

Measuring system cable | **PUR** | chainflex® CF111.D

**36** 10 million  
Double strokes guaranteed

**10 x d**  
Bend radius, e-chain®

**10m**  
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

Dynamic information

|                                                                                     |                 |                                                                     |                                                |
|-------------------------------------------------------------------------------------|-----------------|---------------------------------------------------------------------|------------------------------------------------|
|    | Bend radius     | e-chain® linear                                                     | minimum 10 x d                                 |
|                                                                                     |                 | flexible                                                            | minimum 8 x d                                  |
|                                                                                     |                 | fixed                                                               | minimum 5 x d                                  |
|    | Temperature     | e-chain® linear                                                     | -25°C up to +80°C                              |
|                                                                                     |                 | flexible                                                            | -40°C up to +80°C (following DIN EN 60811-504) |
|                                                                                     |                 | fixed                                                               | -50°C up to +80°C (following DIN EN 50305)     |
|    | v max.          | unsupported                                                         | 5m/s                                           |
|                                                                                     |                 | gliding                                                             | 3m/s                                           |
|   | a max.          |                                                                     | 30m/s²                                         |
|  | Travel distance | Unsupported travels and up to 10m for gliding applications, Class 2 |                                                |

Cable structure

|                                                                                     |                     |                                                                                                                                                                                              |
|-------------------------------------------------------------------------------------|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | Conductor           | Very finely stranded special conductors of particularly bending resistant design made of tinned copper wires.                                                                                |
|  | Core insulation     | Mechanically high-quality TPE mixture.                                                                                                                                                       |
|  | Core structure      | According to measuring system specification.                                                                                                                                                 |
|  | Core identification | According to measuring system specification.<br>► <b>Product range table</b>                                                                                                                 |
|  | Element shield      | Extremely bending-resistant, tinned copper cover.<br>Coverage approx. 90% optical                                                                                                            |
|  | Element shield      | TPE mixture on pair shielding adapted to suit the requirements in e-chains®.                                                                                                                 |
|  | Intermediate layer  | Foil taping over the outer layer.                                                                                                                                                            |
|  | 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: Yellow-green (similar to RAL 6018) |

Electrical information

|                                                                                     |                 |                            |
|-------------------------------------------------------------------------------------|-----------------|----------------------------|
|  | Nominal voltage | 50V<br>300V (following UL) |
|  | Testing voltage | 500V                       |

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



EU2023

Class 4.2.3.1

Properties and approvals

|                                                                                       |                 |                                                                                                                                                           |
|---------------------------------------------------------------------------------------|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
|    | UV resistance   | Medium                                                                                                                                                    |
|    | Oil resistance  | Oil-resistant (following DIN EN 50363-10-2), Class 3                                                                                                      |
|    | Offshore        | MUD-resistant following NEK 606 - status 2016                                                                                                             |
|    | 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/CSA AWM      | See data sheet for details ► <a href="http://www.igus.eu/CF111D">www.igus.eu/CF111D</a>                                                                   |
|    | NFPA            | Following NFPA 79-2018, chapter 12.9                                                                                                                      |
|    | DNV             | Type Approval Certificate TAE00003X4                                                                                                                      |
|   | 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                                                                                                                                      |
|  | UK CA           | 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] |
| -25/-15                   | 12.5                | 13.5                | 14.5                |
| -15/+70                   | 10                  | 11                  | 12                  |
| +70/+80                   | 12.5                | 13.5                | 14.5                |

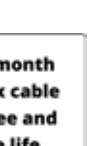
\* Higher number of double strokes? Service life calculation online ► [www.igus.eu/chainflexlife](http://www.igus.eu/chainflexlife)

Typical application areas

- For medium duty applications, Class 4
- Unsupported travels and up to 10m for gliding applications, Class 2
- 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



UL-verified chainflex® guarantee ... [www.igus.eu/ul-verified](http://www.igus.eu/ul-verified)



