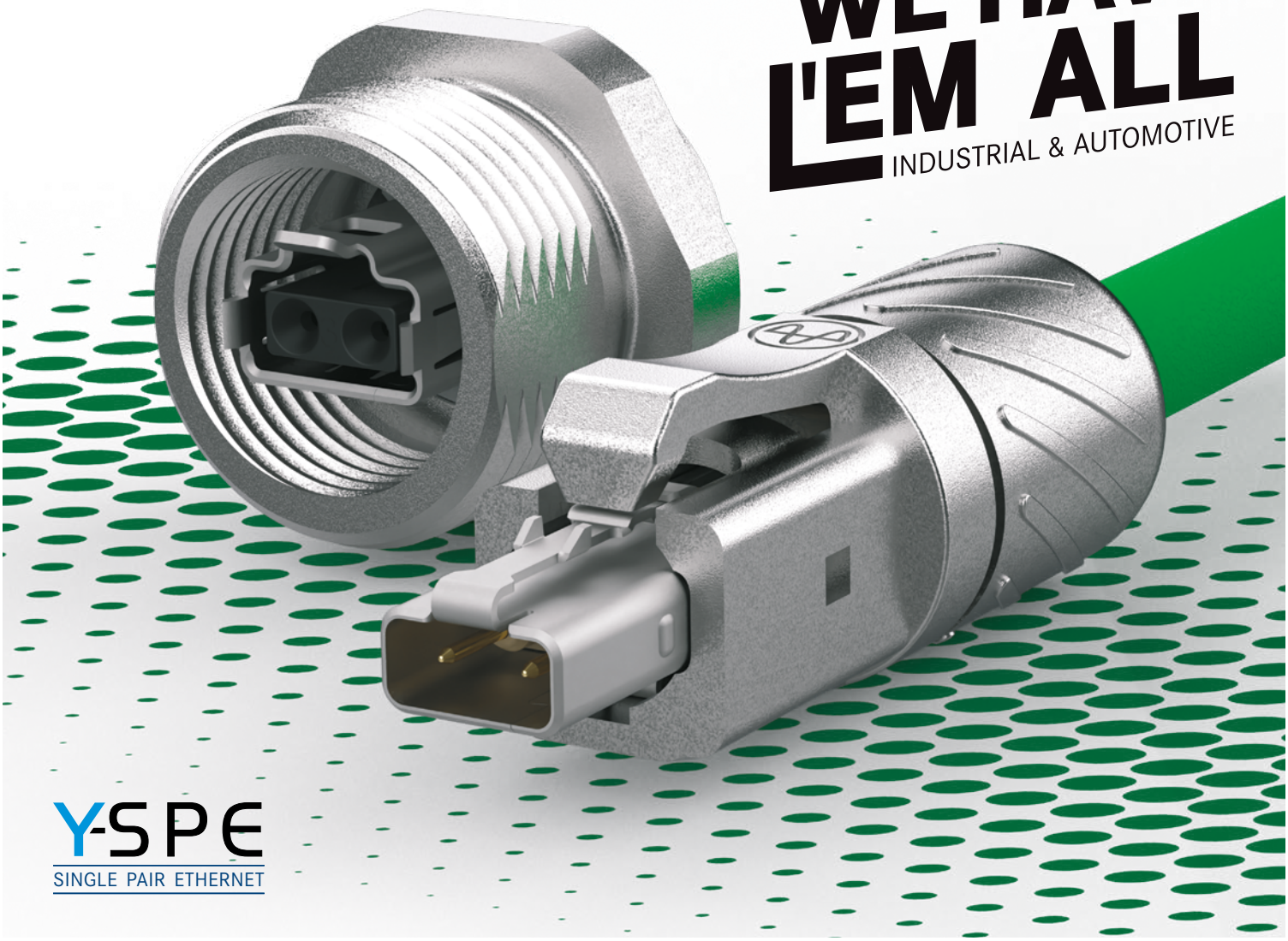
YAMAICHI ELECTRONICS

ENGINEERED TO CONNECT

SINGLE PAIR ETHERNET

WE HAVE L'EM ALL

INDUSTRIAL & AUTOMOTIVE



Y-SPE

SINGLE PAIR ETHERNET

SINGLE PAIR ETHERNET

SINGLE PAIR ETHERNET FROM YAMAICHI ELECTRONICS

As the demands on data transmission in automobiles continue to increase, Single Pair Ethernet (SPE) was originally - and now successfully - used in the automotive industry. However, the areas of use and applications of Single Pair Ethernet are continuously expanding.

