# **Amphenol SOCAPEX**



Miniature High-Density & Reliability 1,27mm / .050" pitch PCB connector











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- 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 serve customers in over 100 countries around the world.
- Amphenol Socapex is part of the leading supplier of interconnect systems **Amphenol**.



1400+ employees



142 M€ Net Sales 2023 70% Export - 30% France



Thyez, France Pune, India

#### Our expertise has no boundaries

#### **Integrated Production in France & India**

- 24 000 m<sup>2</sup> manufacturing capacity on 2 sites
- Design and manufacturing centers in France and India
- State-of-the-art manufacturing technology

#### **Our markets**



**Defense** 



Commercial Aerospace



**Space** 



**Industry** 

## **TECHNOLOGIES & INNOVATION**

#### **Engineering Laboratory**



Product testing and qualification expertise in many fields:

- Environmental, mechanical, electrical, chemical, climatic skills
- RF and fiber optics expertise

#### **High-Speed Expertise**



Strong expertise in high-speed signals - 3D EM simulation software & EM

- Time Domain and frequency domain

models

#### **Materials Expertise**



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

- Advanced technology research and development: polymers, metals, platings, resins ...
- Cutting edge characterizations of interconnects: Radio Frequency, partial discharges
- 3D CAD mechanical software, simulation & analysis

#### **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.

Automation & Tooling: Tools for our different activities: molding, machining, assembly

Molding: Solid expertise in thermoplastic elastomer and thermoset molding

Machining: Manufacturing of cylindrical shells and rectangular shells

Screw Machining: Manufacturing of electrical contacts

Plating: Plating with cadmium, nickel, electroless nickel, silver, black zinc nickel, gold

Assembly: Connector and harness assembly (electrical & optical)

#### Our certifications

Product certifications: MIL-DTL38999, EN3645, EN3155, VG (VG95328, VG95319, VG96944, VG95218, VG96949)













Our memberships

Member of CMG (Connecting Manufacturing Group) Consortium







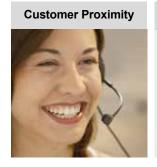






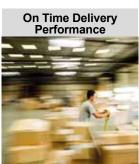
▶ We have a strong reputation for helping customers solve their toughest challenges. This approach of serving your needs is ingrained in our company – from our sales team to our product development engineers.

#### 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:

- 4 10 in France
- 4 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 Advisement & Multilingual Customer Service : 20 people



#### **Worldwide Distribution Network:**

Our range of circular connectors, contacts, fiber optic connectors, PCB connectors and accessories are available thru our extensive distribution network.

It includes qualified distributors (QPL approved) for assembling MIL-DTL-38999 & derivatives and PT/451 (VG95328) connectors.











### **OUR HISTORY**

1947

1956-57

**Early 1960's** 

1973

1975



Socapex creation in Suresnes, France

- 1st radio connector

Manufacturing unit in Cluses (74), France

- Thomson-CSF becomes primary shareholder



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



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



Production of 38999 connectors

1986

shareholder

1995-96

2004

2005

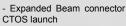
2010's



Amphenol becomes primary







- Headquarters transferred to Thyez



RJ Field launch, "Award Electronica"



New factory in Pune, India



LuxBeam™ **HDAS** and launch

2014-2017

2019





#### **Today & tomorrow**





New workshops:

- Cable Assembly & Contact Manufacturing workshop



Increased manufacturing capacity with 2<sup>nd</sup> building in Pune, India



Harness in the box solution launch

New technologies: Investment in automation & technical expertise



Amphenol SOCAPEX joins the "Convention des Entreprises pour le Climat ".

Our goal: to accelerate our transition to a more sustainable operation.

