

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**.



**1000+** employees



Net Sales 2019: **86,6 M€**  
69% Export - 31% France



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

OUR HISTORY

**1947**



- Socapex creation in Suresnes, France
- 1<sup>st</sup> radio connector

**1956-57**



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

**Early 1960's**



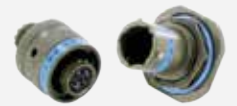
- 1<sup>st</sup> board level connectors: HE8
- 1<sup>st</sup> "licence Bendix" manufactured connectors
- SL Series launch

**1973**



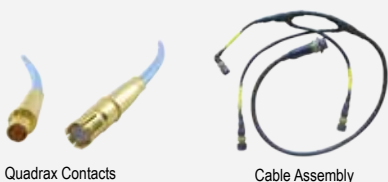
- New factory 13 000 m<sup>2</sup> in Thyez (74) France with 250 people

**1975**



- Production of 38999 connectors

**2014-2017**



- New Cable Assembly workshop
- New Contact Manufacturing workshop

**Today and tomorrow | New technologies**



Miniaturization  
 High-speed signals  
 Rugged Ethernet  
 Fiber optics  
 Power  
 Rugged Ethernet  
 ROHS solutions  
 Power  
 Fiber optics  
 ROHS solutions  
 Advanced Materials (composite)  
 Power  
 Miniaturization  
 ROHS solutions

# INTERNATIONAL EXPERTISE



## Our expertise has no boundaries

### Integrated Production in France & India

- **24 000 m<sup>2</sup>** 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 - Vetronics / Marine / Missiles



### Aviation

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

**1986**

**Amphenol**  
Socapex

- Amphenol becomes primary shareholder

**1995-96**



- Expanded Beam connector CTOS launch
- Headquarters transferred to Thyex

**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



### Respect for nature and the environment

Optimization of natural resources  
Recycling  
Waste Management  
Goodwill  
Optimization of natural resources  
Respect for nature and the environment  
Waste Management  
Recycling



# PRODUCING FASTER, SMALLER, STRONGER CONNECTORS...



## Technologies & innovation

### Technological Center



**Engineering Laboratory for product testing and qualification, product expertise and metrology**

- Mechanical and electrical skills
- RF and fiber optics expertise

### High-Speed Expertise



**Strong expertise in high-speed signals**

- 3D EM simulation software & EM models
- Time Domain and frequency domain (VNA 20GHz, TDR and eye diagram)

### Materials Expertise



**Focus on materials expertise and manufacturing techniques to produce faster, smaller and stronger products**

- 3D CAD mechanical software, simulation & analysis
- Disruptive metal alloys, additive manufacturing

### Eco-responsibility



**Sustainable environment approach, with pro-active management of regulations (REACH / RoHS / Conflict minerals...)**

- 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.

**Tooling** : Tools for our different activities : molding, machining, assembly

**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** : Connector and harness assembly (electrical & optical)

## Our certifications

Certified Management System    Certified Management System    Certified Management System    Certified Management System

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

## Our memberships

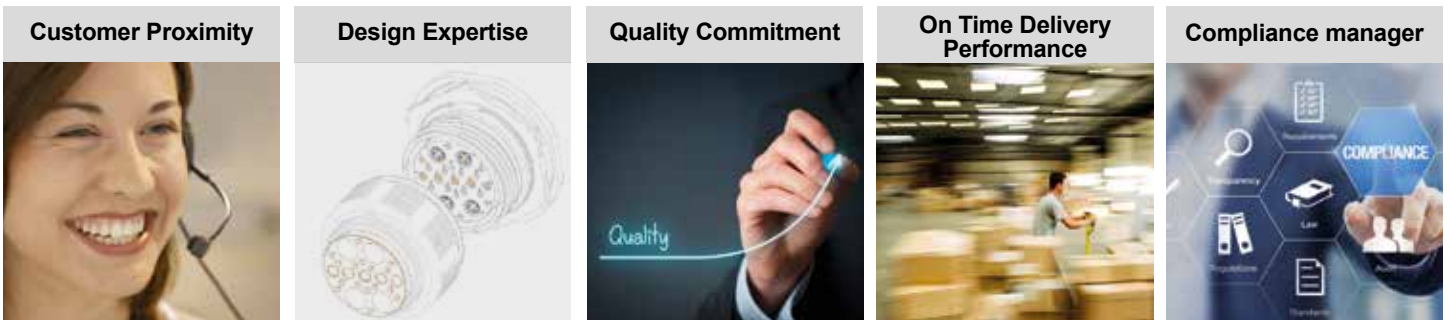
Member of CMG (Connecting Manufacturing Group) Consortium

# 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



## 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 :**
- 15 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

## Product range

Receptacle		mates with		<b>Plug*</b> Right angle backshell
				<b>Plug*</b> Straight backshell
Inline receptacle*		mates with		<b>Receptacle</b> Locking ring
Straight backshell				<b>Plug*</b> Right angle backshell
				<b>Plug*</b> Straight backshell

