

# PUR Control cable | CF77-UL-D

- For high mechanical load requirements
- PUR outer jacket
- Oil-resistant and coolant-resistant
- Notch-resistant
- PVC-free/halogen-free
- Hydrolysis/microbe-resistant

### Dynamic Information

|  |                        |  |                                      |
|--|------------------------|--|--------------------------------------|
|  | <b>Bend radius</b>     | <b>E-Chain®</b>  | min. 6.8 x d                         |
|  |                        | <b>flexible</b>  | min. 5 x d                           |
|  |                        | <b>fixed</b>   | min. 4 x d                           |
|  | <b>Temperature</b>     | <b>E-Chain®</b>  | -13 °F to +176 °F (-25 °C to +80 °C) |
|  |                        | <b>flexible</b>  | -40 °F to +176 °F (-40 °C to +80 °C) |
|  |                        | <b>fixed</b>   | -58 °F to +176 °F (-50 °C to +80 °C) |
|  | <b>v max.</b>          | <b>unsupported</b>   | 32.81 ft/s (10 m/s)                  |
|  |                        | <b>gliding</b>   | 16.41 ft/s (5 m/s)                   |
|  | <b>a max.</b>          | 262.5 ft/s² (80 m/s²)  |                                      |
|  | <b>Travel distance</b> | Unsupported travel distances and for gliding applications up to 328 ft (100 m), Class 5            |                                      |
|  | <b>Torsion</b>         | ± 180°, with 3.281ft (1m) cable length<br>(except 5-core types ≥ 12 AWG Schedule delivery program) |                                      |

### Cable structure

|  |                               |  |
|--|-------------------------------|--|
|  | <b>Conductors</b>             | Conductor consisting of bare copper wires (according to EN 60228).   |
|  | <b>Conductor insulation</b>   | Mechanically high-quality TPE mixture.   |
|  | <b>Conductor construction</b> | <b>Number of conductors &lt; 12:</b> Conductors cabled in a layer with short pitch length.<br><b>Number of conductors ≥ 12:</b> Conductors combined in bundles and cabled together around a high-tensile strength core, using short pitch lengths and specific pitch directions for a low-torsion cable structure. |
|  | <b>Color code</b>             | <b>24-22 AWG:</b> Color code in accordance with DIN 47100.<br><b>20-4 AWG:</b> Black with white numbers, one conductor green-yellow.<br><b>CF77-UL-03-04-INI:</b> brown, blue, black, white  |
|  | <b>Outer jacket</b>           | Low-adhesion, highly abrasion-resistant mixture on the basis of PUR, adapted to suit the requirements in E-Chains® (following DIN VDE 0282 Part 10). Color: Window-gray (similar to RAL 7040)<br><b>CF77-UL-03-04-INI:</b> Color: Yellow (similar to RAL 1021)   |

### Electrical Information

|  |                        |  |
|--|------------------------|--|
|  | <b>Nominal voltage</b> | <b>24-22 AWG:</b> 300 V<br><b>20-4 AWG:</b> 1000 V |
|  | <b>Test voltage</b>    | 2000 V (following DIN EN 50396)                    |

**Configurators** ▶ [www.igus.com/CF77](http://www.igus.com/CF77)

|                 |             |   |   |   |       |         |   |            |         |
|-----------------|-------------|---|---|---|-------|---------|---|------------|---------|
| Requirements    | low         | 1 | 2 | 3 | 4     | 5       | 6 | 7          | highest |
| Travel distance | unsupported | 1 | 2 | 3 | 4     | 5       | 6 | 1,312 ft + |         |
| Oil-resistance  | none        | 1 | 2 | 3 | 4     | highest |   |            |         |
| Torsion         | none        | 1 | 2 | 3 | ±180° |         |   |            |         |