#### **MARKETS AND APPLICATIONS**













# MICRO HDAS Amphenol SOCAPEX



#### **GENERAL CHARACTERISTICS - MICRO HDAS**

#### High performance and high density miniature connector





#### **Description**

Amphenol Socapex introduce the Micro HDAS, its new micro board to board and board to wire connector. Micro HDAS allows you to save space on your board while maintaining a high level of performances. Offering you PC Tail, SMT & crimp contact terminations, Micro HDAS provides a modularity to fit all your needs.

#### **Benefits**

- Space & weight reduction to meet your miniaturization needs
- High density: 1.27mm [.050"] pitch
- · Protected contacts by design
- 7,4mm distance between boards

#### **Features**

- 29 arrangements, from 4 to 60 contacts
- PC Tail, SMT & Crimp contacts
- Meet & Exceed MIL-DTL-55302G & 83513G
- Full range of fittings to answers your needs

#### **Configurations**



Board to wire (Crimp AWG 24 to 30)



Mezzanine



Mother board to Daughter board

#### **Exploded views and Materials**





30% glass-filled termoplastic (LCP) UL94V-0 Polarized

#### FITTINGS







Male Female Guiding Guiding

Passivated Stainless Steel

#### Online configurator & 3D model download





#### **GENERAL CHARACTERISTICS - MICRO HDAS SERIES**



#### **Technical Specifications**

MECHANICAL CHARACTERISTICS	MICRO HDAS	MIL-DTL	-55302		
Backoff - Electrical security (mm)	1,27	N/	Α		
Contact engagement & separation forces Mating force per contact (N) Unmating force per contact (N)	0,39 < F < 0,68 0,16 < F < 0,21	4.5	.3		
Mating and unmating forces - Initial - Tested on a 30 ways connector Mating forces (N) - average per contact Unmating forces (N) - average per contact	0,44 0,31	4.5	i.4		
Durability cycles	500	4.5			
Sinusoidal vibrations	Up to 45g	4.5.			
Shocks (sawtooth/6ms)	Up to 160g	4.5.	10		
Fixing torque between connector and PCB (N.m)	0,3	N/			
Fixing torque between connectors (N.m)	0,2	N/			
	AWG 24 > 49,98N				
	AWG 26 > 36,64N				
Crimp tensile strength	AWG 28 > 19,90N	N/	A		
	AWG 30 > 11,30N				
ENVIRONMENTAL CARACTERISTICS		:			
Operating Temperature (°C)	-65/+150	4.5.	13		
Salt spray (hours)	96	4.5.	.11		
Humidity - 25/65°C - 90-95%	10 cycles of 24 hours	4.5.	15		
Thermal vacuum outgassing Applicable to LCP housing, PEEK ring (AWG 24 contact) and backpotting Stycast 2651 MM + Catalyst 9	Total mass loss: TML < 1% of the original mass Max volatile condensable material: CVCM < 0.1% of the original mass	ASTM E595 (E 020			
ELECTRICAL CARACTERISTICS		·			
	Contact configuration	@25°C	@85°C		
Current rating per contact (A) - 30 ways connector	YD/YD YD/YC	3,4A 3,9A	2,5A 2,6A		
	YD/CRIMP	Depending on o	cable, up to 5A		
Insulation resistance (at 500Vdc) (GΩ)	> 5	4.5	.8		
Contact resistance (mΩ)	< 8	4.5	.5		
Dielectric withstanding voltage (Vrms) at sea level	750	4574			
Dielectric withstanding voltage (Vrms) 70 000 feet (between contacts)	4.5.7.1 cts) 480				

#### **Connector marking**

Micro HDAS connectors are laser marked. Exemple of marking :

