# Bus cables

| chainflex® cable | Jacket | Shield | Bend radius e-chain® [factor x d] | Temperature e-chain® from/to [°C] | Approvals and standards | Oil-resistant | Torsion-resistant | v max. [m/s] unsupported | v max. [m/s] gliding | a max. | Page |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bus cables** | | | | | | | | | | | |
| Selection chart for chainflex® bus cables | | | | | | | | | | | 176 |
| Selection chart for chainflex® Ethernet cables | | | | | | | | | | | 179 |
| CF888 | PVC | ✓ | 15 | +5/+70 | | | | 3 | | 20 | 180 |
| CFBUS.PVC | PVC | ✓ | 12.5 | +5/+70 | | ✓ | | 3 | 2 | 30 | 184 |
| CF898 | iguPUR | ✓ | 15 | -20/+70 | | ✓ | | 3 | | 20 | 188 New |
| CFBUS.PUR | PUR | ✓ | 12.5 | -20/+70 | | ✓ | | 3 | 2 | 30 | 192 |
| CFBUS | TPE | ✓ | 10-12.5 | -35/+70 | | ✓ | | 10 | 6 | 100 | 196 |
| CFBUS.LB | TPE | ✓ | 7.5 | -35/+70 | | ✓ | | 10 | 6 | 100 | 202 New |
| **Twistable bus cables (twistable cables chapter ▶ Page 370 )** | | | | | | | | | | | |
| CFROBOT8 | PUR | ✓ | 10 | -25/+70 | | ✓ | ✓ | | | | 398 |
| CFROBOT8.PLUS | PUR | ✓ | 10 | -25/+70 | | ✓ | ✓ | | | | 402 |

**36-month chainflex® guarantee**

**Guaranteed service life for predictable reliability**

**▶ Selection table page 174**

With the help of the chainflex® service life calculator, you can quickly and easily calculate the expected service life of chainflex® cables specifically for your application:

**www.igus.eu/chainflexlife**

Guarantee igus chainflex 36 up to 36 months guarantee

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

# chainflex® guarantee ▶▶ Guaranteed service life (1)

| | chainflex® cables | Temperature, from/to [°C] | v max. [m/s] unsupported | v max. [m/s] gliding | a max. [m/s²] | Travel distance [m] | Minimum bend radius [factor x d] 5 million (1 million) double strokes * | Minimum bend radius [factor x d] 7.5 million (3 million) double strokes * | Minimum bend radius [factor x d] 10 million (5 million) double strokes * | Page |
|---|---|---|---|---|---|---|---|---|---|---|
| **Bus cables** | | | | | | | | | | |
|  | CF888 | +5 / +15 | 3 | - | 20 | ≤ 10 | 17.5 | 18.5 | 19.5 | 180 |
| | | +15 / +60 | | | | | 15 | 16 | 17 | |
| | | +60 / +70 | | | | | 17.5 | 18.5 | 19.5 | |
|  | CFBUS.PVC | +5 / +15 | 3 | 2 | 30 | ≤ 20 | 15 | 16 | 17 | 184 |
| | | +15 / +60 | | | | | 12.5 | 13.5 | 14.5 | |
| | | +60 / +70 | | | | | 15 | 16 | 17 | |
|  | CF898 New! | -20 / -10 | 3 | - | 20 | ≤ 10 | 17.5 | 18.5 | 19.5 | 188 |
| | | -10 / +60 | | | | | 15 | 16 | 17 | |
| | | +60 / +70 | | | | | 17.5 | 18.5 | 19.5 | |
|  | CFBUS.PUR | -20 / -10 | 3 | 2 | 30 | ≤ 20 | 15 | 16 | 17 | 192 |
| | | -10 / +60 | | | | | 12.5 | 13.5 | 14.5 | |
| | | +60 / +70 | | | | | 15 | 16 | 17 | |
|  | CFBUS.001-.049 CFBUS.060 | -35 / -25 | 10 | 6 | 100 | ≤ 400 | 12.5 | 13.5 | 14.5 | 196 |
| | | -25 / +60 | | | | | 10 | 11 | 12 | |
| | | +60 / +70 | | | | | 12.5 | 13.5 | 14.5 | |
| | CFBUS.050-.055 CFBUS.065-.070 | -35 / -25 | 10 | 6 | 100 | ≤ 400 | 15 | 16 | 17 | 196 |
| | | -25 / +60 | | | | | 12.5 | 13.5 | 14.5 | |
| | | +60 / +70 | | | | | 15 | 16 | 17 | |
| | | | | | | | 5 million | 7.5 million | 12.5 million | |
|  | CFBUS.LB .001-.022 New! | -35 / -25 | 10 | 6 | 100 | ≤ 400 | 12.5 | 13.5 | 14.5 | 202 |
| | | -25 / +60 | | | | | 10 | 11 | 12 | |
| | | +60 / +70 | | | | | 12.5 | 13.5 | 14.5 | |
| | CFBUS.LB. .040-.060 New! | -35 / -25 | 10 | 6 | 100 | ≤ 400 | 10 | 11 | 12 | 202 |
| | | -25 / +60 | | | | | 7.5 | 8.5 | 9.5 | |
| | | +60 / +70 | | | | | 10 | 11 | 12 | |

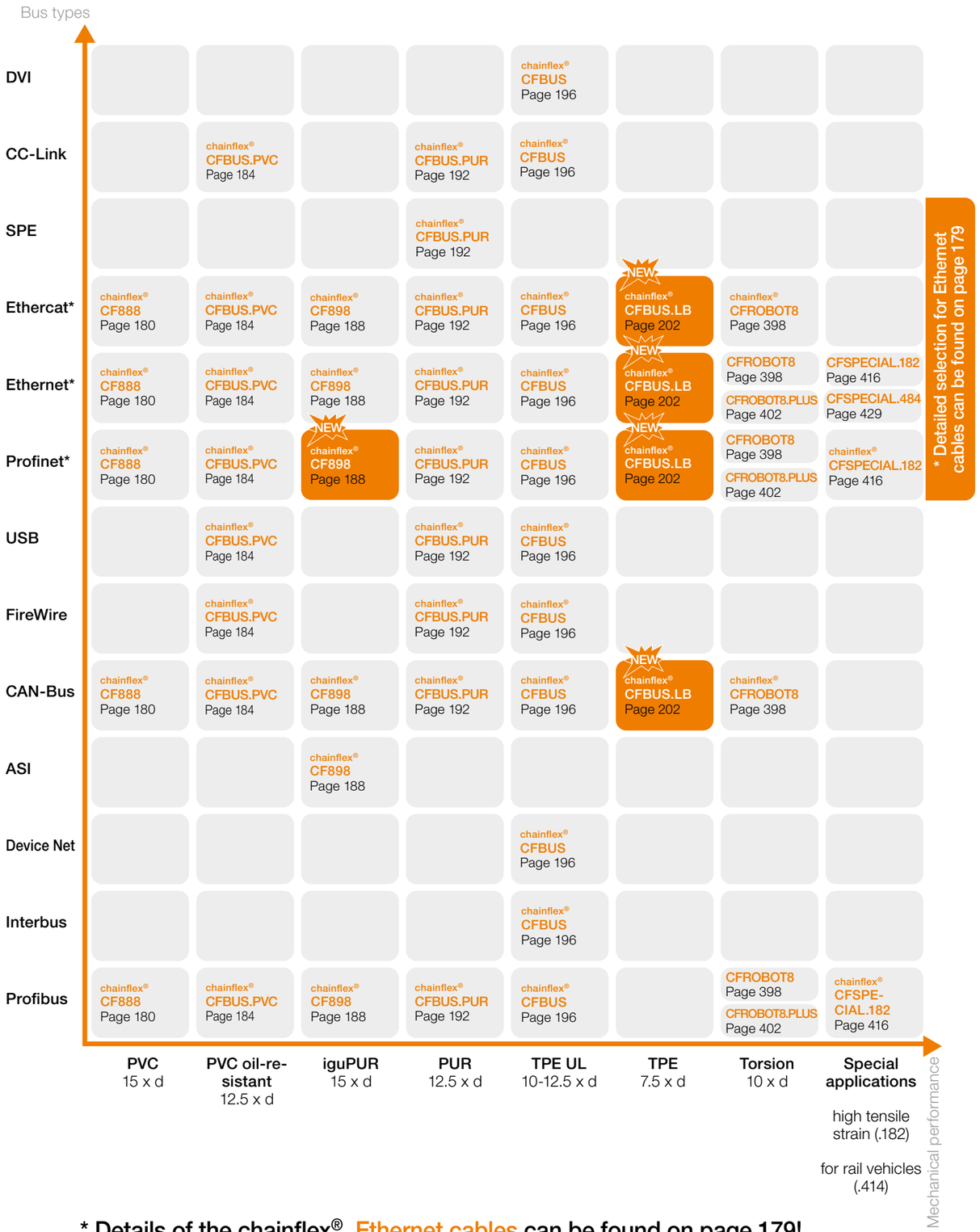
(1) Guaranteed service life for these series (details ▶ see page 28-29)

* Higher number of double strokes? Calculate service life online: ▶ www.igus.eu/chainflexlife
Figures in brackets refer to series CF888 and CF898

Guarantee igus chainflex 36 up to 36 months guarantee

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

# The right cable for every bus system …
# The chainflex® bus cables product range at a glance




* Details of the chainflex® Ethernet cables can be found on page 179!

