

# BiTflame® S FE180/E90



Fire resistant, halogen-free power cable 300/500 V



internal application



EN 60332-1-2



EN 60332-3-24



halogen-free  
EN 60754



low smoke emission  
EN 61034



FE180  
insulation  
resistance  
to fire 180 min.



PH90  
fire  
integrity function



E90  
fire  
integrity function

## Technical data:

### Thermal parameters:

#### Temperature range:

fixed installation: -40 °C up to 80 °C  
min. installation temp: -10 °C

### Electrical parameters:

**Operating voltage:** 300/500 V

**Test voltage:**

AC 3000 V

DC 7200 V

**Insulation resistance (min.):** 100 MΩ x km

### Mechanical parameters:

**Min. bending radius:** 10 x Ø

## Design:

### Conductors:

bare solid copper conductor, class 1 acc. to EN 60228,  
IEC 60228

### Insulation:

special ceramic silicone rubber

### Core colors:

without green/yellow earth conductor  
2- core – blue, brown  
3- core – brown, black, grey  
4-core – blue, brown, black, grey  
5-core – blue, brown, black, grey, black

### Above 5 cores – In each layer:

brown (starting conductor), blue (reference conductor),  
remaining conductors – any freely selected colours  
with exception of green, yellow, brown, blue with  
green/yellow earth conductor  
3-core – green/yellow, blue, brown  
4-core – green/yellow, brown, black, grey  
5-core – green/yellow, blue, brown, black, grey

### Above 5 cores – In external layer:

green/yellow (starting conductor), blue (reference  
conductor) remaining conductors – any freely selected  
colours with exception of green, yellow, brown, blue  
brown (starting conductor), blue (reference conductor)  
remaining conductors – any freely selected colours with  
exception of green, yellow, brown, blue  
polyester tape  
outer sheath: halogen-free compound; colour: red

### Other layers:

### Wrapping:

### Outer sheath:

## Application:

Halogen-free fire resistant cables designed for installations in places where it is necessary to ensure operation of devices under fire conditions. They are recommended for emergency lighting installations, smoke extraction systems, alarm systems, signalling systems, sound warning and control systems, fire alarm signalling and automation and other safety ensuring circuits. Under fire conditions those cables ensure correct functioning of installation for at least 90 minutes (PH90) and insulation resistance to fire exposure for 180 minutes (FE180). During burning they do not emit corrosive gases or dense smoke. Cables are suitable for fixed installations inside buildings.

## Tests:

Flame test for a single insulated cable:

EN 60332-1-2, IEC 60332-1-2

Flame test for vertically-mounted bunched cables:

EN 60332-3-22, IEC 60332-3 cat.A

Test on corrosive gases emitted during burning:

EN 60754-2, IEC 60754-2, VDE 0482-754-2

Smoke density emission during burning:

EN 61034-2, IEC 61034-2, VDE 0482-1034-2

Insulation resistance to long term fire exposure FE180:

IEC 60331-11, IEC 60331-21, IEC 60331-23

Fire integrity function of cable support system E90:

DIN 4102-12

Fire integrity function of cable installations (PH90):

EN 50200

## Cable characteristics:

- fire resistant
- halogen-free
- flame retardant
- no corrosive gases (acidity pH ≥ 4,3; conductivity < 10 µS/mm)
- low smoke emission (light transmittance over 60%)
- increased insulation resistance (FE180)
- fire integrity function (PH90)
- low fire load (calorific value)

# BiTflame® S FE180/E90

Fire resistant, halogen-free power cable 300/500 V

Fire resistant cables

## Cables without green-yellow core BiTflame® S FE180/E90

| Cat. no. | n x mm <sup>2</sup> | Outer diameter* [mm] | Approximate cable weight [kg/km] |
|----------|---------------------|----------------------|----------------------------------|
| BF0360   | 2x1,0               | 6,7                  | 54                               |
| BF0361   | 2x1,5               | 7,5                  | 67                               |
| BF0362   | 2x2,5               | 9,1                  | 103                              |
| BF0363   | 2x4,0               | 10,0                 | 136                              |
| BF0364   | 3x1,0               | 7,1                  | 69                               |
| BF0365   | 3x1,5               | 7,9                  | 88                               |
| BF0366   | 3x2,5               | 9,6                  | 136                              |
| BF0367   | 3x4,0               | 10,8                 | 189                              |
| BF0368   | 4x1,0               | 8,0                  | 90                               |
| BF0369   | 4x1,5               | 9,2                  | 120                              |
| BF0370   | 4x2,5               | 10,8                 | 176                              |
| BF0371   | 4x4,0               | 11,9                 | 240                              |
| BF0372   | 5x1,0               | 8,8                  | 116                              |
| BF0373   | 5x1,5               | 9,9                  | 150                              |
| BF0374   | 5x2,5               | 11,7                 | 223                              |
| BF0375   | 5x4,0               | 12,9                 | 301                              |
| BF0376   | 7x1,0               | 9,5                  | 143                              |
| BF0377   | 7x1,5               | 10,9                 | 191                              |
| BF0378   | 7x2,5               | 12,7                 | 278                              |
| BF0379   | 10x1,0              | 12,1                 | 204                              |
| BF0380   | 10x1,5              | 13,7                 | 265                              |
| BF0381   | 10x2,5              | 16,7                 | 411                              |
| BF0382   | 12x1,0              | 12,5                 | 234                              |

