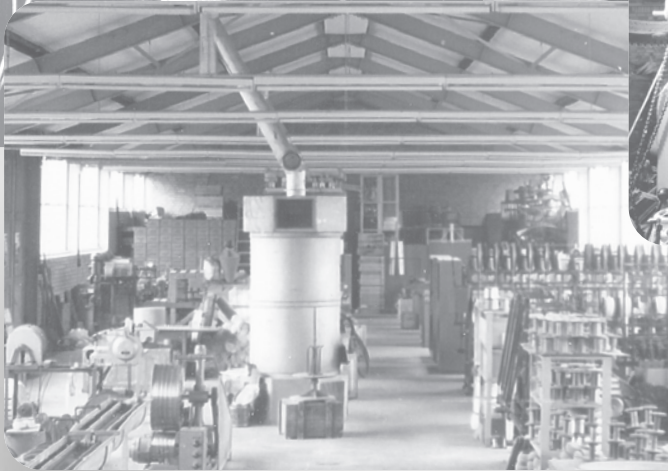


USB 2.0 / 3.0 CABLES



www.sab-cable.com
















TRADITIONAL
FAMILY BUSINESS

SINCE 1947

USB 2.0 / 3.0 Cables

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Application range USB 2.0 and USB 3.0 cables

The SAB robot cables USB 2.0 and USB 3.0 was developed for high frequency data transmission in industry.

In the industry intelligent image processing systems are very important. They are the key to more efficiency, precision and productivity with the installation and treatment by robots for the most different applications. Whether for the identification of parts and components, for visual inspection, welded seam control or for the collection of bar codes or type tests; whe-

rever a quick and reliable collection and transmission of data from the camera to the industrial PC are absolutely important.

Our highly flexible robot cables USB 2.0 and USB 3.0 was especially developed for this application. It guarantees excellent transmission characteristics as it is demanded for intelligent image processing under extreme industrial application conditions.



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USB 2.0 / 3.0 Cables

Who we are - a survey

70 years of experience in temperature measurement and control technique as well as in cable production have made a one man business a company with nearly 500 staff members. Our strength is not only the production of standard products but also the development and manufacturing of special products acc. to customers' specifications. Every year we manufacture more than 1500 special products on our customers' request. Every single product is a challenge for our technical team. We at **SAB BRÖCKSKES** see ourselves as manufacturer and service provider - in the sense of real partnership and customer oriented work.

The quality of our products is known in more than 40 countries worldwide. Our customers have tested our products intensively and confirm that they have a longer service life than others. In all product ranges we are certified acc. to ISO 9001:2015. Besides we established an environmental management system for our company acc. to ISO 14001:2015, an occupational health and safety management acc. to NLF/ILO-OSH 2001 and OHSAS 18001:2007 as well as an energy management system acc. to DIN EN ISO 50001:2011. And our future slogan is:

WE GO FORWARD!

FOUNDED:	1947 by Peter Bröckskes sen. an independent, medium-sized company.
CEO:	Peter Bröckskes and Sabine Bröckskes-Wetten
PLANT/LOCATION:	In Viersen (Lower Rhine) 110.000 m ² company site. Own manufacturing from copper conductor to outer sheath. VDE proved burnchamber and laboratory within the company.
EMPLOYEES/WORKERS:	Approx. 420 at the plant in Viersen, 500 worldwide
YEARLY SALES:	Approx. 95 Mio. € worldwide
PRODUCTS:	Special Cables Temperature Measurement Cable Harnessing

CERTIFICATES AND APPROVALS:



Quality management system acc. to ISO 9001:2015 for every manufacturing field

Environmental management system acc. to ISO 14001:2015

Occupational health and safety management acc. to NLF/ILO-OSH 2001 and OHSAS 18001:2007

Energy management system acc. to DIN EN ISO 50001:2011

USB 2.0 / 3.0 Cables

Who we are - a survey

WE DEVELOP AND PRODUCE **CABLES AND WIRES**
AS WELL AS **SPECIAL SOLUTIONS**
PARTICULARLY ACCORDING TO YOUR REQUIREMENTS AND APPLICATIONS.