| | Bus system/ chainflex® type | Jacket | Number of cores and conductor nominal cross section[mm²] | Page |
|---|---|---|---|---|
| | **Profibus (1x2x0.64mm)** | | **150Ohm** | |
| | CF888.001 | PVC | (2x0.25)C | 182 |
| | CFBUS.PVC.001 | PVC | (2x0.25)C | 186 |
| | CF898.001 | iguPUR | (2x0.25)C | 190 |
| | CFBUS.PUR.001 | PUR | (2x0.25)C | 194 |
| | CFBUS.001 | TPE | (2x0.25)C | 198 |
| | CFBUS.002 | TPE | (2x0.25)C+4x1.5 | 198 |
| | CFBUS.003 | TPE | (2x0.25)C+3G0.75 | 198 |
| New | CFBUS.LB.001 | TPE | (2x0.25)C | 204 |
| | CFROBOT8.001 | PUR | (2x0.35)C | 400 |
| | CFROBOT8.PLUS.001 | PUR | (2x0.25)C | 404 |
| | CFSPECIAL.182.001 | PUR | (2x0.25)C | 416 |
| | **Interbus** | | **100Ohm** | |
| | CFBUS.010 | TPE | (3x(2x0.25))C | 198 |
| | CFBUS.011 | TPE | (3x(2x0.25)+(3G1.0))C | 198 |
| | **CAN-Bus** | | **120Ohm** | |
| | CF888.021 | PVC | (2x0.5)C | 182 |
| | CFBUS.PVC.020 | PVC | (4x0.25)C | 186 |
| | CFBUS.PVC.021 | PVC | (2x0.5)C | 186 |
| | CFBUS.PVC.022 | PVC | (4x0.5)C | 186 |
| | CF898.021 | iguPUR | (2x0.5)C | 186 |
| | CFBUS.PUR.020 | PUR | (4x0.25)C | 194 |
| | CFBUS.PUR.021 | PUR | (2x0.5)C | 194 |
| | CFBUS.PUR.022 | PUR | (4x0.5)C | 194 |
| | CFBUS.020 | TPE | (4x0.25)C | 198 |
| | CFBUS.021 | TPE | (2x0.5)C | 198 |
| | CFBUS.022 | TPE | (4x0.5)C | 198 |
| New | CFBUS.LB.020 | TPE | (4x0.25)C | 204 |
| New | CFBUS.LB.021 | TPE | (2x0.5)C | 204 |
| New | CFBUS.LB.022 | TPE | (4x0.5)C | 204 |
| | CFROBOT8.022 | PUR | (4x0.5)C | 400 |
| | **Device Net** | | **120Ohm** | |
| | CFBUS.030 | TPE | ((2xAWG24)C+2xAWG22)C | 198 |
| | CFBUS.031 | TPE | ((2xAWG18)C+2xAWG15)C | 198 |
| | **CC-Link** | | **110Ohm** | |
| | CFBUS.PVC.035 | PVC | (3x0.5)C | 186 |
| | CFBUS.PUR.035 | PUR | (3x0.5)C | 196 |
| | CFBUS.035 | TPE | (3xAWG20)C | 198 |
| | **Ethernet/CAT5** | | **100Ohm** | |
| | CFBUS.PVC.040 | PVC | (4x0.25)C | 186 |
| | CFBUS.PUR.040 | PUR | (4x0.25)C | 194 |
| | CFBUS.040 | TPE | (4x0.25)C | 200 |
| | CFBUS.044 | TPE | (4x(2x0.15))C | 200 |
| New | CFBUS.LB.040 | TPE | (4x(0.25)C | 204 |
| | **Single Pair Ethernet** | | **100Ohm** | |
| | CFBUS.PUR.042 | PUR | (2x0.15)C | 194 |
| | **Ethernet/CAT5e** | | **100Ohm** | |
| | CF888.045 | PVC | (4x(2x0.14))C | 182 |
| | CFBUS.PVC.045 | PVC | (4x(2x0.15))C | 186 |
| | CF898.045 | iguPUR | (4x(2x0.14))C | 190 |

| | Bus system/ chainflex® type | Jacket | Number of cores and conductor nominal cross section[mm²] | Page |
|---|---|---|---|---|
| | **Ethernet/CAT5e** | | **100Ohm** | |
| | CFBUS.PUR.045 | PUR | (4x(2x0.15))C | 194 |
| | CFBUS.045 | TPE | (4x(2x0.15))C | 200 |
| New | CFBUS.LB.045 | TPE | (4x(2x0.15))C | 204 |
| | CFROBOT8.045 | PUR | 4x(2x0.14)C | 400 |
| | CFROBOT8.PLUS.045 | PUR | (4x(2x0.15))C | 404 |
| | CFSPECIAL.182.045 | PUR | (4x(2x0.15))C | 416 |
| | **Ethernet/CAT6** | | **100Ohm** | |
| | CFBUS.PVC.049 | PVC | (4x(2x0.15))C | 186 |
| | CFBUS.PUR.049 | PUR | (4x(2x0.15))C | 194 |
| | CFBUS.PUR.H01.049 | PUR | (4x(2x0.15))C+4x1.5 | 194 |
| | CFBUS.049 | TPE | (4x(2x0.15))C | 200 |
| New | CFBUS.LB.049 | TPE | (4x(2x0.15))C | 204 |
| | CFROBOT8.049 | PUR | 4x(2x0.14)C | 400 |
| | CFSPECIAL.484.049 | - | (4x(2x0.15))C | 420 |
| | **Ethernet/CAT6A** | | **100Ohm** | |
| | CFBUS.PVC.050 | PVC | 4x(2x0.20)C | 186 |
| | CFBUS.PUR.050 | PUR | 4x(2x0.20)C | 194 |
| | CFBUS.050 | TPE | (4x(2x0.15)C)C | 200 |
| | **Ethernet/CAT7** | | **100Ohm** | |
| | CFBUS.PVC.052 | PVC | (4x(2x0.15)C)C | 186 |
| | CFBUS.PUR.052 | PUR | (4x(2x0.15)C)C | 194 |
| | CFBUS.052 | TPE | (4x(2x0.15)C)C | 200 |
| | **FireWire IEEE 1394a/b** | | **100Ohm** | |
| | CFBUS.PVC.056 | PVC | (2x(2x0.15)C+2x0.38)C | 186 |
| | CFBUS.PUR.056 | PUR | (2x(2x0.15)C+2x0.38)C | 194 |
| | CFBUS.055 | TPE | 2x(2x0.15)C+2x(0.34)C | 200 |
| | **Profinet** | | **100Ohm** | |
| | CF888.060 | PVC | (4x0.38)C | 182 |
| | CFBUS.PVC.060 | PVC | (4x0.38)C | 186 |
| | CF898.060 | iguPUR | (4x0.34)C | 190 |
| New | CF898.061.FC | iguPUR | (4x0.34)C | 190 |
| | CFBUS.PUR.060 | PUR | (4x0.38)C | 194 |
| | CFBUS.PUR.H01.060 | PUR | (4x0.38)C+4x1.5 | 194 |
| | CFBUS.060 | TPE | (4x0.38)C | 200 |
| New | CFBUS.LB.060 | TPE | (4x0.38)C | 204 |
| | CFROBOT8.060 | PUR | (2x(2x0.34))C | 198 |
| | CFROBOT8.PLUS.060 | PUR | (4x0.38)C | 404 |
| | **USB** | | **90Ohm** | |
| | CFBUS.065 | TPE | ((2xAWG28)+2xAWG20)C | 200 |
| | CFBUS.066 | TPE | ((2xAWG24)+2xAWG20)C | 200 |
| | **USB 3.0** | | **90Ohm** | |
| | CFBUS.PVC.068 | PVC | (2x(2xAWG28)+2x(2xAWG28)C)C | 186 |
| | CFBUS.PUR.068 | PUR | (2x(2xAWG28)+2x(2xAWG28)C)C | 194 |
| | **DVI** | | **100Ohm** | |
| | CFBUS.070 | TPE | (4x(2xAWG28)C +(2xAWG28)+3xAWG28)C | 200 |
| | **ASI BUS (flat cables)** | | | |
| | CF898.082 (yellow) | iguPUR | 2x2.5 | 190 |
| | CF898.083 (black) | iguPUR | 2x2.5 | 190 |

# For all data rates and types of movement … Networking your machine with chainflex® Ethernet cables

In our catalogue range you will find the right Ethernet solution for every type of motion. We have prepared a wide range of products both sold by the metre and also a wide variety of ready-to-connect cables with connectors. All chainflex® cables come with a **36-month guarantee** and up to 10 million double strokes as standard, giving you peace-of-mind and confidence.

We support you in three aspects of machine networking with Ethernet cables for moving applications that have been developed, manufactured and tested for high quality:

For your system, we offer Ethernet cables from **CAT5 to CAT7** so that you have the right solution for all data volumes. With that you can safely use Bus systems such as Ethernet/IP, Profinet, EtherCAT, Sercos and many other derivatives. The different quality levels of cable mean that there are opportunities for very large savings or future-proofing.

With the new **Single Pair Ethernet (SPE)** bus technology, it is now possible to create Ethernet connections all the way from the control cabinet to each machine element and thus connect the entire machine with one single bus system. Due to the construction using only one pair of wires, the cable can be manufactured with a considerable weight decrease and a 25% smaller outer diameter. For this pioneering development, we are a member in the Industrial Partner Network for SPE.

By taking into account the individual mechanical requirements in your application, we can offer more customised solutions. There are cables for large and small bend radii for linear movements in energy chains or torsional movements on robots. We can offer you a reasonably priced PVC solution, an oil-resistant PUR cable or a solution with highly abrasion-resistant TPE. Also, **special solutions** for long travels or high tensile strength versions for hanging applications or rolling solutions are standard products for us.

Our **online tools** also enable you to reduce process costs and help you to find the right cable with just a few clicks.

Also visit our Ethernet website:

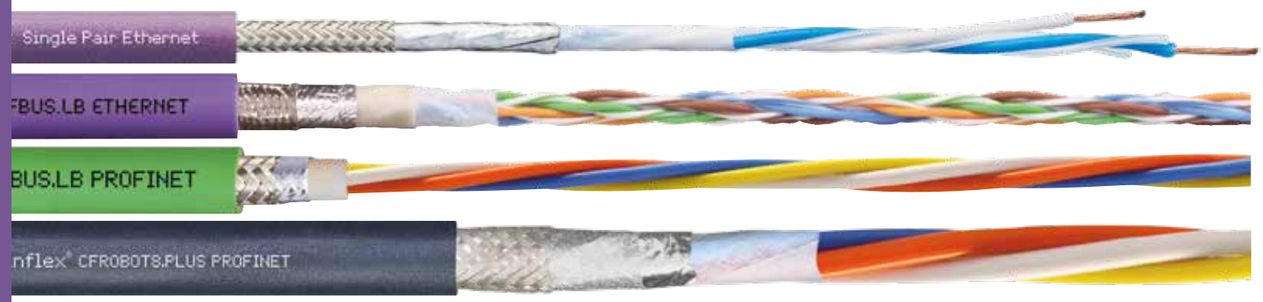
**www.chainflex.eu/ethernet**

All common Bus types in different cable quality levels for your diverse applications. From stock. Tested. With a guarantee.