Series name	Contact type	Date code
MHDAS	YC	YYWW

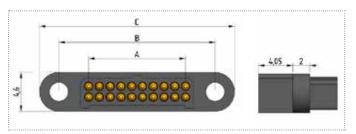
Series name : MHDAS = Micro HDAS

Contact type: as specified in our how to order

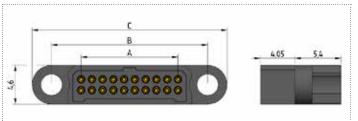
YYWW : year + week batch

#### **OVERALL DIMENSIONS - MICRO HDAS**

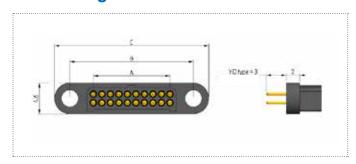
#### Male for cable



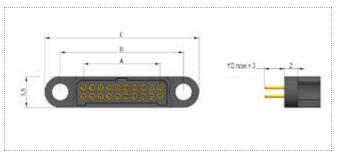
#### Female for cable



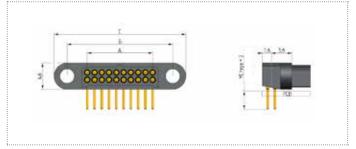
#### **Male Straight Thru Hole**



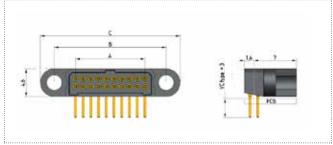
#### **Female Straight Thru Hole**



#### Male 90° Thru Hole



#### Female 90° Thru Hole



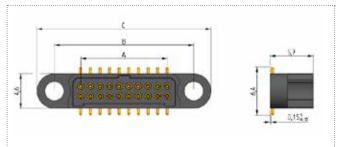
											1	Dimer	nsion	table															
LF contact number	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	52	54	56	58	60
A = Distance between pins (mm)	1.27	2.54	3.81	5.08	6.35	7.62	8.89	10.16	11.43	12.70	13.97	15.24	16.51	17.78	19.05	20.32	21.59	22.86	24.13	25.40	26.67	27.94	29.21	30.48	31.75	33.02	34.29	35.56	36.83
B = Distance between fittings (mm)	8.27	9.54	10.81	12.08	13.35	14.62	15.89	17.16	18.43	19.70	20.97	22.24	23.51	24.78	26.05	27.32	28.59	29.86	31.13	32.4	33.67	34.94	36.21	37.48	38.75	40.02	41.29	42.56	43.83
C = Distance between extremities (mm)	12.87	14.14	15.41	16.68	17.95	19.22	20.49	21.76	23.03	24.3	25.57	26.84	28.11	29.38	30.65	31.92	33.19	34.46	35.73	37	38.27	39.54	40.81	42.02	43.35	44.62	45.89	47.16	48.43

#### **OVERALL DIMENSIONS - MICRO HDAS**

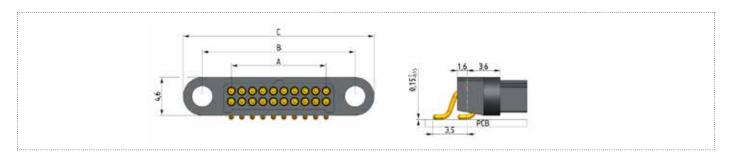
#### **Male Straight SMT**

# 5 0,151,4

#### **Female Straight SMT**



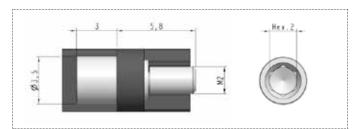
#### Male 90° SMT



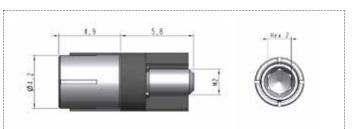
												Dime	nsion	table															
LF contact number	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	52	54	56	58	60
A = Distance between pins (mm)	1.27	2.54	3.81	5.08	6.35	7.62	8.89	10.16	11.43	12.70	13.97	15.24	16.51	17.78	19.05	20.32	21.59	22.86	24.13	25.40	26.67	27.94	29.21	30.48	31.75	33.02	34.29	35.56	36.83
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C = Distance between extremities (mm)	12.87	14.14	15.41	16.68	17.95	19.22	20.49	21.76	23.03	24.3	25.57	26.84	28.11	29.38	30.65	31.92	33.19	34.46	35.73	37	38.27	39.54	40.81	42.02	43.35	44.62	45.89	47.16	48.43