Conductor Materials

- Bare copper
- Tinned copper
- Silver plated copper
- Nickel plated copper
- Nickel
- Nickel pure
- Compensating cable alloys

Conductor Sizes

- 0,14 mm² - 300 mm²
- variety of stranding styles

Insulation and Jacketing Materials

- PVC (varietals)
- Polyethylene
- Polypropylene
- TPE
- Fibreglass
- Besilen®/Silicone
- Pi foil
- FEP, ETFE, PFA, PTFE
- SABIX® zero halogen
- Polyurethane

Conductor Count Ranges

- unshielded - up to 125 conductors
- shielded - up to 100 conductors

Temperature Ranges (based on material)

- Thermoplastic Elastomers -50°C up to +145°C
- Besilen®/Silicone -40°C up to +220°C
- FEP, ETFE, PFA, PTFE -90°C up to +260°C
- Halogen-free -50°C up to +220°C
- Fibreglass up to +600°C

Shielding and Braiding Materials

- Bare copper
- Tinned copper
- Galvanized steel
- Stainless steel
- Aluminium foil
- Fibreglass
- Aramid

Approvals

- UL, CSA, CE, EAC, VDE, HAR, IEC, EN, ISO, DNV-GL, LR, ABS, RINA, RMRS, BSI



USB 2.0 / 3.0 Cables

Who we are - a survey

WE SUPPLY **HARNESSED CABLES AND WIRES**

FROM A SINGLE SOURCE.

- helix cables
- harnessed cables acc. to customers' specification
- cable harnesses
- harnessed motor and transmission cables for Siemens and Indramat drives
- harnessed track cable
- various combinations of connector types and terminals
- many application of various materials and sheath materials
- complete solutions
- high quality standard by continuous quality control

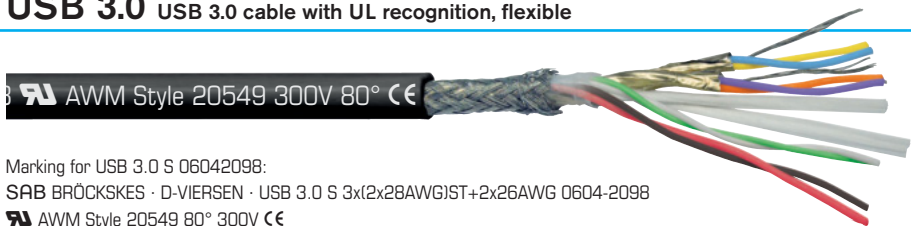


USB 3.0 Cables

USB 3.0 S USB 3.0 cable with UL recognition, continuously flexible, suitable for cable tracks

USB 3.0 RT USB 3.0 cable with UL recognition, continuously flexible, suitable for robots

USB 3.0 USB 3.0 cable with UL recognition, flexible



Marking for USB 3.0 S 06042098:
SAB BRÜCKSKES · D-VIERSEN · USB 3.0 S 3x(2x28AWG)ST+2x26AWG 0604-2098
AWM Style 20549 80° 300V CE

Construction:	USB 3.0 S	USB 3.0 RT	USB 3.0
	<i>suitable for cable tracks</i>	<i>suitable for robots</i>	<i>flexible</i>
Dimensions:	3 x (2 x 28 AWG)ST + 2 x 26 AWG	3 x (2 x 28 AWG)ST + 2 x 26 AWG, 3 x (2 x 26 AWG)ST + 2 x 24 AWG	2 x (2 x 28 AWG)ST + 2 x 28 AWG + 2 x 26 AWG
Conductor:	silver-plated strands and tinned copper strands		
Insulation:	special polymer		
Colour code:	yellow, blue + orange, violet (USB 3.0), green, white (USB 2.0), red, black (power supply)		
Stranding:	twisted pairs and datapairs screened, all elements together		USB 3.0 twisted and screened pairs, USB 2.0 twisted pairs, all elements together
Wrapping:	non-woven tape	netting tape + non-woven tape	non-woven tape
Screen:	tinned copper braiding		
Wrapping:	non-woven tape		
Sheath material:	PUR		PVC
Sheath colour:	black (RAL 9005)		

