dimensions are in mm except as otherwise specified

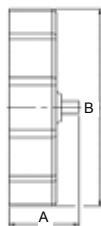
SL61 & «SOCA» - ACCESSORIES

All the protection caps are RoHS compliant (plastic material).

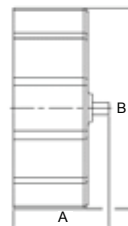
Protection cap for receptacle



Pin



Socket



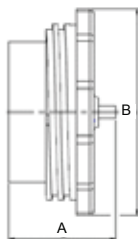
Designation	Size	A _{MAX}	B _{MAX}
SLBEM1B	10	18,4	27,1
SLBEM2B	20	20,2	38
SLBEM3B	30	20,2	52
SLBEM4B	40	20,2	63

Designation	Size	A _{MAX}	B _{MAX}
SLBEF1B	10	26,9	27,1
SLBEF2B	20	29,2	38
SLBEF3B	30	29,2	52
SLBEF4B	40	29,2	63

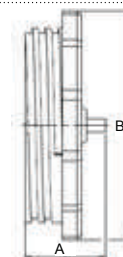
Protection cap for locking ring receptacle



Pin



Socket

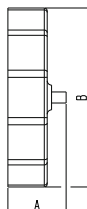


Designation	Size	A _{MAX}	B _{MAX}
BFM3B	30	31,7	52
BFM4B	40	31,7	63

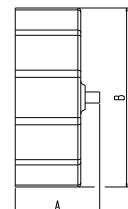
Designation	Size	A _{MAX}	B _{MAX}
BFF3B	30	21,2	52
BFF4B	40	21,2	63

Protection cap for plug

Pin



Socket



Designation	Size	A _{MAX}	B _{MAX}
SLBFMR1B	10	18,4	27,1
SLBFMR2B	20	20,2	38
SLBFMR3B	30	20,2	52
SLBFMR4B	40	20,2	63

Designation	Size	A _{MAX}	B _{MAX}
SLBFFR1B	10	26,9	27,1
SLBFFR2B	20	29,2	38
SLBFFR3B	30	29,2	52
SLBFFR4B	40	29,2	63

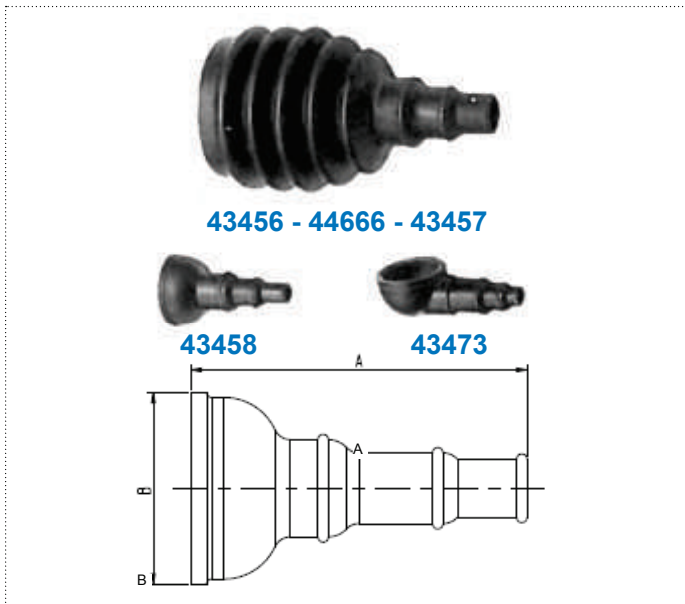
All the dimensions are in mm except as otherwise specified

SL61 & «SOCA» - ACCESSORIES

Sealing sleeve

Spray proofing sleeves, made of neoprene, are mounted on the rear of the plug body.