#### FITTINGS - MICRO HDAS

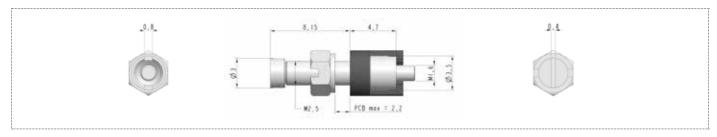
#### E01



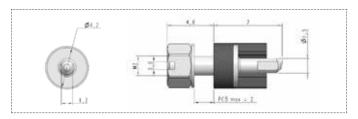
#### **E02**



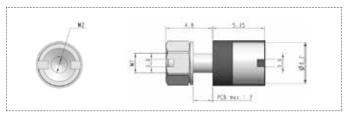
#### E03



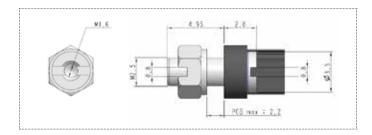
#### E10



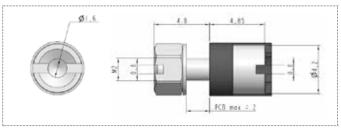
#### E50



#### **E53**



#### **E60**

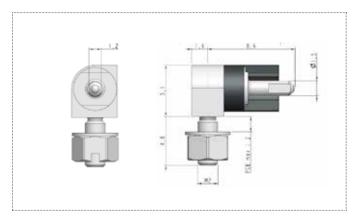


#### **Fittings compatibility**

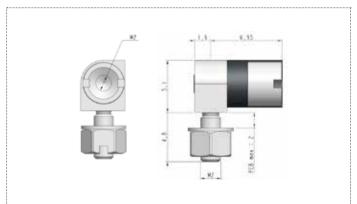
Signal Contact		Fitting	Torque	(N.m)	Compatible with
	E01	Jackscrew for harness	0.	3	E50 or E51
	E02	Captive Screw for harness	0.	3	E50 or E51
	E03	Jackscrew for PCB/Panel mount	On PCB: 0.25	On coupled part: 0.16	E53 or E63
A - B - G - YD - T	E10	Male straight guiding	0.	3	E60 or E61
The state of the s	E50	Female straight jackscrew	0.	E01 or E02	
	E53	Female straight jackscrew	0.	3	E03
	E60	Female straight guiding	0.	3	E10 or E11
	E11	Male 90° guiding	0.	3	E60 or E61
YC - R	E51	3	E01 or E02		
10-K	E61	Female 90° guiding	0.	3	E10 or E11
	E63	Female 90° jackscrew	0.	3	E03

