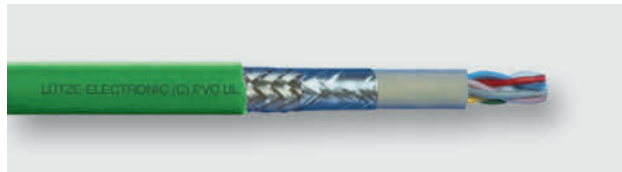


# LUTZE ETHERNET BUS (C) PVC, Shielded

## Flexible ETHERNET Cable with UL Approval



### Application

- For the cabling of industrial field bus systems with the globally accepted TCP/IP protocol
- Cable design for harsh industrial environments and operating conditions with high noise levels.
- Application in automation technology, transport and conveyor technology, machine tool manufacture
- For flexible use and stationary application

### Characteristics

- High active and passive interference resistance (EMC)
- Talc and Silicone free

### Technical data

|                              |                                                                                                         |
|------------------------------|---------------------------------------------------------------------------------------------------------|
| Impedance                    | 100Ω ± 10Ω                                                                                              |
| Loop resistance              | Solid AWG 22/1= 0,34 <sup>2</sup><br><110Ω/km                                                           |
|                              | Strand AWG 24/7= 0,22 <sup>2</sup><br><165Ω/km                                                          |
|                              | Strand AWG 26/7=0.14 <sup>2</sup><br><273Ω/km                                                           |
| Operating capacitance        | < 50pF/m                                                                                                |
| Nominal voltage              | 300V                                                                                                    |
| Test voltage                 | 1500V                                                                                                   |
| Temperature range            | Moving -5°C - +70°C<br>Fixed -30°C - +80°C                                                              |
| Minimum bending radius       | Moving 12 x cable OD<br>Fixed 6 x cable OD                                                              |
| Burning behavior             | Flame retardant per<br>DIN EN 60332-1-2<br>IEC 60332-3-24<br>UL 1581 section VW-1<br>Flame Test<br>FT 4 |
| Approvals                    | cULus CMG<br>RoHS<br>REACH                                                                              |
| Item specific certifications | 104336 & 104397:<br>CC-Link IE Field                                                                    |
| AWG specific approvals       | AWG22:<br>cULus PLTC<br>cURus AWM 600V<br>Class I, II Div. 2 per NEC<br>Art. 336, 392, 501, 502         |

### Construction

- AWG conductor
- Bare copper wire
- Conductor insulation special polyolefin
- ST static foil shield
- Tinned copper braid shield, optical coverage ≥ 85 %
- Jacket PVC, matte, adhesion-free surface
- Green jacket RAL 6018, Teal jacket RAL 5021

For further information, see ETHERNET pages in the Technical Overview

Specifications are subject to change without prior notice

| Part No. | Description<br>No. of conductors | OD / Ø<br>ca. mm | OD / Ø<br>inches | Weight<br>Lbs/Mft | Copper<br>Lbs/Mft |
|----------|----------------------------------|------------------|------------------|-------------------|-------------------|
|----------|----------------------------------|------------------|------------------|-------------------|-------------------|

### Industrial Ethernet/ProfiNet/EtherCat, Green

|               |                                                                                                                             |     |       |    |    |
|---------------|-----------------------------------------------------------------------------------------------------------------------------|-----|-------|----|----|
| <b>104301</b> | (2x2xAWG22/1)<br>CMG, PLTC, AWM 20201 600V<br><b>Cat5</b> 100 MHz, SF/UTQ<br>Star-Quad, FC, ProfiNet Type A<br>WH/BU, YE/OG | 6.5 | 0.256 | 44 | 25 |
| <b>104307</b> | (2x2xAWG22/7)<br>CMG, PLTC, AWM 20201 600V<br><b>Cat5</b> 100 MHz, SF/UTQ<br>Star-Quad, FC, ProfiNet Type B<br>WH/BU, YE/OG | 6.5 | 0.256 | 44 | 21 |

### Industrial Ethernet/Ethernet IP, Green

|               |                                                                                                                     |     |       |       |    |
|---------------|---------------------------------------------------------------------------------------------------------------------|-----|-------|-------|----|
| <b>104335</b> | (4x2xAWG26/7)<br>CMG<br><b>Cat5e</b> 100 MHz, SF/UTP<br>WHBU/BU, WHOG/OG,<br>WHGN/GN, WHBN/BN                       | 6.3 | 0.248 | 0.248 | 20 |
| <b>104336</b> | (4x2xAWG24/7)<br>CMG<br><b>Cat5e</b> 100 MHz, SF/UTP<br>WHBU/BU, WHOG/OG,<br>WH GN/GN, WHBN/BN                      | 7.3 | 0.287 | 46    | 26 |
| <b>104338</b> | (4x(2xAWG26/7))<br>CMG<br><b>Cat6a</b> 500 MHz, S/FTP<br>WHBU/BU, WHOG/OG,<br>WHGN/GN, WHBN/BN                      | 6.4 | 0.252 | 36    | 22 |
| <b>104397</b> | (4x(2xAWG22/1))<br>CMG, PLTC, AWM 2570 600V<br><b>Cat6a</b> 600 MHz, S/FTP<br>WHBU/BU, WHOG/OG,<br>WHGN/GN, WHBN/BN | 9.6 | 0.378 | 65    | 36 |
| <b>104331</b> | (4x(2xAWG26/7))<br>CMG<br><b>Cat7</b> 600 MHz, S/FTP<br>WHBU/BU, WHOG/OG,<br>WHGN/GN, WHBN/BN                       | 7.0 | 0.276 | 42    | 22 |