\*connector body or kit (connector body + 2 parts 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 thermoplastic

**SOLDER CUP CONTACTS**

- Standard contacts with gold plated size 08, 12, 16, 20
- Socket contact:
  - Protected by a closed entry
  - To ensure an outstanding safety in use

**ACCESSORIES:**

- Caps: thermoplastic
- Sealing sleeve: neoprene



### Technical characteristics

**Working temperature:** - 40°C / + 85°C

**Current capability:** 7,5 A, 10 A, 25 A and 50 A

**Working voltage:** Up to 500 V<sub>RMS</sub>

**UL recognition n° E160967(01) for 37Y & 419AR arrangement only**

**Monopiece backshell available with IP67 rating**

### Solder cup contacts

Contact size (AWG)	Nominal current (A)	Contact resistance	Contact cross sectional area
20	7,5	≤ 5mΩ	0,75mm <sup>2</sup>
16	10	≤ 2mΩ	1,75mm <sup>2</sup>
12	25	≤ 2mΩ	5,1mm <sup>2</sup>
8	50	≤ 2mΩ	13mm <sup>2</sup>

### Platings



Black coating

Nickel

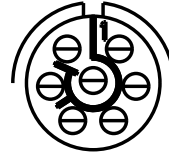
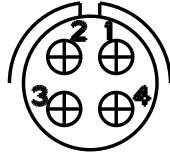
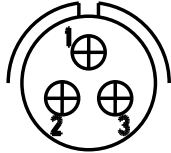


# SL61 - INSERT ARRANGEMENTS

Front face of pin insert shown

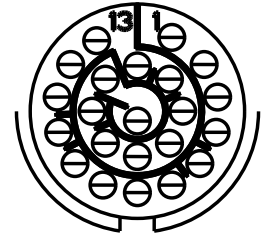
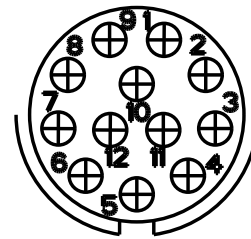
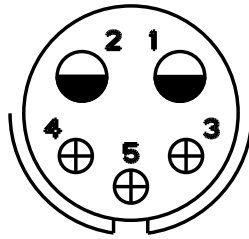
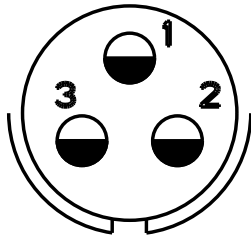
Contact size (AWG)	⊖	⊕	⊖	●
Caption	20	16	12	8

## Size 10



SL61	13 U	14 V	17 P
Contact size	16	16	20
Working voltage (Vrms)	280	225	150
Test voltage at sea level (Vrms)	1400	1400	1050

## Size 20



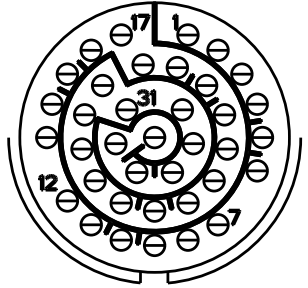
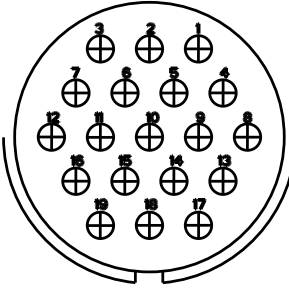
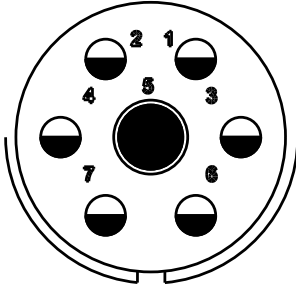
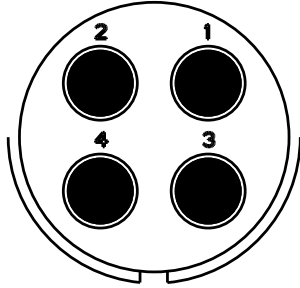
SL61	23 C	25 D	212 AF	222 P
Contact size	12	16 & 12	16	20
Working voltage (Vrms)	440	380	280	150
Test voltage at sea level (Vrms)	1400	1400	1050	1050



# SL61 - INSERT ARRANGEMENTS

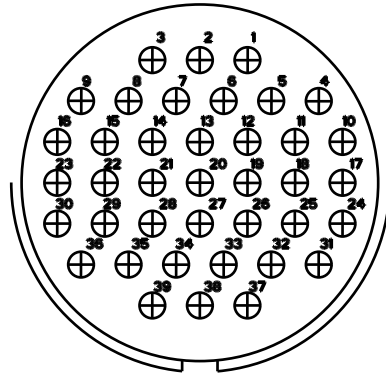
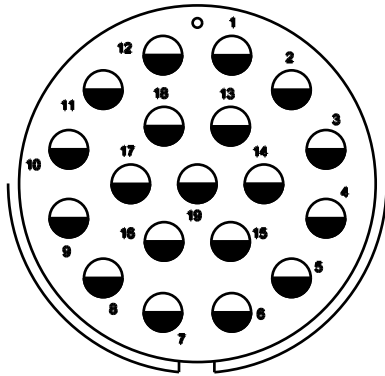
Front face of pin insert shown

