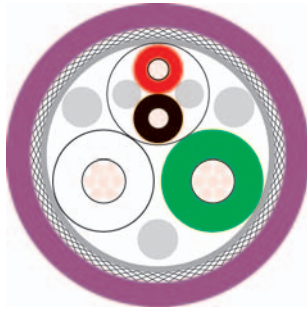


# BUS Cables

## USB Bus S



Drag Chain



### Type

#### Cable structure

Inner conductor diameter 1:  
 Inner conductor diameter 2:  
 Core insulation 1:  
 Core insulation 2:  
 Core colours 1:  
 Core colours 2:  
 Stranding element 1:  
 Shielding 1:  
 Shielding 2:  
 Total shielding:  
 Outer sheath material:  
 Cable external diameter:  
 Outer sheath colour:

### Drag chain applications

#### 1x2xAWG28 + 1x2xAWG20

Copper, tinned (AWG 28/19)  
 Copper, tinned (AWG 20/64)  
 PP  
 PP  
 wh, gn  
 rd, bk  
 2 cores + 2 fillers stranded together  
 Polyester foil over stranded bundle  
 -  
 Foil + braid  
 PUR  
 app. 5,0 mm ± 0,2 mm  
 Violet similar to RAL 4001

### Electrical data

Characteristic impedance:  
 Conductor resistance, max.:  
 Insulation resistance, min.:  
 Loop resistance:  
 Mutual capacitance:  
 Test voltage:

90 Ohm ± 15 %  
 230 Ohm/km  
 0,1 GOhm x km  
 460 Ohm/km max.  
 60 nF/km nom.  
 0,5 kV

### Typical values

| Frequency (MHz)       | 10   | 16   | 62,5 | 100  | 200  | 300  | 400  |
|-----------------------|------|------|------|------|------|------|------|
| Attenuation (db/100m) | 10,1 | 15,4 | 31,0 | 39,7 | 60,2 | 76,2 | 99,7 |

### Technical data

Weight: app. 45 kg/km  
 bending radius, repeated: 50 mm  
 Operating temperature range min.: -30°C  
 Operating temperature range max.: +60°C  
 Caloric load, approx. value: 0,55 MJ/m  
 Copper weight: 30,00 kg/km

### Norms

Applicable standards: USB-Standard 2.0  
 Halogen-free acc. to 60754-2  
 Flame-retardant CSA FT1  
 UL Style: AWM 20963 (80°C/30V)  
 CSA standard: CSA FT1

### Application

HELUKABEL® USB BUS S is designed for continuous moving in cable carriers and lengths up to max. 5m. Conventional USB cables fail within a short period of time, which is why HELUKABEL developed this special cable. Thanks to the PU sheath, it also offers excellent resistance to common mineral oils, greases and cooling lubricants.

### Part no.

**802469**, USB S

Dimensions and specifications may be changed without prior notice.

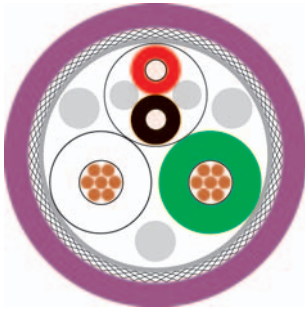
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# BUS Cables

## USB Bus L



Drag Chain



### Type

#### Cable structure

Inner conductor diameter 1:  
 Inner conductor diameter 2:  
 Core insulation 1:  
 Core insulation 2:  
 Core colours 1:  
 Core colours 2:  
 Stranding element 1:  
 Shielding 1:  
 Shielding 2:  
 Total shielding:  
 Drain wire:  
 Outer sheath material:  
 Cable external diameter:  
 Outer sheath colour:

### Drag chain applications

#### 1x2xAWG24 + 1x2xAWG20

Copper, tinned (AWG 24/19)  
 Copper, tinned (AWG 20/19)  
 PO  
 PVC  
 wh, gn  
 rd, bk  
 Double core  
 -  
 -  
 Foil + braid  
 yes  
 PUR  
 app. 6,3 mm ± 0,2 mm  
 Violet similar to RAL 4001