# Class 5.5.3.3

### Properties and approvals

|  |                         |  |
|--|-------------------------|--|
|  | <b>UV resistance</b>    | Medium   |
|  | <b>Oil resistance</b>   | Oil-resistant (following DIN EN 50363-10-2), Class 3   |
|  | <b>Offshore</b>         | MUD-resistant following NEK 606 - status 2009  |
|  | <b>Flame resistance</b> | According to IEC 60332-1-2, CEI 20-35, FT1, VW-1   |
|  | <b>Silicone-free</b>    | Free from silicone which can affect paint adhesion (following PV 3.10.7 – status 1992)                                     |
|  | <b>Halogen-free</b>     | Following EN 50267-2-1   |
|  | <b>UL/CSA</b>           | <b>24-22 AWG:</b> Style 10493 and 20233, 300 V, 80 °C<br><b>20-4 AWG:</b> Style 11323 and 21223, 1000 V, 80 °C             |
|  | <b>NFPA 79</b>          | Complies to NFPA 79-2015 chapter 12.9  |
|  | <b>DNV-GL</b>           | Certified according to GL type testing – Certificate no.: 61 935-14 HH   |
|  | <b>EAC</b>              | Certified according to no. TC RU C-DE.ME77.B.01254   |
|  | <b>CTP</b>              | Certified according to no. C-DE.PB49.B.00416   |
|  | <b>CEI</b>              | Following CEI 20-35  |
|  | <b>Lead-free</b>        | Following 2011/65/EC (RoHS-II)   |
|  | <b>Cleanroom</b>        | According to ISO Class 1. Outer jacket material complies with CF77-UL-05-12-D, tested by IPA according to standard 14644-1 |
|  | <b>DESINA</b>           | According to VDW, DESINA standardisation   |
|  | <b>CE</b>               | Following 2014/35/EG   |

### Guaranteed lifetime according to guarantee conditions (Page 22-25)

| Cycles*     | Temperature, from/to [°F] | Travel distance [ft] | 5 million           |                     | 7.5 million         |                     | 10 million          |                     |
|-------------|---------------------------|----------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
|             |                           |                      | 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] |
| -13 / +5    |                           |                      | < 32.81 ft          | ≥ 32.81 ft          | < 32.81 ft          | ≥ 32.81 ft          | < 32.81 ft          | ≥ 32.81 ft          |
| +5 / +158   |                           | ≤ 328                | 6.8                 | 7.5                 | 7.5                 | 8.5                 | 8.5                 | 9.5                 |
| +158 / +176 |                           |                      | 7.5                 | 10                  | 9.5                 | 11                  | 10.5                | 12                  |

\* Higher number of cycles possible - please ask for your individual calculation.

### Typical application areas

- For high mechanical load requirements
- Indoor and outdoor applications with average sun radiation
- Unsupported travel distances and for gliding applications up to 328 ft (100 m)
- Machining units/machine tools, Storage and retrieval units for high-bay warehouses, Packaging industry, quick handling, refrigerating sector



PUR Control cable | CF77-UL-D

Class 5.5.3.3

Requirements  
Travel distance  
Oil-resistance  
Torsion

|             |   |   |   |       |         |   |   |            |
|-------------|---|---|---|-------|---------|---|---|------------|
| low         | 1 | 2 | 3 | 4     | 5       | 6 | 7 | highest    |
| unsupported | 1 | 2 | 3 | 4     | 5       | 6 | 7 | 1,312 ft + |
| none        | 1 | 2 | 3 | 4     | highest |   |   |            |
| none        | 1 | 2 | 3 | ±180° |         |   |   |            |



Image exemplary.