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



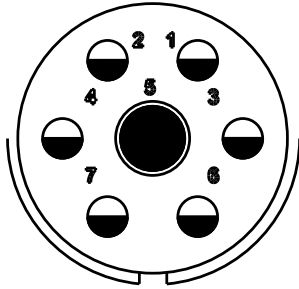
## Size 40

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

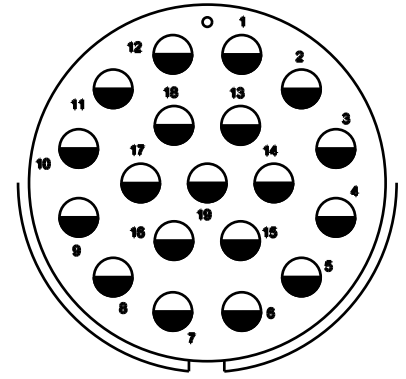
Front face of pin insert shown

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

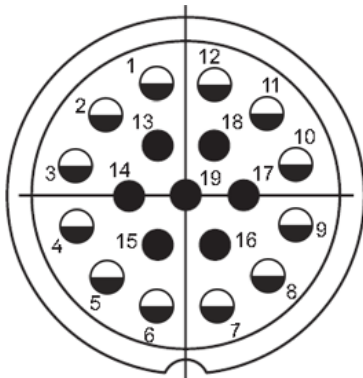


## Size 40

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

Front face of socket insert shown

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

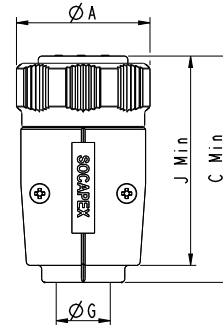
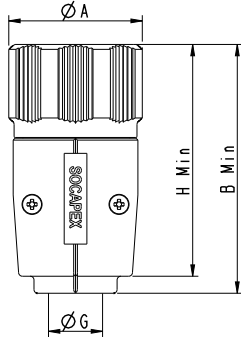


Pin

Socket

How to order page 17  
SL\*FMD\*\*

How to order page 17  
SL\*FFD\*\*



Size	B <sub>MIN</sub>	C <sub>MIN</sub>	ØG*			H <sub>MIN</sub>	J <sub>MIN</sub>	ØA <sup>+0</sup> <sub>-0.2</sub>
10	62,20	52,85	5-7	7-9	-	54,70	48,45	27,50
20	65,90	59,70	6-8	9-11	12-14	58,40	55,20	36,50
30	87,70	80,50	10-12	13-16	17-20	81,20	74,00	51,50
40	85,90	78,70	14-18	19-23	24-30	76,40	71,20	64,50

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

## Right angle plug

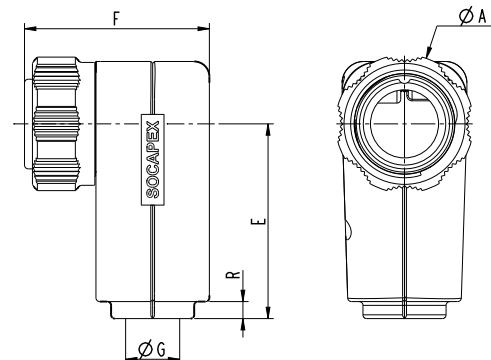
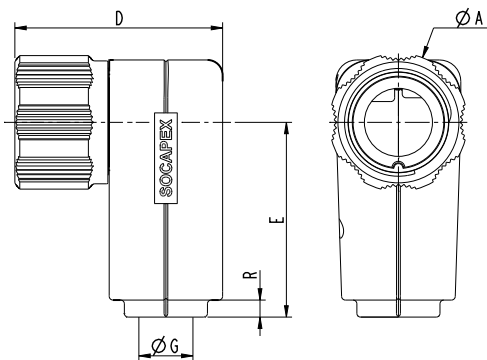


Pin

Socket

How to order page 17  
SL\*FMC\*\*

How to order page 17  
SL\*FFC\*\*



Size	D <sub>MIN</sub>	E <sub>MIN</sub>	ØG*			F <sub>MIN</sub>	R <sub>MIN</sub>	ØA <sup>+0</sup> <sub>-0.2</sub>
10	48,10	45,50	5-7	7-9	-	38,55	4,30	27,50
20	54,90	51,50	6-8	9-11	12-14	48,70	4,30	36,50
30	67,90	55,50	10-12	13-16	17-20	60,70	6,30	51,50
40	76,00	62,50	14-18	19-23	24-30	68,70	7,30	64,50