### Electrical data

Characteristic impedance: 90 Ohm ± 15 %  
 Conductor resistance, max.: 36 Ohm/km  
 Insulation resistance, min.: 0,2 GOhm x km  
 Loop resistance: 71 Ohm/km max.  
 Mutual capacitance: 50 nF/km nom.  
 Nominal voltage: 300 V  
 Test voltage: 2 kV

### Typical values

| Frequency (MHz)       | 1   | 24   | 48   | 96   | 200  | 400   |
|-----------------------|-----|------|------|------|------|-------|
| Attenuation (db/100m) | 4,0 | 19,0 | 27,0 | 38,0 | 64,0 | 116,0 |

### Technical data

Weight: app. 56 kg/km  
 bending radius, repeated: 95 mm  
 Operating temperature range min.: -30°C  
 Operating temperature range max.: +70°C  
 Caloric load, approx. value: 0,57 MJ/m  
 Copper weight: 40,00 kg/km

### Norms

Applicable standards: USB-Standard 2.0  
 Flame-retardant acc. to IEC 60332-1  
 AWM 21198 (80°C/ 300V)  
 UL Style:

### Application

HELUKABEL® USB BUS L is designed for continuous motion in cable carriers and lengths up to max. 10m without a repeater. Conventional USB cables fail within a short period of time and need a repeater after a cable length of 5m, which is why HELUKABEL developed this special cable with a larger cross-section. Thanks to the PU sheath, it also offers excellent resistance to common mineral oils, greases and cooling lubricants.

### Part no.

**802470**, USB L

Dimensions and specifications may be changed without prior notice.

# BUS Cables

## USB Bus 3.0



Drag Chain



### Type

#### Cable structure

Inner conductor diameter 1:  
 Inner conductor diameter 2:  
 Core insulation 1:  
 Core insulation 2:  
 Core colours 1:  
 Core colours 2:  
 Stranding element 1:  
 Shielding 1:  
 Shielding 2:  
 Total shielding:  
 Outer sheath material:  
 Cable external diameter:  
 Outer sheath colour:

### Drag chain applications

#### 2x2xAWG28 + 2x(1x2xAWG28)

Copper, tinned (AWG 28/19)  
 Copper, tinned (AWG 28/19)  
 Foam-skin-PE  
 PE  
 bu/ye, or/vio  
 rd/bk, gn/gnwh  
 Double core  
 Polyester foil over stranded bundle  
 Foil + braid  
 Cu braid, tinned  
 PUR  
 app. 6,5 mm ± 0,3 mm  
 Violet similar to RAL 4001

### Electrical data

Characteristic impedance:  
 Conductor resistance, max.:  
 Insulation resistance, min.:  
 Loop resistance:  
 Mutual capacitance:  
 Test voltage:  
 Relative propagation velocity:

90 Ohm ± 20 %  
 105 Ohm ± 15% at 1 MHz  
 205 Ohm/km  
 2 GOhm x km  
 410 Ohm/km max.  
 60 nF/km nom.  
 0,7 kV  
 75 %

### Typical values

| Frequency (MHz)       | 1   | 625 | 1200 |
|-----------------------|-----|-----|------|
| Attenuation (db/100m) | 4,0 | 115 | 180  |

### Technical data

Weight:  
 bending radius, repeated:  
 Operating temperature range min.:  
 Operating temperature range max.:  
 Caloric load, approx. value:  
 Copper weight:

app. 62 kg/km  
 55 mm  
 -30°C  
 +70°C  
 0,69 MJ/m  
 42,00 kg/km

### Norms

Applicable standards:  
 UL Style:  
 CSA standard:

USB-Standard 3.0  
 Halogen-free acc. to 60754-2  
 Flame-retardant acc. to IEC 60332-1  
 AWM Style 20236 AWM I/II A/B 80°C 30V FT1  
 CSA FT1

### Application

HELUKABEL® USB S 3.0, designed specifically for use in heavy-duty industries, are the ideal solution for highly-flexible applications such as drag chains and camera technology. They guarantee superior transmission properties. The transmission distance is connected with the transmission rate.

### Part no.

**805287**, USB S

Dimensions and specifications may be changed without prior notice.

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