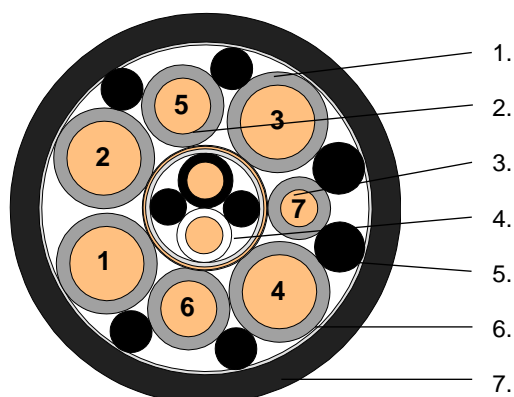


## Technical datasheet

### BETAtans<sup>®</sup> UIC flex black 4X10 + 2X6 + 1X2.5 mm<sup>2</sup> NR + 1X(2X0.75 mm<sup>2</sup>)C 120 Ω

part no.: 311128



#### Product description

Robust, halogen free, electron-beam cross linked control, power supply and data transmission cable with improved fire performance and increased resistance to temperature.

#### Application

This cable is suitable for fixed installations inside and outside of rail vehicles and other rail vehicles. The integrated UIC-Bus cable is also suitable for CAN-fieldbus applications. For installation the guidelines of EN 50355 and EN 50343 must be considered.

#### Construction

|    |              |  |            |
|----|--------------|--|------------|
| 1. | Cores        | 4 x BETAtans 3 GKW 10 mm <sup>2</sup>                                |            |
|    | Conductor    | tinned fine copper strands according to VDE 0295 / IEC 60228 class 5 | Ø: 3.85 mm |
|    | Construction | 80 x 0.40 mm   |            |
|    | Insulation   | polyolefine copolymer electron-beam cross-linked, Comp 752           | Ø: 5.25 mm |
|    | Color        | grey with numbers printed in black no.: 1 - 4                        |            |
| 2. | Cores        | 2 x BETAtans 3 GKW 6 mm <sup>2</sup>                                 |            |
|    | Conductor    | tinned fine copper strands according to VDE 0295 / IEC 60228 class 5 | Ø: 2.95 mm |
|    | Construction | 84 x 0.30 mm   |            |
|    | Insulation   | polyolefine copolymer electron-beam cross-linked, Comp 752           | Ø: 4.35 mm |
|    | Color        | grey with numbers printed in black no.: 5 - 6                        |            |
| 3. | Core         | 1 x BETAtans 3 GKW 2.5 mm <sup>2</sup>                               |            |
|    | Conductor    | tinned fine copper strands according to VDE 0295 / IEC 60228 class 5 | Ø: 1.95 mm |
|    | Construction | 50 x 0,25 mm   |            |
|    | Insulation   | polyolefine copolymer electron-beam cross-linked, Comp 752           | Ø: 3.30 mm |
|    | Color        | grey with numbers printed in black no.: 7                            |            |
| 4. | Cable unit   | BETAtans DATA C-flex 120 Ω WTB (2 x 0.75 mm <sup>2</sup> )           |            |
|    | Conductor    | tinned fine copper strands according to VDE 0295 / IEC 60228 class 5 | Ø: 1.10 mm |
|    | Construction | 24 x 0.20 mm   |            |
|    | Insulation   | PE compound cross-linked, Comp 655                                   | Ø: 3.70 mm |
|    | Colors       | black, white   |            |
|    | Wrapping     | plastic tape   |            |
|    | Shielding    | tinned fine copper braid   |            |
|    | Wrapping     | plastic tape   |            |
| 5. | Filler       | optional   |            |

## Technical datasheet

### BETAtans<sup>®</sup> UIC flex black 4X10 + 2X6 + 1X2.5 mm<sup>2</sup> NR + 1X(2X0.75 mm<sup>2</sup>)C 120 Ω

part no.: 311128

|             |  |                    |
|-------------|--|--------------------|
| 6. Wrapping | Non-woven  |                    |
| 7. Sheath   | elastomer electron-beam cross linked, Comp 603   | ∅: 20.50 ± 0.40 mm |
| Color       | black  |                    |
| Marking     | STUDERCABLES.COM SWITZERLAND BETATRANS DATA UIC FLEX<br>4X10 + 2X6 + 1X2.5 mm <sup>2</sup> + 1X(2X0.75 mm <sup>2</sup> )C 120 OHM ..... - .....<br>1. 2. |                    |
|             | 1. part no.  | 311128             |
|             | 2. production order no   | e.g. 1178655       |