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

All the dimensions are in mm except as otherwise specified

# SL61 & "SOCA"

## Receptacle

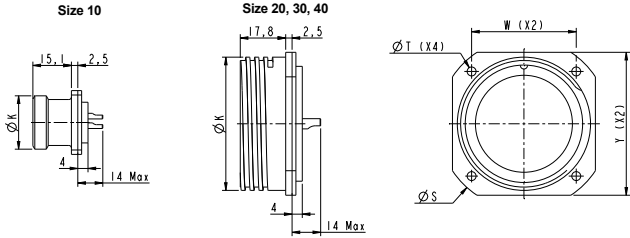


Pin

Socket

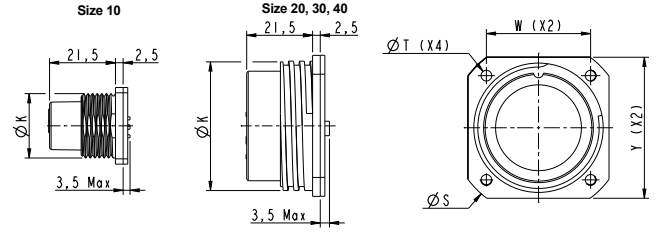
How to order page 16

SL\*EM\*\*



How to order page 16

SL\*EF\*\*



Size	ØK <sub>MIN</sub>	W	Y	ØT	ØS
10	21,00	19,00	25,00	3,20	33,00
20	28,10	24,00	31,00	3,50	40,00
30	42,20	34,00	46,00	3,50	57,00
40	52,20	41,00	56,00	3,50	67,00

## Receptacle with locking ring

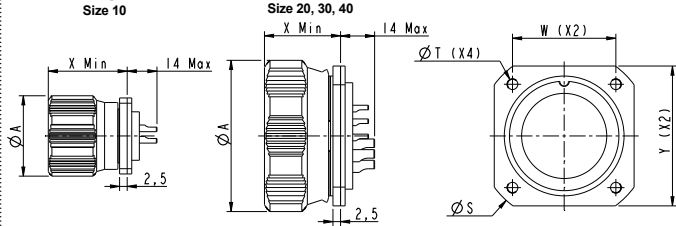


Pin

Socket

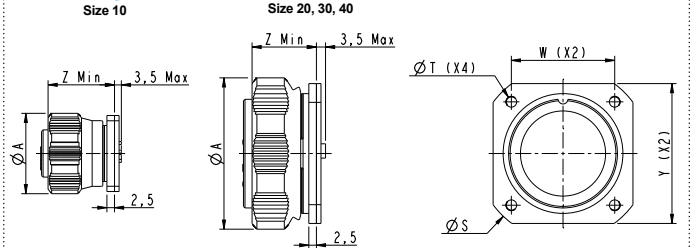
How to order page 16

SL\*EME\*\*



How to order page 16

SL\*EFE\*\*



Size	ØA	W	Y	ØT	ØS	X <sub>Min</sub>	Z <sub>Min</sub>
10	27,50	19,00	25,00	3,20	33,00	25,90	21,20
20	36,50	24,00	31,00	3,50	40,00	24,20	20,20
30	51,50	34,00	46,00	3,50	57,00	24,40	20,20
40	64,50	41,00	56,00	3,50	67,00	29,15	22,43

## Inline receptacle

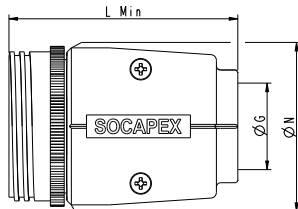


Pin

Socket

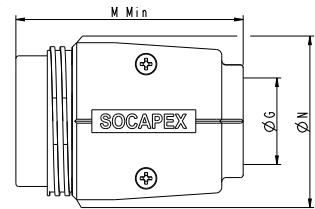
How to order page 17

SL\*FMDR\*\*



How to order page 17

SL\*FFDR\*\*



Size	L <sub>MIN</sub>	M <sub>MIN</sub>	ØN <sub>MIN</sub>	ØG*
10	53,50	57,75	25,00	5-7
20	61,15	59,70	33,00	7-9
30	81,95	80,50	46,00	8-11
40	80,15	79,50	55,00	12-14

\*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-Parts backshell



Size	Straight backshell		Right angle backshell	
	Non conductive	Conductive	Non conductive	Conductive
	Black ✓	Nickel ✓	Black ✓	Nickel ✓
10	47377N	47377NI	47381N	47381NI
20	47378N	47378NI	47382N	47382NI
30	47379N	47379NI	47383N	47383NI
40	47380N	47380NI	47384N	47384NI