| Part No.                      | AWG | Number of Conductors and rated cross section [mm <sup>2</sup> ] | Outer diameter max. |      | Copper index |       | Weight  |       |
|-------------------------------|-----|---|---------------------|------|--------------|-------|---------|-------|
|                               |     |   | in.                 | mm   | lbs/mft      | kg/km | lbs/mft | kg/km |
| CF77-UL-02-04-D               | 24  | 4 x 0.25  | 0.22                | 5.5  | 7.4          | 11    | 23.5    | 35    |
| CF77-UL-03-04-INI             | 22  | 4 x 0.34  | 0.24                | 6.0  | 11.4         | 17    | 26.9    | 40    |
| CF77-UL-05-04-D               | 20  | 4 G 0.5   | 0.24                | 6.0  | 14.8         | 22    | 29.6    | 44    |
| CF77-UL-05-05-D               | 20  | 5 G 0.5   | 0.26                | 6.5  | 18.8         | 28    | 34.9    | 52    |
| CF77-UL-05-07-D               | 20  | 7 G 0.5   | 0.30                | 7.5  | 27.6         | 41    | 53.8    | 80    |
| CF77-UL-05-12-D               | 20  | 12 G 0.5  | 0.39                | 10.0 | 44.3         | 66    | 88.7    | 132   |
| CF77-UL-05-18-D               | 20  | 18 G 0.5  | 0.47                | 12.0 | 66.5         | 99    | 123.6   | 184   |
| CF77-UL-05-25-D               | 20  | 25 G 0.5  | 0.55                | 14.0 | 92.7         | 138   | 166.0   | 247   |
| CF77-UL-05-30-D               | 20  | 30 G 0.5  | 0.59                | 15.0 | 110.9        | 165   | 218.4   | 325   |
| CF77-UL-07-03-D               | 18  | 3 G 0.75  | 0.26                | 6.5  | 16.1         | 24    | 37.0    | 55    |
| CF77-UL-07-04-D               | 18  | 4 G 0.75  | 0.28                | 7.0  | 21.5         | 32    | 43.0    | 64    |
| CF77-UL-07-05-D               | 18  | 5 G 0.75  | 0.30                | 7.5  | 26.9         | 40    | 50.4    | 75    |
| CF77-UL-07-07-D               | 18  | 7 G 0.75  | 0.33                | 8.5  | 37.6         | 56    | 71.2    | 106   |
| CF77-UL-07-12-D               | 18  | 12 G 0.75   | 0.47                | 12.0 | 64.5         | 96    | 129.0   | 192   |
| CF77-UL-07-18-D               | 18  | 18 G 0.75   | 0.53                | 13.5 | 96.1         | 143   | 174.7   | 260   |
| CF77-UL-07-20-D               | 18  | 20 G 0.75   | 0.57                | 14.5 | 106.8        | 159   | 196.2   | 292   |
| CF77-UL-07-25-D               | 18  | 25 G 0.75   | 0.63                | 16.0 | 133.0        | 198   | 247.3   | 368   |
| CF77-UL-07-36-D               | 18  | 36 G 0.75   | 0.75                | 19.0 | 199.6        | 297   | 352.1   | 524   |
| CF77-UL-07-42-D <sup>1)</sup> | 18  | 42 G 0.75   | 0.83                | 21.0 | 245.3        | 365   | 405.9   | 604   |
| CF77-UL-10-02-D               | 17  | 2 x 1.0   | 0.26                | 6.5  | 14.8         | 22    | 36.3    | 54    |
| CF77-UL-10-03-D               | 17  | 3 G 1.0   | 0.26                | 6.5  | 21.5         | 32    | 43.7    | 65    |
| CF77-UL-10-04-D               | 17  | 4 G 1.0   | 0.28                | 7.0  | 28.9         | 43    | 53.1    | 79    |
| CF77-UL-10-05-D               | 17  | 5 G 1.0   | 0.31                | 8.0  | 35.6         | 53    | 65.2    | 97    |
| CF77-UL-10-07-D               | 17  | 7 G 1.0   | 0.35                | 9.0  | 49.7         | 74    | 80.0    | 119   |
| CF77-UL-10-12-D               | 17  | 12 G 1.0  | 0.49                | 12.5 | 85.3         | 127   | 157.2   | 234   |
| CF77-UL-10-18-D               | 17  | 18 G 1.0  | 0.59                | 15.0 | 128.3        | 191   | 227.8   | 339   |
| CF77-UL-10-25-D               | 17  | 25 G 1.0  | 0.69                | 17.5 | 177.4        | 264   | 303.7   | 452   |
| CF77-UL-10-42-D               | 17  | 42 G 1.0  | 0.89                | 22.5 | 310.4        | 462   | 475.8   | 708   |

