

|                                   |                                                                              |                                                                                     |
|-----------------------------------|------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| <b>2170972</b>                    | <b>DATA SHEET</b>                                                            |  |
| <b>valid from:<br/>10.01.2025</b> | <b>ETHERLINE® LAN 1000 Cat.7A S/FTP LSZH<br/>duplex<br/>2x(4x2x23/1 AWG)</b> |                                                                                     |

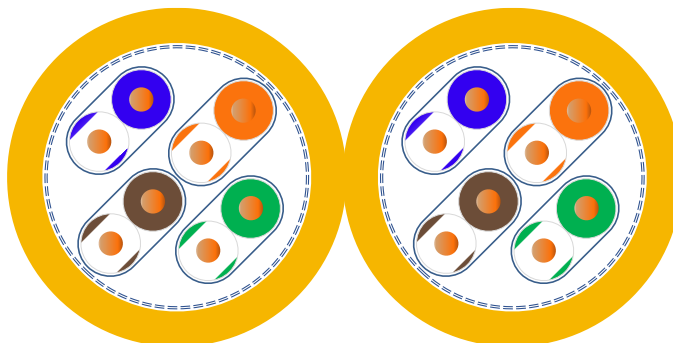
## Application

Field of use: Installation cable for generic cabling systems acc. to ISO/IEC 11801 and EN 50173

Performance: Bandwidth up to 1000 MHz acc. to IEC 61156-5 Category 7A and EN 50288-9-1 and applications up to 10GBase-T

Characteristics: halogen free, flame retardant and largely resistant to acids, alkalis and certain oils

Applications: EtherCAT, EtherNet/IP, PoE (IEEE 802.3af), PoE+ (IEEE 802.3at) and many others



## Design

|                          |                                                                                                                       |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------|
| Certification            | EN 13501-6 and EN 50575 Classification of fire behaviour                                                              |
| Conductor                | solid bare copper<br>23/1 AWG                                                                                         |
| Insulation               | Polyethylene<br>core diameter: ca. 1.3 mm                                                                             |
| Core identification code | pair 1: white(-blue)/blue, pair 2: white(-orange)/orange,<br>pair 3: white(-green)/green, pair 4: white(-brown)/brown |
| Stranding                | cores stranded to pairs,<br>4 pairs stranded to bundle                                                                |
| Pair screen              | plastic laminated aluminium foil (overlapping)                                                                        |
| Screen                   | braid of tinned copper wires                                                                                          |
| Outer sheath             | LSZH<br>yellow, similar RAL 1021<br>outer diameter: 14.8x7.4 mm (± 0.3 mm)                                            |

## Electrical properties at 20 °C

|                           |                                          |
|---------------------------|------------------------------------------|
| Loop resistance           | max. 16.0 Ω/100 m                        |
| Test voltage              | core/core: 1000 V<br>core/screen: 1000 V |
| Maximum operating voltage | 100 V (not for other purposes)           |
| Insulation resistance     | min. 5 GΩ x km                           |
| Mutual capacitance        | nom. 43 nF/km                            |
| Transfer impedance        | Grade 2 acc. to IEC 61156-5              |
| Coupling attenuation      | > 80 dB (30 MHz - 1000 MHz)              |
| Velocity of propagation   | 0.79 c                                   |
| Characteristic impedance  | nom. 100 Ω acc. to IEC 61156-5           |
| Signal propagation time   | ≤ 460 ns/100 m                           |
| Delay skew                | ≤ 20 ns/100 m                            |

|                      |                       |             |
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|                           |                                                                                          |                                                                                     |
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### Transmission properties at 20°C

The transmission characteristics meet the requirements of IEC 61156-5 for category 7A.

| 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]      |
| 4         | 552.0              | 25.0                      | 3.7                | 34.0               | 23.0                   | 78.0        | 75.0           | 78.0           | 75.0            | —               | 23.0      |
| 10        | 545.4              | 25.0                      | 5.8                | 30.0               | 15.0                   | 78.0        | 75.0           | 80.3           | 77.3            | —               | 25.0      |
| 20        | 542.0              | 25.0                      | 8.2                | 27.0               | 9.0                    | 78.0        | 75.0           | 75.8           | 72.8            | —               | 25.0      |
| 62.5      | 538.6              | 25.0                      | 14.6               | 22.0               | —                      | 78.0        | 75.0           | 68.4           | 65.4            | —               | 21.5      |
| 100       | 537.6              | 25.0                      | 18.5               | 20.0               | —                      | 75.4        | 72.4           | 65.3           | 62.3            | 100 ± 5         | 20.1      |
| 250       | 536.3              | 25.0                      | 29.7               | 16.0               | —                      | 69.4        | 66.4           | 59.3           | 56.3            | —               | 17.3      |
| 500       | 535.6              | 25.0                      | 42.8               | —                  | —                      | 64.9        | 61.9           | 54.8           | 51.8            | —               | 15.6      |
| 600       | 535.5              | 25.0                      | 47.1               | —                  | —                      | 63.7        | 60.7           | 53.6           | 50.6            | —               | 17.3      |
| 1000      | 535.1              | 25.0                      | 61.9               | —                  | —                      | 60.4        | 57.4           | 50.3           | 47.3            | —               | 15.6      |

### Mechanical and thermal properties

|                        |                                                                                                                          |
|------------------------|--------------------------------------------------------------------------------------------------------------------------|
| Minimum bending radius | fixed installation: 4x outer diameter<br>occasional flexing: 8x outer diameter                                           |
| Temperature range      | fixed installation: -20 °C up to +60 °C<br>occasional flexing: 0 °C up to +50 °C                                         |
| Flammability           | flame retardant acc. to IEC 60332-1-2 resp. EN 60332-1-2<br>flame propagation acc. to IEC 60332-3-24 resp. EN 60332-3-24 |
| Halogen free           | acc. to IEC 60754-1 resp. EN 60754-1                                                                                     |
| Corrosivity of gases   | acc. to IEC 60754-2 resp. EN 60754-2                                                                                     |
| Smoke density          | acc. to IEC 61034 resp. EN 61034                                                                                         |

**General requirements** This cable is conform to the EU-Directive 2011/65/EU (RoHS, Restriction of the use of certain hazardous substances) and the LV-Directive 2014/35/EU (Low voltage Directive). This cable is classified in accordance with the EU-Regulation no. 305/2011 (CPR).

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

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