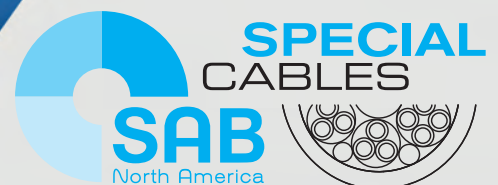


CABLES & ASSEMBLIES FOR 3D MEASUREMENT



www.sabcable.com
866-722-2974 ■ info@sabcable.com



SAB North America is a focused supplier for the automation, aerospace, medical, high temperature, and robotics industries, providing cable and thermocouple solutions that meet, exceed, and set new standards in the flexible cable market. In addition to flexible cable products, we offer an extensive inventory of high-quality cable accessories, including cord grips, grounding glands and other accessories that complement our flexible control and automation cables.

Whatever the need may be, look to SAB North America for Special Cables that can, for example, help minimize maintenance costs and increase productivity, reduce downtime, and solve specific problems. Here is a small sample of some of the challenges that Special Cables from SAB North America can help address:

- Hybrid designs for multiple functions
- Harsh environments
- Difficult applications
- Industry-specific requirements



Speed and accuracy are some of the application requirements for 3D measuring devices and their accessories. Optical 3D measurement offers many advantages over traditional mechanical measuring methods. Optical and contactless measurement processes are 10 to 1000 times quicker and the error rate is comparatively low. SAB's CATLine ethernet cables, USB 2.0 and 3.0 cables and high and low temperature sensor cables guarantee reliable signal transmission of 3D measuring data, geometrical dimensions of components and surface characteristics in 3D sensors, cameras, lasers and quality assurance systems.

Whether you're a valued distribution partner, a manufacturer, an automation house, an integrator, or a contractor, rest assured that our cables are reliable to maximize production efficiencies. SAB brings world class performance & 75 years of ingenuity to the table.

SAB's level of speed and service as a supplier is unmatched. SAB lives up to its name in not only flexible cable but also flexible manufacturing.



SAB Advantage...We make it Easy

- Engineering & technical assistance
- Cut to length with no cut charges
- Prepaid freight within US for orders over \$2,500
- Specialty cable designs (1500 ft minimum)
- No minimum on orders from stock
- Free drop shipments (no surcharges)
- 24-hour shipments from stock
- Cord Grips for securing and grounding cables

Cables for 3D Measurement



Continuous Flex Industrial Ethernet Cables

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USB 3.0 Cables & Assemblies

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Sensor Cables

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Cables for 3D Measurement

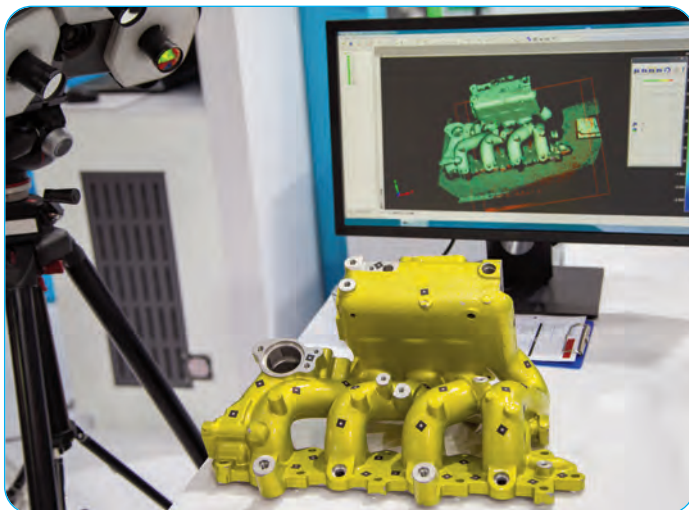
Application Examples

Speed and accuracy are some of the application requirements for 3D measuring devices and their accessories. Optical 3D measurement offers many advantages over traditional mechanical measuring methods. Optical and contactless measurement processes are 10 to 1000 times quicker and the error rate is comparatively low.

■ SAB's highly flexible CATLine cable range offers a combined power supply that is suitable for highly dynamic movements in 3D scanners and measurement devices. The Ethernet and hybrid Ethernet cables of the CATLine range guarantee reliable signal transmission of 3D measuring data, geometrical dimensions of components and surface characteristics in 3D sensors, cameras, lasers and quality assurance systems.

■ Our highly flexible robot cable USB 2.0 and USB 3.0 provide excellent transmission for intelligent image processing under extreme industrial application conditions.

■ Our sensor cables allow for measurement in low and high temperature ranges



Cables for 3D Measurement

CATLine CAT 6 S / CAT 6A S Gigabit Ethernet cable suitable for cable tracks

CATLine CAT 6 RT / CAT 6A RT Gigabit Ethernet cable suitable for cable tracks, suitable for robots



9 80°C 300V CSA AWM I/II A/B 80°C 300V FT2 CE



Marking for CATLine CAT 6 S 16774630:

SAB BRÜCKSKES · D-VIERSEN · CATLine Cat. 6 S 4x2x26AWG 1677-4630 AWM Style 20549 80°C 300V CSA AWM I/II A/B 80°C 300V FT2 CE

	CATLine CAT 6 S suitable for cable tracks	CATLine CAT 6A S suitable for cable tracks	CATLine CAT 6 RT suitable for cable tracks/ suitable for robots	CATLine CAT 6A RT suitable for cable tracks/ suitable for robots
Construction:				
Item numbers:	16774630	16774631	16874630	16874631
Dimensions:	4 x 2 x 26 AWG	4 x 2 x 26 AWG	4 x 2 x 26 AWG	4 x 2 x 26 AWG
Conductor:	bare copper strands, fine wires	bare copper strands, fine wires	bare copper strands, fine wires	bare copper strands, fine wires
Insulation:	special polymer	special polymer	special polymer	special polymer
Color code:	white-blue/blue, white-orange/orange, white-green/green, white-brown/brown		white-blue/blue, white-orange/orange, white-green/green, white-brown/brown	
Stranding:	conductors twisted to pairs, pairs together		conductors twisted to pairs, pairs together	
Wrapping:	non-woven tape	non-woven tape	non-woven tape	non-woven tape
Shielding:	alu foil	alu foil	alu foil	alu foil
Shielding:	tinned copper braiding	tinned copper braiding	tinned copper braiding	tinned copper braiding
Wrapping:	non-woven tape	non-woven tape	non-woven tape	non-woven tape
Jacket material:	PUR	PUR	PUR	PUR
Jacket color:	green (similar RAL 6018)	green (similar RAL 6018)	green (similar RAL 6018)	green (similar RAL 6018)

