

# BiTflame® 1000 FE180/PH120/E90



Fire resistant, halogen-free control and power cable



Fire resistant cables

## Technical data:

### Thermal parameters:

#### Operating temperature:

fixed installation: -40°C to 90°C

min. installation temp.: -5°C

#### Permissible conductor operating

temperature: 90°C

#### Permissible conductor temperature during

short circuit: 250°C

### Electrical parameters:

**Operating voltage:**  $U_0/U=0,6/1kV$

**Test voltage:** 3500V

**Insulation resistance:** > 200 MΩxkm

### Mechanical parameters:

**Min. bending radius:** 10xØ

## Design:

### Cores:

bare copper conductors, singlewires cl.1 (RE) or multiwires cl.2 (RM) (acc. to EN 60228, IEC 60228) mica tape wrapping and special halogen-free compound up to 5 cores colour coded (acc. to the table), >5 cores number coded conductors, cables with protective earth conductor marked G (e.g. 7G2,5)

### Insulation:

### Core colours:

### Fillers:

special halogen-free compound, only in multi-core cables over 16mm²

### Outer sheath:

special halogen-free compound, self-extinguishing and flame retardant (acc. to EN 60332-1, IEC 60332-1-2 flame propagation test for a single insulated cable and EN 60332-3-24, IEC 60332-3-24 flame propagation test for vertically-mounted bunched cables); colour: orange

## Application:

E90 fire resistant cables that keep supplying power or controlling properties under fire conditions for 90 minutes. Cables designed to supply power in the buildings with higher requirements of fire protection (skyscrapers, hospitals, shopping centres, tunnels, museums, theatres, cinemas). Cables can be used to supply power and control to receivers (lighting, fire protection appliances, pumps). Cables with improved fire characteristics E90 must be installed on the supporting systems tested in accordance with DIN 4102-12. Cables made of halogen-free materials, not emitting harmful substances under fire conditions. Suitable for fixed installation in dry and damp rooms-also in public buildings. Cables are suitable for outdoor installation. The outer sheath is UV resistant. Suitable for installation in sprinklers zones (cables BiTflame® 1000 with diameter < 20 mm and BiTflame® 1000 with diameter > 20 mm and number of cores 1 to 5).

## Tests:

Flame propagation test for a single insulated cable: EN 60332-1-2, IEC 60332-1-2, VDE 0482-332-1

Flame propagation test for vertically-mounted bunched cables: EN 60332-3-24, IEC 60332-3-24, VDE 0482-332-3-24, EN 60332-3-23, IEC 60332-3-23, VDE 0482-332-3-23

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 (insulation resistance) **FE180:** IEC 60331-21, VDE 0472-814

Fire integrity function of cable support system **E90:** DIN 4102-12

Fire integrity function during a fire **PH120:** EN 50200, PN-EN IEC 60331-1, EN 50362