SL61



43456 - 44666 - 43457

43458

43473

SG419AR



Description

Sealing sleeve (for inline) - receptacle

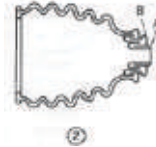
Sealing sleeve assembly instructions

Straight

Right angled



If necessary, adjust the end of the sleeve to the diameter of the cable in use.
 Size 10 connectors: cut off part A for cables using the large diameter cable clamp.
 Size 20-30-40: cut off part A for cables using the middle sized clamp, and parts A and B for cables using the largest diameter cable clamp.
 The sleeve must not be gripped by the cable clamp. For small diameter cables, parts A and B should be folded back, as shown:

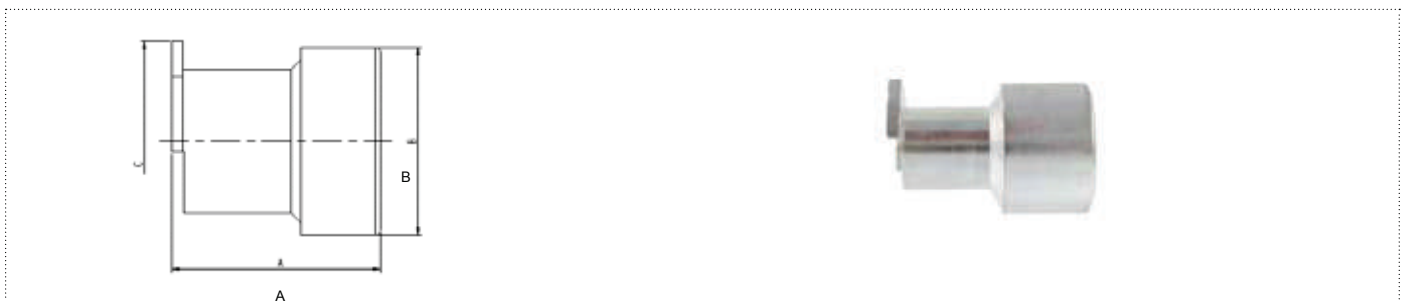


Connector	Size	A _{MAX}	B _{MAX}	Designation
Straight	10	32	18,2	43458
Right angle	10	39	18,2	43473
Straight or right angle	20	56	26	43456
	30	71	37,9	44666
	40	86	47,3	43457

Adaptator for flexible conduit



Adaptator for flexible conduit and PG thread



Connector size	PG size	A _{MAX}	B _{MAX}	C _{MAX}	Designation
20	9	33,5	22,2	24	SL RF 2 09N
	11	33,5	22,2	24	SL RF 2 11N
	13	38,7	30,7	32	SL RF 3 13N
30	16	38,7	30,7	32	SL RF 3 16N
	21	38,7	39,5	32	SL RF 3 21N
40	16	44	39,5	42	SL RF 4 16N
	21	44	39,5	42	SL RF 4 21N
	29	43	39,7	39,7	SL RF 4 29N

All the dimensions are in mm except as otherwise specified

SL61 - HOW TO ORDER

Connector body

1.	2.	3.	4.	5.
SL	D	EM	37Y	

1. Connector type

SL

4. Insert arrangement

See part "Insert arrangement"

2. Shell plating

D	Black coating (RoHS compliant) ✓
Blank	Conductive clear cadmium or nickel (RoHS compliant) ✓

5. Shell plating

NI	Conductive nickel (RoHS compliant) ✓
Blank	Black coating (RoHS compliant) ✓ or conductive clear cadmium

3. Shell style & contact gender

	Pin (M)	Socket (F)
Receptacle	EM	EF
Locking ring receptacle	EME	EFE
Inline receptacle	BMR	BFR
Plug	BM	BF