Technical data:	USB 3.0 S	USB 3.0 RT	USB 3.0
	<i>suitable for cable tracks</i>	<i>suitable for robots</i>	<i>flexible</i>
Item numbers:	0604-2098	0604-3098, 0604-3096	0603-0078
Peak operating voltage:	max. 350 V		
Voltage UL:	300 V		
Testing voltage core/core: core/screen:	2000 V 2000 V		
Min. bending radius fixed laying: flexible application: continuously flexible:	5 x d 10 x d 12 x d	5 x d 10 x d 15 x d	5 x d 10 x d
Torsion angle:	---	up to ±360°/m	---
Temperature range VDE fixed laying: flexible application:	UL: up to +80 °C -50/+90 °C -40/+90 °C		UL: up to +80 °C -30/+70 °C -5/+70 °C
Fire performance:	flame retardant and self-extinguishing acc. to IEC 60332-1-2 + EN 60332-1-2		
Oil resistance:	very good, TMPU acc. to EN 50363-10-2		very good - TM5 acc. to EN 50363-4-1
UL Style:	20549		21083
Absence of harmful substances:	acc. to RoHS directive of the European Union		

item no.	type	dimensions mm ²	outer-ø approx. mm	copper figure kg/km	cable weight ≈ kg/km	ohmic resistance at 20°C max.Ω/km		
						28 AWG	26 AWG	24 AWG
06042098	USB 3.0 S	3 x (2 x 28 AWG)ST + 2 x 26 AWG	6,1	26,5	45	223	140	—
06043098	USB 3.0 RT	3 x (2 x 28 AWG)ST + 2 x 26 AWG	6,4	28,1	50	223	140	—
06043096	USB 3.0 RT	3 x (2 x 26 AWG)ST + 2 x 24 AWG	8,0	38,9	73	—	130	83,3
06030078	USB 3.0	2 x (2 x 28 AWG)ST + 2 x 28 AWG + 2 x 26 AWG	6,1	25,5	48	223	140	—

Other dimensions and colours are possible on request.

For transmission lengths more than 3 m, please contact us!

Also possible as harnessed cable with USB type A and USB type B plug!



USB 3.0 Cables

USB 3.0 M

USB 3.0 cable for the application in medical technology, flexible



Marking for USB 3.0 M 06061018:

SAB BRÜCKSKES · D-VIERSEN · USB 3.0 M 2x(2x28AWG)ST+2x28AWG+2x26AWG 0606-1018 CE

Construction:

Conductor:	28 AWG: silver-plated strands, fine wires 26 AWG: tinned copper strands, fine wires
Insulation:	FEP
Colour code:	28 AWG: yellow, blue + orange, violet (USB 3.0), green, white (USB 2.0), 26 AWG: red, black (power supply)
Stranding:	USB 3.0 twisted and screened pairs, USB 2.0 twisted pairs, all elements together
Drain wire:	bare copper strands, fine wires
Screen:	alu foil
Stranding:	all USB 3.0 elements together
Wrapping:	foil
Screen:	tinned copper braiding
Sheath material:	SABmed S
Sheath colour:	grey (RAL 7000)

Technical data:

Peak operating voltage:	max. 50 V
Testing voltage:	core/core 600 V core/screen 600 V
Min. bending radius	
fixed laying:	5 x d
flexible application:	10 x d
Temperature range	
fixed laying:	-40/+180 °C
flexible application:	-25/+180 °C
Impedance of data pairs:	nom. 90Ω
Absence of harmful substances:	acc. to RoHS directive of the European Union

Outstanding features:



- biocompatible sheath material
- biological harmlessness
acc. to EN ISO 10993-1,
cytotoxicity acc. to EN ISO 10993-5
- high temperature resistant
- high notch and tear resistance
- very good flexibility
- surface not adhesive

item no.	type	dimensions mm ²	outer-ø approx. mm	copper figure kg/km	cable weight ≈ kg/km	ohmic resistance at 20°C max.Ω/km	28 AWG	26 AWG
06061018	USB 3.0 M	2 x (2 x 28 AWG)ST + 2 x 28 AWG + 2 x 26 AWG	5,6	25,4	48	223	140	

Other dimensions and colours are possible on request.



