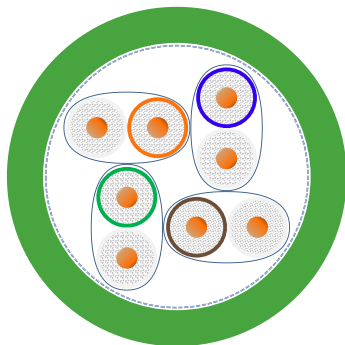


|                           |                                                 |                                                                                     |
|---------------------------|-------------------------------------------------|-------------------------------------------------------------------------------------|
| 2170605                   | <b>DATA SHEET</b>                               |  |
| valid from:<br>16.01.2024 | <b>ETHERLINE® PN Cat.7 Y A<br/>4x2x23/1 AWG</b> |                                                                                     |

## Application

|                  |                                                                                                                                                                                                                                                                                                      |
|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Field of use:    | Industrial Ethernet cable for generic cable system acc. to ISO/IEC 11801 and EN 50173. Suitable for fixed installation. Meeting the transmission requirements of IEC 61156-5, Category 7 and EN 50288-4-1. PROFINET® Type A acc. to the "PROFINET Cabling and Interconnection Technology" guideline. |
| Performance:     | 4-pair, overall braid screened, foil screened pair symmetrical cable (S/FTP), having a nominal impedance of 100 Ω, supporting a bandwidth of 10 Gbit/s (e.g. 100BASE-T, 1000BASE-T, 2.5GBASE-T, 5GBASE-T, 10GBASE-T) over up to 100 m.                                                               |
| Characteristics: | flame retardant, oil resistant, UV resistant, PWIS-free                                                                                                                                                                                                                                              |
| Applications:    | PROFINET Type A stationary cable for applications without movement after installation, EtherCAT, EtherNet/IP, PoE (IEEE 802.3af), PoE+ (IEEE 802.3at), 4PPoE (IEEE 802.3bt) and other                                                                                                                |



## Design

|                          |                                                                                                                                                                              |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Certification            | E224262 (UL) CL3 ST1 SUN RES FT4 acc. to. UL 13<br>E236660 c(UL)us CMG 75°C acc. to. UL 444 and CSA C22.2 No. 214<br>E63634 RU AWM Style 21695 80°C 600V FT2 acc. to. UL 758 |
| Conductor                | solid bare copper<br>23/1 AWG (0.25 mm <sup>2</sup> )<br>conductor diameter: nom. 0.57 mm                                                                                    |
| Insulation               | foam-skin PO (Polyolefine)<br>core diameter: max. 1.5 mm                                                                                                                     |
| Core identification code | pair 1: white/blue; pair 2: white/orange;<br>pair 3: white/green; pair 4: white/brown                                                                                        |
| Stranding                | cores twisted to pairs<br>four screened pairs stranded to bundle                                                                                                             |
| Pair screen              | plastic laminated aluminium foil                                                                                                                                             |
| Screen                   | braid of tinned copper wires (coverage: nom. 85 %)                                                                                                                           |
| Outer sheath             | PVC (Polyvinylchlorid)<br>green, similar RAL 6018<br>outer diameter: 8.1 mm ± 0.3 mm                                                                                         |

## Electrical properties at 20 °C

|                           |              |                                                                                                  |
|---------------------------|--------------|--------------------------------------------------------------------------------------------------|
| Loop resistance           | 20 °C:       | ≤ 15 Ω/100 m                                                                                     |
| Conductor resistance      | 20 °C:       | ≤ 7.5 Ω/100 m                                                                                    |
| Test voltage              | core/core:   | 2000 V                                                                                           |
|                           | core/screen: | 2000 V                                                                                           |
| Rated voltage             | UL:          | 300 V acc. to UL 13, UL 444 & CSA C22.2 No. 214<br>600 V acc. to UL 758                          |
| Maximum operating voltage | IEC/EN:      | 125 V (not intended to be used in conjunction with low impedance sources, such as utility mains) |
| Insulation resistance     | 20 °C:       | ≥ 5 GΩxkm                                                                                        |
| Mutual capacitance        | 1 kHz:       | nom. 44 nF/km                                                                                    |
| Capacitance unbalance     | 1 kHz:       | ≤ 1600 pF/km                                                                                     |

|                      |                       |             |
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|                                   |                                                 |                                                                                     |
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|                         |                             |             |
|-------------------------|-----------------------------|-------------|
| Transfer impedance      | Grade 1 acc. to IEC 61156-5 |             |
|                         | 1 MHz:                      | ≤ 15 mΩ/m   |
|                         | 10 MHz:                     | ≤ 10 mΩ/m   |
|                         | 30 MHz:                     | ≤ 30 mΩ/m   |
| Coupling attenuation    | 100 MHz:                    | ≤ 100 mΩ/m  |
|                         | Type I acc. to IEC 61156-5  |             |
|                         | 30 MHz:                     | ≥ 85        |
|                         | 100 MHz:                    | ≥ 85        |
| Velocity of propagation | 1000 MHz:                   | ≥ 65        |
|                         | 100 MHz:                    | nom. 0.77 c |