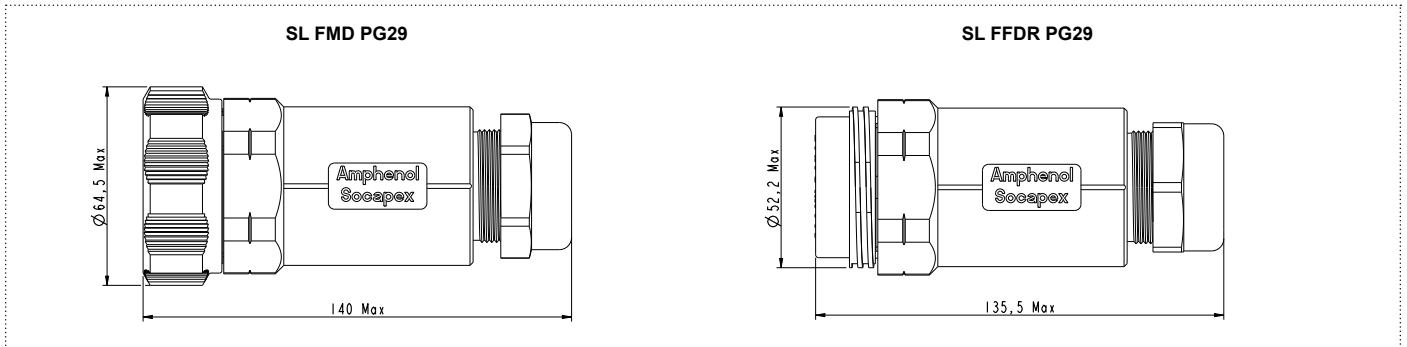
✓ : RoHS compliant  
 - Straight or right-angle backshells are delivered with different clamping pads

## 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

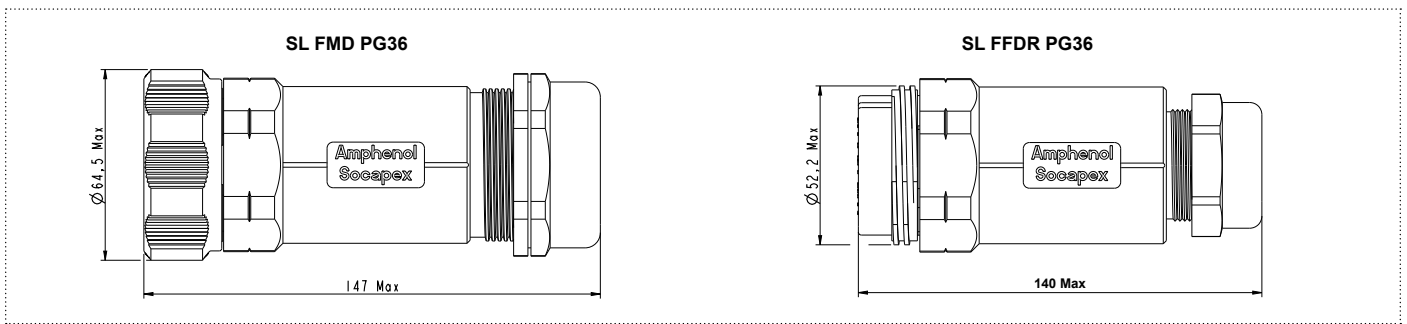


PG size 29



	Size 29 (cable diameter 15mm to 24mm)		
	Connector	Backshell	Set connector + backshell
Male plug	SLD BMPG 419AR	47029N	SLD FMD PG29 419AR
Female inline receptacle	SLD BFRPG 419AR		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	47036N	SLD FMD PG36 419AR
Female inline receptacle	SLD BFRPG 419AR		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

Due to technical progress, all information provided is subject to change without prior notice  
 Designed by Amphenol Socapex

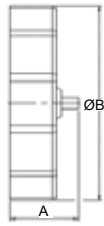
# SL61 & “SOCA” - ACCESSORIES

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

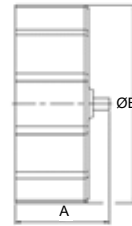
## Protection cap for receptacle and inline receptacle



Pin



Socket



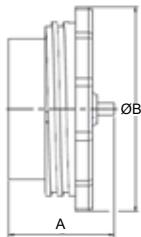
Receptacle	Inline receptacle	Size	A <sub>MAX</sub>	ØB <sub>MAX</sub>
SLBEM1B	SLBFMR1B	10	18,40	27,10
SLBEM2B	SLBFMR2B	20	20,20	38,00
SLBEM3B	SLBFMR3B	30	20,20	52,00
SLBEM4B	SLBFMR4B	40	20,20	63,00

Receptacle	Inline receptacle	Size	A <sub>MAX</sub>	ØB <sub>MAX</sub>
SLBEF1B	-	10	26,90	27,10
SLBEF2B	SLBFFR2B	20	29,20	38,00
SLBEF3B	SLBFFR3B	30	29,20	52,00
SLBEF4B	SLBFFR4B	40	29,20	63,00

