

Colibri for COM Express®

0.5 mm SMT Board-to-Board Connector System

Colibri – 0.5 mm SMT for 16+ Gbps Applications

Connectors for COM Express®

ept's Colibri connector is a shielded, 2-row, SMT interconnect system in 0.5 mm pitch.

It is designed to meet the requirements according to specifications not only of PICMG COM Express®, but also of SFF-SIG Core Express® and nano-ETXexpress and can be used in high-speed applications with 16 Gbps and more. Furthermore Colibri® products are compatible with all common connectors available on the market and have been tested extensively. The connector system is available with 8 mm and 5 mm stacking heights plus 40 - 440 pins. Colibri® connectors are packaged in „Tape and Reel“ to allow fully automated processing.

Key Features:

- for applications with 16+ Gbps
- meets the requirements of PICMG COM Express® and SFF-SIG CoreExpress®
- intermatability with available connectors in the market
- robust connector design
- integrated Pick & Place area
- packed in Tape & Reel

Applications:

- COM Express®
- CoreExpress®
- mezzanine board-to-board

Termination



SMT

Mating configuration



Parallel
5 or 8 mm

Application



HighSpeed



High Density





EMC

**Watch the
Colibri movie:**



<https://youtu.be/rBry52V774Y>

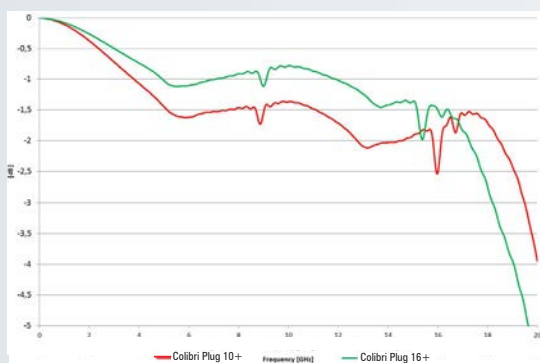
Overview

Type		Number of pins	Board type	Mating connector	Page reference
	Colibri Plug	40 / 80 / 120 / 160 / 220 / 440	COM Express® Base Board	Colibri Receptacle	p. 6 p. 10
	Colibri Receptacle	40 / 80 / 120 / 160 / 220 / 440	COM Express® COM Module	Colibri Plug	p. 8 p. 12

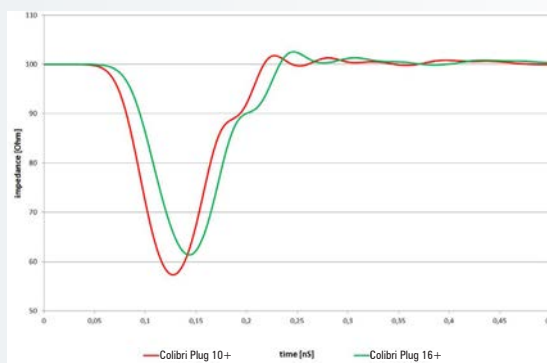
Your COM Express® Application needs more Speed? Colibri Connectors manage 16 Gbps and more!

Colibri connectors are specially designed for HighSpeed applications. The connectors still show a very high signal quality at 16 Gbps. The comparison with the Colibri 10+ in the diagram below shows a definite improvement. The Plug 16+ is therefore highly suitable for HighSpeed applications with 16 Gbps and more.