	CATLine CAT 6 S suitable for cable tracks	CATLine CAT 6A S suitable for cable tracks	CATLine CAT 6 RT suitable for cable tracks/ suitable for robots	CATLine CAT 6A RT suitable for cable tracks/ suitable for robots
Technical data:				
Peak operating voltage:	max. 90 V	max. 90 V	max. 90 V	max. 90 V
Voltage UL/CSA:	300 V	300 V	300 V	300 V
Testing voltage: conductor/conductor: conductor/shielding:	2000 V 2000 V	2000 V 2000 V	2000 V 2000 V	2000 V 2000 V
Min. bending radius: fixed installation free movement: continuous flex:	5 x O.D. 10 x O.D. 15 x O.D.	5 x O.D. 10 x O.D. 15 x O.D.	5 x O.D. 10 x O.D. 15 x O.D.	5 x O.D. 10 x O.D. 15 x O.D.
Torsion:	—	—	up to ± 180°/m	up to ± 180°/m
Temperature range VDE: static: flexible:	UL: up to +80°C -40/+70°C -40/+70°C	UL: up to +80°C -40/+70°C -40/+70°C	UL: up to +80°C -40/+70°C -40/+70°C	UL: up to +80°C -40/+70°C -40/+70°C
Halogen-free:	acc. to IEC 60754-1 + VDE 0482-754-1	acc. to IEC 60754-1 + VDE 0482-754-1	acc. to IEC 60754-1 + VDE 0482-754-1	acc. to IEC 60754-1 + VDE 0482-754-1
Burning characteristics:	flame retardant and self-extinguishing acc. to IEC 60332-1-2 + VDE 0482-332-1-2; UL Horizontal Flame Test FT2			
Oil resistance:	TMPU acc. to EN 50363-10-2 + VDE 0207-363-10-2		TMPU acc. to EN 50363-10-2 + VDE 0207-363-10-2	
Characteristic impedance (100 MHz): accomplishes the electrical and transmission requirements with high frequency	100Ω ± 10Ω, with reference to EN 50288-5-2 / CAT 6	100Ω ± 10Ω, with reference to EN 50288-10-2 / CAT 6A	100Ω ± 10Ω, with reference to EN 50288-5-2 / CAT 6	100Ω ± 10Ω, with reference to EN 50288-10-2 / CAT 6A
Flexibility:	very good	very good	very good	very good
UL Style:	20549	20549	20549	20549
Application:	suitable for EtherCAT and EtherNET/IP applications			
Absence of harmful substances:	acc. to RoHS directive of the European Union, see page O/30			

item no.	type	dimensions AWG	max. cond.-ø mm	outer-ø ±10% inch	±10% mm	cable weight ≈lbs/mft
▶ 16774630	CATLine CAT 6 S	26 (≈ 7/34)/4pr	1.05	0.280	7.1	38
▶ 16774631	CATLine CAT 6A S	26 (≈ 7/34)/4pr	1.05	0.280	7.1	38
▶ 16874630	CATLine CAT 6 RT	26 (≈ 7/34)/4pr	1.05	0.280	7.1	38
▶ 16874631	CATLine CAT 6A RT	26 (≈ 7/34)/4pr	1.05	0.280	7.1	38

Other dimensions and colors are available on request



+90°C on request



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Cables for 3D Measurement

CATLine CAT 6A HT

Gigabit Ethernet cable – high temperature resistant

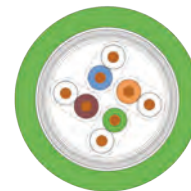


16314631- FEP Version

26AWG 16314631 AWM Style 21618 150°C 600V CE

Marking for CATLine CAT 6A HT 16314631:

SAB BRÖCKSKES · D-VIERSEN · CATLine Cat. 6A HT 4x2x26AWG 16314631 AWM Style 21618 150°C 600V CE



16324631- PFA Version

CATLine CAT 6A HT 4x2x26AWG 16324631 CE

Marking for CATLine CAT 6A HT 16324631:

SAB BRÖCKSKES · D-VIERSEN · CATLine Cat. 6A HT 4x2x26AWG 16324631 CE



Construction:

Conductor:	
FEP:	bare copper strands, fine wires
PFA:	silver-plated copper strands, fine wires
Insulation:	FEP or PFA
Color code:	white/blue, white/orange, white/green, white/brown
Stranding:	twisted to pairs
Wrapping:	PETP foil
Shielding:	
FEP:	alu. foil + tinned copper braiding
PFA:	alu. foil + silver-plated copper braiding
Jacket material:	FEP or PFA
Jacket color:	green (similar RAL 6018)

Outstanding features:

- high temperature resistant
- low temperature resistant
- flame retardant and self-extinguishing
- oil and chemical resistant
- UL recognized- FEP version only

Technical data:

Peak operating voltage:	max. 90 V		
Voltage UL:	600 V		
Testing voltage:	conductor/conductor: conductor/shielding:	FEP: 2000 V 2000 V	PFA: 750 V 750 V
Min. bending radius: <i>fixed installation:</i> <i>free movement:</i>	5 x O.D. 10 x O.D.		
Temperature range: <i>static:</i> <i>flexible:</i>	FEP: -90/+180°C -55/+180°C UL: up to +150°C	PFA: -90/+250°C -55/+250°C	
Burning characteristics: <i>FEP:</i>	flame retardant and self-extinguishing acc. to IEC 60332-1-2 + VDE 0482-332-1-2, UL VW-1		
Oil resistance:	very good		
Chemical resistance:	very good against acids, halogens, bases, chlorinated solvents as well as organic and inorganic compounds		
Character impedance:	100Ω ± 10Ω, accomplishes the electrical and transmission requirements with high frequency with reference to EN 50288-10-2 (CAT 6A)		
Approvals:	FEP: UR AWM Style 21618, CE, RoHS PFA: CE, RoHS		
Application:	suitable for EtherCAT and EtherNET/IP applications		
Absence of harmful substances:	acc. to RoHS directive of the European Union see page O/30		

item no.	type	dimensions AWG	max. cond.-ø mm	outer-ø ±10% inch	outer-ø ±10% mm	cable weight ≈lbs/mft
▶ 16314631	FEP	26 (≈ 7/34)/4pr	1.05	0.228	5.8	36
▶ 16324631	PFA	26 (≈ 7/34)/4pr	1.05	0.217	5.5	33

Other dimensions and colors are available on request

NEW

PFA type
up to +250°C

Also possible as a
cable assembly with
M12 or RJ 45 plug



Cables for 3D Measurement

CATLine CAT 7A S Gigabit Ethernet cable suitable for cable tracks

CATLine CAT 7A RT Gigabit Ethernet cable suitable for suitable for robots



20549 80°C 300V CSA AWM I/II A/B 80°C 300V FT2 CE



Marking for CATLine CAT 7A S 17774631:

SAB BRÖCKSKES · D-VIERSEN · CATLine Cat. 7A S 4x2x26AWG 1777-4631 AWM Style 20549 80°C 300V CSA AWM I/II A/B 80°C 300V FT2 CE