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Basic requirements  
Travel distance  
Oil resistance  
Torsion

|             |   |   |   |   |         |   |        |         |
|-------------|---|---|---|---|---------|---|--------|---------|
| low         | 1 | 2 | 3 | 4 | 5       | 6 | 7      | highest |
| unsupported | 1 | 2 | 3 | 4 | 5       | 6 | ≥ 400m |         |
| none        | 1 | 2 | 3 | 4 | highest |   |        |         |
| none        | 1 | 2 | 3 | 4 | ±360°   |   |        |         |

Example image

## Measuring system cable | PUR | chainflex® CF111.D

## Class 4.2.3.1



Example image

| Part No.    | Number of cores and conductor nominal cross section<br>[mm²] | Outer diameter (d) max.<br>[mm] | Copper index<br>[kg/km] | Weight<br>[kg/km] |
|-------------|--------------------------------------------------------------|---------------------------------|-------------------------|-------------------|
| CF111.001.D | (3x(2x0.14)C+(4x0.14)+(2x0.5))C                              | 9.5                             | 64                      | 104               |
| CF111.002.D | (3x(2x0.14)C+2x(0.5)C)C                                      | 9.5                             | 66                      | 109               |
| CF111.004.D | (2x(2x(2x0.14))+(4x0.14)C+(4x0.5))C                          | 10.5                            | 70                      | 116               |
| CF111.006.D | (3x(2x0.14)C+(4x0.14)+(4x0.25)+(2x0.5))C                     | 10.0                            | 76                      | 122               |
| CF111.009.D | (4x(2x0.25)+2x0.5)C                                          | 8.0                             | 49                      | 79                |
| CF111.010.D | (4x(2x0.25)+2x1.0)C                                          | 8.5                             | 61                      | 94                |
| CF111.011.D | (4x(2x0.34)+4x0.5)C                                          | 9.5                             | 72                      | 115               |
| CF111.014.D | (4x(2x0.25)C+(2x0.5))C                                       | 10.5                            | 77                      | 124               |
| CF111.015.D | (4x(2x0.14)+4x0.5)C                                          | 8.5                             | 54                      | 87                |
| CF111.020.D | (3x(2x0.14)+2x(4x0.14)+(2x0.5))C                             | 8.5                             | 52                      | 87                |
| CF111.021.D | ((4x0.25)+3x(2x0.25+2x0.5))C                                 | 9.5                             | 80                      | 117               |
| CF111.022.D | ((2x0.25)+5x0.5)C                                            | 7.0                             | 46                      | 75                |
| CF111.024.D | ((4x0.14)+2x(2x0.34))C                                       | 7.0                             | 36                      | 61                |
| CF111.026.D | (6x(2x0.25)+(2x0.34)C+(2x0.5))C                              | 10.5                            | 74                      | 119               |