Reaction-to-fire: EN 50399

# BiTflame® 1000 FE180/PH120/E90

Fire resistant, halogen-free control and power cable

## cables without green-yellow core

| Cat. no. | n x mm <sup>2</sup> | Outer diameter* [mm] | Approximate cable weight [kg/km] |
|----------|---------------------|----------------------|----------------------------------|
| B63800   | 1x1,5 RE            | 6,0                  | 53                               |
| B63801   | 1x2,5 RE            | 6,4                  | 65                               |
| B63802   | 1x4 RE              | 6,8                  | 84                               |
| B63803   | 1x6 RE              | 7,3                  | 105                              |
| B63804   | 1x10 RE             | 8,1                  | 150                              |
| B63805   | 1x16 RE             | 9,1                  | 220                              |
| B63806   | 1x25 RM             | 11,2                 | 330                              |
| B63807   | 1x35 RM             | 12,3                 | 425                              |
| B63808   | 1x50 RM             | 14,4                 | 588                              |
| B63809   | 1x70 RM             | 15,8                 | 775                              |
| B63810   | 1x95 RM             | 17,9                 | 1060                             |
| B63811   | 1x120 RM            | 19,6                 | 1280                             |
| B63812   | 1x150 RM            | 22,2                 | 1640                             |
| B63813   | 1x185 RM            | 23,9                 | 1990                             |
| B63814   | 1x240 RM            | 27,6                 | 2545                             |
| B63815   | 1x300 RM            | 29,7                 | 3090                             |
| B63819   | 2x1,5 RE            | 10,4                 | 131                              |
| B63820   | 2x2,5 RE            | 11,2                 | 160                              |
| B63821   | 2x4 RE              | 12,1                 | 202                              |
| B63822   | 2x6 RE              | 13,1                 | 255                              |
| B63823   | 2x10 RE             | 14,7                 | 350                              |
| B63824   | 2x16 RE             | 16,7                 | 505                              |
| B63825   | 2x25 RM             | 20,8                 | 770                              |
| B63826   | 2x35 RM             | 23,1                 | 985                              |
| B63827   | 2x50 RM             | 27,4                 | 1365                             |
| B63828   | 2x70 RM             | 30,2                 | 1790                             |
| B63829   | 3x1,5 RE            | 11,0                 | 150                              |
| B63830   | 3x2,5 RE            | 11,8                 | 186                              |
| B63831   | 3x4 RE              | 12,8                 | 240                              |
| B63832   | 3x6 RE              | 13,8                 | 325                              |
| B63833   | 3x10 RE             | 15,5                 | 460                              |
| B63834   | 3x16 RE             | 17,7                 | 675                              |
| B63835   | 3x25 RM             | 22,1                 | 1035                             |
| B63836   | 3x35 RM             | 24,6                 | 1335                             |
| B63837   | 3x50 RM             | 29,3                 | 1870                             |
| B63838   | 3x70 RM             | 32,3                 | 2460                             |

| Cat. no. | n x mm <sup>2</sup> | Outer diameter* [mm] | Approximate cable weight [kg/km] |
|----------|---------------------|----------------------|----------------------------------|
| B63839   | 3x95 RM             | 36,7                 | 3380                             |
| B63840   | 3x120 RM            | 40,5                 | 4090                             |
| B63841   | 3x150 RM            | 46,0                 | 5255                             |
| B63842   | 3x185 RM            | 49,8                 | 6370                             |
| B63843   | 3x240 RM            | 57,6                 | 8190                             |
| B63844   | 4x1,5 RE            | 11,9                 | 186                              |
| B63845   | 4x2,5 RE            | 12,8                 | 235                              |
| B63846   | 4x4 RE              | 13,9                 | 305                              |
| B63847   | 4x6 RE              | 15,1                 | 412                              |
| B63848   | 4x10 RE             | 17,0                 | 590                              |
| B63849   | 4x16 RE             | 19,5                 | 875                              |
| B63850   | 4x25 RM             | 24,4                 | 1355                             |
| B63851   | 4x35 RM             | 27,2                 | 1760                             |
| B63852   | 4x50 RM             | 32,6                 | 2480                             |
| B63853   | 4x70 RM             | 36,0                 | 3280                             |
| B63854   | 4x95 RM             | 41,1                 | 4490                             |
| B63855   | 4x120 RM            | 45,2                 | 5440                             |
| B63856   | 4x150 RM            | 51,4                 | 6995                             |
| B63857   | 4x185 RM            | 57,4                 | 8640                             |
| B63858   | 4x240 RM            | 64,3                 | 10910                            |
| B63859   | 5x1,5 RE            | 12,9                 | 225                              |
| B63860   | 5x2,5 RE            | 14,0                 | 285                              |
| B63861   | 5x4 RE              | 15,2                 | 372                              |
| B63862   | 5x6 RE              | 16,5                 | 482                              |
| B63863   | 5x10 RE             | 18,7                 | 700                              |
| B63864   | 5x16 RE             | 21,4                 | 1045                             |
| B63865   | 5x25 RM             | 27,0                 | 1620                             |
| B63866   | 5x35 RM             | 30,3                 | 2110                             |
| B63867   | 5x50 RM             | 36,3                 | 2995                             |
| B63868   | 5x70 RM             | 40,1                 | 3975                             |
| B63869   | 5x95 RM             | 45,8                 | 5460                             |
| B63870   | 5x120 RM            | 50,4                 | 6615                             |
| B63871   | 5x150 RM            | 57,4                 | 8505                             |
| B63872   | 5x185 RM            | 62,0                 | 10320                            |
| B63873   | 5x240 RM            | 71,9                 | 13276                            |

