



# **SINGLE-PAIR ETHERNET (SPE)**

**ETHERNET CABLES FROM THE SPECIALIST –  
IDEAL FOR INDUSTRIAL DATA COMMUNICATION**

**2023/2024**



**DATWYLER**

# SINGLE-PAIR ETHERNET (SPE)



Single Pair Ethernet  
System Alliance

## SPE AS A NEW ETHERNET STANDARD CONTINUOUS NETWORKING UP TO THE FIELD LEVEL

Single-Pair Ethernet (SPE) is an Ethernet standard for data transmission over a single pair of wires (2-Wire Ethernet) and is perfect for integrating intelligent sensors, RFID systems or high-resolution cameras into the existing industrial IP network.

When developing new industry standards, Datwyler and its partners rely on innovative Single-Pair Ethernet technology. SPE enables the consistent and economical connection of a large number of end devices in the Industrial IoT – from sensors in the field to the cloud.

### Selection of SPE solutions (as of November 2023)

Standard IEC 61156	Category/Class	Cable type	Cores	Dimensions n x n x AWG	Application (type) <sup>1)</sup>	Flexibility	UL Approval	PoDL IEEE 802.3	CPR	Flame propagation
Single-pair Ethernet (SPE) Cables IEC 61156	IEC 61156-11	Single-pair installation cable with transmission properties up to 600 MHz (fixed installation)	1 pair	1 x 2 x AWG22/1	A	fixed	✗	✓	✓	✓
					B	flexible				
					C	drag chain				
					R	torsion				
					A	fixed				
	IEC 61156-12	Single-pair connection/patch cable with transmission properties up to 600 MHz (flexible)	1 pair	1 x 2 x AWG22/7	B	flexible	UL 444 CMG	✓	✓	✓
				1 x 2 x AWG22/7			UL AWM 758	✓	✓	✓
				1 x 2 x AWG26/7			UL AWM 758	✓	✓	✓
				1 x 2 x AWG22/19	C	drag chain	UL AWM 758	✓	✓	✓
				1 x 2 x AWG22/19	R	torsion	UL AWM 758	✓	✓	✓
	IEC 61156-13	Single-pair installation cable with transmission properties up to 20 MHz (fixed installation)	1 pair	1 x 2 x AWG22/1	A	fixed	✗	✓	✓	✓
				1 x 2 x AWG18/1			✗	✓	✓	✓
					B	flexible				
					C	drag chain				
					R	torsion				
	IEC 61156-14	Single-pair connection/patch cable with transmission properties up to 20 MHz (flexible)	1 pair	1 x 2 x AWG22/7	B	flexible	✗	✓	✓	✓
1 x 2 x AWG22/7				UL 444 CMG			✓	✓	✓	
1 x 2 x AWG22/7				UL AWM 758			✓	✓	✓	
1 x 2 x AWG26/7				UL AWM 758			✓	✓	✓	
				A	fixed					

<sup>1)</sup> Definition of cable types in accordance with current Profinet guidelines <https://www.profinet.com/download/profinet-cabling-and-interconnection-technology>

Click here to go directly to the  
**PROFINET GUIDELINE**  
(PDF)





## CURRENT NEW DEVELOPMENTS:

### SPE cable, 1P, AWG 22 and AWG 26, FRNC, UL

Can be used as a patch and connection cable for flexible wiring in machine control cabinets and for general industrial applications where UL-certified products are required.

#### Product highlights:

- Meet SPE transmission properties according to IEC 61156-11
- Meet the high requirements for fire behavior in accordance with FT4 - UL 1685
- Variants with flame retardant, non-corrosive and halogen-free outer jacket (FRNC)
- Compatible with common SPE connectors according to IEC 63171

## THIS IS WHAT MAKES OUR ETHERNET CABLES SO UNIQUE:

- Datwyler produces more than 120,000 km of Ethernet cables per year in Switzerland
- Specialized manufacturer of Ethernet-based data technology
- Development partner for Cat.5/5e to Cat.6<sub>A</sub> and Cat.7 products including Single-Pair Ethernet (SPE)
- Cost savings thanks to an optimised design
- Highest quality: We test our materials and cables in our own laboratory
- UL and CSA approved for worldwide use

Zero halogen	Outdoor	Sheath material	Shielding	Max. bandwidth	Max. length	Typical application	Unique feature	Availability	Compatible connectors	Article number
✓	✗	LSZH FRNC	S/FTP	1000 Mbit/s	40 m	Horizontal wiring building	High flame retardance	available	IEC 63171	19143100DK
								not provided		
								not provided		
								not provided		
								not provided		
✓	✗	LSZH FRNC	S/FTP	1000 Mbit/s	40 m	Industrial communication machinery cabling	Space saving	available	IEC 63171	19471300EK
✓	✗	TPU	S/FTP	1000 Mbit/s	40 m	Industrial communication machinery cabling	Space saving	available	IEC 63171	19468300EK
✓	✗	TPU	S/FTP	1000 Mbit/s	40 m	Industrial communication machinery cabling	Space saving	available	IEC 63171	19468400EK
✓	✗	TPU	S/FTP	1000 Mbit/s	40 m	Industrial communication machinery cabling	Highly flexible design	in development	IEC 63171	-
✓	✗	TPU	S/FTP	1000 Mbit/s	40 m	Industrial communication machinery cabling	Highly flexible design	in development	IEC 63171	-
✓	✗	LSZH FRNC	S/FTP	10 Mbit/s	1000 m	Horizontal wiring building	High flame retardance	available	IEC 63171	19143100DK
✓	✗	LSZH FRNC	S/FTP	10 Mbit/s	1000 m	Horizontal wiring building	Long distance reach	on request	IEC 63171	-
								not provided		
								not provided		
								not provided		
								not provided		
✓	✗	LSZH FRNC	S/FTP	10 Mbit/s	1000 m	Horizontal wiring building	High flame retardance	available	IEC 63171	19463000DK
✓	✗	LSZH FRNC	S/FTP	10 Mbit/s	1000 m	Industrial communication machinery cabling	Space saving	available	IEC 63171	19471300EK
✓	✗	TPU	S/FTP	10 Mbit/s	1000 m	Industrial communication machinery cabling	Space saving	available	IEC 63171	19468300EK
✓	✗	TPU	S/FTP	10 Mbit/s	1000 m	Industrial communication machinery cabling	Space saving	available	IEC 63171	19468400EK



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