**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

| Part No.    | Core group     | Colour code                                                                                  |
|-------------|----------------|----------------------------------------------------------------------------------------------|
| CF111.001.D | 3x(2x0.14)C    | green/yellow, black/brown, red/orange                                                        |
|             | (4x0.14)       | grey/blue/white-yellow/white-black                                                           |
|             | (2x0.5)        | brown-red/brown-blue                                                                         |
| CF111.002.D | 3x(2x0.14)C    | green/yellow, black/brown, red/orange                                                        |
|             | 2x(0.5)C       | black, red                                                                                   |
| CF111.004.D | 2x(2x(2x0.14)) | (brown/green)/(yellow/violet), (grey/pink)/(red/black)                                       |
|             | (4x0.14)C      | yellow-black/red-black/green-black/blue-black                                                |
|             | (4x0.5)        | brown-green/white-green/blue/white                                                           |
| CF111.006.D | 3x(2x0.14)C    | green/yellow, black/brown, red/orange                                                        |
|             | (4x0.14)       | grey/blue/white-yellow/white-black                                                           |
|             | (4x0.25)       | yellow-brown/grey-brown/green-black/green-red                                                |
|             | (2x0.5)        | brown-red/brown-blue                                                                         |
| CF111.009.D | 4x(2x0.25)     | brown/green, blue/violet, grey/pink, red/black                                               |
|             | 2x0.5          | white, brown                                                                                 |
| CF111.010.D | 4x(2x0.25)     | brown/green, blue/violet, grey/pink, red/black                                               |
|             | 2x1.0          | white, brown                                                                                 |
| CF111.011.D | 4x(2x0.34)     | black/brown, red/orange, green/yellow, blue/violet                                           |
|             | 4x0.5          | black-white, red-white, yellow-white, blue-white                                             |
| CF111.014.D | 4x(2x0.25)C    | white/brown, green/yellow, grey/pink, blue/red                                               |
|             | (2x0.5)        | black no. 1/black no. 2                                                                      |
| CF111.015.D | 4x(2x0.14)     | brown/green, yellow/violet, grey/pink, red/black                                             |
|             | 4x0.5          | blue, white, brown-green, white-green                                                        |
| CF111.020.D | 3x(2x0.14)     | blue/red, black/violet, grey-pink/red-blue                                                   |
|             | 2x(4x0.14)     | green/grey/yellow/pink, white-green/white-yellow/brown-green/yellow-brown                    |
|             | (2x0.5)        | white/brown                                                                                  |
| CF111.021.D | (4x0.25)       | white/brown/grey/black                                                                       |
|             | 3x2x0.25       | white/yellow, white/grey, black/orange                                                       |
|             | 3x2x0.5        | black no. 1/black no. 2, black no. 3/black no. 4, black no. 5/black no. 6                    |
| CF111.022.D | (2x0.25)       | white/brown                                                                                  |
|             | 5x0.5          | green, yellow, grey, pink, blue                                                              |
| CF111.024.D | (4x0.14)       | yellow/grey/violet/pink                                                                      |
|             | 2x(2x0.34)     | white-green/white, brown-green/blue                                                          |
| CF111.026.D | 6x(2x0.25)     | green/yellow, grey/pink, blue/red, black/violet, grey-pink/red-blue, white-green/brown-green |
|             | (2x0.34)C      | white/brown                                                                                  |
|             | (2x0.5)        | blue/red                                                                                     |

