

# Data sheet

## chainflex® CF898

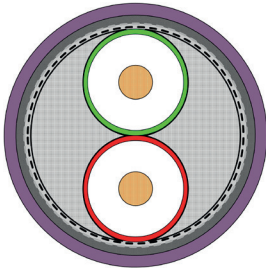


Bus cable (Class 3.1.3.1) ● For flexing applications ● iguPUR outer jacket ● Oil-resistant  
● Shielded ● Flame retardant



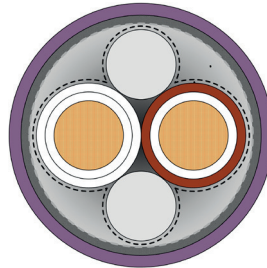
### Profibus

CF898.001



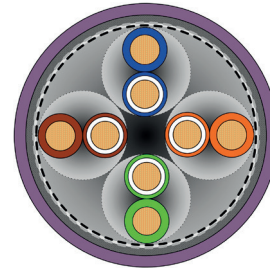
### CAN-Bus

CF898.021



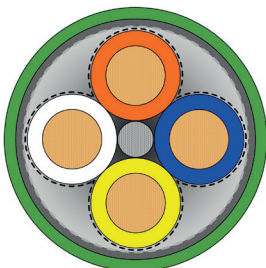
### Ethernet (CAT5/CAT5e/GigE/PoE)

CF898.045



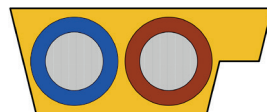
### Profinet (Type C)

CF898.060



### AS-Interface

CF898.082-CF898.083



igus 36-month chainflex cable guarantee and service life calculator based on 2 billion test cycles per year



Example image

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## chainflex® CF898



Bus cable (Class 3.1.3.1) ● For flexing applications ● iguPUR outer jacket ● Oil-resistant  
● Shielded ● Flame retardant

### Cable structure

|                                                                                   |                            |                                                                                                                                                                                         |
|-----------------------------------------------------------------------------------|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <b>Conductor</b>           | Conductor consisting of bare copper wires (according to DIN EN 60228).                                                                                                                  |
|  | <b>Core insulation</b>     | According to bus specification.                                                                                                                                                         |
|  | <b>Core structure</b>      | According to bus specification.                                                                                                                                                         |
|  | <b>Core identification</b> | According to bus specification.<br>► Product range table                                                                                                                                |
|  | <b>Overall shield</b>      | Braiding made of tinned copper wires.<br>Coverage approx. 60 % optical                                                                                                                  |
|  | <b>Outer jacket</b>        | Low-adhesion iguPUR mixture, adapted to suit the requirements in e-chains®.<br><b>Colour:</b> Red lilac (similar to RAL 4001), Variants ► Product range table<br><b>Printing:</b> black |

„00000 m\*\* igus chainflex M CF898.---① ---② ---③ EAC/CTP CE ---④

---⑤ conform RoHS-II conform

www.igus.de +++ chainflex cable works +++

\* **Length printing:** Not calibrated. Only intended as an orientation aid.

① / ② Cable identification according to Part No. (see technical table).

③ Printing of the UL style (see related chapter).

④ Printing: DESINA (only if DESINA is fulfilled).

⑤ Printing according to bus specification (inclusive wave resistance).

Example: ... chainflex **CF898.001 (2x0.25)C** ...

### Guaranteed service life according to guarantee conditions

| Double strokes            | 1 million           | 3 million           | 5 million           |
|---------------------------|---------------------|---------------------|---------------------|
| Temperature, from/to [°C] | R min. [factor x d] | R min. [factor x d] | R min. [factor x d] |
| -20/-10                   | 17.5                | 18.5                | 19.5                |
| -10/+60                   | 15                  | 16                  | 17                  |
| +60/+70                   | 17.5                | 18.5                | 19.5                |

Minimum guaranteed service life of the cable under the specified conditions.

The installation of the cable is recommended within the middle temperature range.