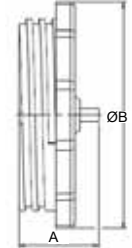
## Protection cap for plug and locking ring receptacle



Pin



Socket



Plug	Locking ring receptacle	Size	A <sub>MAX</sub>	ØB <sub>MAX</sub>
SLBFM1B	-	10	30,90	21,10
SLBFM2B	-	20	31,70	38,00
SLBFM3B	BFM3B	30	31,70	52,00
SLBFM4B	BFM4B	40	31,70	63,00

Plug	Locking ring receptacle	Size	A <sub>MAX</sub>	ØB <sub>MAX</sub>
SLBFF1B	-	10	18,90	27,10
SLBFF2B	-	20	21,20	38,00
SLBFF3B	BFF3B	30	21,20	52,00
SLBFF4B	BFF4B	40	21,70	63,00

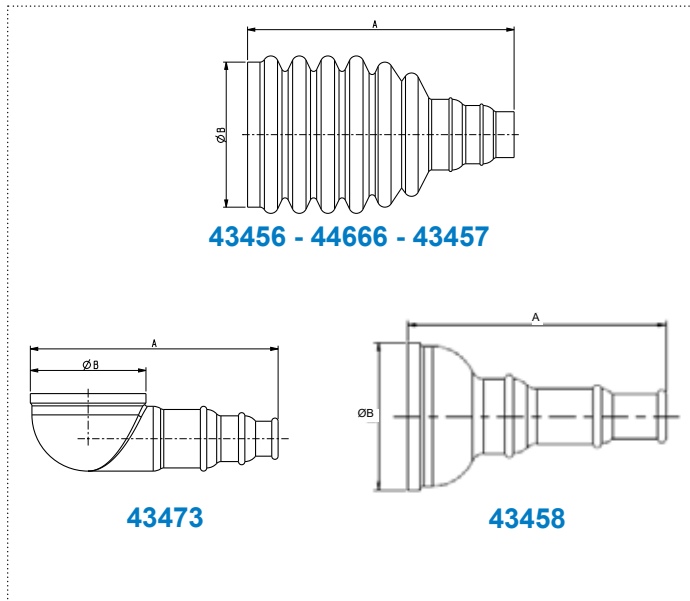
All the dimensions are in mm except as otherwise specified

# SL61 & «SOCA» - ACCESSORIES

## Sealing sleeve

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

SL61



43456 - 44666 - 43457

43473

43458

Connector	Size	A <sub>MAX</sub>	ØB <sub>MAX</sub>	Designation
Straight	10	32,00	18,20	43458
Right angle	10	39,00	18,20	43473
Straight or right angle	20	56,00	26,00	43456
	30	71,00	37,90	44666
	40	86,00	47,30	43457

### Sealing sleeve assembly instructions

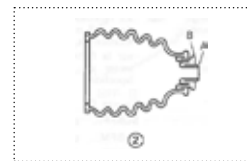
Straight



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:



## Grounding discs for 419 AR arrangement

Pin insert: 140654-91  
(front mounting)

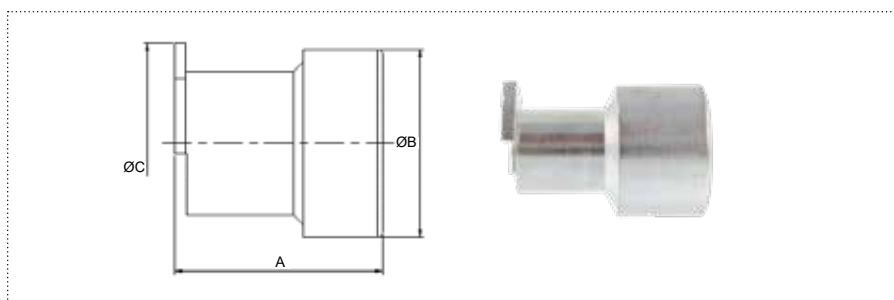


Socket insert: 140653-00  
(rear mounting)



Not available for  
SLG 419AR series

## Adaptator for flexible conduit and PG thread



Connector size	PG size	A <sub>MAX</sub>	ØB <sub>MAX</sub>	ØC <sub>MAX</sub>	Designation
20	9	33,50	22,20	24,00	SL RF 2 09N
	11	33,50	22,20	24,00	SL RF 2 11N
	13	38,70	30,70	32,00	SL RF 3 13N
30	16	38,70	30,70	32,00	SL RF 3 16N
	21	38,70	39,50	32,00	SL RF 3 21N
40	16	44,00	39,50	42,00	SL RF 4 16N
	21	44,00	39,50	42,00	SL RF 4 21N
	29	43,00	39,70	39,70	SL RF 4 29N

All the dimensions are in mm except as otherwise specified

### Adaptator for flexible conduit



# SL61 - HOW TO ORDER

## Connector (without backshell)

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

### 1. Connector type

SL

### 2. Shell plating

D	Black coating ✓
Blank	Nickel ✓ 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