**Further cable types ► Page 260**

igus® chainflex® CF111.D

Example image

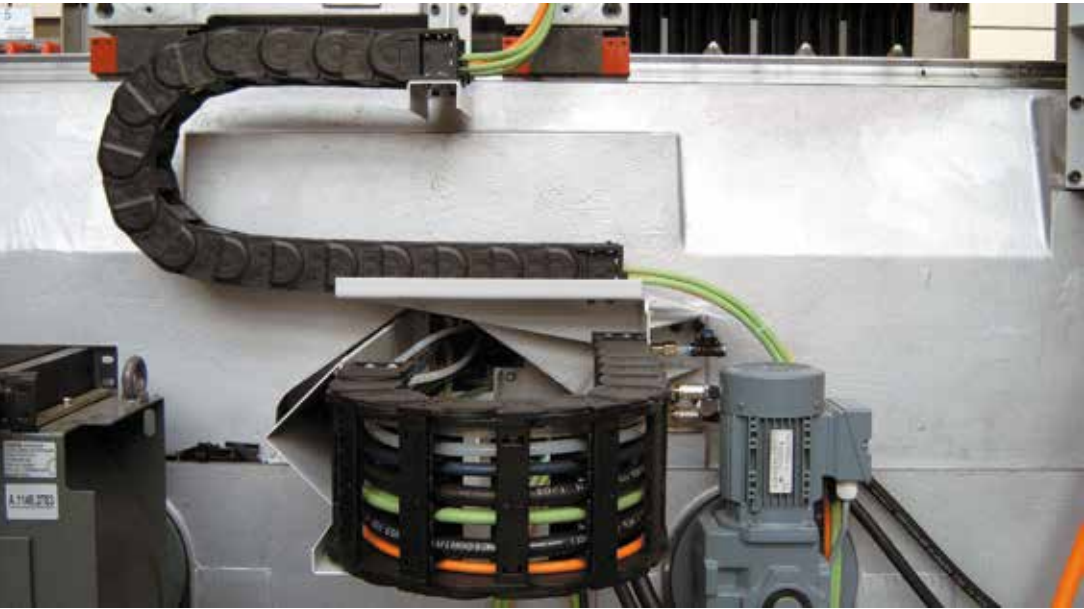
| Part No.                  | Number of cores and conductor nominal cross section [mm²] | Outer diameter (d) max. [mm] | Copper index [kg/km] | Weight [kg/km] |
|---------------------------|-----------------------------------------------------------|------------------------------|----------------------|----------------|
| CF111.027.D               | (5x(2x0.14)+2x0.5)C                                       | 8.0                          | 45                   | 76             |
| CF111.028.D               | (2x(2x0.15)+(2x0.38))C                                    | 7.5                          | 40                   | 73             |
| CF111.032.D <sup>5)</sup> | 3x(2x0.14)C+(3x0.14)C                                     | 8.5                          | 35                   | 82             |
| CF111.040.D               | (3x(4x0.14)+(2x0.14+2x0.34)+2x1.5)C                       | 9.0                          | 81                   | 118            |
| New CF111.041.D           | (2x(2x0.18)+5x0.5)C                                       | 7.5                          | 49                   | 80             |
| New CF111.042.D           | (3x(2x0.18)+6x0.5)C                                       | 8.5                          | 62                   | 99             |

<sup>5)</sup> Manufactured without overall shield

**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

| Part No.                  | Core group                             | Colour code                                                                                                                                                            |
|---------------------------|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CF111.027.D               | 5x(2x0.14)<br>2x0.5                    | brown/green, yellow/grey, white/violet, red/black, pink/blue<br>white-green, white-red                                                                                 |
| CF111.028.D               | 2x(2x0.15)<br>(2x0.38)                 | green/yellow, pink/blue<br>red/black                                                                                                                                   |
| CF111.032.D <sup>5)</sup> | 3x(2x0.14)C<br>(3x0.14)C               | green/black, yellow/black, red/black<br>grey/pink/black                                                                                                                |
| CF111.040.D               | 3x(4x0.14)<br>(2x0.14+2x0.34)<br>2x1.5 | black/red/white-black/white-red, green/blue/white-green/white-blue, yellow/brown/white-yellow/white-brown<br>violett/orange/weißviolett/weißorange<br>white-grey, grey |
| CF111.041.D               | 2x(2x0.18)<br>5x0.5                    | white/brown, black/violet<br>blue, violet, green, yellow, grey                                                                                                         |
| CF111.042.D               | 3x(2x0.18)<br>6x0.5                    | white/black, red/white, black/red<br>black no. 1, black no. 2, black no. 3, red no. 4, red no. 5, red no. 6                                                            |

Further cable types ► Page 258



readychain® systems from igus® are completely pre-harnessed with chainflex® cables, hoses, metal parts etc.

EPLAN download, configurators ► [www.igus.eu/CF111D](http://www.igus.eu/CF111D)

260 36-month guarantee ... more than 1,350 cable types from stock ... no cutting charges



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UL-verified chainflex® guarantee ... [www.igus.eu/ul-verified](http://www.igus.eu/ul-verified)

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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/cf-case](http://www.igus.eu/cf-case)



cost down...



...life up

Reduce cost, improve technology, now!

Do the chainflex® price check ...  
[www.igus.eu/cf-price-check](http://www.igus.eu/cf-price-check)

... for example: reduce cost with CF211 ...



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