

## Bus system cable - VS-936/... - 1416599

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CAT5e, PROFINET cable, shielded, star-quad, 4-pos., 22 AWG (7-wire), black, length: variable



### Key Commercial Data

|                                      |          |
|--------------------------------------|----------|
| Packing unit                         | 1 pc     |
| Weight per Piece (excluding packing) | 80.000 g |
| Custom tariff number                 | 85444210 |
| Country of origin                    | Poland   |

### Technical data

#### Dimensions

|                 |                              |
|-----------------|------------------------------|
| Length of cable | free input (0.2 ... 100.0 m) |
|-----------------|------------------------------|

#### Ambient conditions

|                                 |                                                 |
|---------------------------------|-------------------------------------------------|
| Ambient temperature (operation) | -40 °C ... 90 °C (cable, fixed installation)    |
|                                 | -25 °C ... 90 °C (cable, flexible installation) |

#### General data

|                      |                                     |
|----------------------|-------------------------------------|
| Rated voltage        | 48 V AC                             |
|                      | 60 V DC                             |
| Number of positions  | 4                                   |
| Signal type/category | PROFINET CAT5 (IEC 11801), 100 Mbps |

#### Characteristics head 1

|                        |              |
|------------------------|--------------|
| Head type              | configurable |
| Shielded               | yes          |
| Outer sheath, material | PE-X         |

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## Technical data

### Characteristics head 1

|                        |                |
|------------------------|----------------|
| External sheath, color | black RAL 9005 |
|------------------------|----------------|

### Characteristics head 2

|           |              |
|-----------|--------------|
| Head type | configurable |
|-----------|--------------|

### Cable

|                                               |                                                                 |
|-----------------------------------------------|-----------------------------------------------------------------|
| Cable type                                    | PROFINET RADOX <sup>®</sup> railway application CAT5 reinforced |
| Cable type (abbreviation)                     | 936                                                             |
| Signal type/category                          | PROFINET CAT5 (IEC 11801), 100 Mbps                             |
| Cable structure                               | 1x4xAWG22/7; SF/TQ                                              |
| Conductor cross section                       | 4x 0.34 mm <sup>2</sup>                                         |
| AWG signal line                               | 22                                                              |
| Conductor structure signal line               | 7x 0.25 mm                                                      |
| Core diameter including insulation            | 1.95 mm                                                         |
| Wire colors                                   | white-blue, orange-yellow                                       |
| Overall twist                                 | Star quad                                                       |
| Shielding                                     | Plastic-coated aluminum foil, tinned copper braided shield      |
| Optical shield covering                       | 100 %                                                           |
| External sheath, color                        | black RAL 9005                                                  |
| Outer sheath thickness                        | ≥ 0.8 mm                                                        |
| External cable diameter D                     | 7.25 mm ±0.3 mm                                                 |
| Minimum bending radius, fixed installation    | 6 x D                                                           |
| Minimum bending radius, flexible installation | 10 x D                                                          |
| Cable weight                                  | 81 g/m                                                          |
| Outer sheath, material                        | PE-X                                                            |
| Material conductor insulation                 | PE-X                                                            |
| Conductor material                            | silver-plated Cu litz wires                                     |
| Conductor resistance                          | ≤ 54.4 Ω/km                                                     |
| Working capacitance                           | ≤ 65 pF (core-core)                                             |
|                                               | ≤ 100 pF (core-shield)                                          |
| Wave impedance                                | 100 Ω ±5 Ω (f = 100 MHz)                                        |
| Near end crosstalk attenuation (NEXT)         | 80 dB (with 1 MHz)                                              |
|                                               | 76 dB (at 4 MHz)                                                |
|                                               | 67 dB (at 10 MHz)                                               |
|                                               | 60 dB (at 31.5 MHz)                                             |
|                                               | 56 dB (at 62.5 MHz)                                             |
|                                               | 53 dB (at 100 MHz)                                              |
| Remote crosstalk attenuation (FEXT)           | 80 dB (with 1 MHz)                                              |