Example image

igus® chainflex® CF898.045

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Bus cable (Class 3.1.3.1) ● For flexing applications ● iguPUR outer jacket ● Oil-resistant  
● Shielded ● Flame retardant

### Properties and approvals

|  |                 |                                                                                                                                        |
|--|-----------------|----------------------------------------------------------------------------------------------------------------------------------------|
|  | UV resistance   | Medium                                                                                                                                 |
|  | Oil resistance  | Oil-resistant (following DIN EN 50363-10-2), Class 3                                                                                   |
|  | Flame retardant | <b>CF898.001-CF898.060:</b> According to IEC 60332-1-2, FT1, VW-1<br><b>CF898.082-CF898.083:</b> According to IEC 60332-1-2, FT2       |
|  | Silicone-free   | Free from silicone which can affect paint adhesion (following PV 3.10.7 – status 1992)                                                 |
|  | UL verified     | Certificate No. B129699: „igus 36-month chainflex cable guarantee and service life calculator based on 2 billion test cycles per year“ |
|  | UL/CSA AWM      | See table UL/CSA AWM for details                                                                                                       |
|  | NFPA            | <b>CF898.001-CF898.060:</b> Following NFPA 79-2018, chapter 12.9                                                                       |
|  | EAC             | Certificate No. RU C-DE.ME77.B.00295/19 (TR ZU)                                                                                        |
|  | REACH           | In accordance with regulation (EC) No. 1907/2006 (REACH)                                                                               |
|  | Lead-free       | Following 2011/65/EC (RoHS-II/RoHS-III)                                                                                                |
|  | CE              | Following 2014/35/EU                                                                                                                   |



### Properties and approvals

#### UL/CSA AWM Details

| Part No.  | UL style core insulation | UL style outer jacket | UL Voltage Rating<br>[V] | UL Temperature Rating<br>[°C] |
|-----------|--------------------------|-----------------------|--------------------------|-------------------------------|
| CF898.001 | 1589                     | 20236                 | 30                       | 80                            |
| CF898.021 | 10578                    | 21161                 | 300                      | 80                            |
| CF898.045 | 11602                    | 21161                 | 300                      | 80                            |
| CF898.060 | 11602                    | 21161                 | 300                      | 80                            |
| CF898.082 | -                        | 21866                 | 90                       | 80                            |
| CF898.083 | -                        | 21866                 | 90                       | 80                            |

Example image

igus® chainflex® CF898.045

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Bus cable (Class 3.1.3.1) ● For flexing applications ● iguPUR outer jacket ● Oil-resistant  
● Shielded ● Flame retardant

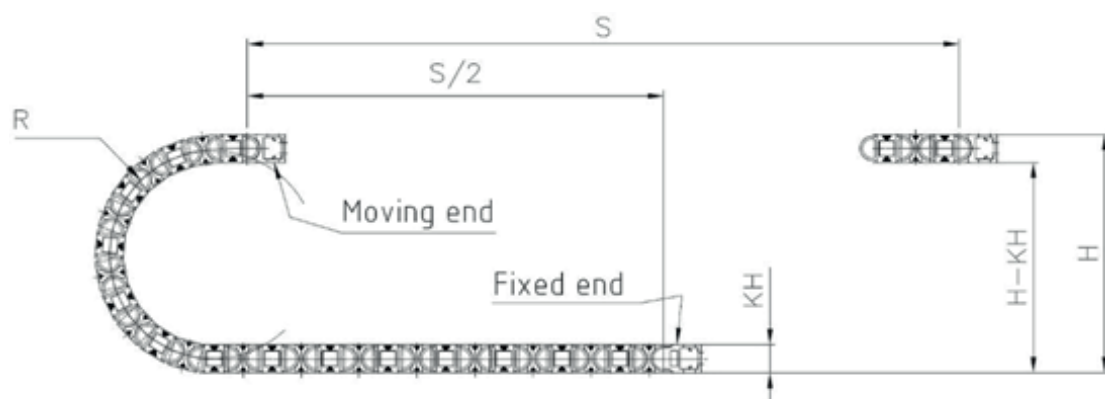
### Dynamic information

|                                                                                   |                        |                                                           |                                                                                                                         |
|-----------------------------------------------------------------------------------|------------------------|-----------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|
|  | <b>Bend radius</b>     | <b>e-chain® linear</b><br><b>flexible</b><br><b>fixed</b> | min. 15 x d<br>min. 12 x d<br>min. 8 x d                                                                                |
|  | <b>Temperature</b>     | <b>e-chain® linear</b><br><b>flexible</b><br><b>fixed</b> | -20 °C up to +70 °C<br>-40 °C up to +70 °C (following DIN EN 60811-504)<br>-50 °C up to +70 °C (following DIN EN 50305) |
|  | <b>v max.</b>          | <b>unsupported</b>                                        | 3 m/s                                                                                                                   |
|  | <b>a max.</b>          |                                                           | 20 m/s <sup>2</sup>                                                                                                     |
|  | <b>Travel distance</b> | Unsupported travel distances up to 10 m, Class 1          |                                                                                                                         |

These values are based on specific applications or tests. They do not represent the limit of what is technically feasible.