For transmission lengths
more than 3 m,
please contact us!

Also possible
as harnessed cable
with USB type A and
USB type B plug!

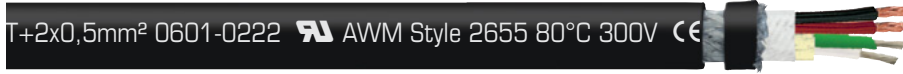


USB 2.0 Cables

USB 2.0 flexible USB 2.0 cable

USB 2.0 UL flexible USB 2.0 cable with UL recognition

USB 2.0 FRNC halogen-free flexible USB 2.0 cable



Marking for USB 2.0 UL 06010222:

SAB BRÖCKSKES · D-VIERSEN · USB 2.0 Leitung · (2x0,22mm²)ST+2x0,5mm² 0601-0222 AWM Style 2655 80°C 300V CE



Construction:	USB 2.0 <i>flexible</i>	USB 2.0 UL <i>flexible</i>	USB 2.0 FRNC <i>flexible</i>
Dimensions:		(2 x 0,22 mm ²) ST + 2 x 0,5 mm ²	
Conductor:		bare copper strands (0,50 mm ²), silver-plated strands (0,22 mm ²)	
Insulation:		SABIX®	
Colour code:		black, red (0,50 mm ²), white, green (0,22 mm ²)	
Stranding:		2 x 0,22 mm ² wrapped with alu foil, together with 0,5 mm ²	
Wrapping:		non-woven tape	
Screen:		tinned copper braiding	
Sheath material:		PVC	SABIX®
Sheath colour:		black (RAL 9005)	

Technical data:	USB 2.0 <i>flexible</i>	USB 2.0 UL <i>flexible</i>	USB 2.0 FRNC <i>flexible</i>
Item numbers:	0601-0122	0601-0222	0601-9001
Peak operating voltage:		max. 350 V	
Voltage UL:	---	300 V	---
Testing voltage core/core: core/screen:	600 V 600 V	2000 V 2000 V	1500 V 1200 V
Min. bending radius fixed laying: flexible application:		5 x d 10 x d	
Temperature range VDE fixed laying: flexible application:	-30/+70 °C -5/+70 °C	UL: up to +80 °C -30/+70 °C -5/+70 °C	-40/+90 °C -30/+90 °C
Halogen-free:		---	acc. to IEC 60754-1 + VDE 0482-754-1
Fire performance:		---	flame retardant and self-extinguishing acc. to IEC 60332-1-2 + VDE 0482-332-1-2
Oil resistance:		acc. to internal standard	
UL Style:	---	2655	---
Absence of harmful substances:		acc. to RoHS directive of the European Union	

item no.	type	dimensions mm ²	outer-ø approx. mm	copper figure kg/km	cable weight ≈ kg/km
06010122	USB 2.0	(2x0,22) ST + 2x0,50	6,8	34,0	60
06010222	USB 2.0 UL	(2x0,22) ST + 2x0,50	7,0	34,0	64
06019001	USB 2.0 FRNC	(2x0,22) ST + 2x0,50	6,8	34,0	62

Other dimensions and colours are possible on request.

Also possible as harnessed cable with USB type A and USB type B plug!