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## Technical data

### Cable

|                                  |                                                      |
|----------------------------------|------------------------------------------------------|
|                                  | 70 dB (at 4 MHz)                                     |
|                                  | 65 dB (at 10 MHz)                                    |
|                                  | 58 dB (at 31.5 MHz)                                  |
|                                  | 59 dB (at 62.5 MHz)                                  |
|                                  | 67 dB (at 100 MHz)                                   |
| Attenuation                      | 2 dB (with 1 MHz)                                    |
|                                  | 4 dB (at 4 MHz)                                      |
|                                  | 6.5 dB (at 10 MHz)                                   |
|                                  | 10.5 dB (at 31.5 MHz)                                |
|                                  | 14 dB (at 62.5 MHz)                                  |
|                                  | 18 dB (at 100 MHz)                                   |
| Return loss (RL)                 | 35 dB (at 4 MHz)                                     |
|                                  | 35 dB (at 10 MHz)                                    |
|                                  | 35 dB (at 31.5 MHz)                                  |
|                                  | 33 dB (at 62.5 MHz)                                  |
|                                  | 33 dB (at 100 MHz)                                   |
| Signal speed                     | 66 c                                                 |
| Shield attenuation               | 40 dB (30 MHz ≤ f ≤ 100 MHz)                         |
| Coupling resistance              | 200.00 mΩ/m (f ≤ 30 MHz)                             |
| Nominal voltage, cable           | 300 V AC                                             |
| Test voltage, cable              | 2000 V AC (50 Hz, 5 minutes)                         |
| Fire protection in rail vehicles | BS 6853 (Category Ia, Ib, II)                        |
|                                  | GM/RT 2130 (Category Ia, Ib, II)                     |
|                                  | EN 45545 (Risk level HL1 - HL3)                      |
|                                  | DIN 5510 (Fire protection level 1, 2, 3, 4)          |
|                                  | NF F16-101 (Category A1, A2, B)                      |
|                                  | NF F16-101 (Class C/F0)                              |
|                                  | NFPA 130                                             |
|                                  | UNI CEI 11170 (Risk level LR1 - LR4)                 |
| Flame resistance                 | EN 60332-1-2                                         |
|                                  | EN 50266                                             |
|                                  | EN 60332-3-25                                        |
|                                  | NF C32-070, 2.1                                      |
|                                  | NF C32-070, 2.2                                      |
|                                  | UL 1685, 12 (FT4)                                    |
|                                  | in accordance with ISO 6722-1 5.22 (UN ECE-R 118.01) |
| Halogen-free                     | According to EN 50267-2-1                            |

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### Technical data

#### Cable

|                                 |                                                          |
|---------------------------------|----------------------------------------------------------|
| Resistance to oil               | according to IRM 902, 72 h at 100 °C                     |
| Other resistance                | Resistance to fuels according to IRM 903, 168 h at 70 °C |
| Concentration of fumes          | BS 6853 D.8.7                                            |
|                                 | EN 61034-2                                               |
|                                 | UL 1685, 12 (FT4)                                        |
| Fume corrosiveness              | EN 50267-2-2                                             |
| Fume toxicity                   | BS 6853 B.1                                              |
|                                 | EN 50305, 9.2                                            |
| Ambient temperature (operation) | -50 °C ... 90 °C (cable, fixed installation)             |
|                                 | -40 °C ... 90 °C (cable, flexible installation)          |