For industrial use, SPE is a future-oriented communication platform of electrical or electronic components and machines and thus enables efficient and cost-effective data transmission from the sensor to the cloud.

Due to the large range and the uniform communication level, Single Pair Ethernet is therefore generally considered the key in the transition to IIoT and Industry 4.0.

The use of only two, instead of four or eight contacts as before, reduces costs, saves space, weight and time during assembly. Due to the reduced number of strands, potential errors during assembly are also reduced.

Y-SPE
SINGLE PAIR ETHERNET

Y-HDE
ETHERNET

Y-CIRC
SERIES

Y-SPE – INDUSTRIAL SINGLE PAIR ETHERNET ACCORDING TO IEC 63171

The IEC 63171 norm series was created for industry in order to guarantee secure communication and compatibility. The use in the industrial sector is locally unlimited and a multitude of machines and components from different manufacturers are to be interconnected. The standardisation provides the necessary basis for this.

The basic standard 63171 describes the fundamental technical requirements and qualification standards. Various sub-standards are assigned to this standard, which define connectors with different mating faces, partly for the same, but also partly for different applications. Some of these sub-standards have already been officially released, others are still in the standardisation process.

These standards include both connectors as IP20 solutions and IP6X circular connectors with screw or push-pull locking. Similar to Power over Ethernet (PoE), power transmission without additional contacts is also possible with SPE. This is called Power over Data Line (PoDL).

For applications with additional requirements, the IEC 63171-7 standard has also been defined for power transmission. These are M12 hybrid connectors with 7 different types and codings.

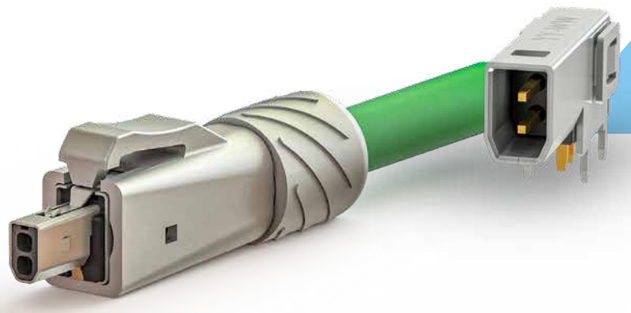
Yamaichi Electronics combines all industrial SPE connectors of the IEC 63171-x standard series in the Y-SPE product range and is continuously expanding its portfolio: in future, the Y-SPE product family will include mating faces of the IEC 63171-2 /-5 /-6 /-7 sub-standards. For the M12-based connectors, a choice can be made between push-pull and screw variants for locking.

63171 – Basic norm
63171-2 – IP20
63171-5 – IP67 on M8 / M12 base
63171-6 – IP20 / IP67 on M8 / M12 base
63171-7 – IP67 on M12 base

Y-SPE – INDUSTRIAL SINGLE PAIR ETHERNET ACCORDING TO IEC 63171

Connectors according to IEC 63171-2

- Jack 90°
- Plug IP20 180°



Connectors according to IEC 63171-6

- Plug IP20 180°
- Jacks 90° and 180°
- Socket M12 IP67 Front mount – screw type
- Socket M12 IP67 Front mount - inner push-pull
- Plug 180° IP67 screw type

- Plug 180° IP67 inner push-pull

Connectors according to IEC 63171-5

- Socket M8 IP67 Front Mount - screw type
- Plug M8 180° IP67 screw type
- Socket M12 IP67 Front mount – screw type
- Socket M12 IP67 Front mount - inner push-pull
- Plug M12 180° IP67 screw type
- Plug M12 180° IP67 inner push-pull

Connectors according to IEC 63171-7

Typ 2 (2 data pins / 4 power pins)

Typ 6 (2 data pins / 2 power pins)

- Socket M12 IP67 Front mount – screw type
- Socket M12 IP67 Front mount - inner push-pull
- Plug 180° IP67 screw type
- Plug 180° IP67 inner push-pull

Y-HDE - SPECIALLY FOR THE AUTOMOTIVE SECTOR

Single Pair Ethernet components in the automotive sector or for customised connectors are not subject to any IEC standardisation regarding the mating face.

With the Y-HDE series, Yamaichi Electronics offers the perfect connector for fast and secure data exchange in vehicles. The single pair Ethernet connector convinces with transmission rates of up to 20Gbps at 100 Ohm differential impedance in many high-speed applications and is tested in accordance with LV214/ USCAR.