Construction:	CATLine CAT 7A S <i>suitable for cable tracks</i>	CATLine CAT 7A RT <i>suitable for robots</i>
Item numbers:	17774631 / 17774431	17874631 / 17874431
Dimensions:	4 x 2 x 26 AWG / 4 x 2 x 24 AWG	4 x 2 x 26 AWG / 4 x 2 x 24 AWG
Conductors:	bare copper strands, fine wires	bare copper strands, fine wires
Insulation:	special polymer	special polymer
Color code:	white-blue/blue, white-orange/orange, white-green/green, white-brown/brown	white-blue/blue, white-orange/orange, white-green/green, white-brown/brown
Stranding:	conductors twisted to pairs, pairs shielded with foil, pairs together	conductors twisted to pairs, pairs shielded with foil, pairs together
Shielding:	aluminized non-woven tape	aluminized non-woven tape
Shielding:	tinned copper braiding	tinned copper braiding
Wrapping:	non-woven tape	non-woven tape
Jacket material:	PUR	PUR
Jacket color:	green (similar RAL 6018)	green (similar RAL 6018)

Technical data:	CATLine CAT 7A S <i>suitable for cable tracks</i>	CATLine CAT 7A RT <i>suitable for robots</i>
Peak operating voltage:	max. 90 V	max. 90V
Voltage UL/CSA:	300 V	300 V
Testing voltage: conductor/conductor: conductor/shielding:	2000 V 2000 V	2000 V 2000 V
Min. bending radius: fixed installation: free movement: continuous flex:	5 x O.D. 10 x O.D. 15 x O.D.	5 x O.D. 10 x O.D. —
Torsion angle:	—	up to ± 180°/m
Temperature range VDE: static: flexible:	UL/CSA: up to +80°C -40/+70°C -40/+70°C	UL/CSA: up to +80°C -40/+70°C -40/+70°C
Halogen-free:	acc. to IEC 60754-1 + VDE 0482-754-1	acc. to IEC 60754-1 + VDE 0482-754-1
Burning characteristics:	flame retardant and self-extinguishing acc. to IEC 60332-1-2 + VDE 0482-332-1-2 UL Horizontal Flame Test FT2	flame retardant and self-extinguishing acc. to IEC 60332-1-2 + VDE 0482-332-1-2 UL Horizontal Flame Test FT2
Oil resistance:	TMPU acc. to EN 50363-10-2 + VDE 0207-363-10-2	TMPU acc. to EN 50363-10-2 + VDE 0207-363-10-2
Characteristic impedance (100 MHz):	100Ω ± 10Ω, accomplishes the electrical and transmission requirements with high frequency with reference to EN 50288-9-2 + VDE 0819-9-2 / CAT 7A	
Flexibility:	very good	very good
UL Style:	20549	20549
Application:	suitable for EtherCAT and EtherNET/IP applications	
Absence of harmful substances:	acc. to RoHS directive of the European Union, see page O/30	

item no.	type	dimensions AWG	max. cond.-ø mm	outer-ø ±10% inch	outer-ø ±10% mm	cable weight ≈lbs/mft
▶ 17774631	CATLine CAT 7A S	26 (≈ 7/34)/4pr	1.50	0.355	8.5	54
▶ 17774431	CATLine CAT 7A S	24 (≈ 7/34)/4pr	1.60	0.409	10.4	68
▶ 17874631	CATLine CAT 7A RT	26 (≈ 7/34)/4pr	1.50	0.350	8.9	56
▶ 17874431	CATLine CAT 7A RT	24 (≈ 7/34)/4pr	1.60	0.366	9.3	66



**+90°C
on request**

Also possible as a
cable assembly with
M12 or RJ 45 plug



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Cables for 3D Measurement

CATLine CAT 5e DR CAT 5e reeling industrial Ethernet cable

CATLine CAT 6A DR CAT 6A reeling gigabit Ethernet cable

CATLine CAT 7A DR CAT 7A reeling gigabit Ethernet cable



RSEN · **CATLine** Cat. 7A DR 4x2x26AWG 1639-4651



Marking for CATLine CAT 7A DR 17394651:

SAB BRÖCKSKES · D-VIERSEN · **CATLine** Cat. 7A DR 4x2x26AWG 17394651

Construction:	CATLine CAT 5e DR <i>reeling Ethernet cable</i>	CATLine CAT 6A DR <i>reeling Ethernet cable</i>	CATLine CAT 7A DR <i>reeling Ethernet cable</i>
Item numbers:	15394651	16394651	17394651
Dimensions:	4 x 2 x 26 AWG	4 x 2 x 26 AWG	4 x 2 x 26 AWG
Conductor:	bare copper strands, fine wires	bare copper strands, fine wires	bare copper strands, fine wires
Insulation:	special polymer	special polymer	special polymer
Color code:	white-blue/blue, white-orange/orange, white-green/green, white-brown/brown	white-blue/blue, white-orange/orange, white-green/green, white-brown/brown	white-blue/blue, white-orange/orange, white-green/green, white-brown/brown
Stranding:	conductors twisted to pairs, pairs together	conductors twisted to pairs, pairs together	conductors twisted to pairs, pairs shielded with foil, pairs together
Wrapping:	non-woven tape	non-woven tape	—
Shielding:	alu foil	alu foil	aluminized non-woven tape
Shielding:	tinned copper braiding	tinned copper braiding	tinned copper braiding
Wrapping:	non-woven tape	non-woven tape	non-woven tape
Jacket material:	PUR / supporting braid/ PUR	PUR / supporting braid/ PUR	PUR / supporting braid/ PUR
Jacket color:	black (RAL 9005)	black (RAL 9005)	black (RAL 9005)

Technical data:	CATLine CAT 5e DR <i>reeling Ethernet cable</i>	CATLine CAT 6A DR <i>reeling Ethernet cable</i>	CATLine CAT 7A DR <i>reeling Ethernet cable</i>
Peak operating voltage:	max. 90 V	max. 90 V	max. 90 V
Testing voltage: conductor/conductor: conductor/shielding:	750 V 750 V	750 V 750 V	750 V 750 V
Min. bending radius fixed laying and installation (fixed installation): for repeated winding action (flexible application): guided on pulleys (flexible application):	5 x O.D. 10 x O.D. 12 x O.D.	5 x O.D. 10 x O.D. 12 x O.D.	5 x O.D. 10 x O.D. 12 x O.D.
Temperature range VDE: static: flexible:	-50/+90°C -40/+90°C	-50/+90°C -40/+90°C	-50/+90°C -40/+90°C
Halogen-free:	acc. to IEC 60754-1 + VDE 0482-754-1	acc. to IEC 60754-1 + VDE 0482-754-1	acc. to IEC 60754-1 + VDE 0482-754-1
Oil resistance:	TMPU acc. to EN 50363-10-2 + VDE 0207-363-10-2	TMPU acc. to EN 50363-10-2 + VDE 0207-363-10-2	TMPU acc. to EN 50363-10-2 + VDE 0207-363-10-2
Characteristic impedance (100 MHz):	100Ω ± 10Ω, accomplishes the electrical and transmission requirements with high frequency with reference to EN 50288-2-2 / CAT 5	100Ω ± 10Ω, accomplishes the electrical and transmission requirements with high frequency with reference to EN 50288-10-2 / CAT 6A	100Ω ± 10Ω, accomplishes the electrical and transmission requirements with high frequency with reference to EN 50288-9-2 / CAT 7A
Weather resistance:	very good	very good	very good
Application:	suitable for EtherCAT and EtherNET/IP applications		
Absence of harmful substances:	acc. to RoHS directive of the European Union, see page O/30		