## cables with green-yellow core

| Cat. no. | nxmm <sup>2</sup> | Outer diameter* [mm] | Approximate cable weight [kg/km] |
|----------|-------------------|----------------------|----------------------------------|
| B63877   | 1G1,5 RE          | 6,0                  | 53                               |
| B63878   | 1G2,5 RE          | 6,4                  | 65                               |
| B63879   | 1G4 RE            | 6,8                  | 84                               |
| B63880   | 1G6 RE            | 7,3                  | 105                              |
| B63881   | 1G10 RE           | 8,1                  | 150                              |
| B63882   | 1G16 RE           | 9,1                  | 220                              |
| B63883   | 1G25 RM           | 11,2                 | 330                              |
| B63884   | 1G35 RM           | 12,3                 | 425                              |
| B63885   | 1G50 RM           | 14,4                 | 588                              |
| B63886   | 1G70 RM           | 15,8                 | 775                              |
| B63887   | 1G95 RM           | 17,9                 | 1060                             |
| B63888   | 1G120 RM          | 19,6                 | 1280                             |
| B63889   | 1G150 RM          | 22,2                 | 1640                             |
| B63890   | 1G185 RM          | 23,9                 | 1990                             |
| B63891   | 1G240 RM          | 27,6                 | 2545                             |
| B63892   | 1G300 RM          | 29,7                 | 3090                             |
| B63895   | 3G1,5 RE          | 11,0                 | 150                              |
| B63896   | 3G2,5 RE          | 11,8                 | 186                              |
| B63897   | 3G4 RE            | 12,8                 | 240                              |

| Cat. no. | nxmm <sup>2</sup> | Outer diameter* [mm] | Approximate cable weight [kg/km] |
|----------|-------------------|----------------------|----------------------------------|
| B63898   | 3G6 RE            | 13,8                 | 325                              |
| B63899   | 3G10 RE           | 15,5                 | 460                              |
| B63900   | 3G16 RE           | 17,7                 | 675                              |
| B63901   | 3G25 RM           | 22,1                 | 1035                             |
| B63902   | 3G35 RM           | 24,6                 | 1335                             |
| B63903   | 3G50 RM           | 29,3                 | 1870                             |
| B63904   | 3G70 RM           | 32,3                 | 2460                             |
| B63905   | 3G95 RM           | 36,7                 | 3380                             |
| B63906   | 3G120 RM          | 40,5                 | 4090                             |
| B63907   | 3G150 RM          | 46,0                 | 5255                             |
| B63908   | 3G185 RM          | 49,8                 | 6370                             |
| B63909   | 3G240 RM          | 57,6                 | 8190                             |
| B63910   | 4G1,5 RE          | 11,9                 | 186                              |
| B63911   | 4G2,5 RE          | 12,8                 | 235                              |
| B63912   | 4G4 RE            | 13,9                 | 305                              |
| B63913   | 4G6 RE            | 15,1                 | 412                              |
| B63914   | 4G10 RE           | 17,0                 | 590                              |
| B63915   | 4G16 RE           | 19,5                 | 875                              |
| B63916   | 4G25 RM           | 24,4                 | 1355                             |

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Fire resistant, halogen-free control and power cable