#### FITTINGS - MICRO HDAS

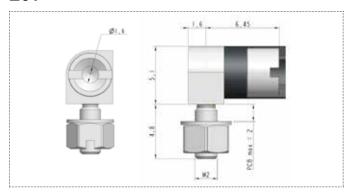
#### E11



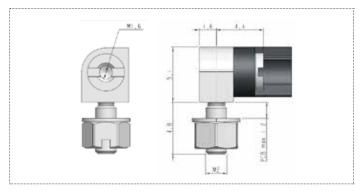
#### E51



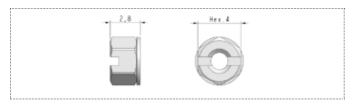
#### E61



#### E63



#### Nut + washer



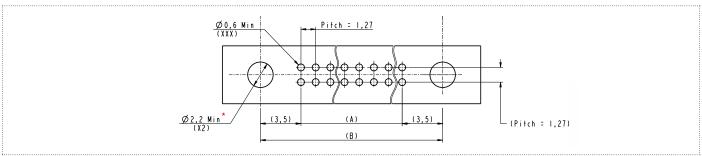
#### **Fittings compatibility**

Signal Contact		Fitting	Torque (N.m)					
	E01	Jackscrew for harness	0.	.3	E50 or E51			
	E02	Captive Screw for harness	0.	.3	E50 or E51			
	E03	Jackscrew for PCB/Panel mount	On PCB: 0.25	On coupled part: 0.16	E53 or E63			
A - B - G - YD - T	E10	Male straight guiding	0.	.3	E60 or E61			
	E50	Female straight jackscrew	0.	E01 or E02				
	E53	Female straight jackscrew	0.	.3	E03			
	E60	Female straight guiding	0.	3	E10 or E11			
	E11	Male 90° guiding	0.	.3	E60 or E61			
YC - R	E51	Female 90° jackscrew	0.	.3	E01 or E02			
10 - K	E61	Female 90° guiding	0.	3	E10 or E11			
	E63	Female 90° jackscrew	0.	.3	E03			

#### **PCB LAYOUT - MICRO HDAS**

#### Straight/90° on PCB

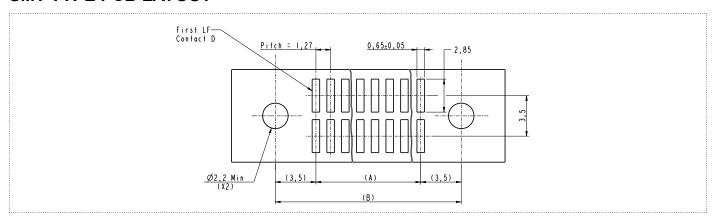
#### THROUGH-HOLE PCB LAYOUT



\* ø2.8 Min with E03 and E53 fittings

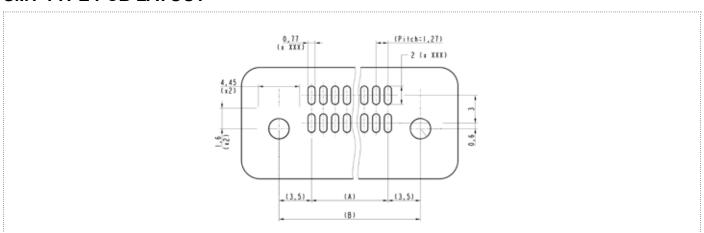
#### **Straight on PCB**

#### **SMT TYPE PCB LAYOUT**



#### 90° on PCB

#### **SMT TYPE PCB LAYOUT**



												Dime	ensio	n tab	le														
LF contact number	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	52	54	56	58	60
A = Distance between pins (mm)	1.27	2.54	3.81	5.08	6.35	7.62	8.89	10.16	11.43	12.70	13.97	15.24	16.51	17.78	19.05	20.32	21.59	22.86	24.13	25.40	26.67	27.94	29.21	30.48	31.75	33.02	34.29	35.56	36.83
B = Distance between fittings (mm)	8.27	9.54	10.81	12.08	13.35	14.62	15.89	17.16	18.43	19.70	20.97	22.24	23.51	24.78	26.05	27.32	28.59	29.86	31.13	32.4	33.67	34.94	36.21	37.48	38.75	40.02	41.29	42.56	43.83

#### **HOW TO ORDER - MICRO HDAS**



6.

#### **Straight on PCB**

90° on PCB

For Harnesses

9

1. 2. 3. 4.

Series	Number of rows	Connector type	Number of contacts	Contact type	Fitting type
MHDAS	2	M	016	YD	E10

#### 1. Series

MHDAS Micro HDAS 1.27mm pitch

# Number of rows 2 2 rows connector

2 TOWS CONNECTION

<b>3</b> . Co	nnector type
M	Male connector
F	Female connector

4. Number of c	4. Number of contacts									
004	024	044								
006	026	046								
008	028	048								
010	030	050								
012	032	052								
014	034	054								
016	036	056								
018	038	058								
020	040	060								
022	042									

5. Con	tact type
YD	Straight PC tail standard 🗸
Т	Straight SMT 🗸

6. Fitting type		
E10	Male straight guiding	
E50	Female straight jackscrew	
E60	Female straight guiding	
E01	Jackscrew for harness	
E02	Captive screw for harness	
E03	Jackscrew for PCB/Panel mount	
E53	Female straight jackscrew	

All the fittings type are compatible with male and female contacts.