“SOCA” SLG 419AR - SHOWBIZ - HOW TO ORDER

Grounding version

1.	2.	3.	4.
SLG	D	EF	419AR

1. Connector type

SLG
7 first mate last break earth contacts

3. Shell style & contact gender

EF	Socket panel mount receptacle
FFDR	Socket inline receptacle

2. Shell plating

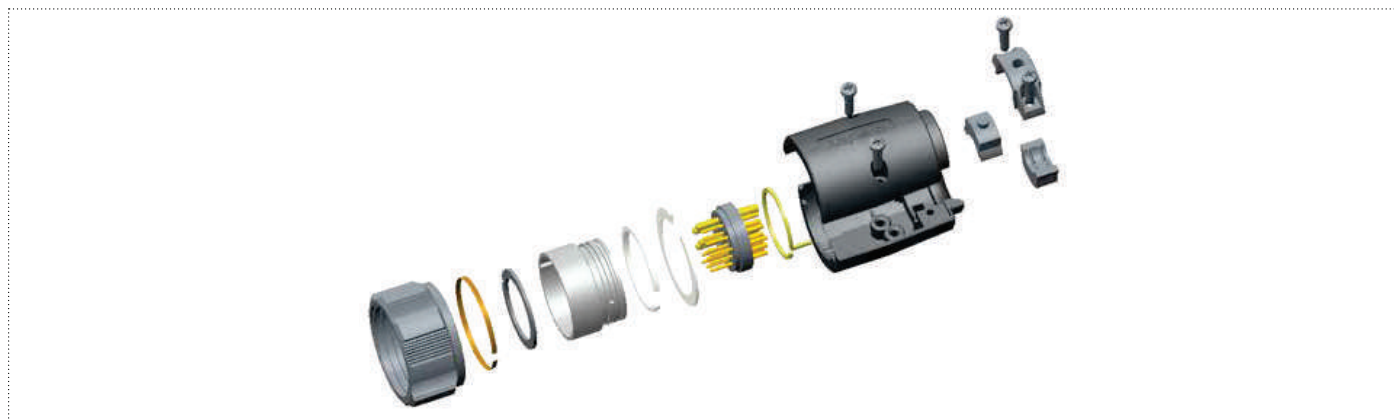
D	Black coating (RoHS compliant) ✓
Blank	Conductive clear cadmium (non RoHS)

4. Insert arrangement

419AR

SL61 - HOW TO ORDER

Connector body + 2-part backshell



1.	2.	3.	4.	5.	6.	7.
SL	D	F	M	D	319L	NI

1. Connector type

SL

2. Shell plating

- D** Black coating (RoHS compliant) ✓
- Blank** Conductive clear cadmium or nickel

3. Kit, mandatory digit

F

4. Contact gender

- M** Pin
- F** Socket

5. Kit composition

- D** Plug + straight backshell
- DR** Inline receptacle + straight backshell
- C** Plug + right angle backshell

6. Insert arrangement

See part "insert arrangement"

7. Shell plating

- NI** Conductive nickel (RoHS compliant) ✓
- Blank** Black coating (RoHS compliant) ✓ or conductive clear cadmium

Kit details



A kit is made of :

- SL connector
- 2-part backshell (upper backshell & lower backshell) + 2 fixing screws
- 2 or 3 plastic cable clamps (2 for size 10, 3 for sizes 20, 30, 40)
- 1 cable fixing bridge + 2 bridge fixing screws

SL61 & «SOCA» - WEIGHTS

In grams	Plug: body + shell				Receptacle		Line receptacle body + shell		Locking ring receptacle	
Insert	SL F FD	SL F MD	SL F FC	SL F MC	SL E F	SL E M	SL FF DR	SL FM DR	SL E FE	SL E ME
13U	30	33	42	45	15	12	29	28	22	22
14V	30	34	42	46	15	12	29	29	22	22
17P	32	35	44	47	17	13	31	30	24	23
23C	62	65	80	83	26	24	57	58	37	36
25D	32	35	80	83	26	24	57	58	37	36
212AF	62	65	80	83	27	24	57	58	38	36
222P	67	68	85	86	32	27	62	61	43	39
34H	136	145	165	174	67	63	122	125	81	78
37Y	135	142	164	171	65	58	121	122	79	73
319L	133	135	162	164	64	53	119	115	78	68
337P	143	143	172	172	74	60	129	123	88	75
419AR	209	212	238	241	101	85	191	194	124	116
439R	202	203	231	232	96	77	183	185	119	108
G419AR										

In grams	Protection cap			
Size	SLB FF B FF	SLB FM B FM	SLB EF SLB FFR	SLB EM SLB FMR
10	11	12	14	11
20	14	18	22	15
30	19	27	31	21
40	23	34	39	26