EtherCAT®

CC-Link IE Field

PROFINET®








## Always find the Ethernet cable that works, for less.
# Selection table for the largest range of flexible Ethernet cables

Electrical performance

| | CF888 PVC 15 x d | CFBUS.PVC PVC, oil-resistant 12.5 x d | CF898 iguPUR 15 x d | CFBUS.PUR PUR 12.5 x d | CFBUS TPE UL 10 x d | CFBUS.LB TPE Hal 7.5 x d | CFROBOT8 PUR ± 180°/m | CFROBOT8.PLUS PUR ± 360°/m | Special cables |
|---|---|---|---|---|---|---|---|---|---|
| **CAT7** 10GBit 600MHz | | chainflex® CFBUS.PVC.052 Page 186 | | chainflex® CFBUS.PUR.052 Page 194 | chainflex® CFBUS.052 Page 200 | | chainflex® CFROBOT8.052 Page 400 | | |
| **CAT6A** 10GBit 500MHz | | chainflex® CFBUS.PVC.050 Page 186 | | chainflex® CFBUS.PUR.050 Page 194 | chainflex® CFBUS.050 Page 200 | | chainflex® CFROBOT8.050 Page 400 | | |
| **CAT6** 1GBit 250MHz | | chainflex® CFBUS.PVC.049 Page 186 | | chainflex® CFBUS.PUR.049 Page 194 | chainflex® CFBUS.049 Page 200 | NEW chainflex® CFBUS.LB.049 Page 204 | chainflex® CFROBOT8.049 Page 400 | | chainflex® CFSPECIAL.484.049 Page 420 |
| **CAT5e** 1GBit 100MHz | chainflex® CF888.045 Page 182 | chainflex® CFBUS.PVC.045 Page 186 | chainflex® CF898.045 Page 190 | chainflex® CFBUS.PUR.045 Page 194 | chainflex® CFBUS.045 Page 200 | NEW chainflex® CFBUS.LB.045 Page 204 | chainflex® CFROBOT8.045 Page 400 | chainflex® CFROBOT8.PLUS.045 Page 404 | CFSPECIAL.182.045 P. 416; CFCLEAN8.045 Page 450 NEW |
| **SPE** 1GBit 600MHz | | | | chainflex® CFBUS.PUR.042 Page 194 | | | | | |
| **Profinet** 100MBit 100MHz | chainflex® CF888.060 Page 182 | chainflex® CFBUS.PVC.060 Page 186 | CF898.060 Page 190; CF898.061.FC Page 190 NEW | chainflex® CFBUS.PUR.060 Page 194 | chainflex® CFBUS.060 Page 200 | NEW chainflex® CFBUS.LB.060 Page 204 | chainflex® CFROBOT8.060 Page 400 | chainflex® CFROBOT8.PLUS.060 Page 404 | |
| **CAT5** 100MBit 100MHz | | chainflex® CFBUS.PVC.040 Page 186 | | chainflex® CFBUS.PUR.040 Page 194 | chainflex® CFBUS.040 Page 200 | NEW chainflex® CFBUS.LB.040 Page 204 | | | |

Mechanical performance

## SPE Single Pair Ethernet (SPE) ...
### ... the key to smart industrial automation

In the area of mechanical engineering, a strong trend in recent years has been a continuous increase in the need for more and faster data. Fieldbuses such as Profibus and CC-Link in Ethernet derivates such as Profinet and CC-Link IE have been developed further in order to enable improved performance in machines.
The situation is similar in the case of the Ethernet types. Whereas CAT5 used to be the standard and a quantum leap was achieved with CAT5e, everyone is now talking about CAT6A and CAT7 for the future. This is not only true with regard to building infrastructure but is also in the case of machine and robot cabling.

However, all products end at the last "intelligent" component of the machine. Due to the sheer size of the cable and the connector solutions, connections extending as far as the smallest sensor had not yet been possible. This is where we and our partners of the Industrial Partner Network e.V. are now breaking new ground with the Single Pair Ethernet (SPE). The idea is to reduce to one data pair in order to keep connector and cable small.

This is most evident in the case of the connector. It is now the size of an M8 round connector and is therefore considerably smaller than the normal RJ45. As regards the cable, we have reduced the diameter by 25% and have now also arrived in the range of a proximity switch cable. This allows smaller installation spaces and energy chains, which will be welcome in the field of machine design.

As a clear service life together with a guarantee is always given for all cables in the igus® catalogue; thorough testing is what allows us to do it. This also applies to the new member of the family, of course: CFBUS.PUR.042 is guaranteed to last for 10 million double strokes or 36 months.

# Bus cable | PVC | chainflex® CF888

Example image

**5 million** Double strokes guaranteed

**15 x d** Bend radius, e-chain®

**10m** Travel distance, e-chain®

- For flexing applications
- PVC outer jacket
- Shielded
- Flame-retardant

## Dynamic information

| | | |
|---|---|---|
| **Bend radius** | **e-chain® linear** | minimum 15 x d |
| | **flexible** | minimum 12 x d |
| | **fixed** | minimum 8 x d |
| **Temperature** | **e-chain® linear** | +5°C up to +70°C |
| | **flexible** | -5°C up to +70°C (following DIN EN 60811-504) |
| | **fixed** | -15°C up to +70°C (following DIN EN 50305) |
| **v max.** | **unsupported** | 3m/s |
| **a max.** | | 20m/s² |
| **Travel distance** | | Unsupported travels up to 10m, Class 1 |

## Cable structure

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

## Electrical information

| | |
|---|---|
| **Nominal voltage** | 50V<br>300V (following UL), except **CF888.001:** 30V (following UL) |
| **Testing voltage** | 500V |

**EPLAN download, configurators ▶ www.igus.eu/CF888**

36-month guarantee ... more than 1,350 cable types from stock ... no cutting charges



EU2022

# Class 3.1.1.1

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Basic requirements | low | 1 | 2 | **3** | 4 | 5 | 6 | 7 | highest |
| Travel distance | unsupported | **1** | 2 | 3 | 4 | 5 | 6 | ≥ 400m | |
| Oil resistance | none | **1** | 2 | 3 | 4 | highest | | | |
| Torsion | none | **1** | 2 | 3 | 4 | ±360° | | | |

## Properties and approvals

| | |
|---|---|
| **Flame-retardant** | According to IEC 60332-1-2, Cable Flame, VW-1, FT1, FT2 / Horizontal Flame |
| **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 data sheet for details ▶ www.igus.eu/CF888 |
| **NFPA** | Following NFPA 79-2018, chapter 12.9 |
| **EAC** | Certificate No. RU C-DE.ME77.B.00295/19 |
| **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 |
| **UKCA** | In accordance with the valid regulations of the United Kingdom (as at 08/2021) |

## Guaranteed service life (details see page 28-29)

| 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] |
| +5/+15 | 17.5 | 18.5 | 19.5 |
| +15/+60 | 15 | 16 | 17 |
| +60/+70 | 17.5 | 18.5 | 19.5 |

* Higher number of double strokes? Service life calculation online ▶www.igus.eu/chainflexlife

## Typical application areas

- For flexing applications, Class 3
- Especially for unsupported travels, Class 1
- Without influence of oil, Class 1
- No torsion, Class 1
- Preferably indoor applications
- Wood/stone processing, packaging industry, feeding, handling, adjusting devices

# Bus cable | PVC | chainflex® CF888

## Class 3.1.1.1

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Basic requirements | low | 1 | 2 | **3** | 4 | 5 | 6 | 7 | highest |
| Travel distance | unsupported | **1** | 2 | 3 | 4 | 5 | 6 | | ≥ 400m |
| Oil resistance | none | **1** | 2 | 3 | 4 | highest | | | |
| Torsion | none | **1** | 2 | 3 | 4 | ±360° | | | |

CF888
PVC
15 x d


Example image

| | Part No. | Number of cores and conductor nominal cross section | Outer diameter (d) max. | Copper index | Weight | Part No. | Characteristic wave impedance approx. | Core group | Colour code |
|---|---|---|---|---|---|---|---|---|---|
| | | [mm²] | [mm] | [kg/km] | [kg/km] | | [Ω] | | |
| | **Profibus (1x2x0.64mm)** | | | | | | | | |
| PROFIBUS | **CF888.001** | (2x0.25)C | 8.0 | 18 | 59 | **CF888.001** | 150 | 2x0.25 | red, green |
| | **CAN-Bus** | | | | | | | | |
| | **CF888.021** | (2x0.5)C | 8.5 | 24 | 73 | **CF888.021** | 120 | 2x0.5 | white, brown |
| | **Ethernet/CAT5e** | | | | | | | | |
| | **CF888.045** | (4x(2x0.14))C | 7.0 | 25 | 62 | **CF888.045** | 100 | 4x(2x0.14) | white-blue/blue, white-orange/orange, white-green/green, white-brown/brown |
| | **Profinet** | | | | | | | | |
| PROFINET EtherCAT | **CF888.060** [2) 13)] | (4x0.34)C | 7.0 | 25 | 59 | **CF888.060** [2) 13)] | 100 | 4x0.34 | white, orange, blue, yellow (star-quad) |

The chainflex® types marked with [2)] are cables designed as a star-quad.
[13)] Colour outer jacket: Yellow-green (RAL 6018)

**Note:** The given outer diameters are maximum values and may tend toward lower tolerance limits.
**G =** with green-yellow earth core **x =** without earth core


### Cables available in the chainflex® CASE

Simple savings on delivery, storage space and re-ordering with the chainflex® CASE - ship'n store by igus®.

**More on this on page 24/25 and online:** www.igus.eu/cfcase

**Technical note on bus cables**
chainflex® bus cables have been specially developed and tested for continuously moving use in e-chains®. Depending on the material used for the outer jacket and on the underlying construction principle, the bus cables are designed for different mechanical requirements and resistance to diverse media.
The cables have been electrically designed in such a way that, on the one hand, the electrical requirements of the respective bus specification are reliably met and, on the other, that greater value is placed on a high degree of EMC reliability.
It is also ensured that the electrical values remain stable over the long term in spite of permanent movement.
The overall quality of transmission in a complete bus communication system, however, is not solely dependent on the cable used. What is also essential is that all components (electronic parts, connecting system and cable) are precisely matched to each other and that the maximum transmission lengths, which are dependent on the respective system, are adhered to with regard to the data transmission rates needed. A cable is thus not solely responsible for the reliable transmission of signals.
igus® advises you when you are designing your bus system to take all these factors into account and, with extensive tests, helps you to ensure the process reliability of your system from the very beginning.

chainflex® CF888 bus cables in a handling application

**EPLAN download, configurators ▶ www.igus.eu/CF888**

# Bus cable | PVC | chainflex® CFBUS.PVC

Example image

**10 million** Double strokes guaranteed

**12.5 x d** Bend radius, e-chain®

**20m** Travel distance, e-chain®

- For medium duty applications
- PVC outer jacket
- Shielded
- Oil-resistant
- Flame-retardant

## Dynamic information

| | | |
|---|---|---|
| Bend radius | e-chain® linear | minimum 12.5 x d |
| | flexible | mininum 10 x d |
| | fixed | minimum 7 x d |
| Temperature | e-chain® linear | +5°C up to +70°C |
| | flexible | -5°C up to +70°C (following DIN EN 60811-504) |
| | fixed | -15°C up to +70°C (following DIN EN 50305) |
| v max. | unsupported | 3m/s |
| | gliding | 2m/s |
| a max. | | 30m/s² |
| Travel distance | | Unsupported travels and up to 20m for gliding applications, Class 3 |