ADVANTAGES OF THE Y-HDE PRODUCT SERIES:

- High-Speed Data Ethernet developed and tested for automotive requirements
- Data transmission up to 15 Ghz/20 Gbps
- 100 Ohm differential impedance
- 7 different codings available
- Mechanical and colour coding
- Space and weight saving design
- Single, double and quad types

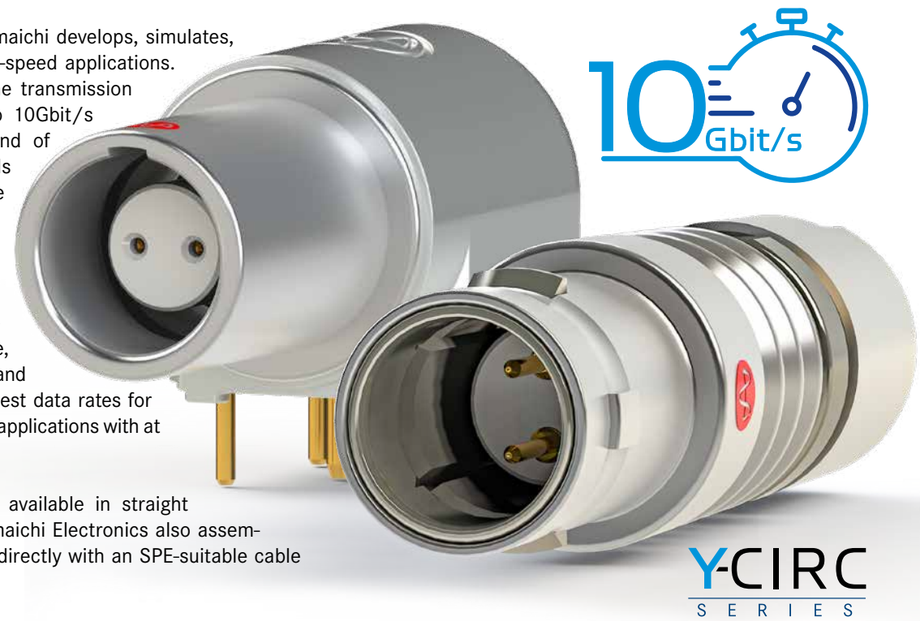
Y-CIRC P - PUSH-PULL CIRCULAR CONNECTOR VARIANTS

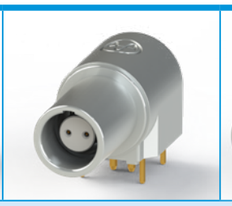
In addition to the standardised industrial SPE versions and the automotive connectors, Yamaichi Electronics also offers customised solutions based on the Y-Circ P metallic push-pull connectors with a high number of mating cycles.

In its in-house laboratory, Yamaichi develops, simulates, and tests pin layouts for high-speed applications. The S1 pin layout enables the transmission of Single Pair Ethernet up to 10Gbit/s according to IEC 802.3ch and of automotive Ethernet signals according to the Open Alliance Standard TC9.

The combination of the reliable push-pull locking mechanism in the small 09 connectors and the innovative, patent-pending insulator and contact design offers the highest data rates for special test and measurement applications with at least 5,000 mating cycles.

The new S1 pole pattern is available in straight and even angled sockets. Yamaichi Electronics also assembles the matching connector directly with an SPE-suitable cable on request.



Connector Types				
Connector Series	**B-Series**			
Connector Group	Cable Plug	Straight PCB Socket	Angled PCB Socket	
Connector Type	PB/PR	WG/WH	WE/WI	WI-Special
Size	09			
Pin Count	02 (S1)			
Contact Diameter	0.5 mm			
Contact Type	Solder	Print THT		
Contact Cross Section	0.25mm²	0.5mm	0.6mm	0.6mm
Acc. to IEC 802.3ch 10 Gbit/s	✓	✓	✓	✓
Acc. to TC9	✓			✓

ADVANTAGES OF THE YAMAICHI SPE PORTFOLIO:

- We offer product solutions for industrial, automotive and custom applications.
- For industrial Y-SPE: various mating faces according to IEC 63171-2/-5/-6 /-7
- High-Speed Data Ethernet Y-HDE according to automotive requirements
- Y-Circ P circular connectors for automotive Ethernet according to Open Alliance Standard TC9
- Customised new developments and adaptations are possible
- All from one source

SINGLE PAIR ETHERNET

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