item no.	type	dimensions AWG	max. cond.-ø mm	outer-ø ±10% inch	outer-ø ±10% mm	cable weight ≈lbs/mft	tensile strength max. N
▶ 15394651	CATLine CAT 5e DR	26 (≈ 7/34)/4pr	1.05	0.335	8.5	53	200
▶ 16394651	CATLine CAT 6A DR	26 (≈ 7/34)/4pr	1.05	0.335	8.5	54	200
▶ 17394651	CATLine CAT 7A DR	26 (≈ 7/34)/4pr	1.05	0.413	10.5	79	200

Other dimensions and colors are available on request

Also possible as a
cable assembly with
M12 or RJ 45 plug



Cables for 3D Measurement

USB 3.0 S Continuous flex USB 3.0 cable suitable for cable tracks
USB 3.0 RT Continuous flex USB 3.0 cable suitable for robots
USB 3.0 Flexible USB 3.0 cable

transmission
length
up to 3 m



Marking for USB 3.0 S 6042098:

SAB BRÖCKSKES · D-VIERSEN · USB 3.0 S 3x(2x28AWG)ST+2x26AWG 0604-2098

AWM Style 20549 80° 300V CE

Construction:	USB 3.0 S suitable for cable tracks	USB 3.0 RT suitable for robots	USB 3.0 flexible
Item numbers:	6042098	6043098 / 6043096	6030078
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	silver-plated strands and tinned copper strands	silver-plated strands and tinned copper strands
Insulation:	special polymer	special polymer	special polymer
Color code:	yellow, blue + orange, violet (USB 3.0), green, white (USB 2.0), red, black (power supply)		
Stranding:	twisted pairs and data pairs shielded, all elements together	twisted pairs and data pairs shielded, all elements together	USB 3.0 twisted and screened pairs, USB 2.0 twisted pairs, all elements together
Wrapping:	non-woven tape	woven tape + non-woven tape	non-woven tape
Shielding:	tinned copper braiding	tinned copper braiding	tinned copper braiding
Wrapping:	non-woven tape	non-woven tape	non-woven tape
Jacket material:	PUR	PUR	PVC
Jacket color:	black (RAL 9005)	black (RAL 9005)	black (RAL 9005)

Technical data:	USB 3.0 S suitable for cable tracks	USB 3.0 RT suitable for robots	USB 3.0 flexible
Peak operating voltage:	max. 350 V	max. 350 V	max. 350 V
Voltage UL:	300 V	300 V	300 V
Testing voltage: conductor/conductor: conductor/shielding:	2000 V 2000 V	2000 V 2000 V	2000 V 2000 V
Min. bending radius: fixed installation: free movement: continuous flex:	5 x O.D. 10 x O.D. 12 x O.D.	5 x O.D. 10 x O.D. 15 x O.D.	5 x O.D. 10 x O.D. —
Torsion angle:	—	up to ± 360°/m	—
Temperature range VDE: static: flexible:	UL: up to 80°C -50/+90°C -40/+90°C	UL: up to 80°C -50/+90°C -40/+90°C	UL: up to 80°C -30/+70°C -5/+70°C
Burning characteristics:	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, TMPU acc. to EN 50363-10-2	very good - TM5 acc. to EN 50363-4-1
UL Style:	20549	20549	21083
Absence of harmful substances:	acc. to RoHS directive of the European Union, see page O/30		

item no.	type	dimensions AWG	outer-ø ±10% inch	outer-ø ±10% mm	cable weight ≈ lbs/mft	ohmic resistance at 20°C max.Ω/km		
						28 AWG	26 AWG	24 AWG
▶ 6042098	USB 3.0 S	28 (≈ 7/38)ST/3pr + 26 (≈ 7/34)/2c	0.240	6.1	30	223	140	—
▶ 6043098	USB 3.0 RT	28 (≈ 7/38)ST/3pr + 26 (≈ 7/34)/2c	0.252	6.4	34	223	140	—
▶ 6043096	USB 3.0 RT	26 (≈ 7/34)ST/3pr + 24 (7 strand)/2c	0.315	8.0	49	—	130	83.3
▶ 6030078	USB 3.0	28 (≈ 7/38)ST/2pr + 28 (≈ 7/38)/2c + 26 (≈ 7/34)/2c	0.240	6.1	32	223	140	—

Other dimensions and colors are available on request



**For transmission lengths
more than 3 m,
please contact us.**

Also possible as a
cable assembly with
USB type A or B plug



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Cables for 3D Measurement

USB 3.0 M UL

Flexible USB 3.0 cable for medical imaging devices

transmission
length
up to 3 m

SABBus



Construction:

Conductor:	28 AWG: silver plated copper, finely stranded 26 AWG: silver plated copper, finely stranded
Insulation:	FEP
Color code:	28 AWG: yellow, blue, orange, violet, green, white 26 AWG: red, black
Stranding:	28 AWG: conductors twisted as pair, yellow/blue, orange/violet, green/white
Shielding:	28 AWG: yellow/blue, orange/violet, wrapped with aluminum-foil, drain wire under aluminum foil
Drain Wire:	28 silver plated copper, finely stranded
Stranding:	pairs of conductors red and black twisted together in especially adjusted layering, filler in center, wrapped with foil
Shielding:	silver plated copper braiding
Jacket:	SABmed S platin in gray

Technical data:

Operating voltage:	max. 375V (VDE) 600V (UL)
Testing voltage:	conductor/conductor: 2000 V conductor/shielding: 2000 V
Min. bending radius: <i>fixed installation:</i> <i>free movement:</i>	5 x O.D. 10 x O.D.
Temperature range: <i>static:</i> <i>flexible:</i>	VDE -25/+180°C -40/+180°C UL Up to +150°C Up to +150°C
Impedance of data pairs:	characteristic impedance of data pairs 28AWG: nom. 90Ω
Biocompatibility:	cytotoxicity acc. to DIN EN ISO 10993-5
UL:	UL AWM Style 4535 150°C 600V
Ethanol resistance:	good