CABLE ASSEMBLY POSSIBLE

USB 2.0 Cables

- USB 2.0 S** USB 2.0 cable, continuously flexible, suitable for cable tracks
- USB 2.0 S UL/CSA** USB 2.0 cable with UL recognition, CSA approval, continuously flexible, suitable for cable tracks
- USB 2.0 RT UL/CSA** USB 2.0 cable with UL recognition, CSA approval, continuously flexible, suitable for robots



Marking for USB 2.0 S UL/CSA 06011122:
 SAB BRÜCKSKES · D-VIERSEN · USB 2.0 Leitung · (2x0,22mm²)ST+2x0,5mm² 0601-1122 AWM Style 21198 80°C 300V CSA AWM I/II A/B 80°C 300V FT2

Construction:			
	USB 2.0 S <i>suitable for cable tracks</i>	USB 2.0 S UL/CSA <i>suitable for cable tracks</i>	USB 2.0 RT UL/CSA <i>suitable for robots</i>
Dimensions:	(2 x 0,22 mm ²) ST + 2 x 0,5 mm ²		
Conductor:	bare copper strands (0,50 mm ²), silver-plated strands (0,22 mm ²)		
Insulation:	SABIX®		
Colour code:	black, red (0,50 mm ²), white, green (0,22 mm ²)		
Stranding:	2 x 0,22 mm ² wrapped with alu foil, together with 0,5 mm ²		
Wrapping:	non-woven tape	PTFE foil	
Screen:	tinned copper braiding	wrapping with tinned copper round wires	
Wrapping:	non-woven tape		
Sheath material:	PUR		
Sheath colour:	black (RAL 9005)		

Technical data:			
	USB 2.0 S <i>suitable for cable tracks</i>	USB 2.0 S UL/CSA <i>suitable for cable tracks</i>	USB 2.0 RT UL/CSA <i>suitable for robots</i>
Item numbers:	0601-1022	0601-1122	0601-2022
Peak operating voltage:	max. 350 V		
Voltage UL/CSA:	---	300 V	
Testing voltage core/core: core/screen:	600 V 600 V	2000 V 2000 V	
Min. bending radius fixed laying: flexible application: continuously flexible:	5 x d 6 x d 7,5 x d		5 x d 7,5 x d 10 x d
Torsion angle:	---		up to ±180°/m
Temperature range VDE fixed laying: flexible application:	-50/+90 °C -40/+90 °C	UL/CSA: up to +80 °C -50/+90 °C -40/+90 °C	
Halogen-free:	acc. to IEC 60754-1 + VDE 0482-754-1		---
Oil resistance:	PUR, TPU EN 50363-10-2 + VDE 0207-363-10-2		
UL Style:	---	21198	
Absence of harmful substances:	acc. to RoHS directive of the European Union		

item no.	type	dimensions mm ²	outer-ø approx. mm	copper figure kg/km	cable weight ≈ kg/km
06011022	USB 2.0 S	(2x0,22) ST + 2x0,50	7,0	34,1	59
06011122	USB 2.0 S UL/CSA	(2x0,22) ST + 2x0,50	7,2	34,1	66
06012022	USB 2.0 RT UL/CSA	(2x0,22) ST + 2x0,50	7,0	34,3	64

Other dimensions and colours are possible on request.

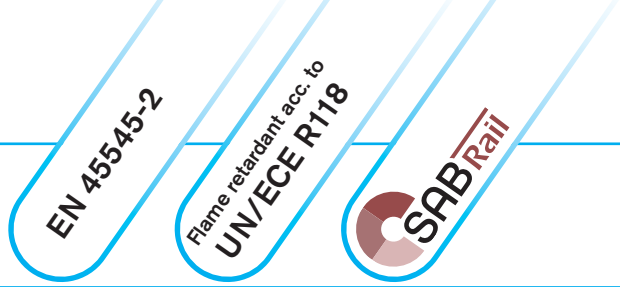
Also possible as harnessed cable with USB type A and USB type B plug!