\* not available for 13U, 14V & 17P  
 ✓ : RoHS compliant

### 4. Insert arrangement

See part "Insert arrangement" page 8-10

### 5. Shell plating

NI	Nickel ✓
Blank	Black coating ✓ Clear cadmium

# “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

### 2. Shell plating

D	Black coating ✓
Blank	Clear cadmium

✓ : RoHS compliant

### 3. Shell style & contact gender

EF	Socket panel mount receptacle
FFDR	Socket inline receptacle

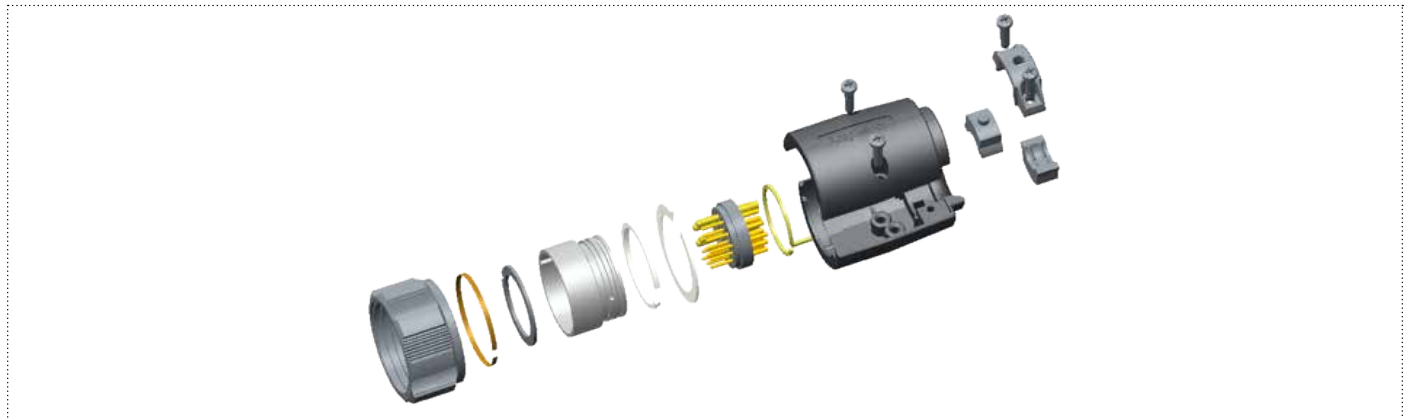
### 4. Insert arrangement

419AR



# SL61 - HOW TO ORDER

## Connector + 2-parts backshell



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

### 1. Connector type

SL

### 2. Shell plating

D	Black coating ✓
Blank	Nickel ✓ Clear cadmium**

### 3. Kit, mandatory digit

F

### 4. Contact gender

M	Pin
F	Socket

\* not available in female version for 13U, 14V and 17P arrangement

\*\* delivered with black backshell

✓ : RoHS compliant

### 5. Kit composition

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

### 6. Insert arrangement

See part "insert arrangement" page 8-10

### 7. Shell plating

NI	Nickel ✓
Blank	Black coating ✓ Clear cadmium**

## Kit details



A kit is made of :

- SL connector
- 2-parts 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 &amp; “SOCA” - WEIGHTS

In grams	Plug: body + backshell				Plug: body		Receptacle		Inline receptacle : body + backshell		Inline receptacle: body		Locking ring receptacle	
	Insert	SL F FD	SL F MD	SL F FC	SL F MC	SL B F	SL B M	SLE F	SLE M	SL FF DR	SL FM DR	SL BF R	SL BM R	SLE FE
13U	30	33	42	45	15	23	15	12	-	28	12	12	22	22
14V	30	34	42	46	16	24	15	12	-	29	12	12	22	22
17P	32	35	44	47	18	25	17	13	31	30	14	13	24	23
23C	62	65	80	83	35	41	26	24	57	58	24	15	37	36
25D	32	35	80	83	35	41	26	24	57	58	24	15	37	36
212AF	62	65	80	83	36	42	27	24	57	58	24	16	38	36
222P	67	68	85	86	41	46	32	27	62	61	29	20	43	39
34H	136	145	165	174	74	87	67	63	122	125	56	41	81	78
37Y	135	142	164	171	72	82	65	58	121	122	54	36	79	73
319L	133	135	162	164	69	77	64	53	119	115	52	31	78	68
337P	143	143	172	172	78	84	74	60	129	123	61	38	88	75
419AR	209	212	238	241	113	133	101	85	191	194	92	87	124	116
439R	202	203	231	232	106	123	96	77	183	185	85	78	119	108
G419AR							99		186		88			