<sup>1)</sup> Delivery time upon request  
Note: The mentioned outer diameters are maximum values.  
G = with green-yellow earth core x = without earth core

| Part No.                       | AWG | Number of Conductors and rated cross section [mm <sup>2</sup> ] | Outer diameter max. |      | Copper index |       | Weight  |       |
|--------------------------------|-----|---|---------------------|------|--------------|-------|---------|-------|
|                                |     |   | in.                 | mm   | lbs/mft      | kg/km | lbs/mft | kg/km |
| CF77-UL-15-03-D                | 16  | 3 G 1.5   | 0.30                | 7.5  | 32.3         | 48    | 57.8    | 86    |
| CF77-UL-15-04-D                | 16  | 4 G 1.5   | 0.31                | 8.0  | 43.0         | 64    | 70.6    | 105   |
| CF77-UL-15-05-D                | 16  | 5 G 1.5   | 0.33                | 8.5  | 53.8         | 80    | 84.0    | 125   |
| CF77-UL-15-07-D <sup>17)</sup> | 16  | 7 G 1.5   | 0.41                | 10.5 | 74.6         | 111   | 116.9   | 174   |
| CF77-UL-15-12-D                | 16  | 12 G 1.5  | 0.55                | 14.0 | 128.3        | 191   | 207.0   | 308   |
| CF77-UL-15-18-D                | 16  | 18 G 1.5  | 0.67                | 17.0 | 192.2        | 286   | 320.5   | 477   |
| CF77-UL-15-25-D                | 16  | 25 G 1.5  | 0.77                | 19.5 | 266.1        | 396   | 423.3   | 630   |
| CF77-UL-15-36-D <sup>1)</sup>  | 16  | 36 G 1.5  | 0.93                | 23.5 | 399.1        | 594   | 598.7   | 891   |
| CF77-UL-15-42-D <sup>1)</sup>  | 16  | 42 G 1.5  | 1.04                | 26.5 | 489.9        | 729   | 698.8   | 1040  |
| CF77-UL-25-03-D                | 14  | 3 G 2.5   | 0.33                | 8.5  | 53.8         | 80    | 83.3    | 124   |
| CF77-UL-25-04-D                | 14  | 4 G 2.5   | 0.37                | 9.5  | 71.2         | 106   | 104.2   | 155   |
| CF77-UL-25-05-D                | 14  | 5 G 2.5   | 0.41                | 10.5 | 88.7         | 132   | 129.0   | 192   |
| CF77-UL-25-07-D <sup>17)</sup> | 14  | 7 G 2.5   | 0.49                | 12.5 | 124.3        | 185   | 181.4   | 270   |
| New CF77-UL-25-12-D            | 14  | 12 G 2.5  | 0.69                | 17.5 | 213.0        | 317   | 356.1   | 530   |
| CF77-UL-40-04-D <sup>1)</sup>  | 12  | 4 G 4.0   | 0.45                | 11.5 | 118.3        | 176   | 172.0   | 256   |
| CF77-UL-40-05-D                | 12  | 5 G 4.0   | 0.47                | 12.0 | 142.5        | 212   | 202.9   | 302   |
| CF77-UL-60-05-D                | 10  | 5 G 6.0   | 0.55                | 14.0 | 213.0        | 317   | 287.6   | 428   |
| CF77-UL-100-05-D <sup>1)</sup> | 8   | 5 G 10.0  | 0.75                | 19.0 | 354.8        | 528   | 486.5   | 724   |
| CF77-UL-160-05-D               | 6   | 5 G 16.0  | 0.89                | 22.5 | 567.8        | 845   | 737.8   | 1098  |
| CF77-UL-250-05-D <sup>1)</sup> | 4   | 5 G 25.0  | 1.10                | 28.0 | 887.0        | 1320  | 1098.7  | 1635  |

<sup>1)</sup> Delivery time upon request  
<sup>17)</sup> Using the cables with "7 G 1.5 mm<sup>2</sup>" and "7 G 2.5 mm<sup>2</sup>" it is essential: bending radius 17 x d with travel distance ≥ 5 m. When the travel distance is not less than 5 m, a bending radius not less than 17 x d has to be used.  
Note: The mentioned outer diameters are maximum values.  
G = with green-yellow earth core x = without earth core

Order example: **CF77-UL-10-03-D** – In your desired length  
**CF77-UL-D** Chainflex® series -10 Code nominal cross section -03 Number of conductors

Online order: [www.chainflex.com/CF77](http://www.chainflex.com/CF77)

Delivery time 24hr or today.  
Delivery time means time until shipping of goods.

Configurators ► [www.igus.com/CF77](http://www.igus.com/CF77)