## Cable structure

| | |
|---|---|
| Conductor | Stranded conductor in especially bending-resistant version consisting of bare copper wires (following DIN EN 60228). |
| Core insulation | According to bus specification. |
| Core structure | According to bus specification. |
| Core identification | According to bus specification.<br>▶ Product range table |
| Overall shield | Bending-resistant braiding made of tinned copper wires.<br>Coverage linear approx. 55%, optical approx. 80% |
| Outer jacket | Low-adhesion, oil-resistant PVC mixture, adapted to suit the requirements in e-chains® (following DIN EN 50363-4-1).<br>Colour: Red lilac (similar to RAL 4001)<br>Variants ▶ Product range table |

## Electrical information

| | |
|---|---|
| Nominal voltage | 50V<br>300V (following UL), except **CFBUS.PVC.020:** 30V (following UL) |
| Testing voltage | 500V |

**EPLAN download, configurators ▶ www.igus.eu/CFBUS.PVC**



EU2022



# Class 4.3.2.1

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Basic requirements | low | 1 | 2 | 3 | **4** | 5 | 6 | 7 | highest |
| Travel distance | unsupported | 1 | 2 | **3** | 4 | 5 | 6 | | ≥ 400m |
| Oil resistance | none | 1 | **2** | 3 | 4 | | | | highest |
| Torsion | none | **1** | 2 | 3 | 4 | | | | ±360° |

## Properties and approvals

| | |
|---|---|
| **UV resistance** | Medium |
| **Oil resistance** | Oil-resistant (following DIN EN 50363-4-1), Class 2 |
| **Flame-retardant** | According to IEC 60332-1-2, Cable Flame, VW-1, FT1, FT2 / Horizontal Flame |
| **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 listed** | CMX, 75°C (except CFBUS.PVC.068) |
| **UL/CSA AWM** | See data sheet for details ▶ www.igus.eu/CFBUS.PVC |
| **NFPA** | Following NFPA 79-2018, chapter 12.9 |
| **CLPA** | **CFBUS.PVC.045:** CC-Link IE Field, Reference no. 153<br>**CFBUS.PVC.049:** CC-Link IE Field, Reference no. 154 |
| **EAC** | Certificate No. RU C-DE.ME77.B.00295/19 |
| **REACH** | In accordance with regulation (EC) No. 1907/2006 (REACH) |
| **Lead-free** | Following 2011/65/EC (RoHS-II/RoHS-III) |
| **Cleanroom** | According to ISO Class 1. The outer jacket material of this series complies with CF240.02.24 - tested by IPA according to standard DIN EN ISO 14644-1 |
| **CE** | Following 2014/35/EU |
| **UKCA** | In accordance with the valid regulations of the United Kingdom (as at 08/2021) |

## Guaranteed service life (details see page 28-29)

| Double strokes* | 5 million | 7.5 million | 10 million |
|---|---|---|---|
| Temperature, from/to [°C] | R min. [factor x d] | R min. [factor x d] | R min. [factor x d] |
| +5/+15 | 15 | 16 | 17 |
| +15/+60 | 12.5 | 13.5 | 14.5 |
| +60/+70 | 15 | 16 | 17 |

* Higher number of double strokes? Service life calculation online ▶ www.igus.eu/chainflexlife

## Typical application areas

- For medium duty applications, Class 4
- Unsupported travels and up to 20m for gliding applications, Class 3
- Light oil influence, Class 2
- No torsion, Class 1
- Preferably indoor applications, but also outdoor ones at temperatures > 5 °C
- Machining units/packaging machines, handling, indoor cranes

CFBUS.PVC
PVC
12.5 x d

# Bus cable | PVC | chainflex® CFBUS.PVC

## Class 4.3.2.1

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Basic requirements | low | 1 | 2 | 3 | **4** | 5 | 6 | 7 | highest |
| Travel distance | unsupported | 1 | 2 | **3** | 4 | 5 | 6 | | ≥ 400m |
| Oil resistance | none | 1 | **2** | 3 | 4 | | | | highest |
| Torsion | none | **1** | 2 | 3 | 4 | | | | ±360° |

CFBUS.PVC
PVC
12.5 x d


Example image

| Part No. | Number of cores and conductor nominal cross section [mm²] | Outer diameter (d) max. [mm] | Copper index [kg/km] | Weight [kg/km] | Part No. | Characteristic wave impedance approx. [Ω] | Core group | Colour code |
|---|---|---|---|---|---|---|---|---|
| **Profibus (1x2x0.64mm)** | | | | | | | | |
| **CFBUS.PVC.001** | (2x0.25)C | 8.5 | 25 | 77 | **CFBUS.PVC.001** | 150 | 2x0.25 | red, green |
| **CAN-Bus** | | | | | | | | |
| **CFBUS.PVC.020** [2)] | (4x0.25)C | 7.0 | 23 | 57 | **CFBUS.PVC.020** [2)] | 120 | 4x0.25 | white, green, brown, yellow (star-quad) |
| **CFBUS.PVC.021** | (2x0.5)C | 8.5 | 32 | 86 | **CFBUS.PVC.021** | 120 | 2x0.5 | white, brown |
| **CFBUS.PVC.022** [2)] | (4x0.5)C | 8.5 | 43 | 94 | **CFBUS.PVC.022** [2)] | 120 | 4x0.5 | white, green, brown, yellow (star-quad) |
| **CC-Link** | | | | | | | | |
| **CFBUS.PVC.035** | (3x0.5)C | 8.0 | 40 | 82 | **CFBUS.PVC.035** | 110 | 3x0.5 | white, blue, yellow |
| **Ethernet/CAT5** | | | | | | | | |
| **CFBUS.PVC.040** [2)] | (4x0.25)C | 6.5 | 29 | 70 | **CFBUS.PVC.040** [2)] | 100 | 4x0.25 | white, green, brown, yellow (star-quad) |
| **Ethernet/CAT5e** | | | | | | | | |
| **CFBUS.PVC.045** | (4x(2x0.15))C | 7.5 | 33 | 67 | **CFBUS.PVC.045** | 100 | 4x(2x0.15) | white-blue/blue, white-orange/orange, white-green/green, white-brown/brown |
| **Ethernet/CAT6** | | | | | | | | |
| **CFBUS.PVC.049** | (4x(2x0.15))C | 7.5 | 33 | 67 | **CFBUS.PVC.049** | 100 | 4x(2x0.15) | white-blue/blue, white-orange/orange, white-green/green, white-brown/brown |
| **Ethernet/CAT6A** | | | | | | | | |
| **CFBUS.PVC.050** | 4x(2x0.20)C | 10.0 | 65 | 123 | **CFBUS.PVC.050** | 100 | 4x(2x0.20)C | white-blue/blue, white-orange/orange, white-green/green, white-brown/brown |
| **Ethernet/CAT7** | | | | | | | | |
| **CFBUS.PVC.052** | (4x(2x0.15)C)C | 9.5 | 89 | 136 | **CFBUS.PVC.052** | 100 | 4x(2x0.15)C | white-blue/blue, white-orange/orange, white-green/green, white-brown/brown |
| **FireWire IEEE 1394b** | | | | | | | | |
| **CFBUS.PVC.056** [11)] | (2x(2x0.15)C+2x0.38)C | 9.0 | 59 | 96 | **CFBUS.PVC.056** [11)] | 110 | 2x(2x0.15)C<br>2x0.38 | orange/blue, blue/red<br>black, white |
| **Profinet** | | | | | | | | |
| **CFBUS.PVC.060** [2) 13)] | (4x0.38)C | 7.0 | 33 | 67 | **CFBUS.PVC.060** [2) 13)] | 100 | 4x0.38 | white, orange, blue, yellow (star-quad) |
| **USB 3.0** | | | | | | | | |
| **CFBUS.PVC.068** | (2x(2xAWG28)<br>+2x(2xAWG28)C)C | 7.0 | 39 | 68 | **CFBUS.PVC.068** | 90 | 2x(2xAWG28)<br>2x(2xAWG28)C | red/black, green/white-green<br>blue/yellow, orange/violet |

The chainflex® types marked with [2)] are cables designed as a star-quad.
[11)] Phase-out model
[13)] Colour outer jacket: Yellow-green (RAL 6018)

**Note:** The given outer diameters are maximum values and may tend toward lower tolerance limits.
**G =** with green-yellow earth core **x =** without earth core


## Cables available in the chainflex® CASE

Simple savings on delivery, storage space and re-ordering with the chainflex® CASE - ship'n store by igus®.

**More on this on page 24/25 and online:** www.igus.eu/cfcase

**Technical note on bus cables**
chainflex® bus cables have been specially developed and tested for continuously moving use in e-chains®. Depending on the material used for the outer jacket and on the underlying construction principle, the bus cables are designed for different mechanical requirements and resistance to diverse media.
The cables have been electrically designed in such a way that, on the one hand, the electrical requirements of the respective bus specification are reliably met and, on the other, that greater value is placed on a high degree of EMC reliability.
It is also ensured that the electrical values remain stable over the long term in spite of permanent movement.
The overall quality of transmission in a complete bus communication system, however, is not solely dependent on the cable used. What is also essential is that all components (electronic parts, connecting system and cable) are precisely matched to each other and that the maximum transmission lengths, which are dependent on the respective system, are adhered to with regard to the data transmission rates needed. A cable is thus not solely responsible for the reliable transmission of signals.
igus® advises you when you are designing your bus system to take all these factors into account and, with extensive tests, helps you to ensure the process reliability of your system from the very beginning.