#### **HOW TO ORDER - MICRO HDAS**





Straight on PCB

90° on PCB

For Harnesses

1.	2.	3.	4.	5.	6.
Series	Number of rows	Connector type	Number of contacts	Contact type	Fitting type
MHDAS	2	M	016	YC	E11

#### 1. Series

MHDAS Micro HDAS 1.27mm pitch

2. Num	ber of rows
2	2 rows connector

3. Connector type		
М	Male connector	
F	Female connector	

4. Number of contacts		
004	024	044
006	026	046
008	028	048
010	030	050
012	032	052
014	034	054
016	036	056
018	038	058
020	040	060
022	042	

<b>5</b> . Cor	ntact type	ROHS
YC	Right angle PC tail standard 🗸	
R	Right angle SMT (only male) 🗸	

6. Fitting type		
E11	Male 90° guiding	
E51	Female 90° jackscrew	
E61	Female 90° guiding	
E63	Female 90° jackscrew	

All the fittings type are compatible with male and female contacts.

#### **HOW TO ORDER - MICRO HDAS**

#### **For Harnesses**

1.

3.

5.

6.

Series	Number of rows	Connector type	Number of contacts	Contact type	Fitting type
MHDAS	2	M	016	Α	E02

#### 1. Series

MHDAS Micro HDAS 1.27mm pitch

#### 2. Number of rows

2 rows connector

3.	Connector	tvpe

	Male connector
F	Female connector

#### 4. Number of contacts

Number of contacts		
004	024	044
006	026	046
008	028	048
010	030	050
012	032	052
014	034	054
016	036	056
018	038	058
020	040	060
022	042	

For harnesses, backpotting is recommended for enhanced protection.

#### 5. Contact type



G Crimp AWG 28-30 <

Contacts A and B are the same ones. The differentiation comes from the addition of a ring in peek to crimp the AWG 24.

#### 6. Fitting type

E01	Jackscrew for harness
E02	Captive screw for harness
E10	Male straight guiding
E50	Female straight jackscrew
E60	Female straight guiding
E03	Jackscrew for PCB/Panel mount
E53	Female straight jackscrew

All the fittings type are compatible with male and female contacts.

#### **Order contacts:**

Code	Refer	ence	Type Cable		
Code	Male	Female	туре	gauge	
Δ	MHDASMAB	MHDASFAB		AWG 24	
	MHDASARING		To be	AWO 24	
В	MHDASMAB	MHDASFAB	crimped	AWG 26	
G	MHDASMG	MHDASFG		AWG 28-30	

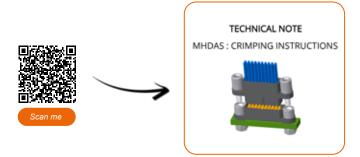
Feel free to contact us if you require a full wired solution.

#### **TOOLING & INSTRUCTION - MICRO HDAS**

#### Signal contact crimping tool

Reference	Description
MH800	Hand crimp tool DANIELS
K2024	Positioner for Micro HDAS signal contacts

Access our crimping instruction for Micro HDAS connector signal contacts : PCB-ER-020-Ext.



#### Signal contact insertion and extraction tool

Reference	Description	
MHDASODIEC	Insertion and extraction tool for Micro HDAS signal contacts	
	TECHNICAL NOTE	
	MHDAS - CRIMP CONTACT	

Access our insertion and extraction instruction for Micro HDAS connector signal contacts: PCB-ER-016-Ext.