### Typical lab test setup for this cable series

|                                    |                                      |
|------------------------------------|--------------------------------------|
| <b>Test bend radius R</b>          | approx. 75 - 100 mm                  |
| <b>Test travel S/S<sub>2</sub></b> | approx. 1 - 15 m                     |
| <b>Test duration</b>               | minimum 2 - 4 million double strokes |
| <b>Test speed</b>                  | approx. 0,5 - 2 m / s                |
| <b>Test acceleration</b>           | approx. 0.5 - 1.5 m / s <sup>2</sup> |



### Typical application areas

- For flexing applications, Class 3
- Especially for unsupported travels, Class 1
- With influence of oil, Class 3
- No torsion, Class 1
- Indoor and outdoor applications without direct solar radiation
- Machining units/machine tools, low temperature applications



Example image

igus® chainflex® CF898.045

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Bus cable (Class 3.1.3.1) ● For flexing applications ● iguPUR outer jacket ● Oil-resistant  
● Shielded ● Flame retardant

### Technical tables:

#### Mechanical information

| Part No.                 | Number of cores and conductor nominal cross section [mm²] | Outer diameter (d) max. [mm] | Copper index [kg/km] | Weight [kg/km] |
|--------------------------|-----------------------------------------------------------|------------------------------|----------------------|----------------|
| Profibus (1x2x0,64 mm)   |                                                           |                              |                      |                |
| CF898.001                | (2x0.25)C                                                 | 8.0                          | 18                   | 56             |
| CAN-Bus                  |                                                           |                              |                      |                |
| CF898.021                | (2x0.5)C                                                  | 8.5                          | 24                   | 80             |
| Ethernet/CAT5e           |                                                           |                              |                      |                |
| CF898.045                | (4x(2x0.14))C                                             | 7.0                          | 25                   | 54             |
| Profinet                 |                                                           |                              |                      |                |
| CF898.060 <sup>13)</sup> | (4x0.34)C                                                 | 7.0                          | 25                   | 58             |
| ASI BUS (flat cables)    |                                                           |                              |                      |                |
| CF898.082 <sup>14)</sup> | 2x2.5                                                     |                              | 50                   | 82             |
| CF898.083 <sup>15)</sup> | 2x2.5                                                     |                              | 50                   | 79             |

<sup>13)</sup> Colour outer jacket: Yellow-green (RAL 6018)

<sup>14)</sup> Colour outer jacket: Yellow (RAL 1021)

<sup>15)</sup> Colour outer jacket: Jet black (RAL 9005)

G = with green-yellow earth core

x = without earth core

**Note:** The given outer diameters are maximum values and may tend toward lower tolerance limits.



igus 36-month chainflex cable guarantee and service life calculator based on 2 billion test cycles per year



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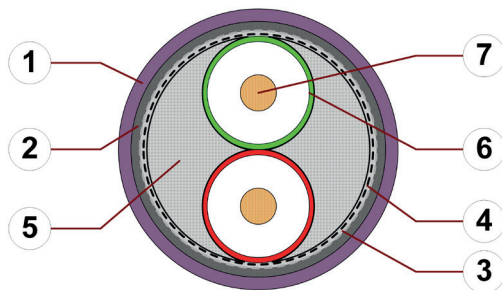


Bus cable (Class 3.1.3.1) ● For flexing applications ● iguPUR outer jacket ● Oil-resistant  
● Shielded ● Flame retardant

**Profibus**  
CF898.001

### Cable structure

(Electrical information please see next page)



1. Outer jacket: Pressure extruded iguPUR mixture
2. Overall shield: Braiding made of tinned copper wires
3. Shield foil: Aluminium clad plastic foil
4. Banding: Plastic foil
5. Filler: Plastic yarns
6. Core insulation: Mechanically high quality TPE mixture (according to bus specification)
7. Conductor: Stranded conductor consisting of bare copper wires

### Example image

For detailed overview please see design table

### Design table

| Part No.  | Core group | Colour code | Drawing |
|-----------|------------|-------------|---------|
| CF898.001 | 2x0.25     | red, green  |         |