Outstanding features:

- biocompatible jacket 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 AWG	outer-ø ±10% inch	±10% mm	cable weight ≈lbs/mft	ohmic resistance at 20°C max.Ω/km	28 AWG	26 AWG
▶ 39000070	USB 3.0 M UL	28 (≈ 7/38)ST/2pr + 28 (≈ 7/38)/2c + 26 (≈ 7/34)/2c	0.228	5.8	22	224.7	142.9	

Other dimensions and colors are available on request



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

Also possible as a
cable assembly with
USB type A or B plug



Cables for 3D Measurement

USB 3.0 M

Flexible USB 3.0 cable for Medical Technology Applications

transmission
length
up to 3 m

SAB BUS



98 AWM Style 20549 300V 80° CE

Marking for USB 3.0 M 6061018:

SAB BRÖCKSKES · D-VIERSEN · USB 3.0 M

2x(2x28AWG)ST+2x28AWG+2x26AWG 6061018 CE



Construction:

Conductor:	28 AWG: silver-plated strands, fine wires 26 AWG: tinned copper strands, fine wires
Insulation:	FEP
Color 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 shielded pairs, USB 2.0 twisted pairs, all elements together
Drain wire:	bare copper strands, fine wires
Shielding:	alu foil
Stranding:	all USB 3.0 elements together
Wrapping:	foil
Shielding:	tinned copper braiding
Jacket material:	SABmed S
Jacket color:	gray (RAL 7000)

Outstanding features:

- biocompatible jacket 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

Technical data:

Peak operating voltage:	max. 50V
Testing voltage:	conductor/conductor: 600 V conductor/shielding: 600 V
Min. bending radius: <i>fixed installation:</i> <i>free movement:</i>	5 x O.D. 10 x O.D.
Temperature range: <i>static:</i> <i>flexible:</i>	-40/+180°C -25/+180°C
Impedance of data pairs:	nom. 90Ω
Approvals:	CE, RoHS
Absence of harmful substances:	acc. to RoHS directive of the European Union see page O/30

item no.	type	dimensions AWG	outer-ø		cable weight ≈lbs/mft	ohmic resistance at 20°C max.Ω/km	
			±10% inch	±10% mm		28 AWG	26 AWG
▶ 6061018	USB 3.0 M	28 (≈ 7/38)ST/2pr + 28 (≈ 7/38)/2c + 26 (≈ 7/34)/2c	0.220	5.6	32	223	140

Other dimensions and colors are available on request



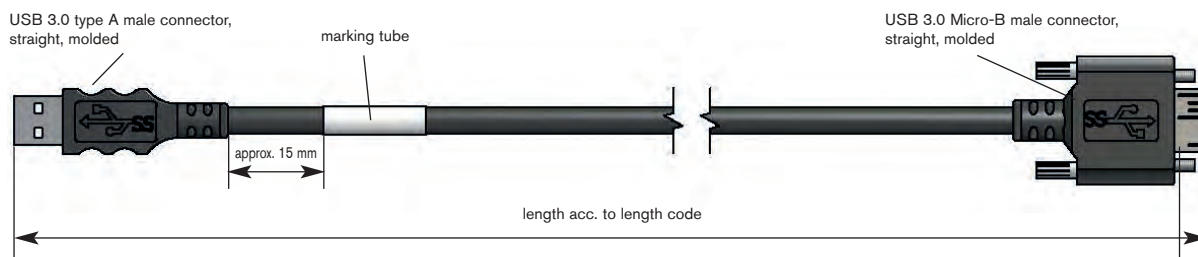
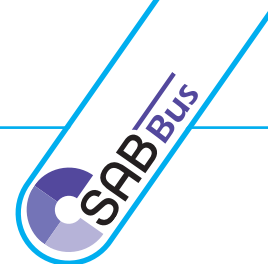
For transmission lengths
more than 3 m,
please contact us.

Also possible as a
cable assembly with
USB type A or B plug



USB 3.0 cable assembly with molded connector

USB 3.0 cable with molded type A and Micro-B male connector



Application:

Connection cable PC – 3D camera



Cable characteristics:

- mechanically very rugged
- PUR cable suitable for cable tracks

Cable data:

Construction:	3x(2x30AWG)ST+2x24AWG
Insulation:	SABIX®
Outer jacket:	PUR
Outer diameter:	approx. 6.1 mm
Min. bending radius:	10 x O.D.
Peak operating voltage:	max. 350 V

Configuration examples:

item no.	length "L" in cm
S0604-4004-00100	100
S0604-4004-00200	200
S0604-4004-00300	300
S0604-4004-00500	500

Connector:

side 1:	USB 3.0 type A male connector
side 2:	USB 3.0 type A Micro-B connector

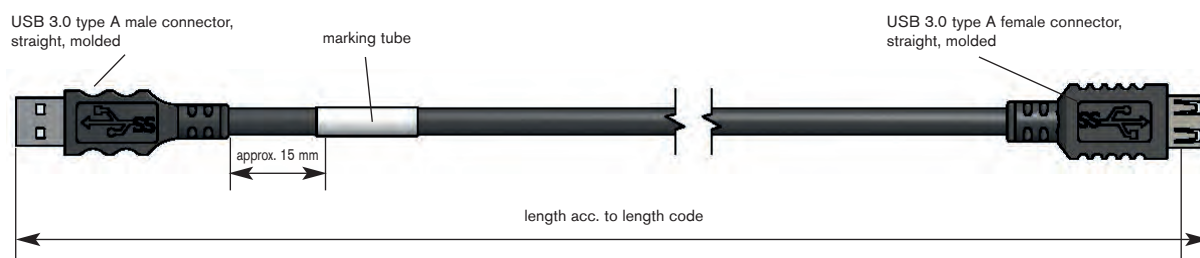
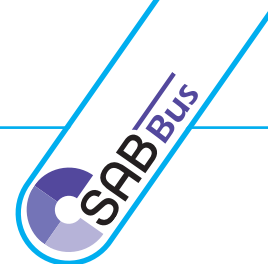
SAB marking:

item number, order number, length

Cables for 3D Measurement

USB 3.0 cable assembly with molded connector

USB 3.0 cable with molded type A male connector and type A female connector



Application:

Connection cable PC – 3D camera



Cable characteristics:

- mechanically very rugged
- PUR cable suitable for cable tracks

Cable data:

Construction:	3x(2x30AWG)ST+2x24AWG
Insulation:	SABIX®
Outer jacket:	PUR
Outer diameter:	approx. 6.1 mm
Min. bending radius:	10 x O.D.
Peak operating voltage:	max. 350 V

Configuration examples:

item no.	length "L" in cm
S0604-4005-00050	50
S0604-4005-00100	100
S0604-4005-00200	200
S0604-4005-00300	300
S0604-4005-00500	500