#### Product properties: power cores

|                            |                                     |   |
|----------------------------|-------------------------------------|---|
| Nominal voltage            | U <sub>0</sub> /U                   | 0.6/1 kV AC   |
| Max. voltage               | U <sub>0m</sub>                     | 0.72 kV AC  |
| Max. voltage               | U <sub>m</sub>                      | 1.2 kV AC   |
| Max. voltage               | V <sub>0</sub>                      | 0.9 kV DC   |
| Max. voltage               | V <sub>m</sub>                      | 1.8 kV DC   |
| Testing voltage            |                                     | 4 kV AC (50 Hz / 5 min.)                                    |
| Max. conductor temperature | fixed installation<br>short circuit | +120 °C (20`000 h / at 50 % elongation)<br>+280 °C / 5 sec. |

#### Product properties: Data bus

|                   |                    |                            |
|-------------------|--------------------|----------------------------|
| Nominal voltage   |                    | 0.125 kV AC                |
| Testing voltage   |                    | 1.5 kV AC (50 Hz / 1 min.) |
| Temperature range | fixed installation | -40 °C up to +90 °C        |

#### Electrical characteristics at 20 °C: data bus

|                       |             |             |
|-----------------------|-------------|-------------|
| Impedance             | 0.5 – 2 MHz | 120 ± 12 Ω  |
| Transfer Impedance    | 30 MHz      | ≤ 30 mΩ/m   |
| Attenuation           | 1 MHz       | ≤ 10 db/km  |
|                       | 2 MHz       | ≤ 14 db/km  |
|                       | 3 MHz       | ≤ 18 db/km  |
| Insulation resistance |             | > 100 MΩ/km |
| Conductor resistance  |             | < 26.7 mΩ/m |

#### Technical data

|                          |                    |           |
|--------------------------|--------------------|-----------|
| Weight                   |                    | 824 kg/km |
| Min. ambient temperature | fixed installation | -50 °C    |
| Min. bending radius      | fixed installation | > 6 x ∅   |

## Technical datasheet

### BETAtrans® UIC flex black 4X10 + 2X6 + 1X2.5 mm<sup>2</sup> NR + 1X(2X0.75 mm<sup>2</sup>)C 120 Ω

part no.: 311128

#### Fire performance for rolling stock

EN 45545-2

hazard level HL1 - HL3

Vertical flame propagation for a single insulated wire or cable  
Vertical flame spread of bunched wires or cables  $\geq$  12 mm  
Smoke density  
Toxicity of smoke  
Absence of halogens

EN 60332-1-2  
EN 60332-3-24  
EN 61034-2  
EN 50305  
EN 60754-1  
EN 60684-2  
EN 60754-2  
EN 60754-2

carbonisation > 50 and  $\leq$  540 mm  
carbonisation < 2,5 m  
transmittance > 70 %  
ITC  $\leq$  6  
HCl und HBr < 0.5 %  
HF < 0.1 %  
pH > 4.3  
conductivity < 10  $\mu$ S/m

Corrosivity of gases

#### Fire performance for rolling stock

EN 50264-1

Vertical flame propagation for a single insulated wire or cable  
Vertical flame spread of bunched wires or cables  $\geq$  12 mm  
Smoke density  
Toxicity of smoke  
Absence of halogens

EN 60332-1-2  
EN 60332-3-24  
EN 61034-2  
EN 50305  
EN 60754-1  
EN 60684-2  
EN 60754-2  
EN 60754-2

carbonisation > 50 und  $\leq$  540 mm  
carbonisation < 2,5 m  
transmittance > 70%  
ITC  $\leq$  3  
HCl und HBr < 0.5 %  
HF < 0.1 %  
pH > 4.3  
conductivity < 10  $\mu$ S/mm

Corrosivity of gases

#### Material properties of sheath

EN 50264-3-2

hazard level M

High resistance to cold  
High resistance to oil  
High resistance to fuel

EN 60811-504  
EN 60811-404  
EN 60811-404

- 50 °C  
72h/100 °C, IRM 902  
168h/70 °C, IRM 903

#### Additional material properties

Resistance to ozone

EN 50306-4

72h/40 °C, method B  
volume concentration  $200 \times 10^{-6}$

Low fire load  
Limiting oxygen index (LOI)

DIN 51900  
ISO 4589-2  
ASTM D 2863

insulation > 30 %  
sheath > 40 %  
insulation > 30 %  
sheath > 40 %

All information properties, technical data, etc. are without obligation. Dimensions and weights are reference values. All information can be changed at any time and without prior notice. The confirmation of the fire performances is based on the certified test reports made on the basic versions within the same cable family and compound.