Example image



# Data sheet

## chainflex® CF898



Bus cable (Class 3.1.3.1) ● For flexing applications ● iguPUR outer jacket ● Oil-resistant  
● Shielded ● Flame retardant



**Profibus**  
CF898.001

### Electrical information

(Cable structure please see previous page)

| Part No.                                                       | CF898.001                   |
|----------------------------------------------------------------|-----------------------------|
| Nominal voltage                                                | 50 V<br>30 V (following UL) |
| Testing voltage<br>(following DIN EN 50289-1-3)                | 500 V                       |
| Characteristic wave impedance<br>(following DIN EN 50289-1-11) | 150 ± 15 Ω (at 3-16 MHz)    |

Line attenuation approx. [dB/100m]

| Part No.  | 0.01<br>MHz | 0.04<br>MHz | 4<br>MHz | 16<br>MHz |
|-----------|-------------|-------------|----------|-----------|
| CF898.001 | 0.3         | 0.4         | 2.5      | 5.2       |

| Conductor nominal<br>cross section | Maximum conductor resistance at 20 °C<br>(following DIN EN 50289-1-2) | Maximum current rating at 30 °C<br>(following DIN VDE 0298-4) |
|------------------------------------|-----------------------------------------------------------------------|---------------------------------------------------------------|
| [mm²]                              | [Ω/km]                                                                | [A]                                                           |
| 0.25                               | 88                                                                    | 5                                                             |

The final maximum current rating depends among other things on the ambient conditions, the type of the installation and the number of loaded cores.



Example image

# Data sheet

## chainflex® CF898

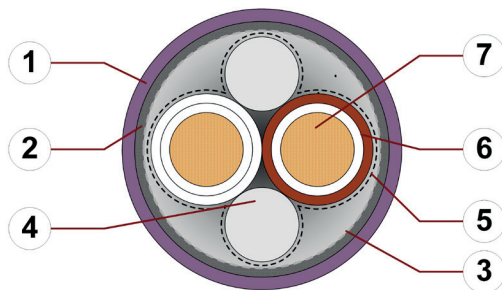


Bus cable (Class 3.1.3.1) ● For flexing applications ● iguPUR outer jacket ● Oil-resistant  
● Shielded ● Flame retardant

**CAN-Bus**  
CF898.021

### Cable structure

(Electrical information please see next page)



1. Outer jacket: Pressure extruded iguPUR mixture
2. Overall shield: Braiding made of tinned copper wires
3. Shield foil: Aluminium clad plastic foil
4. Filler: Plastic dummy
5. Banding: Plastic foil
6. Core insulation: Mechanically high quality TPE mixture (according to bus specification)
7. Conductor: Stranded conductor consisting of bare copper wires

### Example image

For detailed overview please see design table

### Design table

| Part No.  | Core group | Colour code  | Drawing |
|-----------|------------|--------------|---------|
| CF898.021 | 2x0.5      | white, brown |         |



Example image



# Data sheet

## chainflex® CF898



Bus cable (Class 3.1.3.1) ● For flexing applications ● iguPUR outer jacket ● Oil-resistant  
● Shielded ● Flame retardant



**CAN-Bus**  
CF898.021

### Electrical information

(Cable structure please see previous page)

| Part No.                                                       | CF898.021                    |
|----------------------------------------------------------------|------------------------------|
| Nominal voltage                                                | 50 V<br>300 V (following UL) |
| Testing voltage<br>(following DIN EN 50289-1-3)                | 500 V                        |
| Characteristic wave impedance<br>(following DIN EN 50289-1-11) | 120 ± 12 Ω (at 1 MHz)        |

| Conductor nominal cross section | Maximum conductor resistance at 20 °C<br>(following DIN EN 50289-1-2) | Maximum current rating at 30 °C<br>(following DIN VDE 0298-4) |
|---------------------------------|-----------------------------------------------------------------------|---------------------------------------------------------------|
| [mm²]                           | [Ω/km]                                                                | [A]                                                           |
| 0.5                             | 39                                                                    | 10                                                            |

The final maximum current rating depends among other things on the ambient conditions, the type of the installation and the number of loaded cores.