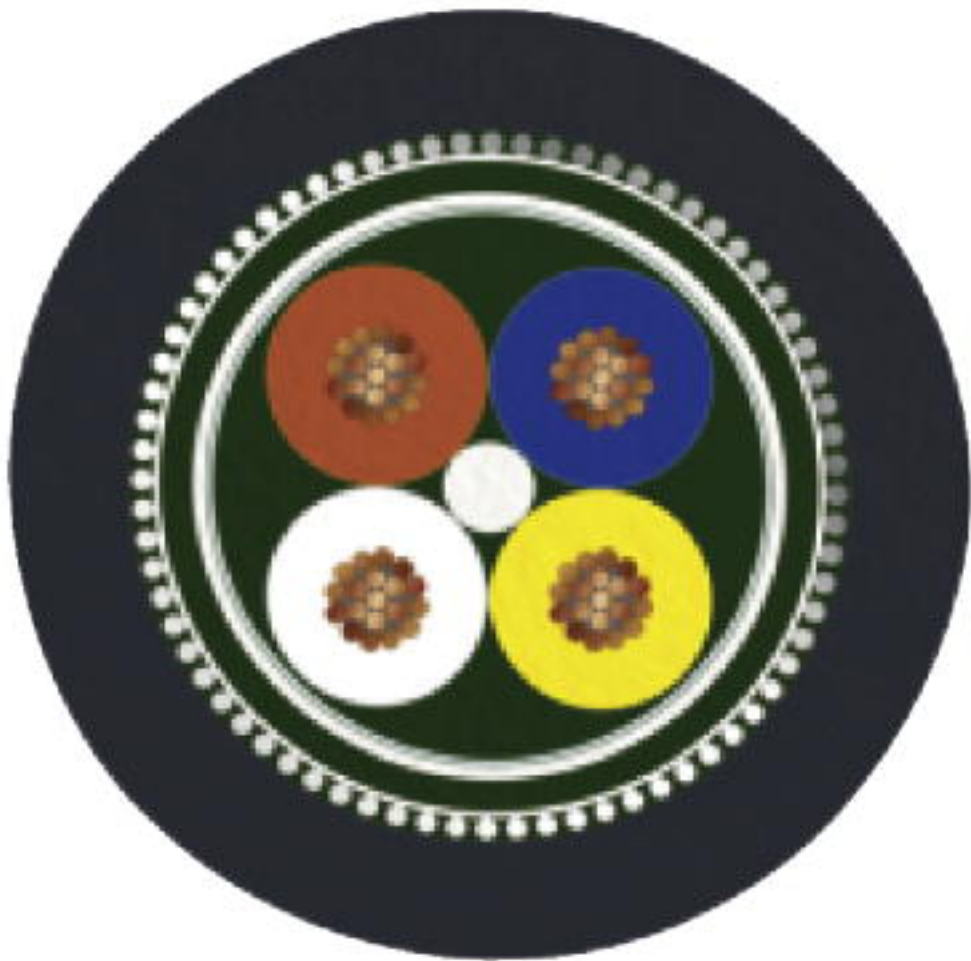
#### Environmental Product Compliance

|            |                                                         |
|------------|---------------------------------------------------------|
| China RoHS | Environmentally friendly use period: unlimited = EFUP-e |
|            | No hazardous substances above threshold values          |

### Drawings

Bus system cable - VS-936/... - 1416599

Cable cross section



PROFINET RADOX® railway application CAT5 reinforced [936]

Classifications

eCl@ss

|            |          |
|------------|----------|
| eCl@ss 4.0 | 24010400 |
| eCl@ss 4.1 | 24010400 |
| eCl@ss 5.0 | 19030300 |
| eCl@ss 5.1 | 19030300 |
| eCl@ss 6.0 | 27061800 |
| eCl@ss 7.0 | 27061801 |
| eCl@ss 8.0 | 27061801 |

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### Classifications

#### eCl@ss

|            |          |
|------------|----------|
| eCl@ss 9.0 | 27061801 |
|------------|----------|

#### ETIM

|          |          |
|----------|----------|
| ETIM 3.0 | EC000830 |
| ETIM 4.0 | EC000830 |
| ETIM 5.0 | EC000830 |
| ETIM 6.0 | EC000830 |
| ETIM 7.0 | EC003249 |

#### UNSPSC

|               |          |
|---------------|----------|
| UNSPSC 6.01   | 31261501 |
| UNSPSC 7.0901 | 31261501 |
| UNSPSC 11     | 31261501 |
| UNSPSC 12.01  | 31261501 |
| UNSPSC 13.2   | 31251501 |
| UNSPSC 18.0   | 26121604 |
| UNSPSC 19.0   | 26121604 |
| UNSPSC 20.0   | 26121604 |
| UNSPSC 21.0   | 26121604 |

### Approvals

#### Approvals

#### Approvals

#### EAC

#### Ex Approvals

#### Approval details

|     |                                                                                     |                          |
|-----|-------------------------------------------------------------------------------------|--------------------------|
| EAC |  | RU C-<br>DE.BL08.B.00511 |
|-----|-------------------------------------------------------------------------------------|--------------------------|