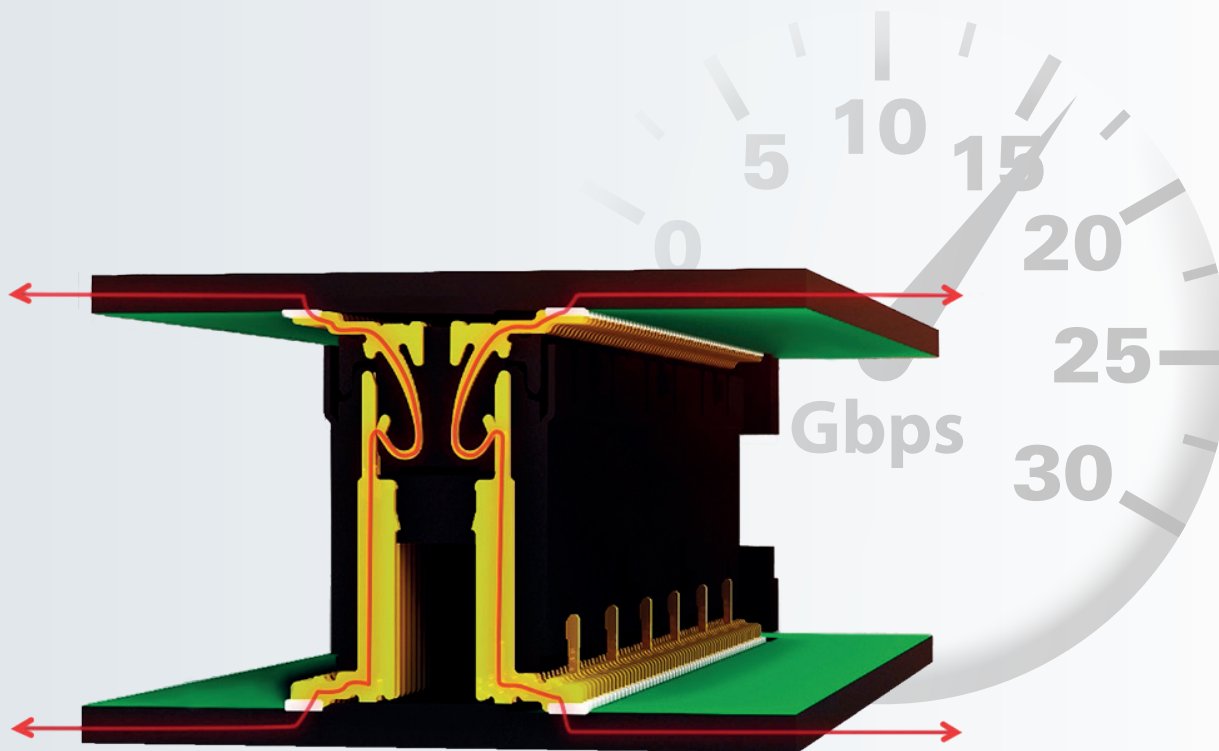
Insertion loss comparison of 10 Gbps with 16 Gbps



Differential Impedance of a Colibri Connector pair



A differential signal was inserted into the plug side of the connector with a 29ps rise time.



A detailed report about the simulation with 16 Gbps as well as S-parameters for the simulation of your own design are available on request.

Questions? We have answers!

Is there a specific receptacle for data transfer rates of up to 16 Gbps?

No, because the Colibri Receptacle already has an optimized contact design and is able to reach speeds of up to 16 Gbps in combination with the Colibri Plug 16+ connector.

Are the Colibri Plugs 16+ compatible with third party receptacles?

Data transfer rates of 16 Gbps can only be reached when using a Colibri Plug 16+ combined with a Colibri Receptacle. However, the Colibri Plugs 16+ are plug compatible with third party receptacles.

Why 16 Gbps exactly?

Data transfer rates of up to 16 Gbps are best suited for the PCIe Gen4 specification.

Are there advantages to using the new Plug 16+ in applications with data transfer rates of less 16 Gbps?

Yes. The new Plug 16+ provides improvements to signal integrity. Data transfer standards such as 10 Gigabit Ethernet or USB 3.1 Gen2 will therefore benefit from the new Colibri 16+.

Is the Colibri Plug 16+ available in 5 mm and 8 mm PCB distances?

Yes, both versions are available.

Is the new Colibri Plug 16+ compatible with the layout of its predecessor?

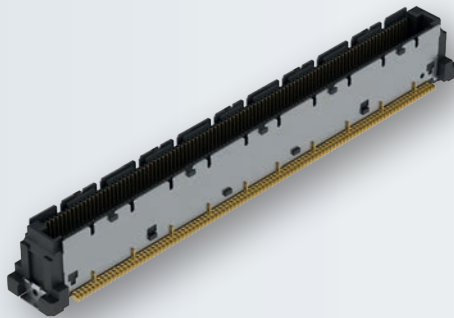
Yes, the Plug 16+ has the same footprint as the Plug 10+.

Is the Plug 16+ compatible with the COM Express standard?

Yes, the Plug 16+ is COM Express® compatible.