PVC | iguPUR | PUR | TPE

# Bus cable | iguPUR | chainflex® CF898

New

**5 million** Double strokes guaranteed

**15 x d** Bend radius, e-chain®

**10m** Travel distance, e-chain®

- For flexing applications
- iguPUR outer jacket
- Oil-resistant
- Shielded
- Flame-retardant

PROFINET suitable for FastConnect


Example image

## Dynamic information

| | | |
|---|---|---|
| **Bend radius** | **e-chain® linear** | minimum 15 x d |
| | **flexible** | minimum 12 x d |
| | **fixed** | minimum 8 x d |
| **Temperature** | **e-chain® linear** | -20°C up to +70°C |
| | **flexible** | -40°C up to +70°C (following DIN EN 60811-504) |
| | **fixed** | -50°C up to +70°C (following DIN EN 50305) |
| **v max.** | **unsupported** | 3m/s |
| **a max.** | | 20m/s² |
| **Travel distance** | | Unsupported travels up to 10m, Class 1 |

## Cable structure

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

## Electrical information

| | |
|---|---|
| **Nominal voltage** | 50V<br>300V (following UL), except **CF898.001:** 30V (following UL) |
| **Testing voltage** | 500V |

# Class 3.1.3.1

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Basic requirements | low | 1 | 2 | **3** | 4 | 5 | 6 | 7 | highest |
| Travel distance | unsupported | **1** | 2 | 3 | 4 | 5 | 6 | ≥ 400m | |
| Oil resistance | none | 1 | 2 | **3** | 4 | highest | | | |
| Torsion | none | **1** | 2 | 3 | 4 | ±360° | | | |

## Properties and approvals

| | |
|---|---|
| **UV resistance** | Medium |
| **Oil resistance** | Oil-resistant (following DIN EN 50363-10-2), Class 3 |
| **Flame-retardant** | According to IEC 60332-1-2, Cable Flame, VW-1, FT1, FT2 / Horizontal Flame<br>**CF898.082-CF898.083:** 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 data sheet for details ▶ www.igus.eu/CF898 |
| **NFPA** | **CF898.001-CF898.060:** Following NFPA 79-2018, Kapitel 12.9 |
| **EAC** | Certificate No. RU C-DE.ME77.B.00295/19 |
| **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 |
| **UKCA** | In accordance with the valid regulations of the United Kingdom (as at 08/2021) |

## Guaranteed service life (details see page 28-29)

| 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 |

* Higher number of double strokes? Service life calculation online ▶ www.igus.eu/chainflexlife

## 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 sun radiation
- Machining units/machine tools, low temperature applications

CF898
iguPUR
15 x d

Guarantee igus chainflex 36 up to 36 months guarantee

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

# Bus cable | iguPUR | chainflex® CF898

New

## Class 3.1.3.1

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Basic requirements | low | 1 | 2 | **3** | 4 | 5 | 6 | 7 | highest |
| Travel distance | unsupported | **1** | 2 | 3 | 4 | 5 | 6 | ≥ 400m | |
| Oil resistance | none | 1 | 2 | **3** | 4 | highest | | | |
| Torsion | none | **1** | 2 | 3 | 4 | ±360° | | | |

CF898 iguPUR 15 x d


Example image

| Part No. | Number of cores and conductor nominal cross section [mm²] | Outer diameter (d) max. [mm] | Copper index [kg/km] | Weight [kg/km] | Part No. | Characteristic wave impedance approx. [Ω] | Core group | Colour code |
|---|---|---|---|---|---|---|---|---|
| **Profibus (1x2x0.64mm)** | | | | | | | | |
| **CF898.001** | (2x0.25)C | 8.0 | 18 | 56 | **CF898.001** | 150 | 2x0.25 | red, green |
| **CAN-Bus** | | | | | | | | |
| **CF898.021** | (2x0.5)C | 8.5 | 24 | 80 | **CF898.021** | 120 | 2x0.5 | white, brown |
| **Ethernet/CAT5e** | | | | | | | | |
| **CF898.045** | (4x(2x0.14))C | 7.0 | 25 | 54 | **CF898.045** | 100 | 4x(2x0.14) | white-blue/blue, white-orange/orange, white-green/green, white-brown/brown |
| **Profinet** | | | | | | | | |
| **CF898.060** [13] | (4x0.34)C | 7.0 | 25 | 58 | **CF898.060** [13] | 100 | 4x0.34 | white, orange, blue, yellow (star-quad) |
| New **CF898.061.FC** | (4x0.34)C | 7.0 | 25 | 72 | **CF898.061.FC** | 100 | 4x0.34 | white, orange, blue, yellow (star-quad) |
| **ASI BUS (flat cables)** | | | | | | | | |
| **CF898.082** [14] | According to ASI | 4.0 | 50 | 82 | **CF898.082** [14] | According to ASI | 2x2.5 | blue, brown |
| **CF898.083** [15] | According to ASI | 4.0 | 50 | 79 | **CF898.083** [15] | According to ASI | 2x2.5 | blue, brown |

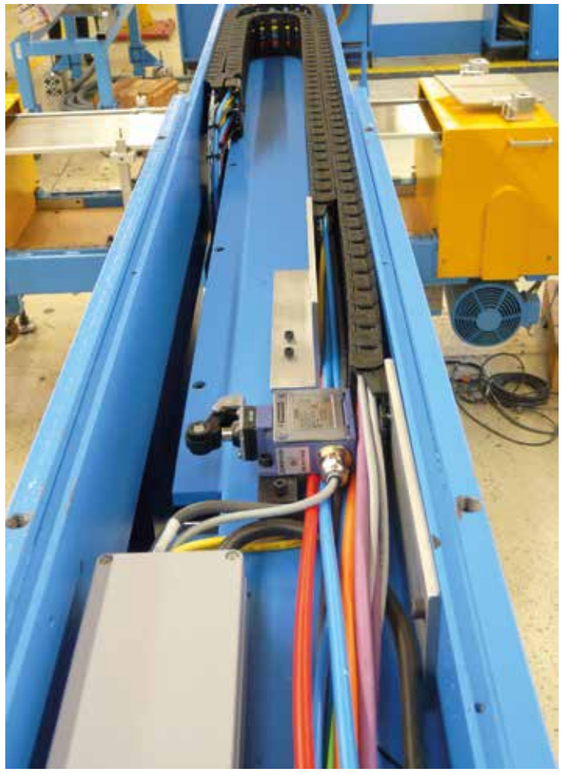
[13] Colour outer jacket: Yellow-green (RAL 6018)
[14] Colour outer jacket: Yellow (RAL 1021)
[15] Colour outer jacket: Jet black (RAL 9005)

**Note:** The given outer diameters are maximum values and may tend toward lower tolerance limits.
**G =** with green-yellow earth core **x =** without earth core


### Cables available in the chainflex® CASE

Simple savings on delivery, storage space and re-ordering with the chainflex® CASE - ship'n store by igus®.

**More on this on page 24/25 and online:** www.igus.eu/cfcase



**Adjustment device with chainflex® CF898 bus cables**

**Technical note on bus cables**
chainflex® bus cables have been specially developed and tested for continuously moving use in e-chains®. Depending on the material used for the outer jacket and on the underlying construction principle, the bus cables are designed for different mechanical requirements and resistance to diverse media.
The cables have been electrically designed in such a way that, on the one hand, the electrical requirements of the respective bus specification are reliably met and, on the other, that greater value is placed on a high degree of EMC reliability.
It is also ensured that the electrical values remain stable over the long term in spite of permanent movement.
The overall quality of transmission in a complete bus communication system, however, is not solely dependent on the cable used. What is also essential is that all components (electronic parts, connecting system and cable) are precisely matched to each other and that the maximum transmission lengths, which are dependent on the respective system, are adhered to with regard to the data transmission rates needed. A cable is thus not solely responsible for the reliable transmission of signals.
igus® advises you when you are designing your bus system to take all these factors into account and, with extensive tests, helps you to ensure the process reliability of your system from the very beginning.

**EPLAN download, configurators ▶ www.igus.eu/CF898**



EU2022 igus®

# Bus cable | PUR | chainflex® CFBUS.PUR

Example image

**10 million** Double strokes guaranteed

**12.5 x d** Bend radius, e-chain®

**20m** Travel distance, e-chain®

- For medium duty applications
- PUR outer jacket
- Shielded
- Oil-resistant and coolant-resistant
- Flame-retardant
- PVC and halogen-free
- Notch-resistant
- Hydrolysis and microbe-resistant

Single Pair Ethernet for e-chains®

SPE

## Dynamic information

| | | |
|---|---|---|
| Bend radius | e-chain® linear | minimum 12.5 x d |
| | flexible | mininum 10 x d |
| | fixed | minimum 7 x d |
| Temperature | e-chain® linear | -20°C up to +70°C |
| | flexible | -40°C up to +70°C (following DIN EN 60811-504) |
| | fixed | -50°C up to +70°C (following DIN EN 50305) |
| v max. | unsupported | 3m/s |
| | gliding | 2m/s |
| a max. | | 30m/s² |
| Travel distance | | Unsupported travels and up to 20m for gliding applications, Class 3 |

## Cable structure

| | |
|---|---|
| Conductor | Stranded conductor in especially bending-resistant version consisting of bare copper wires (following DIN EN 60228). |
| Core insulation | According to bus specification. |
| Core structure | According to bus specification. |
| Core identification | According to bus specification.<br>▶ Product range table |
| Overall shield | Bending-resistant braiding made of tinned copper wires.<br>Coverage linear approx. 55%, optical approx. 80% |
| Outer jacket | Low-adhesion, halogen-free, highly abrasion resistant PUR mixture, adapted to suit the requirements in e-chains® (following DIN EN 50363-10-2)<br>Colour: Red lilac (similar to RAL 4001)<br>Variants ▶ Product range table |

## Electrical information

| | |
|---|---|
| Nominal voltage | 50V<br>300V (following UL), except **CFBUS.PUR.020:** 30V (following UL) |
| Testing voltage | 500V |

## Properties and approvals

| | |
|---|---|
| UV resistance | Medium |

**EPLAN download, configurators ▶ www.igus.eu/CFBUS.PUR**

36-month guarantee ... more than 1,350 cable types from stock ... no cutting charges

igus



# Class 4.3.3.1

| | |
|---|---|
| Basic requirements | low 1 2 3 **4** 5 6 7 highest |
| Travel distance | unsupported 1 2 **3** 4 5 6 ≥ 400m |
| Oil resistance | none 1 2 **3** 4 highest |
| Torsion | none **1** 2 3 4 ±360° |

| | |
|---|---|
| **Oil resistance** | Oil-resistant (following DIN EN 50363-10-2), Class 3 |
| **Offshore** | MUD-resistant following NEK 606 - status 2009 |
| **Flame-retardant** | According to IEC 60332-1-2, Cable Flame, VW-1, FT1, FT2 / Horizontal Flame |
| **Silicone-free** | Free from silicone which can affect paint adhesion (following PV 3.10.7 – status 1992) |
| **Halogen-free** | Following DIN EN 60754 |
| **UL verified** | Certificate No. B129699: "igus 36-month chainflex cable guarantee and service life calculator based on 2 billion test cycles per year" |
| **UL listed** | CMX, 75°C (except CFBUS.PUR.068) |
| **UL/CSA AWM** | See data sheet for details ▶ www.igus.eu/CFBUS.PUR |
| **NFPA** | Following NFPA 79-2018, chapter 12.9 |
| **CLPA** | **CFBUS.PUR.045:** CC-Link IE Field, Reference no. 151<br>**CFBUS.PUR.049:** CC-Link IE Field, Reference no. 152 |
| **DNV** | Type Approval Certificate TAE00003X6<br>**CFBUS.PUR.040-.052:** Type Approval Certificate TAE00003X8 |
| **EAC** | Certificate No. RU C-DE.ME77.B.00295/19 |
| **REACH** | In accordance with regulation (EC) No. 1907/2006 (REACH) |
| **Lead-free** | Following 2011/65/EC (RoHS-II/RoHS-III) |
| **Cleanroom** | According to ISO Class 1. The outer jacket material of this series complies with CF77.UL.05.12.D - tested by IPA according to standard DIN EN ISO 14644-1 |
| **DESINA** | According to VDW, DESINA standardisation |
| **CE** | Following 2014/35/EU |
| **UKCA** | In accordance with the valid regulations of the United Kingdom (as at 08/2021) |