Example image

Bus cable (Class 3.1.3.1) ● For flexing applications ● iguPUR outer jacket ● Oil-resistant  
● Shielded ● Flame retardant

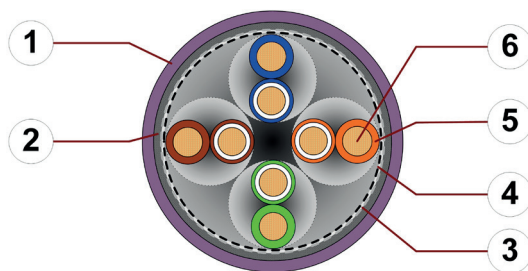


### Ethernet (CAT5/CAT5e/GigE/PoE)

CF898.045

### Cable structure

(Electrical information please see next page)



1. Outer jacket: Pressure extruded iguPUR mixture
2. Overall shield: Braiding made of tinned copper wires
3. Shield foil: Aluminium clad plastic foil
4. Banding: Plastic foil
5. Core insulation: Mechanically high quality TPE mixture (according to bus specification)
6. Conductor: Stranded conductor consisting of bare copper wires

### Example image

For detailed overview please see design table

### Design table

| Part No.  | Core group | Colour code                                                                       | Drawing |
|-----------|------------|-----------------------------------------------------------------------------------|---------|
| CF898.045 | 4x(2x0.14) | white-blue/blue, white-orange/<br>orange, white-green/green,<br>white-brown/brown |         |



Example image

# Data sheet

## chainflex® CF898



Bus cable (Class 3.1.3.1) ● For flexing applications ● iguPUR outer jacket ● Oil-resistant  
● Shielded ● Flame retardant



### Ethernet (CAT5/CAT5e/GigE/PoE)

CF898.045

### Electrical information

(Cable structure please see previous page)

| Part No.                                                       | CF898.045                    |
|----------------------------------------------------------------|------------------------------|
| Nominal voltage                                                | 50 V<br>300 V (following UL) |
| Testing voltage<br>(following DIN EN 50289-1-3)                | 500 V                        |
| Characteristic wave impedance<br>(following DIN EN 50289-1-11) | 100 ± 25 Ω                   |
| Operating capacity                                             | 47 pF/m                      |
| Nominal Velocity of Propagation (NVP)                          | 67 %                         |

Line attenuation approx. [dB/100m]

| Part No.  | 1<br>MHz | 4<br>MHz | 10<br>MHz | 16<br>MHz | 20<br>MHz | 31.25<br>MHz | 62.5<br>MHz | 100<br>MHz |
|-----------|----------|----------|-----------|-----------|-----------|--------------|-------------|------------|
| CF898.045 | 3.2      | 6.0      | 9.5       | 12.1      | 13.6      | 17.1         | 14.8        | 32.0       |

| Conductor nominal<br>cross section | Maximum conductor resistance at 20 °C<br>(following DIN EN 50289-1-2) | Maximum current rating at 30 °C<br>(following DIN VDE 0298-4) |
|------------------------------------|-----------------------------------------------------------------------|---------------------------------------------------------------|
| [mm²]                              | [Ω/km]                                                                | [A]                                                           |
| 0.14                               | 145                                                                   | 2.5                                                           |

The final maximum current rating depends among other things on the ambient conditions, the type of the installation and the number of loaded cores.



Example image

# Data sheet

## chainflex® CF898



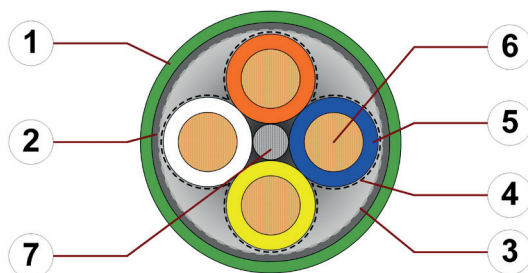
Bus cable (Class 3.1.3.1) ● For flexing applications ● iguPUR outer jacket ● Oil-resistant  
● Shielded ● Flame retardant

### Profinet (Type C)

CF898.060

### Cable structure

(Electrical information please see next page)



1. Outer jacket: Pressure extruded iguPUR mixture
2. Overall shield: Braiding made of tinned copper wires
3. Shield foil: Aluminium clad plastic foil
4. Banding: Plastic foil
5. Core insulation: Mechanically high quality TPE mixture (according to bus specification)
6. Conductor: Stranded conductor consisting of bare copper wires
7. Filler: Plastic yarns

### Example image

For detailed overview please see design table

### Design table

| Part No.  | Core group | Colour code                             | Drawing |
|-----------|------------|-----------------------------------------|---------|
| CF898.060 | 4x0.34     | white, orange, blue, yellow (Star-quad) |         |