Technical Specifications

Colibri® for COM Express®		
Technical Specifications	Testing Standard	0.5 mm SMT Board-to-Board connector system
Basics		
Specification		PICMG COM.0
Number of pins		220 / 440
Termination		SMT
Operating temperature range		-40°C to +125°C
Material		
Insulator material		LCP, UL 94 V-0
Contact material		Copper alloy
Contact surface		Au over Ni
Mechanical		
Pitch		0.5 mm
Mating force per pin		max. 0.9 N
Separating force per pin		min. 0.1 N
Durability	IEC 60512-9-1:2010	30 mating cycles
Coplanarity		max. 0.1 mm
Electrical		
Operational current	IEC 60512-5-2:2002	max. 0.5 A
Operating voltage		50 VAC
Contact resistance	IEC 60512-2-1:2002	max. 75 mΩ
Insulation resistance	IEC 60512-3-1:2002	> 100 MΩ
Test voltage	IEC 60512-4-1:2003	200 VAC
Data transfer rate		16 Gbps
Processing		
Soldering temperature	JEDEC J-STD-020E	260°C
MSL	JEDEC J-STD-020E	1
Packaging		Tape and Reel or Tray
Assembly		Pick and place
Approval		
UL file		E130314
Environment		RoHS compliant



Type: Plug (Base Board)

Number of pins: 220, 440

Pitch: 0.5 mm

Data transfer rate: 16 Gbps

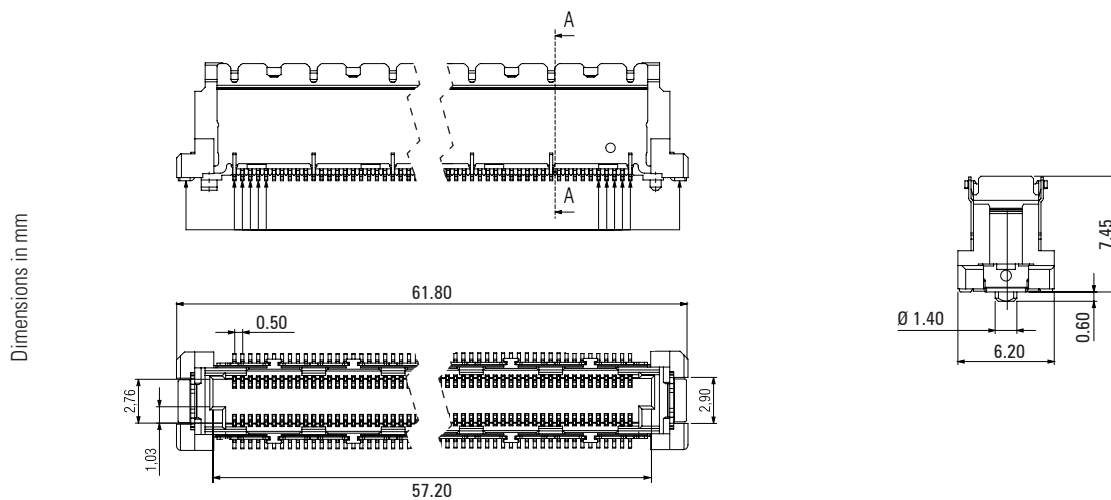
Packaging: Tape & Reel, Tray

Standards: PICMG COM.0



Technical Specification on page 5

For drawings and
technical data visit
www.ept.de/Colibri



Drawing shows 8 mm Board-to-board distance

Note

The 10 Gbps version is still available. For more information about the Colibri Plug 10+ check our Catalog or visit www.ept.de/Colibri

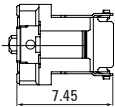
Mating connector / Application:



Colibri Receptacle (p. 10-11)



8 mm board-to-board distance . . .