## Guaranteed service life (details see page 28-29)

| Double strokes* | 5 million | 7.5 million | 10 million |
|---|---|---|---|
| Temperature, from/to [°C] | R min. [factor x d] | R min. [factor x d] | R min. [factor x d] |
| -20/-10 | 15 | 16 | 17 |
| -10/+60 | 12.5 | 13.5 | 14.5 |
| +60/+70 | 15 | 16 | 17 |

* Higher number of double strokes? Service life calculation online ▶ www.igus.eu/chainflexlife

## Typical application areas

- For medium duty applications, Class 4
- Unsupported travels and up to 20m for gliding applications, Class 3
- Almost unlimited resistance to oil, Class 3
- No torsion, Class 1
- Indoor and outdoor applications without direct sun radiation
- Machining units/machine tools, low temperature applications

EU2022

CFBUS.PUR
PUR
12.5 x d

# Bus cable | PUR | chainflex® CFBUS.PUR

## Class 4.3.3.1

Basic requirements: low 1 2 3 4 5 6 7 highest
Travel distance: unsupported 1 2 3 4 5 6 ≥ 400m
Oil resistance: none 1 2 3 4 highest
Torsion: none 1 2 3 4 ±360°

CFBUS.PUR
PUR
12.5 x d


Example image

| Part No. | Number of cores and conductor nominal cross section [mm²] | Outer diameter (d) max. [mm] | Copper index [kg/km] | Weight [kg/km] | Part No. | Characteristic wave impedance approx. [Ω] | Core group | Colour code |
|---|---|---|---|---|---|---|---|---|
| **Profibus (1x2x0.64mm)** | | | | | | | | |
| **CFBUS.PUR.001** | (2x0.25)C | 8.5 | 25 | 75 | **CFBUS.PUR.001** | 150 | 2x0.25 | red, green |
| **CAN-Bus** | | | | | | | | |
| **CFBUS.PUR.020** 2) | (4x0.25)C | 7.5 | 23 | 64 | **CFBUS.PUR.020** 2) | 120 | 4x0.25 | white, green, brown, yellow (star-quad) |
| **CFBUS.PUR.021** | (2x0.5)C | 8.5 | 32 | 82 | **CFBUS.PUR.021** | 120 | 2x0.5 | white, brown |
| **CFBUS.PUR.022** 2) | (4x0.5)C | 8.5 | 43 | 91 | **CFBUS.PUR.022** 2) | 120 | 4x0.5 | white, green, brown, yellow (star-quad) |
| **CC-Link** | | | | | | | | |
| **CFBUS.PUR.035** | (3x0.5)C | 8.0 | 40 | 76 | **CFBUS.PUR.035** | 110 | 3x0.5 | white, blue, yellow |
| **Ethernet/CAT5** | | | | | | | | |
| **CFBUS.PUR.040** 2) | (4x0.25)C | 6.5 | 29 | 69 | **CFBUS.PUR.040** 2) | 100 | 4x0.25 | white, green, brown, yellow (star-quad) |
| **Single Pair Ethernet/CAT5e** | | | | | | | | |
| **CFBUS.PUR.042** | (2x0.15)C | 5.5 | 12 | 33 | **CFBUS.PUR.042** | | 2x0.15 | white/blue |
| **Ethernet/CAT5e** | | | | | | | | |
| **CFBUS.PUR.045** | (4x(2x0.15))C | 7.5 | 33 | 66 | **CFBUS.PUR.045** | 100 | 4x(2x0.15) | white-blue/blue, white-orange/orange, white-green/green, white-brown/brown |
| **Ethernet/CAT6** | | | | | | | | |
| **CFBUS.PUR.049** | (4x(2x0.15))C | 7.5 | 33 | 66 | **CFBUS.PUR.049** | 100 | 4x(2x0.15) | white-blue/blue, white-orange/orange, white-green/green, white-brown/brown |
| **CFBUS.PUR.H01.049** | ((4x(2x0.15))C+4x1.5)C | 12.5 | 125 | 202 | **CFBUS.PUR.H01.049** | 100 | (4x(2x0.15))C | white-blue/blue, white-orange/orange, white-green/green, white-brown/brown |
| | | | | | | | 4x1.5 | black, brown, grey, blue |
| **Ethernet/CAT6A** | | | | | | | | |
| **CFBUS.PUR.050** | 4x(2x0.20)C | 10.0 | 65 | 120 | **CFBUS.PUR.050** | 100 | 4x(2x0.20)C | white-blue/blue, white-orange/orange, white-green/green, white-brown/brown |
| **Ethernet/CAT7** | | | | | | | | |
| **CFBUS.PUR.052** | (4x(2x0.15)C)C | 9.5 | 89 | 129 | **CFBUS.PUR.052** | 110 | (4x(2x0.15))C | white-blue/blue, white-orange/orange, white-green/green, white-brown/brown |
| **FireWire IEEE 1394b** | | | | | | | | |
| **CFBUS.PUR.056** | (2x(2x0.15)C+2x0.38)C | 9.0 | 59 | 91 | **CFBUS.PUR.056** | 110 | 2x(2x0.15)C | orange/blue, blue/red |
| | | | | | | | 2x0.38 | black, white |
| **Profinet** | | | | | | | | |
| **CFBUS.PUR.060** 2) 13) | (4x0.38)C | 7.0 | 33 | 64 | **CFBUS.PUR.060** 2) 13) | 100 | 4x0.38 | white, orange, blue, yellow (star-quad) |
| **CFBUS.PUR.H01.060** | ((4x0.38)C+4x1.5)C | 11.5 | 120 | 196 | **CFBUS.PUR.H01.060** | 100 | (4x0.38)C | white, orange, blue, yellow (star-quad) |
| | | | | | | | 4x1.5 | black, brown, grey, blue |
| **USB 3.0** | | | | | | | | |
| **CFBUS.PUR.068** | (2x(2xAWG28) +2x(2xAWG28)C)C | 7.0 | 39 | 64 | **CFBUS.PUR.068** | 90 | 2x(2xAWG28) | red/black, green/white-green |
| | | | | | | | 2x(2xAWG28)C | blue/yellow, orange/violet |

The chainflex® types marked with 2) are cables designed as a star-quad.
13) Colour outer jacket: Yellow-green (RAL 6018)

**Note:** The given outer diameters are maximum values and may tend toward lower tolerance limits.
**G =** with green-yellow earth core **x =** without earth core

**EPLAN download, configurators ▶ www.igus.eu/CFBUS.PUR**

PVC | iguPUR | PUR | **TPE**

# Bus cable | TPE | chainflex® CFBUS

Example image

**10 million** Double strokes guaranteed

**10 x d** Bend radius, e-chain®

**400m** Travel distance, e-chain®

- For extremely heavy duty applications
- TPE outer jacket
- Shielded
- Oil and bio-oil-resistant
- Flame-retardant
- Hydrolysis and microbe-resistant

## Dynamic information

| | | |
|---|---|---|
| **Bend radius** | **e-chain® linear** | minimum 10 x d (CFBUS.001-.049 and CFBUS.060)<br>minimum 12.5 x d (CFBUS.050-.055 and CFBUS.070) |
| | **flexible** | minimum 8 x d |
| | **fixed** | minimum 5 x d |
| **Temperature** | **e-chain® linear** | -35°C up to +70°C |
| | **flexible** | -45°C up to +70°C (following DIN EN 60811-504) |
| | **fixed** | -50°C up to +70°C (following DIN EN 50305) |
| **v max.** | **unsupported** | 10m/s |
| | **gliding** | 6m/s |
| **a max.** | 100m/s² | |
| **Travel distance** | Unsupported travels and up to 400m and more for gliding applications, Class 6 | |

## Cable structure

| | |
|---|---|
| **Conductor** | Stranded conductor in especially bending-resistant version consisting of bare copper wires (following DIN EN 60228). |
| **Core insulation** | According to bus specification. |
| **Core structure** | According to bus specification. |
| **Core identification** | According to bus specification.<br>▶ Product range table |
| **Inner jacket** | TPE mixture adapted to suit the requirements in e-chains®. |
| **Overall shield** | Extremely bending-resistant braiding made of tinned copper wires.<br>Coverage linear approx. 70%, optical approx. 90% |
| **Outer jacket** | Low-adhesion, extremely abrasion-resistant and highly flexible TPE mixture, adapted to suit the requirements in e-chains®.<br>Colour: Red lilac (similar to RAL 4001)<br>Variants ▶ Product range table |

## Electrical information

| | |
|---|---|
| **Nominal voltage** | 50V<br>600V (following UL), except **CFBUS.065/.066:** 30V (following UL) |
| **Testing voltage** | 500V (following DIN EN 50289-1-3) |

## Properties and approvals

| | |
|---|---|
| **UV resistance** | Medium |



CFBUS
TPE
10-12.5 x d

# Class 6.6.4.1

| | |
|---|---|
| Basic requirements | low 1 2 3 4 5 **6** 7 highest |
| Travel distance | unsupported 1 2 3 4 5 **6** ≥ 400m |
| Oil resistance | none 1 2 3 **4** highest |
| Torsion | none **1** 2 3 4 ±360° |

| | |
|---|---|
| **Oil resistance** | Oil-resistant (following DIN EN 60811-404), bio-oil-resistant (following VDMA 24568 with Plantocut 8 S-MB tested by DEA), Class 4 |
| **Flame-retardant** | According to IEC 60332-1-2, Cable Flame, VW-1, FT1, FT2 / Horizontal Flame<br>**CFBUS.030/CFBUS.065/CFBUS.066:** 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 data sheet for details ▶www.igus.eu/CFBUS |
| **NFPA** | Following NFPA 79-2018, chapter 12.9 |
| **CLPA** | **CFBUS.045:** CC-Link IE Field, Reference no. 130<br>**CFBUS.049:** CC-Link IE Field, Reference no. 137 |
| **DNV** | Type Approval Certificate TAE00003X5<br>**CFBUS.040-.052:** Type Approval Certificate TAE00003X7 |
| **EAC** | Certificate No. RU C-DE.ME77.B.00295/19 |
| **REACH** | In accordance with regulation (EC) No. 1907/2006 (REACH) |
| **Lead-free** | Following 2011/65/EC (RoHS-II/RoHS-III) |
| **Cleanroom** | According to ISO Class 1. The outer jacket material of this series complies with CF34.UL.25.04.D - tested by IPA according to standard DIN EN ISO 14644-1 |
| **DESINA** | According to VDW, DESINA standardisation |
| **CE** | Following 2014/35/EU |
| **UKCA** | In accordance with the valid regulations of the United Kingdom (as at 08/2021) |