### Transmission properties at 20°C

The transmission characteristics meet the requirements of IEC 61156-5 for category 7 and the requirements of the PROFINET Cabling and Interconnection Technology Guideline.

| Frequency   | (max.) Phase delay | (max.) Differential delay | (max.) Attenuation | (min.) TCL Level 1 | (min.) EL TCTL Level 1 | (min.) NEXT | (min.) PS NEXT | (min.) ACR-F   | (min.) PS ACR-F | Char. Impedance | (min.) RL |
|-------------|--------------------|---------------------------|--------------------|--------------------|------------------------|-------------|----------------|----------------|-----------------|-----------------|-----------|
| f [MHz]     | [ns/<br>100 m]     | [ns/<br>100 m]            | [dB/<br>100 m]     | [dB]               | [dB]                   | [dB]        | [dB]           | [dB/<br>100 m] | [dB/<br>100 m]  | [Ohm]           | [dB]      |
| <b>4</b>    | 552.0              | 20.0                      | 3.7                | 34.0               | 23.0                   | 78.0        | 75.0           | 78.0           | 75.0            | —               | 23.0      |
| <b>10</b>   | 545.4              | 20.0                      | 5.9                | 30.0               | 15.0                   | 78.0        | 75.0           | 79.0           | 76.0            | —               | 25.0      |
| <b>20</b>   | 542.0              | 20.0                      | 8.3                | 27.0               | 9.0                    | 78.0        | 75.0           | 74.5           | 71.5            | —               | 25.0      |
| <b>62.5</b> | 538.6              | 20.0                      | 14.9               | 22.0               | —                      | 75.5        | 72.5           | 67.1           | 64.1            | —               | 21.5      |
| <b>100</b>  | 537.6              | 20.0                      | 19.0               | 20.0               | —                      | 72.4        | 69.4           | 64.0           | 61.0            | 100 ± 5         | 20.1      |
| <b>200</b>  | 536.5              | 20.0                      | 27.5               | 17.0               | —                      | 67.9        | 64.9           | 59.5           | 56.5            | —               | 18.0      |
| <b>250</b>  | 536.3              | 20.0                      | 31.0               | 16.0               | —                      | 66.4        | 63.4           | 58.0           | 55.0            | —               | 17.3      |
| <b>500</b>  | 535.6              | 20.0                      | 45.3               | —                  | —                      | 61.9        | 58.9           | 53.5           | 50.5            | —               | 15.6      |
| <b>600</b>  | 535.5              | 20.0                      | 50.1               | —                  | —                      | 60.7        | 57.7           | 52.3           | 49.3            | —               | 17.3      |

### Mechanical and thermal properties

|                        |                                                                                                                        |                                                                         |
|------------------------|------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Minimum bending radius | fixed installation:                                                                                                    | 4× outer diameter                                                       |
| Temperature range      | fixed installation:                                                                                                    | -30 °C up to +80 °C                                                     |
|                        | UL:                                                                                                                    | 75 °C acc. to UL 13, UL 444 & CSA C22.2 No. 214<br>80 °C acc. to UL 758 |
| Flammability           | flame retardant acc. to IEC 60332-1-2 resp. EN 60332-1-2<br>FT2 acc. to UL 1581 §1100<br>FT4 acc. to UL 1685 §12 - §19 |                                                                         |
| Oil resistance         | type TM 55 acc. to EN 50290-2-22, table 1 §10                                                                          |                                                                         |
| UV resistance          | SUN RES acc. to UL 13, 29                                                                                              |                                                                         |

### General requirements

These cables are conform to the LV-Directive 2014/35/EU (Low voltage Directive) and the EU-Directive 2011/65/EU (RoHS, Restriction of the use of certain hazardous substances).

### Environmental information

These cables meet the substance-specific requirements of the EU Directive 2011/65/EU (RoHS).

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