Number of pins	Colibri® Plug			
				
	8 mm board-to-board distance			
	Part number	PU (Tape & Reel)	Part number	PU (Tray)
220	401-55103-51	600	401-55103-51VP1	336
440	401-55503-51	240	401-55503-51VP1	168

Ordering note

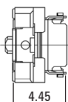
All pin numbers are also available with heavy gold plating; therefore please use the ending „52“ instead of 51 in the part number

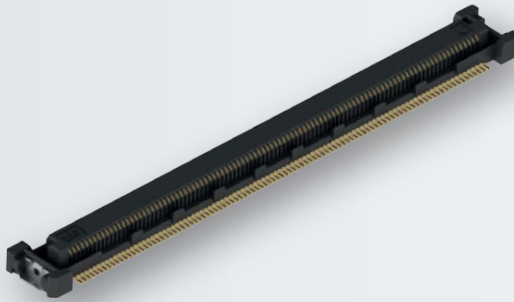
On request

- alternative contact surface
- with pick & place cap



5 mm board-to-board distance . . .

Number of pins	Colibri® Plug			
				
	5 mm board-to-board distance			
	Part number	PU (Tape & Reel)	Part number	PU (Tray)
220	401-51103-51	875	401-51103-51VP1	336
440	401-51503-51	350	401-51503-51VP1	168



Type: Receptacle (COM Module)

Number of pins: 220, 440

Pitch: 0.5 mm

Mating connector: 401-5XX01-51 - 10 Gbit/s
401-5XX03-51 - 16 Gbit/s

Packaging: Tape & Reel, Tray

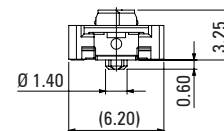
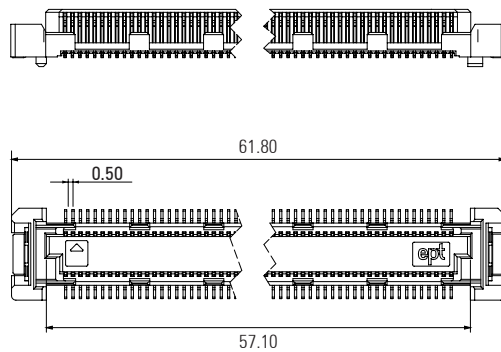
Standards: PICMG COM.0



Technical Specification on page 5

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Dimensions in mm



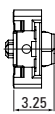
Note

The Colibri Receptacle is Plug 10+ as well as Plug 16+ compatible.
Data transfer speeds depend on the plug used in the setup.

Mating connector / Application:



Colibri Plug 5 mm & 8 mm (p. 6-7)

Number of pins	Colibri® Receptacle			
				
	Part number	PU (Tape & Reel)	Part number	PU (Tray)
220	402-51101-51	1050	402-51101-51VP1	336
440 with pick & place cap	402-51501-51	400	402-51501-51VP1	168

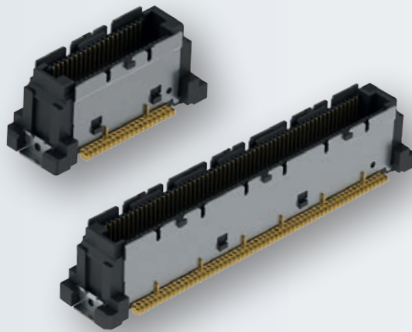
Ordering note

All pin numbers are also available with heavy gold plating; therefore please use the ending „52“ instead of 51 in the part number

On request

- alternative contact surface

Plug 16+ (Male Connector / Base Board)



Type: Plug (Base Board)

Number of pins: 40, 80, 120, 160

Pitch: 0.5 mm

Data transfer rate: 16 Gbit/s

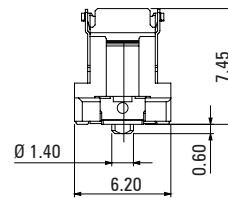
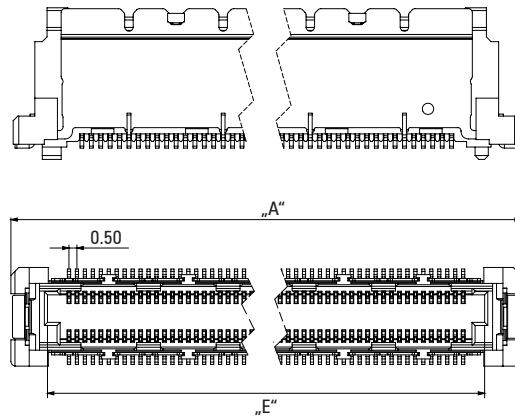
Packaging: Tape & Reel