## Guaranteed service life (details see page 28-29)

| Double strokes* | 5 million | | 7.5 million | | 10 million | |
|---|---|---|---|---|---|---|
| Temperature, from/to [°C] | CFBUS .001-.049 | CFBUS .050-.070 | CFBUS .001-.049 | CFBUS .050-.070 | CFBUS .001-.049 | CFBUS .050-.070 |
| | R min. [factor x d] | R min. [factor x d] | R min. [factor x d] | R min. [factor x d] | R min. [factor x d] | R min. [factor x d] |
| -35/-25 | 12.5 | 15 | 13.5 | 16 | 14.5 | 17 |
| -25/+60 | 10 | 12.5 | 11 | 13.5 | 12 | 14.5 |
| +60/+70 | 12.5 | 15 | 13.5 | 16 | 14.5 | 17 |

* Higher number of double strokes? Service life calculation online ▶ www.igus.eu/chainflexlife

## Typical application areas

- For heavy-duty applications, Class 6
- Unsupported travels and up to 400m and more for gliding applications, Class 6
- Almost unlimited resistance to oil, also with bio-oils, Class 4
- No torsion, Class 1
- Indoor and outdoor applications without direct sun radiation
- Storage and retrieval units for high-bay warehouses, machining units/machine tools, quick handling, cleanroom, semiconductor insertion, indoor cranes, low temperature applications

Guarantee igus chainflex 36 up to 36 months guarantee

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

# Bus cable | TPE | chainflex® CFBUS

## Class 6.6.4.1

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Basic requirements | low | 1 | 2 | 3 | 4 | 5 | **6** | 7 | highest |
| Travel distance | unsupported | 1 | 2 | 3 | 4 | 5 | **6** | ≥ 400m | |
| Oil resistance | none | 1 | 2 | 3 | **4** | highest | | | |
| Torsion | none | **1** | 2 | 3 | 4 | ±360° | | | |

CFBUS TPE 10-12.5 x d


Example image

| Part No. | Number of cores and conductor nominal cross section [mm²] | Outer diameter (d) max. [mm] | Copper index [kg/km] | Weight [kg/km] | Part No. | Characteristic wave impedance approx. [Ω] | Core group | Colour code |
|---|---|---|---|---|---|---|---|---|
| **Profibus (1x2x0.64mm)** | | | | | | | | |
| **CFBUS.001** | (2x0.25)C | 9.0 | 33 | 92 | **CFBUS.001** | 150 | 2x0.25 | red, green |
| **CFBUS.002** | (2x0.25)C+4x1.5 | 12.5 | 94 | 191 | **CFBUS.002** | 150 | (2x0.25)C | red/green |
| | | | | | | | 4x1.5 | black with white numbers 1-4 |
| **CFBUS.003** | (2x0.25)C+3G0.75 | 11.5 | 55 | 145 | **CFBUS.003** | 150 | (2x0.25)C | red/green |
| | | | | | | | 3G0.75 | black, blue, green-yellow |
| **Interbus** | | | | | | | | |
| **CFBUS.010** | (3x(2x0.25))C | 9.0 | 47 | 91 | **CFBUS.010** | 100 | 3x(3x0.25) | white/brown, green/yellow, grey/pink |
| **CFBUS.011** | (3x(2x0.25)+(3G1.0))C | 10.5 | 87 | 152 | **CFBUS.011** | 100 | 3x(2x0.25) | white/brown, green/yellow, grey/pink |
| | | | | | | | (3G1.0) | red, blue, green-yellow |
| **CAN-Bus** | | | | | | | | |
| **CFBUS.020** [2] | (4x0.25)C | 6.5 | 28 | 58 | **CFBUS.020** [2] | 120 | 4x0.25 | white, green, brown, yellow (star-quad) |
| **CFBUS.021** | (2x0.5)C | 8.0 | 39 | 81 | **CFBUS.021** | 120 | 2x0.5 | white, brown |
| **CFBUS.022** [2] | (4x0.5)C | 8.0 | 43 | 87 | **CFBUS.022** [2] | 120 | 4x0.5 | white, green, brown, yellow (star-quad) |
| **DeviceNet** | | | | | | | | |
| **CFBUS.030** [4] | ((2xAWG24)C+2xAWG22)C | 7.0 | 36 | 57 | **CFBUS.030** [4] | 120 | (2xAWG24)C | white/blue |
| | | | | | | | 2xAWG22 | red, black |
| **CFBUS.031** [4] | ((2xAWG18)C+2xAWG15)C | 11.5 | 103 | 174 | **CFBUS.031** [4] | 120 | (2xAWG18)C | white/blue |
| | | | | | | | 2xAWG15 | red, black |
| **CC-Link** | | | | | | | | |
| **CFBUS.035** | (3xAWG20)C | 8.5 | 43 | 96 | **CFBUS.035** | 110 | 3xAWG20 | white, blue, yellow |

The chainflex® types marked with [2] are cables designed as a star-quad.
[4] Manufactured without inner jacket

**Note:** The given outer diameters are maximum values and may tend toward lower tolerance limits.
**G =** with green-yellow earth core **x =** without earth core


### Cables available in the chainflex® CASE

Simple savings on delivery, storage space and re-ordering with the chainflex® CASE - ship'n store by igus®.

**More on this on page 24/25 and online:** www.igus.eu/cfcase

**Technical note on bus cables**
chainflex® bus cables have been specially developed and tested for continuously moving use in e-chains®. Depending on the material used for the outer jacket and on the underlying construction principle, the bus cables are designed for different mechanical requirements and resistance to diverse media.
The cables have been electrically designed in such a way that, on the one hand, the electrical requirements of the respective bus specification are reliably met and, on the other, that greater value is placed on a high degree of EMC reliability.
It is also ensured that the electrical values remain stable over the long term in spite of permanent movement.
The overall quality of transmission in a complete bus communication system, however, is not solely dependent on the cable used. What is also essential is that all components (electronic parts, connecting system and cable) are precisely matched to each other and that the maximum transmission lengths, which are dependent on the respective system, are adhered to with regard to the data transmission rates needed. A cable is thus not solely responsible for the reliable transmission of signals.
igus® advises you when you are designing your bus system to take all these factors into account and, with extensive tests, helps you to ensure the process reliability of your system from the very beginning.

Guarantee igus chainflex 36 up to 36 months guarantee

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

**EPLAN download, configurators ▶ www.igus.eu/CFBUS**

# Bus cable | TPE | chainflex® CFBUS

## Class 6.6.4.1

Basic requirements: low 1 2 3 4 5 **6** 7 highest
Travel distance: unsupported 1 2 3 4 5 **6** ≥ 400m
Oil resistance: none 1 2 3 4 highest
Torsion: none **1** 2 3 4 ±360°

CFBUS TPE 10-12.5 x d


Example image

| | Part No. | Number of cores and conductor nominal cross section [mm²] | Outer diameter (d) max. [mm] | Copper index [kg/km] | Weight [kg/km] | Part No. | Characteristic wave impedance approx. [Ω] | Core group | Colour code |
|---|---|---|---|---|---|---|---|---|---|
| | **Ethernet/CAT5I** | | | | | | | | |
| EtherCAT | **CFBUS.040** | (4x0.25)C | 7.0 | 33 | 59 | **CFBUS.040** | 100 | 4x0.25 | white, green, brown, yellow (star-quad) |
| | **Ethernet/CAT5e** | | | | | | | | |
| CC-Link IE Field | **CFBUS.045** | (4x(2x0.15))C | 8.5 | 42 | 84 | **CFBUS.045** | 100 | 4x(2x0.15) | white-blue/blue, white-orange/orange, white-green/green, white-brown/brown |
| | **Ethernet/CAT6** | | | | | | | | |
| CC-Link IE Field | **CFBUS.049** | (4x(2x0.15))C | 8.5 | 42 | 84 | **CFBUS.049** | 100 | 4x(2x0.15) | white-blue/blue, white-orange/orange, white-green/green, white-brown/brown |
| | **Ethernet/CAT6A** | | | | | | | | |
| | **CFBUS.050** [4] | (4x(2x0.15)C)C | 10.5 | 83 | 134 | **CFBUS.050** [4] | 100 | 4x(2x0.15)C | white-blue/blue, white-orange/orange, white-green/green, white-brown/brown |
| | **Ethernet/CAT7** | | | | | | | | |
| | **CFBUS.052** [4] | (4x(2x0.15)C)C | 10.5 | 89 | 133 | **CFBUS.052** [4] | 100 | 4x(2x0.15)C | white-blue/blue, white-orange/orange, white-green/green, white-brown/brown |
| | **FireWire 1394a** | | | | | | | | |
| | **CFBUS.055** | 2x(2x0.15)C+2x(0.34)C | 8.0 | 39 | 76 | **CFBUS.055** | 100 | 2x(2x0.15)C | orange/blue, green/red |
| | | | | | | | | 2x(0.34)C | white, black |
| | **Profinet** | | | | | | | | |
| PROFINET EtherCAT | **CFBUS.060** [2] [13] | (4x0.38)C | 7.5 | 39 | 74 | **CFBUS.060** [2] [13] | 100 | 4x0.38 | white, orange, blue, yellow (star-quad) |
| | **USB** | | | | | | | | |
| | **CFBUS.065** | ((2xAWG28)+2xAWG20)C | 5.5 | 28 | 45 | **CFBUS.065** | 90 | (2xAWG28) | white/green |
| | | | | | | | | 2xAWG20 | red, black |
| | **CFBUS.066** | ((2xAWG24)+2xAWG20)C | 6.5 | 32 | 51 | **CFBUS.066** | 90 | (2xAWG24) | white/green |
| | | | | | | | | 2xAWG20 | red, black |
| | **DVI** | | | | | | | | |
| | **CFBUS.070** [4] [6] | (4x(2xAWG28)C +(2xAWG28)+3xAWG28)C | 9.0 | 35 | 95 | **CFBUS.070** [4] [6] | 100 | 4x(2xAWG28)C | 4 x white/yellow with element-shield in blue, black, red, white |
| | | | | | | | | (2xAWG28) | white/brown |
| | | | | | | | | 3xAWG28)C | green, yellow, grey |

The chainflex® types marked with [2] are cables designed as a star-quad.
[4] Manufactured without inner jacket
[6] without cULus
[13] Colour outer jacket: Yellow-green (RAL 6018)

**Note:** The given outer diameters are maximum values and may tend toward lower tolerance limits.
**G =** with green-yellow earth core **x =** without earth core

**Technical note on bus cables**
chainflex® bus cables have been specially developed and tested for continuously moving use in e-chains®. Depending on the material used for the outer jacket and on the underlying construction principle, the bus cables are designed for different mechanical requirements and resistance to diverse media.
The cables have been electrically designed in such a way that, on the one hand, the electrical requirements of the respective bus specification are reliably met and, on the other, that greater value is placed on a high degree of EMC reliability.
It is also ensured that the electrical values remain stable over the long term in spite of permanent movement.
The overall quality of transmission in a complete bus communication system, however, is not solely dependent on the cable used. What is also essential is that all components (electronic parts, connecting system and cable) are precisely matched to each other and that the maximum transmission lengths, which are dependent on the respective system, are adhered to with regard to the data transmission rates needed. A cable is thus not solely responsible for the reliable transmission of signals.
igus® advises you when you are designing your bus system to take all these factors into account and, with extensive tests, helps you to ensure the process reliability of your system from the very beginning.