Connector:

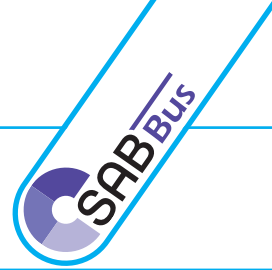
side 1:	USB 3.0 type A male connector
side 2:	USB 3.0 type A female connector

SAB marking:

item number, order number, length

Cables for 3D Measurement

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



2x0.5mm² 6010222 AWM Style 2655 80°C 300V

Marking for USB 2.0 UL 6010222:

SAB BRÖCKSKES · D-VIERSEN · USB 2.0 Leitung · (2x0.22mm²)ST+2x0.5mm² 6010222 AWM Style 2655 80°C 300V



Construction:	USB 2.0 flexible	USB 2.0 UL flexible	USB 2.0 FRNC flexible
Item numbers:	6010122	6010222	6019001
Dimensions:	(2 x 0.22 mm ²) ST + 2 x 0.50 mm ²	(2 x 0.22 mm ²) ST + 2 x 0.50 mm ²	(2 x 0.22 mm ²) ST + 2 x 0.50 mm ²
Conductor:	bare copper strands (0.50 mm ²) silver-plated strands (0.22 mm ²)	bare copper strands (0.50 mm ²) silver-plated strands (0.22 mm ²)	bare copper strands (0.50 mm ²) silver-plated strands (0.22 mm ²)
Insulation:	SABIX®	SABIX®	SABIX®
Color code:	black, red (0.50 mm ²), white, green (0.22 mm ²)	black, red (0.50 mm ²), white, green (0.22 mm ²)	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	non-woven tape	non-woven tape
Shielding:	tinned copper braiding	tinned copper braiding	tinned copper braiding
Jacket material:	PVC	PVC	SABIX®
Jacket color:	black (RAL 9005)	black (RAL 9005)	black (RAL 9005)

Technical data:	USB 2.0 flexible	USB 2.0 UL flexible	USB 2.0 FRNC flexible
Peak operating voltage:	max. 350 V	max. 350 V	max. 350 V
Voltage UL:	—	300 V	—
Testing voltage: conductor/conductor: conductor/shielding:	600 V 600 V	2000 V 2000 V	1500 V 1200 V
Min. bending radius: fixed installation: free movement:	5 x O.D. 10 x O.D.	5 x O.D. 10 x O.D.	5 x O.D. 10 x O.D.
Temperature range VDE: static: flexible:	-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
Burning characteristics:	---	---	flame retardant and self-extinguishing acc. to IEC 60332-1-2 + VDE 0482-332-1-2
Oil resistance:	acc. to internal standard see page O/29	acc. to internal standard see page O/29	—
UL Style:	—	2655	—
Absence of harmful substances:	acc. to RoHS directive of the European Union, see page O/30		

item no.	type	dimensions AWG	outer-ø ±10% inch	outer-ø ±10% mm	cable weight ≈lbs/mft
▶ 6010122	USB 2.0	(2x0.22) ST + 2x0.50	0.268	6.8	40
▶ 6010222	USB 2.0 UL	(2x0.22) ST + 2x0.50	0.276	7.0	43
▶ 6019001	USB 2.0 FRNC	(2x0.22) ST + 2x0.50	0.268	6.8	42

Other dimensions and colors are available on request

Also possible as a
cable assembly with
USB type A or B plug



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Cables for 3D Measurement

USB 2.0 S

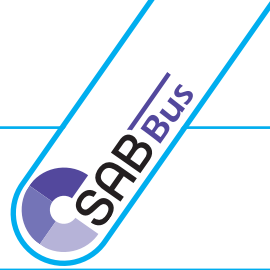
Continuous flex cable, suitable for cable tracks

USB 2.0 S UL/CSA

Continuous flex cable, suitable for cable tracks

USB 2.0 RT UL/CSA

Continuous flex cable, suitable for robots



IEC 21198 80°C 300V CSA AWM I/II A/B 80°C 300V FT2 CE



Marking for USB 2.0 S UL/CSA 6011122:

SAB BRÖCKSKES · D-VIERSEN · USB 2.0 Leitung · (2x0.22mm²)ST+2x0.5mm² 6011122 AWM Style 21198 80°C 300V CSA AWM I/II A/B 80°C 300V FT2 CE



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>
Item numbers:	6011022	6011122	6012022
Dimensions:	(2 x 0.22 mm²) ST + 2 x 0.50 mm²	(2 x 0.22 mm²) ST + 2 x 0.50 mm²	(2 x 0.22 mm²) ST + 2 x 0.50 mm²
Conductor:	bare copper strands (0.50 mm²) silver-plated strands (0.22 mm²)	bare copper strands (0.50 mm²) silver-plated strands (0.22 mm²)	bare copper strands (0.50 mm²) silver-plated strands (0.22 mm²)
Insulation:	SABIX®	SABIX®	SABIX®
Color code:	black, red (0.50 mm²), white, green (0.22 mm²)	black, red (0.50 mm²), white, green (0.22 mm²)	black, red (0.50 mm²), white, green (0.22 mm²)
Stranding:	2 x 0.22 mm² wrapped with alu foil, together with 0.5 mm²		
Wrapping:	non-woven tape	non-woven tape	PTFE foil
Shielding:	tinned copper braiding	tinned copper braiding	wrapping with tinned copper round wires
Wrapping:	non-woven tape	non-woven tape	non-woven tape
Jacket material:	PUR	PUR	PUR
Jacket color:	black (RAL 9005)	black (RAL 9005)	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>
Peak operating voltage:	max. 350 V	max. 350 V	max. 350 V
Voltage UL/CSA:	—	300 V	300 V
Testing voltage: conductor/conductor: conductor/shielding:	600 V 600 V	2000 V 2000 V	2000 V 2000 V
Min. bending radius: fixed installation: free movement: continuous flex:	5 x O.D. 6 x O.D. 7.5 x O.D.	5 x O.D. 6 x O.D. 7.5 x O.D.	5 x O.D. 7.5 x O.D. 10 x O.D.
Torsion angle:	---	---	up to ± 180°/m
Temperature range VDE: static: flexible:	-50/+90°C -40/+90°C	UL/CSA: up to 80°C -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	acc. to IEC 60754-1 + VDE 0482-754-1	—
Oil resistance:	PUR, TPU EN 50363-10-2 + VDE 0207-363-10-2	PUR, TPU EN 50363-10-2 + VDE 0207-363-10-2	PUR, TPU EN 50363-10-2 + VDE 0207-363-10-2
UL Style:	—	21198	21198
Absence of harmful substances:	acc. to RoHS directive of the European Union, see page O/30		

item no.	type	dimensions AWG	outer-ø ±10% inch	outer-ø ±10% mm	cable weight ≈lbs/mft
▶ 6011022	USB 2.0 S	(2x0.22) ST + 2x0.50	0.276	7.0	40
▶ 6011122	USB 2.0 S UL/CSA	(2x0.22) ST + 2x0.50	0.283	7.2	44
▶ 6012022	USB 2.0 RT UL/CSA	(2x0.22) ST + 2x0.50	0.276	7.0	43