| Cat. no. | n x mm <sup>2</sup> | Outer diameter* [mm] | Approximate cable weight [kg/km] |
|----------|---------------------|----------------------|----------------------------------|
| BF0383   | 12x1,5              | 14,1                 | 306                              |
| BF0384   | 12x2,5              | 17,2                 | 475                              |
| BF0385   | 14x1,0              | 13,1                 | 265                              |
| BF0386   | 14x1,5              | 14,7                 | 348                              |
| BF0387   | 14x2,5              | 18,1                 | 541                              |
| BF0388   | 16x1,0              | 13,8                 | 302                              |
| BF0389   | 16x1,5              | 16,3                 | 427                              |
| BF0390   | 16x2,5              | 19,6                 | 655                              |
| BF0391   | 19x1,0              | 14,5                 | 344                              |
| BF0392   | 19x1,5              | 17,1                 | 477                              |
| BF0393   | 19x2,5              | 20,7                 | 735                              |
| BF0394   | 20x1,0              | 15,8                 | 384                              |
| BF0395   | 20x1,5              | 18,5                 | 546                              |
| BF0396   | 20x2,5              | 21,7                 | 801                              |
| BF0397   | 24x1,0              | 17,5                 | 452                              |
| BF0398   | 24x1,5              | 20,5                 | 622                              |
| BF0399   | 24x2,5              | 24,7                 | 949                              |
| BF0400   | 30x1,0              | 19,1                 | 569                              |
| BF0401   | 30x1,5              | 21,6                 | 747                              |
| BF0402   | 30x2,5              | 26,1                 | 1144                             |
| BF0403   | 37x1,0              | 20,5                 | 680                              |
| BF0404   | 37x1,5              | 23,9                 | 929                              |
| BF0405   | 37x2,5              | 28,1                 | 1375                             |

## Cables with green-yellow core BiTflame® S FE180/E90

| Cat. no. | n x mm <sup>2</sup> | Outer diameter* [mm] | Approximate cable weight [kg/km] |
|----------|---------------------|----------------------|----------------------------------|
| BF0408   | 3x1,0               | 7,1                  | 69                               |
| BF0409   | 3x1,5               | 7,9                  | 88                               |
| BF0410   | 3x2,5               | 9,6                  | 136                              |
| BF0411   | 3x4,0               | 10,8                 | 189                              |
| BF0412   | 4x1,0               | 8,0                  | 90                               |
| BF0413   | 4x1,5               | 9,2                  | 120                              |
| BF0414   | 4x2,5               | 10,8                 | 176                              |
| BF0415   | 4x4,0               | 11,9                 | 240                              |
| BF0416   | 5x1,0               | 8,8                  | 116                              |
| BF0417   | 5x1,5               | 9,9                  | 150                              |
| BF0418   | 5x2,5               | 11,7                 | 223                              |
| BF0419   | 5x4,0               | 12,9                 | 301                              |
| BF0420   | 7x1,0               | 9,5                  | 143                              |
| BF0421   | 7x1,5               | 10,9                 | 191                              |
| BF0422   | 7x2,5               | 12,7                 | 278                              |
| BF0423   | 10x1,0              | 12,1                 | 204                              |
| BF0424   | 10x1,5              | 13,7                 | 265                              |
| BF0425   | 10x2,5              | 16,7                 | 411                              |
| BF0426   | 12x1,0              | 12,5                 | 234                              |
| BF0427   | 12x1,5              | 14,1                 | 306                              |
| BF0428   | 12x2,5              | 17,2                 | 475                              |

| Cat. no. | n x mm <sup>2</sup> | Outer diameter* [mm] | Approximate cable weight [kg/km] |
|----------|---------------------|----------------------|----------------------------------|
| BF0429   | 14x1,0              | 13,1                 | 265                              |
| BF0430   | 14x1,5              | 14,7                 | 348                              |
| BF0431   | 14x2,5              | 18,1                 | 541                              |
| BF0432   | 16x1,0              | 13,8                 | 302                              |
| BF0433   | 16x1,5              | 16,3                 | 427                              |
| BF0434   | 16x2,5              | 19,6                 | 655                              |
| BF0435   | 19x1,0              | 14,5                 | 344                              |
| BF0436   | 19x1,5              | 17,1                 | 477                              |
| BF0437   | 19x2,5              | 20,7                 | 735                              |
| BF0438   | 20x1,0              | 15,8                 | 384                              |
| BF0439   | 20x1,5              | 18,5                 | 546                              |
| BF0440   | 20x2,5              | 21,7                 | 801                              |
| BF0441   | 24x1,0              | 17,5                 | 452                              |
| BF0442   | 24x1,5              | 20,5                 | 622                              |
| BF0443   | 24x2,5              | 24,7                 | 949                              |
| BF0444   | 30x1,0              | 19,1                 | 569                              |
| BF0445   | 30x1,5              | 21,6                 | 747                              |
| BF0446   | 30x2,5              | 26,1                 | 1144                             |
| BF0447   | 37x1,0              | 20,5                 | 680                              |
| BF0448   | 37x1,5              | 23,9                 | 929                              |
| BF0449   | 37x2,5              | 28,1                 | 1375                             |

\*Outer diameter tolerance: +/-5%

Cable Factory BITNER reserves the right to modify specifications without prior notification

Note: on customer's request other cross sections or number of cores can be produced