Example image



# Data sheet

## chainflex® CF898



Bus cable (Class 3.1.3.1) ● For flexing applications ● iguPUR outer jacket ● Oil-resistant  
● Shielded ● Flame retardant



### Profinet (Type C)

CF898.060

### Electrical information

(Cable structure please see previous page)

| Part No.                                                       | CF898.060                    |
|----------------------------------------------------------------|------------------------------|
| Nominal voltage                                                | 50 V<br>300 V (following UL) |
| Testing voltage<br>(following DIN EN 50289-1-3)                | 500 V                        |
| Characteristic wave impedance<br>(following DIN EN 50289-1-11) | 100 ± 15 Ω                   |
| Operating capacity                                             | 53 pF/m                      |
| Nominal Velocity of Propagation (NVP)                          | 67 %                         |

Line attenuation approx. [dB/100m]

| Part No.  | 1<br>MHz | 4<br>MHz | 10<br>MHz | 16<br>MHz | 20<br>MHz | 31.25<br>MHz | 62.5<br>MHz | 100<br>MHz |
|-----------|----------|----------|-----------|-----------|-----------|--------------|-------------|------------|
| CF898.060 | 3.2      | 6.0      | 9.5       | 12.1      | 13.6      | 17.1         | 14.8        | 32.0       |

| Conductor nominal<br>cross section | Maximum conductor resistance at 20 °C<br>(following DIN EN 50289-1-2) | Maximum current rating at 30 °C<br>(following DIN VDE 0298-4) |
|------------------------------------|-----------------------------------------------------------------------|---------------------------------------------------------------|
| [mm²]                              | [Ω/km]                                                                | [A]                                                           |
| 0.34                               | 59                                                                    | 7                                                             |

The final maximum current rating depends among other things on the ambient conditions, the type of the installation and the number of loaded cores.



Example image

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## chainflex® CF898



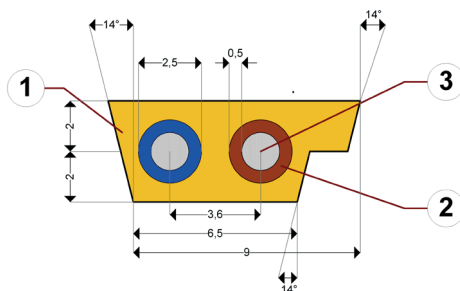
Bus cable (Class 3.1.3.1) ● For flexing applications ● iguPUR outer jacket ● Oil-resistant  
● Shielded ● Flame retardant

### AS-Interface

CF898.082-CF898.083

### Cable structure

(Electrical information please see next page)



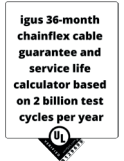
1. Outer jacket: Pressure extruded PUR mixture
2. Core insulation: Mechanically high quality TPE mixture (according to bus specification)
3. Conductor: Fine-wire strand made of tinned copper wires

### Example image

For detailed overview please see design table

### Design table

| Part No.  | Core group | Colour code | Drawing |
|-----------|------------|-------------|---------|
| CF898.082 | 2x2.5      | blue, brown |         |
| CF898.083 | 2x2.5      | blue, brown |         |



Example image



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Bus cable (Class 3.1.3.1) ● For flexing applications ● iguPUR outer jacket ● Oil-resistant  
● Shielded ● Flame retardant



### AS-Interface

CF898.082-CF898.083

### Electrical information

(Cable structure please see previous page)

| Part No.                                                       | CF898.082                         | CF898.083 |
|----------------------------------------------------------------|-----------------------------------|-----------|
| Nominal voltage                                                | 50 V<br>90 V (in Anlehnung an UL) |           |
| Testing voltage<br>(following DIN EN 50289-1-3)                | 500 V                             |           |
| Characteristic wave impedance<br>(following DIN EN 50289-1-11) | 100 ± 15 Ω                        |           |
| Operating capacity                                             | <75 pF/m                          |           |

| Conductor nominal<br>cross section | Maximum conductor resistance at 20 °C<br>(following DIN EN 50289-1-2) | Maximum current rating at 30 °C<br>(following DIN VDE 0298-4) |
|------------------------------------|-----------------------------------------------------------------------|---------------------------------------------------------------|
| [mm²]                              | [Ω/km]                                                                | [A]                                                           |
| 2.5                                | 9.0                                                                   | 30                                                            |

The final maximum current rating depends among other things on the ambient conditions, the type of the installation and the number of loaded cores.



Example image