#### **Backpotting**

Amphenol Socapex recomend to do backpotting with Stycast 2651MM and Catalyst 9 (10%).

# NOTES

#### NOTES

# **ABOUT AMPHENOL**

Founded in 1932, **Amphenol** is one of the largest manufacturers of interconnect products in the world. The company designs, manufactures, and markets electrical, electronic, and fiber optic connectors, interconnect systems, and coaxial and specialty cables.

**Amphenol** has a diversified presence as a leader in high growth areas of the interconnect industry and provides solutions for customers in the automotive, broadband, industrial, information technology and data communications, military and aerospace, mobile devices, and mobile networks markets.

More info on www.amphenol.com

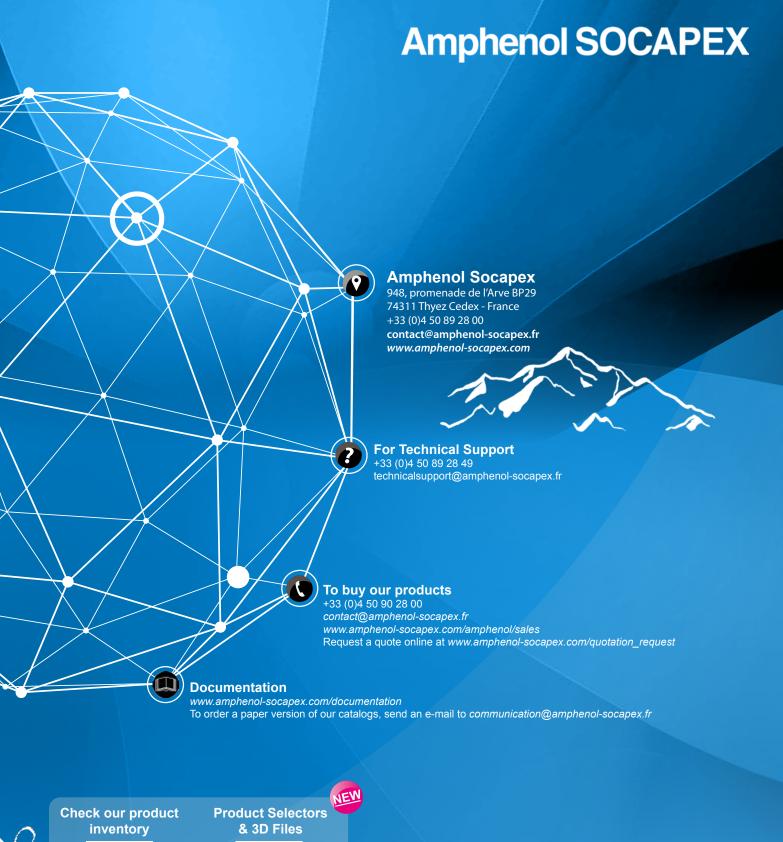


Europe			
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FRANCE	Amphenol SEFEE	Z.I. des Cazes – BP243 - 12402 Saint-Affrique Cedex	+33 5 65 98 11 00
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UNITED KINGDOM	Amphenol IONIX SYSTEMS	Prospect House, Taylor Business Park, Risley, Warrington, WA3 6HP	+44 1 942 685 200
UNITED KINGDOM	Amphenol LTD	Thanet Way, Whitstable - KENT, CT53JF	+44 1227 773 200
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USA	Amphenol FSI	1300 Central Expwy N, Suite 100 - Allen, TX 75013	+1 214 547 2400
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USA	Amphenol PCD	72 Cherry Hill Drive - Beverly, MA. 01915	+1 978 624 3400
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USA	Amphenol SV MICROWAVE	2400 Centrepark West Drive - West Palm Beach, FL	+1 561 840 1800
USA	Amphenol TIMES MICROWAVE	358 Hall Avenue - Wallingford, CT 06492	+1 800 867 2629

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