Other dimensions and colors are available on request

Also possible as a
cable assembly with
USB type A or B plug



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Cables for 3D Measurement

Sensor minus 50

Low temperature resistant FEP insulated sensor cable up to -50°C



Sensor minus 50 4 x AWG 24/7

Marking for Sensor minus 50 38360424:

SAB BRÖCKSKES · D-VIERSEN · Sensor minus 50 4 x AWG 24/7 3836-0424

Application: Low temperature resistant sensor cable down to -50°C for measuring and testing technology. Supply cable for miniature sensors. Strain gauge supply cable with smallest bending radii for indoor and outdoor use.

Construction:

Conductor:	tinned copper strands, silver-plated from AWG 32
Insulation:	FEP
Color code:	DIN 47100, see below
Wrapping:	foil
Shielding:	tinned copper braiding, optical coverage ≥ 85%
Jacket material:	PUR 420 with matte surface
Jacket color:	black (RAL 9005)

Outstanding features:

- highest flexibility even with low temperatures down to -45°C
- absolutely weather resistant
- very easy installation due to anti-adhesive outer jacket - avoidance of stick-slip effect
- low capacity
- smallest bending radius
- easy harnessing
- small outer diameter

Technical Data:

Peak operating voltage:	max. 48 V
Testing voltage:	conductor/conductor: 600 V conductor/shielding: 600 V
Min. bending radius	
fixed installation:	2 x O.D. (one single bend)
flexible application:	10 x O.D.
Temperature range cable:	
static*:	-50/+125°C
flexible*:	-45/+125°C
Temperature range conductor:	up to +180 °C (short time use up to +205°C)
Low temperature resistance:	-50°C acc. to DIN EN 60811-506
Oil resistance:	very good - TMPU acc. to EN 50363-10-2
Fuel resistance:	good
Battery acid resistance:	good
UV resistance:	acc. to HD 605
Ozone resistance:	acc. to EN 50396
Saltwater resistance:	acc. to UL 1309
Absence of harmful substances:	acc. to RoHS directive of the European Union see page O/30

*+125 °C – up to 2500 hours

item no.	no. of conductors	outer-ø ±10% inch	outer-ø ±10% mm	cable weight ≈lbs/mft
▶ AWG 34/7				
38360234	2	0.087	2.2	5
38360334	3	0.091	2.3	5
38360434	4	0.094	2.4	6
38360634	6	0.102	2.6	7
38360834	8	0.110	2.8	9
▶ AWG 32/7				
38360232	2	0.091	2.3	5
38360332	3	0.091	2.3	6
38360432	4	0.098	2.5	7
38360632	6	0.110	2.8	9
38360832	8	0.122	3.1	11

item no.	no. of conductors	outer-ø ±10% inch	outer-ø ±10% mm	cable weight ≈lbs/mft
▶ AWG 30/7				
38360230	2	0.094	2.4	6
38360330	3	0.098	2.5	7
38360430	4	0.102	2.6	8
38360630	6	0.118	3.0	11
38360830	8	0.126	3.2	13
▶ AWG 28/7				
38360228	2	0.102	2.6	7
38360328	3	0.106	2.7	9
38360428	4	0.110	2.8	9
38360628	6	0.122	3.1	12
38360828	8	0.150	3.8	17

item no.	no. of conductors	outer-ø ±10% inch	outer-ø ±10% mm	cable weight ≈lbs/mft
▶ AWG 26/7				
38360226	2	0.118	3.0	10
38360326	3	0.122	3.1	11
38360426	4	0.150	3.8	15
38360626	6	0.154	3.9	19
38360826	8	0.173	4.4	24
▶ AWG 24/7				
38360224	2	0.126	3.2	11
38360324	3	0.130	3.3	13
38360424	4	0.150	3.8	17
38360624	6	0.173	4.4	24
38360824	8	0.197	5.0	31

Other dimensions and colors are available on request

DIN 47100 color code:

- #1- white
- #2- brown
- #3- green
- #4- yellow
- #5- gray
- #6- pink
- #7- blue
- #8- red



Possible on request:

- harnessed cable
- also available without copper braiding

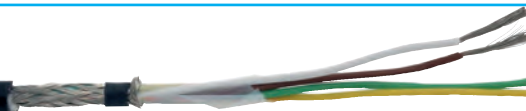
Cables for 3D Measurement

Sensor plus 150

High temperature resistant FEP insulated sensor cable up to +150°C



Sensor plus 150 4 x AWG 24/7



Marking for Sensor plus 150 38370424:

SAB BRÖCKSKES · D-VIERSEN · Sensor plus 150 4 x AWG 24/7 3837-0424

Application: High temperature resistant sensor cable up to max. +150°C for measuring and testing technology. Supply cable for miniature sensors. Strain gauge supply cable for smallest bending radii. Connecting cable for modular technology.

Construction:

Conductor:	tinned copper strands, silver-plated from AWG 32
Insulation:	FEP
Color code:	DIN 47100, see below
Wrapping:	foil
Shielding:	tinned copper braiding, optical coverage ≥ 85%
Jacket material:	PUR 490 with smooth surface
Jacket color:	black (RAL 9005)

Outstanding features:

- Temperature resistance up to +150 °C (up to 3000 hours)
- high flexibility and high abrasion resistance
- high robustness
- low capacity
- smallest bending radius
- easy harnessing
- small outer diameter
- fuel resistant

Technical Data:

Peak operating voltage:	max. 48 V
Testing voltage:	conductor/conductor: 600 V conductor/shielding: 600 V
Min. bending radius	
fixed installation:	2 x O.D. (one single bend)
flexible application:	10 x O.D.
Temperature range cable:	
static*:	-50/+150°C
flexible*:	-45/+150°C
Temperature range conductor:	up to +180°C (short time use up to +205°C)
Oil resistance:	very good - TMPU acc. to EN 50363-10-2
Fuel resistance:	good
Absence of harmful substances:	acc. to RoHS directive of the European Union see page O/30