Approval:  **US RoHS COMPLIANT**

Technical Specification on page 5

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technical data visit
www.ept.de

Dimensions in mm



Pins	„A“	„E“
40	16.80	12.20
80	26.80	22.20
120	36.80	32.20
160	46.80	42.20

Drawing shows 8 mm Board-to-board distance

Note

The 10 Gbps version is still available. For more information about the Colibri Plug 10+ check our Catalog or visit www.ept.de/Colibri

Mating connector / Application:

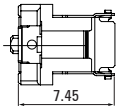


Colibri Receptacle (p. 12-13)

Plug 16+ (Male Connector / Base Board)



8 mm board-to-board distance

Number of pins	Colibri® Plug	
		
	8 mm board-to-board distance	
	Part number	PU (Tape & Reel)
40	401-55703-51	600
80	401-55603-51	
120	401-55403-51	
160	401-55303-51	

Ordering note

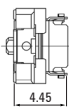
All pin numbers are also available with heavy gold plating; therefore please use the ending „52“ instead of 51 in the part number

On request

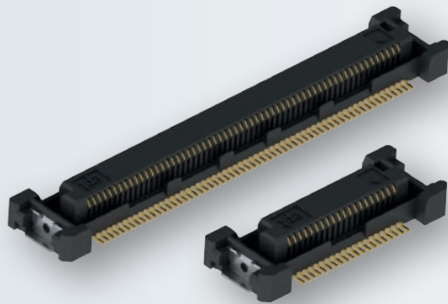
- alternative contact surface
- with pick & place cap



5 mm board-to-board distance

Number of pins	Colibri® Plug	
		
	5 mm board-to-board distance	
	Part number	PU (Tape & Reel)
40	401-51703-51	875
80	401-51603-51	
120	401-51403-51	
160	401-51303-51	

Receptacle (Female Connector / COM Modul)



Type: Receptacle (COM Module)

Number of pins: 40, 80, 120, 160

Pitch: 0.5 mm

Mating connector: 401-5XX01-51 - 10 Gbit/s
401-5XX03-51 - 16 Gbit/s

Packaging: Tape & Reel, Tray

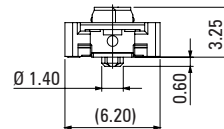
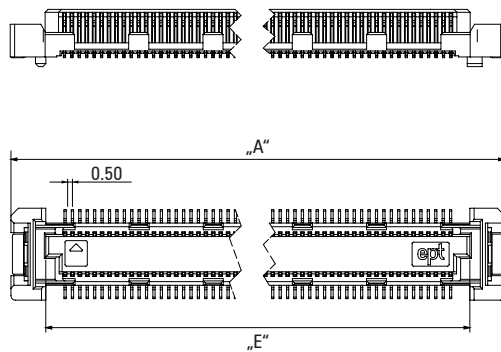
Standards: PICMG COM.0



Technical Specification on page 5

For drawings and
technical data visit
www.ept.de

Dimensions in mm



Pins	„A“	„E“
40	16.80	12.10
80	26.80	22.10
120	36.80	32.10
160	46.80	42.10

Note

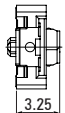
The Colibri Receptacle is Plug 10+ as well as Plug 16+ compatible.
Data transfer speeds depend on the plug used in the setup.

Mating connector / Application:



Colibri Plug 5 mm & 8 mm (p. 10-11)

Receptacle (Female Connector / COM Modul)

Number of pins	Colibri® Receptacle	
		
	Part number	PU (Tape & Reel)
40	402-51701-51	1050
80	402-51601-51	
120	402-51401-51	
160	402-51301-51	

Ordering note

All pin numbers are also available with heavy gold plating; therefore please use the ending „52“ instead of 51 in the part number

On request

- alternative contact surface

connectors

ept designs, produces and distributes electronic connectors for highquality applications. Founded by Bernhard Guglhör over 40 years ago, we are proud to remain an independent and family owned company. Today, we employ over 1.000 people at six locations worldwide.

Over decades we have built trusting and successful partnerships with our customers, who are the primary focus of all. Our products and core competencies are used in high-level applications.

With our motto "Precision with Passion" ept stands for the highest quality and reliability under the personal and individual touch of dedicated employees.

We are looking forward to working with you.

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