### Industrial Ethernet/Ethernet IP, Teal

|               |                                                                                                                    |     |       |    |    |
|---------------|--------------------------------------------------------------------------------------------------------------------|-----|-------|----|----|
| <b>104349</b> | (4x2xAWG22/7)<br>CMG, PLTC, AWM 2570 600V<br><b>Cat5e</b> 100 MHz, SF/UTP<br>WHBU/BU, WHOG/OG,<br>WHGN/GN, WHBN/BN | 8.6 | 0.338 | 62 | 32 |
|---------------|--------------------------------------------------------------------------------------------------------------------|-----|-------|----|----|

# ETHERNET – Overview

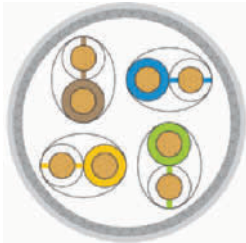
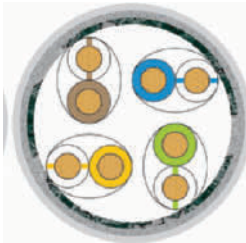
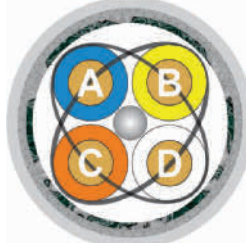
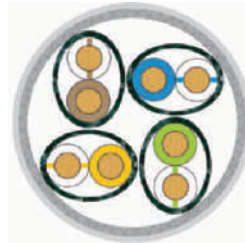
## 1) Correct Handling and Installation of Network Copper Cable

- Do not subject cable to tension
- Do not kink the cable
- Do not bend the cable more than 90° (See individual specifications for bending radius)
- Strip the cable as short as possible
- Do not crush cable when fastening
- Do not untwist the conductor pairs by more than 0.5 inch
- Terminate the shielding on both ends

## 2) LUTZE ETHERNET Cables

We recommend shielded industrial ETHERNET cable, such as LUTZE ETHERNET cable, for use in industrial environment to ensure secure connectivity. Motors and other electrical noise producing devices are often located in close proximity to network cabling. EMI (Electro Magnetic Interference) and RFI (Radio Frequency Interference) can distort data transmission on copper-based network cable. To lessen or eliminate interference, called alien-crosstalk, the use of shielded industrial cable and connectors is recommended.

Available LUTZE ETHERNET Cables:

|  |  |  |  |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| S/UTP                                                                             | SF/UTP                                                                            | SF/UTQ                                                                             | S/FTP                                                                               |
| Susceptibility for Interference                                                   |                                                                                   |                                                                                    |                                                                                     |
| some                                                                              | low                                                                               |                                                                                    | low                                                                                 |
| 104337 CAT 5e                                                                     | 104335 CAT 5e                                                                     | 104301 CAT 5e                                                                      | 104338 CAT 6 <sub>A</sub>                                                           |
|                                                                                   | 104336 CAT 5e                                                                     | 104307 CAT 5e                                                                      | 104397 CAT 6 <sub>A</sub>                                                           |
|                                                                                   | 104396 CAT 5e                                                                     | 104302 CAT 5e                                                                      | 104331 CAT 7                                                                        |
|                                                                                   | 104349 CAT 5e                                                                     | 104303 CAT 5e                                                                      |                                                                                     |
|                                                                                   | 104347 CAT 6                                                                      | 104379 CAT 5e                                                                      |                                                                                     |

## 3) Key for Twisted Pair Cables according to ISO/IEC-11801 (2002)E

XX/YYZ

XX for the outer shielding / Y for the pair shielding ZZ for the pair arrangement

U = unshielded / U = unshielded TP = twisted pair (regular)

F = foiled shield / F = foiled shield TQ = quad pair (star quad)

S = braided shield / S = braided shield

SF = braided and foiled shield

In order to utilize EMI/RFI shielding, the shield must be properly terminated at both ends!

## 4) ProfiNet Star Quad Design and Termination

The star quad is a specific low-impedance cable configuration. Four conductors are twisted on a common axis. The conductors across from each other make a pair.

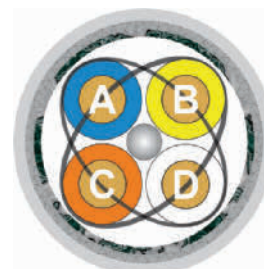
In **Figure 1** the pairs are as follows:

**Pair 1:**

Conductor A ↔ Conductor D

**Pair 2:**

Conductor B ↔ Conductor C



**Figure 1**

Other terminations than in **Figure 1** lead to interferences, decreased connectivity or no connectivity at all.