*+150 °C – up to 3000 hours

item no.	no. of conductors	outer-ø ±10% inch	outer-ø ±10% mm	cable weight ≈lbs/mft
▶ AWG 34/7				
38370234	2	0.087	2.2	5
38370334	3	0.091	2.3	5
38370434	4	0.094	2.4	6
38370634	6	0.102	2.6	7
38370834	8	0.114	2.9	9
▶ AWG 32/7				
38370232	2	0.091	2.3	5
38370332	3	0.091	2.3	6
38370432	4	0.098	2.5	7
38370632	6	0.110	2.8	9
38370832	8	0.122	3.1	11

item no.	no. of conductors	outer-ø ±10% inch	outer-ø ±10% mm	cable weight ≈lbs/mft
▶ AWG 30/7				
38370230	2	0.094	2.4	6
38370330	3	0.098	2.5	7
38370430	4	0.102	2.6	8
38370630	6	0.114	2.9	10
38370830	8	0.126	3.2	12
▶ AWG 28/7				
38370228	2	0.102	2.6	7
38370328	3	0.106	2.7	9
38370428	4	0.110	2.8	9
38370628	6	0.122	3.1	13
38370828	8	0.150	3.8	17

item no.	no. of conductors	outer-ø ±10% inch	outer-ø ±10% mm	cable weight ≈lbs/mft
▶ AWG 26/7				
38370226	2	0.118	3.0	10
38370326	3	0.122	3.1	11
38370426	4	0.130	3.3	13
38370626	6	0.154	3.9	19
38370826	8	0.173	4.4	24
▶ AWG 24/7				
38370224	2	0.126	3.2	11
38370324	3	0.130	3.3	13
38370424	4	0.150	3.8	17
38370624	6	0.173	4.4	24
38370824	8	0.189	4.8	30

Other dimensions and colors are available on request

DIN 47100 color code:

- #1- white
- #2- brown
- #3- green
- #4- yellow
- #5- gray
- #6- pink
- #7- blue
- #8- red



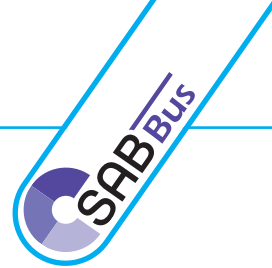
Possible on request:

- harnessed cable
- also available as HV thermo cable type K (1-channel and 4-channel)
- also available without copper braiding

Cables for 3D Measurement

Sensor plus 250

High temperature resistant PFA insulated sensor cable up to +250°C



Sensor plus 250 4 x AWG 32/7

Marking for Sensor plus 250 38390432:

SAB BRÖCKSKES · D-VIERSEN · Sensor plus 250 4 x AWG 32/7 38390432

Application: High temperature resistant sensor cable up to max. +250°C for measuring and testing technology. Supply cable for miniature sensors. Strain gauge supply cable for smallest bending radii. Connecting cable for modular technology.

Construction:

Conductor:	silver-plated copper strands
Insulation:	PFA
Color code:	DIN 47100, see below
Wrapping:	foil
Shielding:	tinned copper braiding, optical coverage ≥ 85%
Jacket material:	PFA
Jacket color:	black (RAL 9005)

Outstanding features:

- Temperature resistance up to +250°C
- low capacity
- absolutely weather resistant
- high abrasion resistance
- very good chemical resistance
- small outer diameter

item no.	no. of conductors	outer-ø ±10% inch	±10% mm	cable weight ≈lbs/mft
▶ AWG 34/7 38390234	2	0.071	1.8	5
▶ AWG 32/7 38390432	4	0.083	2.1	7
▶ AWG 30/7 38390330	3	0.083	2.1	7
▶ AWG 28/7 38390628	6	0.106	2.7	13

Other dimensions and colors are available on request

DIN 47100 color code:

- #1- white
- #2- brown
- #3- green
- #4- yellow
- #5- gray
- #6- pink

Technical Data:

Peak operating voltage:	max. 48 V
Testing voltage:	conductor/conductor: 600 V conductor/shielding: 600 V
Min. bending radius fixed installation: flexible application:	2 x O.D. (one single bend) 10 x O.D.
Temperature range: static: flexible:	-90/+250°C -55/+250°C
Dielectric constant:	approx. 2.1
Burning characteristics:	flame retardant and self-extinguishing acc. to IEC 60332-1-2 + VDE 0482-332-1-2
Oil resistance:	very good
Hydraulic oil resistance:	very good
Fuel resistance:	very good
Battery acid resistance:	very good
UV resistance:	very good
Ozone resistance:	very good
Saltwater resistance:	very good
Absence of harmful substances:	acc. to RoHS directive of the European Union see page O/30



Possible on request:

- harnessed cable
- also available without copper braiding

Production possibilities

Flexible cables and wires “Made in Germany”

As a leading manufacturer we develop and produce cables for industrial purposes.

Our wide range of materials offer a lot of possibilities for your individual product requirement.

The following survey shows an extract of our production possibilities:

Conductor Materials:

- ✓ bare copper
- ✓ tinned copper
- ✓ silver plated copper
- ✓ nickel plated copper
- ✓ nickel
- ✓ nickel pure
- ✓ compensating cable alloys

Insulation and Jacketing Materials:

- ✓ PVC
- ✓ Polyethylene
- ✓ Polypropylene
- ✓ Polyurethane
- ✓ TPE
- ✓ SABIX® (zero halogen)
- ✓ Besilen® - Silicone
- ✓ FEP, ETFE, PFA, PTFE
- ✓ PI foil
- ✓ Fiberglass

Temperature Ranges:

- Thermoplastic Elastomers
- ✓ -50°C up to +145°C
- SABIX®
- ✓ -50°C up to +220°C
- Besilen® - Silicone
- ✓ -40°C up to +220°C
- FEP, ETFE, PFA
- ✓ -90°C up to +260°C
- Fiberglass
- ✓ up to +600°C

Conductors:

- ✓ cross sections 0.055 - 300 mm²
- ✓ unshielded and shielded over 100 conductors

Cable assemblies directly from the manufacturer SAB:

As a full service partner, we are able to offer cable design and production as well as the manufacturing of cable assemblies according to customer's request. Please trust on our experience for decades in the treatment of cables and connectors.

- ✓ cable assemblies according to customer's demands
- ✓ complete cable assemblies
- ✓ UL certified assemblies
- ✓ helix cables
- ✓ HV measuring assemblies

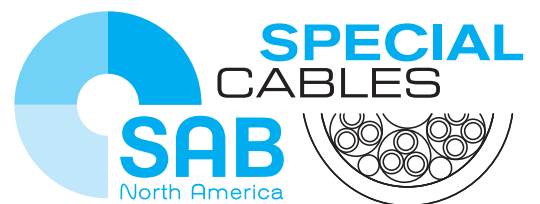
CABLE ASSEMBLIES

MEASUREMENT TECHNOLOGY

Measuring technology for industrial applications

Manufacturer of temperature sensors for industrial applications with 75 years of experience!

- ✓ mineral insulated thermocouples
- ✓ mineral insulated resistance thermometers
- ✓ temperature sensors
- ✓ mobile high voltage measuring technology
- ✓ temperature sensors for vehicle testing



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