CABLE ASSEMBLY POSSIBLE

USB 2.0 Cables

SABIX® USB 2.0 R flex

halogen-free continuously flexible SABIX® USB 2.0 Rail cable



Marking for SABIX® USB 2.0 R flex 06019013:
SAB BRÜCKSKES · D-VIERSEN · SABIX® USB 2.0 R flex 4x28AWG 0601-9013

Construction:

Conductor:	bare copper strands, fine wires
Insulation:	SABIX®
Colour code:	white, green, red, black
Screen:	alu foil and tinned copper braiding, Drain AWG 30 of tinned copper under the braid
Sheath material:	SABIX®
Sheath colour:	black (RAL 9005)

Technical data:

Peak operating voltage:	max. 30 V
Testing voltage:	core/core 600 V core/screen 600 V
Min. bending radius	fixed laying: 5 x d flexible application: 10 x d
Temperature range	fixed laying: -50/+90 °C flexible application: -50/+90 °C
Halogen-free:	acc. to EN 50306-1 + EN 50264-1 are fulfilled. Development of HCl is < 0,5% acc. to IEC 60754-1. pH-value is > 4,3 acc. to IEC 60754-2. Conductivity is < 10,0 µS/mm acc. to IEC 60754-2. Fluoric content < 0,1% acc. to IEC 60684-2.
Fire performance:	No flame propagation acc. to IEC 60332-3-24 + VDE 0482-332-3-24 resp. IEC 60332-3-25 + VDE 0482-332-3-25 and EN 50305 + VDE 0260-305 section 9.1.2. Flame retardant and self-extinguishing acc. to IEC 60332-1-2 + VDE 0482-332-1-2
Toxicity:	acc. to EN 50305 + VDE 0260-305
Smoke density:	acc. to IEC 61034 + VDE 0482-1034
Absence of harmful substances:	acc. to RoHS directive of the European Union

Outstanding features:

- halogen-free
- continuously flexible
- no flame propagation
- flame retardant and self-extinguishing
- fulfils fire protection requirements R15 (EL1A) and R16 (EL1B) acc. to EN 45545-2 for hazard levels HL1-3

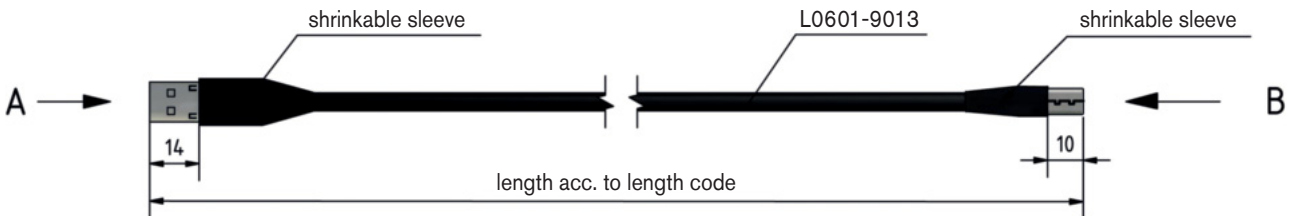
item no.	type	cross section	outer-ø approx. mm	copper figure kg/km	cable weight ≈kg/km	ohmic resistance at 20°C max.Ω/km
06019013	SABIX® USB 2.0 R flex	4 x AWG 28/7	5,2	14,3	41	223,8

Other dimensions and colours are possible on request.

Also possible as harnessed cable with USB type A and USB type B plug!

CABLE ASSEMBLY POSSIBLE

USB 2.0 cable with USB type A and USB type B plug



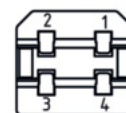
view A (2:1)



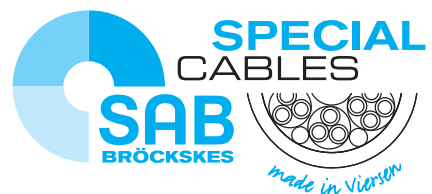
Pin configuration

USB A	colour code	USB B
1	red	1
2	white	2
3	green	3
4	black	4
housing	screen	housing

view B (3:1)



view soldering side



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