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

\* B FF & B FM caps in size 10 & 20 are not available

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### Europe

FRANCE	Amphenol AIR LB	2 rue Clément Ader, ZAC de Wé - 08110 Carignan	+33 3 24 22 78 49
FRANCE	Amphenol SEFEE	Z.I. des Cazes – BP243 - 12402 Saint-Affrique Cedex	+33 5 65 98 11 00
GERMANY	Amphenol AIR LB GMBH	Am Kleinbahnhof 4 - 66740 Saarlouis	+49 6831 981 00
ITALY	Amphenol EUROPEAN SALES OPERATIONS	Via Barbaiana n.5 - 20020 Lainate - Milano	+39 293 254 214
UNITED KINGDOM	Amphenol INVOTEC	Unit 1-3, Hedging Lane Industrial Estate, Dosthill - Tamworth, B77 5HH	+44 1827 263 000
UNITED KINGDOM	Amphenol IONIX SYSTEMS	Prospect House, Taylor Business Park, Risley, Warrington, WA3 6HP	+44 1 942 685 200
UNITED KINGDOM	Amphenol LTD	Thanet Way, Whitstable - KENT, CT53JF	+44 1227 773 200
UNITED KINGDOM	Amphenol MARTEC	St Augustines Business Park, Swalecliffe Whitstable - Kent CT5 2QJ	+44 1227 793 733

### North America

CANADA	Amphenol CANADA	605 Milner avenue - Toronto, Ontario	+1 416 291 0647
USA	Amphenol AEROSPACE OPERATIONS	40-60 Delaware street - Sidney, NY 13838	+1 800 678 0141
USA	Amphenol BORISH TECHNOLOGIES	4511 East Paris AVE - Grand Rapids, MI 49512	+1 616 554 9820
USA	Amphenol FSI	1300 Central Expwy N, Suite 100 - Allen, TX 75013	+1 214 547 2400
USA	Amphenol GRIFFITH ENTERPRISES	6000 East Coury Drive - Cottonwood, AZ 86326	+1 928 634 3685
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USA	Amphenol PCD	72 Cherry Hill Drive - Beverly, MA. 01915	+1 978 624 3400
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### Asia

CHINA	Amphenol PCD CO.	Building 21, 1 <sup>st</sup> Liao Keng Industrial Zone, Shi Yan Street - Bao An District - Shenzhen 518108	+86 755 8173 8000/8286
INDIA	Amphenol INTERCONNECT INDIA	105 Bhosari Industrial Area - Pune 411 026	+91 20 27120363
JAPAN	Amphenol JAPAN	471-1, Deba, Ritto-City - Shiga 520 3041	+81 77 553 8501
KOREA	Amphenol DAESHIN	558 SongNae-Dong SoSa-Gu, Bucheon-city, Kyunggi-Do - 420-130	+81 32 610 3830/3845
SINGAPORE	Amphenol EAST ASIA	26/F, Railway Plaza, 39 Chatham Road South, Tsim Sha Tsui, Kowloon, Hong Kong	+65 6294 2128

### Other Areas

AFRICA	Amphenol AFRICA	30 Impala Rd - Sandton 2146	+27 82 410 5179
ARGENTINA	Amphenol ARGENTINA	Av. Callao 930 2do piso Oficina B "Plaza" C1023 - AAP Buenos Aires	+54 11 4815 6886
AUSTRALIA	Amphenol AUSTRALIA PTY	2 Fiveways Blvd., Keysborough - Melbourne - Victoria 3173	+61 3 8796 8888
BRAZIL	Amphenol DO BRAZIL	Rua Diogo Moreira, 132, 20 andar, rooms 2001-2-3	+55 11 3815 1003
ISRAEL	Amphenol BAR-TEC	3 Hagavish Street, K fir-Barkan Bldg. East Industrial Zone - Kfar-Sava, 44102	+972 9 764 4100
MEXICO	Amphenol OPTIMIZE	Carretera Internacional Km 6.5, Col. Parque Industrial, Nogales, Sonora, C.P. 84094	+52 631 311 160
NEW ZEALAND	Amphenol PHITEK	Level 4, 2 Kingdon Street, Newmarket, Auckland 1023	+64 9 524 2984
RUSSIA	Amphenol RUSSIA	Yaroslavskaja Street 8 - 129164 Moscow	+7 495 937 6341
TURKEY	Amphenol TURKEY	Sun Plaza 15 Kat: 15 Maslak Hah. Bilim Sok. No.5 - Sisli/Istanbul, 34398	+90 212 367 92 19

# Amphenol SOCAPEX



## Amphenol Socapex

948, promenade de l'Arve BP29  
74311 Thyez Cedex - France  
Phone: +33 (0)4 50 89 28 00  
[contact@amphenol-socapex.fr](mailto:contact@amphenol-socapex.fr)  
[www.amphenol-socapex.com](http://www.amphenol-socapex.com)



## For Technical Support

+33 (0)4 50 89 28 49  
[technicalsupport@amphenol-socapex.fr](mailto:technicalsupport@amphenol-socapex.fr)  
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