**EPLAN download, configurators ▶ www.igus.eu/CFBUS**

PVC | iguPUR | PUR | TPE

# Bus cable | TPE | chainflex® CFBUS.LB

New


Example image

**12.5 million**
Double strokes guaranteed

**7.5 x d**
Bend radius, e-chain®

**400m**
Travel distance, e-chain®

- For heaviest duty applications
- TPE outer jacket
- Shielded
- Oil and bio-oil-resistant
- Low-temperature-flexible
- PVC and halogen-free
- Hydrolysis and microbe-resistant

Now available with UL approval & 25% longer service life

## Dynamic information

| | | |
|---|---|---|
| **Bend radius** | **e-chain® linear** | minimum 7.5 x d |
| | **flexible** | minimum 6 x d |
| | **fixed** | minimum 4 x d |
| **Temperature** | **e-chain® linear** | -35°C up to +70°C |
| | **flexible** | -50°C up to +70°C (following DIN EN 60811-504) |
| | **fixed** | -55°C up to +70°C (following DIN EN 50305) |
| **v max.** | **unsupported** | 10m/s |
| | **gliding** | 6m/s |
| **a max.** | | 100m/s² |
| **Travel distance** | | Unsupported travels and up to 400m and more for gliding applications, Class 6 |

## Cable structure

| | |
|---|---|
| **Conductor** | Stranded conductor in especially bending-resistant version consisting of bare copper wires (following DIN EN 60228). |
| **Core insulation** | According to bus specification. |
| **Core structure** | According to bus specification. |
| **Core identification** | According to bus specification.<br>▶ Product range table |
| **Inner jacket** | TPE mixture adapted to suit the requirements in e-chains®. |
| **Overall shield** | Extremely bending-resistant braiding made of tinned copper wires.<br>Coverage linear approx. 70%, optical approx. 90% |
| **Outer jacket** | Low-adhesion, extremely abrasion-resistant and highly flexible TPE mixture, adapted to suit the requirements in e-chains®.<br>Colour: Red lilac (similar to RAL 4001)<br>Variants ▶ Product range table |

## Electrical information

| | |
|---|---|
| **Nominal voltage** | 50V<br>600V (following UL) |
| **Testing voltage** | 500V (following DIN EN 50289-1-3) |

**EPLAN download, configurators ▶ www.igus.eu/CFBUS.LB**

36-month guarantee ... more than 1,350 cable types from stock ... no cutting charges



CFBUS.LB
TPE
7.5 x d

# Class 7.6.4.1

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Basic requirements | low | 1 | 2 | 3 | 4 | 5 | 6 | **7** highest |
| Travel distance | unsupported | 1 | 2 | 3 | 4 | 5 | **6** | ≥ 400m |
| Oil resistance | none | 1 | 2 | 3 | **4** | highest | | |
| Torsion | none | **1** | 2 | 3 | 4 | ±360° | | |

## Properties and approvals

| | |
|---|---|
| **UV resistance** | Medium |
| **Oil resistance** | Oil-resistant (following DIN EN 60811-404), bio-oil-resistant (following VDMA 24568 with Plantocut 8 S-MB tested by DEA), Class 4 |
| **Silicone-free** | Free from silicone which can affect paint adhesion (following PV 3.10.7 – status 1992) |
| **Halogen-free** | Following DIN EN 60754 |
| **UL verified** | Certificate No. B129699: "igus 36-month chainflex cable guarantee and service life calculator based on 2 billion test cycles per year" |
| **UL AWM** | See data sheet for details ▶ www.igus.eu/CFBUS.LB<br>(from production date 01/2022) |
| **CLPA** | **CFBUS.LB.045:** CC-Link IE Field, Reference no. 131<br>**CFBUS.LB.049:** CC-Link IE Field, Reference no. 138 |
| **EAC** | Certificate No. RU C-DE.ME77.B.02806 (TR ZU) |
| **REACH** | In accordance with regulation (EC) No. 1907/2006 (REACH) |
| **Lead-free** | Following 2011/65/EC (RoHS-II/RoHS-III) |
| **Cleanroom** | According to ISO Class 1. The outer jacket material of this series complies with CF9.15.07 - tested by IPA according to standard DIN EN ISO 14644-1 |
| **DESINA** | According to VDW, DESINA standardisation |
| **CE** | Following 2014/35/EU |
| **UKCA** | In accordance with the valid regulations of the United Kingdom (as at 08/2021) |

## Guaranteed service life (details see page 28-29)

| Double strokes* | 5 million | | 7.5 million | | 12.5 million | |
|---|---|---|---|---|---|---|
| Temperature, from/to [°C] | CFBUS.LB .001-.022 | CFBUS.LB .040-.060 | CFBUS.LB .001-.022 | CFBUS.LB .040-.060 | CFBUS.LB .001-.022 | CFBUS.LB .040-.060 |
| | R min. [factor x d] | R min. [factor x d] | R min. [factor x d] | R min. [factor x d] | R min. [factor x d] | R min. [factor x d] |
| -35/-25 | 12.5 | 10 | 13.5 | 11 | 14.5 | 12 |
| -25/+60 | 10 | 7.5 | 11 | 8.5 | 12 | 9.5 |
| +60/+70 | 12.5 | 10 | 13.5 | 11 | 14.5 | 12 |

* Higher number of double strokes? Service life calculation online ▶ www.igus.eu/chainflexlife

## Typical application areas

- For heavy-duty applications, Class 7
- Unsupported travels and up to 400m and more for gliding applications, Class 6
- Almost unlimited resistance to oil, also with bio-oils, Class 4
- No torsion, Class 1
- Indoor and outdoor applications without direct sun radiation
- Storage and retrieval units for high-bay warehouses, machining units/machine tools, quick handling, cleanroom, semiconductor insertion, indoor cranes, low temperature applications

Guarantee igus chainflex 36 up to 36 months guarantee

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

EU2022

PVC | iguPUR | PUR | **TPE**

# Bus cable | TPE | chainflex® CFBUS.LB

New

## Class 7.6.4.1

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Basic requirements | low | 1 | 2 | 3 | 4 | 5 | 6 | **7** | highest |
| Travel distance | unsupported | 1 | 2 | 3 | 4 | 5 | **6** | ≥ 400m | |
| Oil resistance | none | 1 | 2 | 3 | **4** | highest | | | |
| Torsion | none | **1** | 2 | 3 | 4 | ±360° | | | |

CFBUS.LB
TPE
7.5 x d


Example image

| | Part No. | Number of cores and conductor nominal cross section [mm²] | Outer diameter (d) max. [mm] | Copper index [kg/km] | Weight [kg/km] | Part No. | Characteristic wave impedance approx. [Ω] | Core group | Colour code |
|---|---|---|---|---|---|---|---|---|---|
| | **Profibus (1x2x0.64mm)** | | | | | | | | |
| New | **CFBUS.LB.001** | (2x0.25)C | 9.0 | 33 | 78 | **CFBUS.LB.001** | 150 | 2x0.25 | red, green |
| | **CAN-Bus/Feldbus** | | | | | | | | |
| New | **CFBUS.LB.020** [2] | (4x0.25)C | 6.5 | 28 | 49 | **CFBUS.LB.020** [2] | 120 | 4x0.25 | white, green, brown, yellow (star-quad) |
| New | **CFBUS.LB.021** | (2x0.5)C | 8.0 | 39 | 67 | **CFBUS.LB.021** | 120 | 2x0.5 | white, brown |
| New | **CFBUS.LB.022** [2] | (4x0.5)C | 8.0 | 43 | 78 | **CFBUS.LB.022** [2] | 120 | 4x0.5 | white, green, brown, yellow (star-quad) |
| | **Ethernet/CAT5I** | | | | | | | | |
| New | **CFBUS.LB.040** [2] | (4x0.25)C | 7.0 | 33 | 50 | **CFBUS.LB.040** [2] | 100 | 4x0.25 | white, green, brown, yellow (star-quad) |
| | **Ethernet/CAT5e** | | | | | | | | |
| New | **CFBUS.LB.045** | (4x(2x0.15))C | 8.5 | 42 | 71 | **CFBUS.LB.045** | 100 | 4x(2x0.15) | white-blue/blue, white-orange/orange, white-green/green, white-brown/brown |
| | **Ethernet/CAT6** | | | | | | | | |
| New | **CFBUS.LB.049** | (4x(2x0.15))C | 8.5 | 42 | 71 | **CFBUS.LB.049** | 100 | 4x(2x0.15) | white-blue/blue, white-orange/orange, white-green/green, white-brown/brown |
| | **Profinet** | | | | | | | | |
| New | **CFBUS.LB.060** [2] [13] | (4x0.38)C | 7.5 | 39 | 67 | **CFBUS.LB.060** [2] [13] | 100 | 4x0.38 | white, orange, blue, yellow (star-quad) |

The chainflex® types marked with [2] are cables designed as a star-quad.
[13] Colour outer jacket: Yellow-green (RAL 6018)

**Note:** The given outer diameters are maximum values and may tend toward lower tolerance limits.
**G =** with green-yellow earth core **x =** without earth core


### Cables available in the chainflex® CASE

Simple savings on delivery, storage space and re-ordering with the chainflex® CASE - ship'n store by igus®.

**More on this on page 24/25 and online:** www.igus.eu/cfcase

cost down...


...life up

### Reduce cost, improve technology, now!

Do the chainflex® price check ...
www.igus.eu/cf-price-check

… for example: reduce cost with CFBUS.PUR ...

**Technical note on bus cables**
chainflex® bus cables have been specially developed and tested for continuously moving use in e-chains®. Depending on the material used for the outer jacket and on the underlying construction principle, the bus cables are designed for different mechanical requirements and resistance to diverse media.
The cables have been electrically designed in such a way that, on the one hand, the electrical requirements of the respective bus specification are reliably met and, on the other, that greater value is placed on a high degree of EMC reliability.
It is also ensured that the electrical values remain stable over the long term in spite of permanent movement.
The overall quality of transmission in a complete bus communication system, however, is not solely dependent on the cable used. What is also essential is that all components (electronic parts, connecting system and cable) are precisely matched to each other and that the maximum transmission lengths, which are dependent on the respective system, are adhered to with regard to the data transmission rates needed. A cable is thus not solely responsible for the reliable transmission of signals.
igus® advises you when you are designing your bus system to take all these factors into account and, with extensive tests, helps you to ensure the process reliability of your system from the very beginning.