Fire resistant cables

## cables with green-yellow core

| Cat. no. | nxmm <sup>2</sup> | Outer diameter* [mm] | Approximate cable weight [kg/km] |
|----------|-------------------|----------------------|----------------------------------|
| B63917   | 4G35 RM           | 27,2                 | 1760                             |
| B63918   | 4G50 RM           | 32,6                 | 2480                             |
| B63919   | 4G70 RM           | 36,0                 | 3280                             |
| B63920   | 4G95 RM           | 41,1                 | 4490                             |
| B63921   | 4G120 RM          | 45,2                 | 5440                             |
| B63922   | 4G150 RM          | 51,4                 | 6995                             |
| B63923   | 4G185 RM          | 57,4                 | 8640                             |
| B63924   | 4G240 RM          | 64,3                 | 10910                            |
| B63925   | 5G1,5 RE          | 12,9                 | 225                              |
| B63926   | 5G2,5 RE          | 14,0                 | 285                              |
| B63927   | 5G4 RE            | 15,2                 | 372                              |
| B63928   | 5G6 RE            | 16,5                 | 482                              |
| B63929   | 5G10 RE           | 18,7                 | 700                              |
| B63930   | 5G16 RE           | 21,4                 | 1045                             |
| B63931   | 5G25 RM           | 27,0                 | 1620                             |
| B63932   | 5G35 RM           | 30,3                 | 2110                             |
| B63933   | 5G50 RM           | 36,3                 | 2995                             |
| B63934   | 5G70 RM           | 40,1                 | 3975                             |
| B63935   | 5G95 RM           | 45,8                 | 5460                             |
| B63936   | 5G120 RM          | 50,4                 | 6615                             |
| B63937   | 5G150 RM          | 57,4                 | 8505                             |
| B63938   | 5G185 RM          | 62,0                 | 10320                            |
| B63939   | 5G240 RM          | 71,9                 | 13276                            |

| Cat. no. | nxmm <sup>2</sup> | Outer diameter* [mm] | Approximate cable weight [kg/km] |
|----------|-------------------|----------------------|----------------------------------|
| B63942   | 7G1,5 RE          | 14,0                 | 276                              |
| B63943   | 7G2,5 RE          | 15,1                 | 357                              |
| B63944   | 7G4 RE            | 16,5                 | 473                              |
| B63945   | 7G6 RE            | 18,0                 | 620                              |
| B63946   | 7G10 RE           | 20,4                 | 915                              |
| B63947   | 10G1,5 RE         | 17,6                 | 392                              |
| B63948   | 10G2,5 RE         | 19,1                 | 510                              |
| B63949   | 10G4 RE           | 20,9                 | 665                              |
| B63950   | 12G1,5 RE         | 18,1                 | 437                              |
| B63951   | 12G2,5 RE         | 19,7                 | 572                              |
| B63952   | 12G4 RE           | 21,6                 | 770                              |
| B63953   | 14G1,5 RE         | 19,4                 | 520                              |
| B63954   | 14G2,5 RE         | 21,1                 | 675                              |
| B63955   | 14G4 RE           | 23,1                 | 910                              |
| B63956   | 19G1,5 RE         | 21,5                 | 665                              |
| B63957   | 19G2,5 RE         | 23,4                 | 875                              |
| B63958   | 19G4 RE           | 25,7                 | 1185                             |
| B63959   | 24G1,5 RE         | 25,1                 | 835                              |
| B63960   | 24G2,5 RE         | 27,5                 | 1105                             |
| B63961   | 30G1,5 RE         | 26,6                 | 995                              |
| B63962   | 30G2,5 RE         | 29,2                 | 1335                             |
| B63963   | 48G1,5 RE         | 33,1                 | 1550                             |
| B63964   | 48G2,5 RE         | 36,4                 | 2085                             |

\*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

## Cores coloring:

| Number of cores                       | Colours                                |
|---------------------------------------|----------------------------------------|
| <b>Cables without protective core</b> |                                        |
| 1                                     | black                                  |
| 2                                     | blue, brown                            |
| 3                                     | brown, black, grey                     |
| 4                                     | blue, brown, black, grey               |
| 5                                     | blue, brown, black, grey, black        |
| <b>Cables with protective core</b>    |                                        |
| 1                                     | green-yellow                           |
| 2                                     | green-yellow, black                    |
| 3                                     | green-yellow, blue, brown              |
| 4                                     | green-yellow, brown, black, grey       |
| 5                                     | green-yellow, blue, brown, black, grey |
| > 5                                   | green-yellow, numbered                 |