USB 2.0 / 3.0
CABLES

SAB Bus

75 Years

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

SPECIAL CABLES

SAB North America

About Us

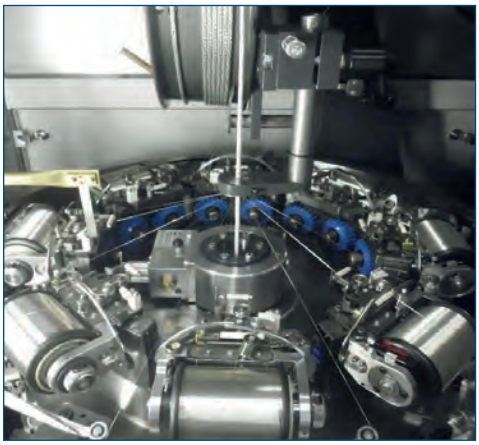
SAB North America is a focused supplier for the automation, industrial machinery, medical, high temperature, and robotics industries, providing cable solutions that meet, exceed, and set new standards in the flexible cable market. In addition to flexible cable products, we offer an extensive inventory 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.

SAB USB 2.0 and USB 3.0 cables were developed for high frequency data transmission for industrial applications because 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 stringent 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; a quick and reliable collection and transmission of data from the camera to the industrial PC are absolutely important. Our highly flexible robot cable USB 2.0 and USB 3.0 were especially developed for this application. It guarantees excellent transmission characteristics as it is demanded for intelligent image processing under extreme industrial application conditions. The use of PC compatible components make possible the recourse to established standards and simplifies further treatment in electronic data processing systems.

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



SAB Service 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

Content

Application range USB 2.0 and USB 3.0 cables

The SAB USB 2.0 and USB 3.0 robot cables were developed for high frequency data transmission in industrial applications where image processing systems are very important. They are the key to efficiency, precision and productivity of robots in a variety of applications wherever quick and reliable collection and transmission of data from the camera to the industrial PC are important. Our highly flexible robot cables were developed for the identification of parts and components, for visual inspection, welded seam control or for the collection of bar codes or type tests.

Selection Chart

	Cable Type	USB 2.0	USB 2.0 UL	USB 2.0 FRNC	USB 2.0 S	USB 2.0 S UL/CSA	USB 2.0 RT UL/CSA	SABIX USB 2.0 flex	USB 3.0 S	USB 3.0 RT	USB 3.0
		6	6	6	7	7	7	8	5	5	5
		USB 2.0 Cables							USB 3.0 Cables		
Basic construction	Shielded	●	●	●	●	●	●	●	●	●	●
	Inner jacket										
	Optical waveguide POF										
Temperature range fixed installation*	+180°C										
	+ 90°C			▮	▮	▮	▮	▮	▮	▮	
	+ 85°C			▮	▮	▮	▮	▮	▮	▮	
	+ 80°C		▮	▮	▮	▮	▮	▮	▮	▮	
	+ 75°C		▮	▮	▮	▮	▮	▮	▮	▮	
	+ 70°C	▮	▮	▮	▮	▮	▮	▮	▮	▮	▮
	- 30°C	▮	▮	▮	▮	▮	▮	▮	▮	▮	▮
	- 40°C				▮	▮	▮	▮	▮	▮	
	- 50°C				▮	▮	▮	▮	▮	▮	
	- 90°C										
Voltage	Nominal voltage 300/500 V										
	Peak operating voltage max. 30V							●			
	Peak operating voltage max. 50V										
	Peak operating voltage max. 90V										
	Peak operating voltage max. 350V	●	●	●	●	●	●		●	●	●
	Voltage UL 30 V										
	Voltage UL resp. CSA 300 V		●			●	●		●	●	●
	Voltage UL resp. CSA 600 V										
	Testing Voltage 600 V	●						●			
	Testing Voltage 750 V										
	Testing Voltage 1000 V										
	Testing voltage 1500 V			●							
	Testing voltage 2000 V		●								
	Testing voltage 3000 V										
Standards and approvals	Halogen-free acc. to IEC 60754-1 + VDE 0482-754-1			●	●	●					
	Halogen-free for rail types										
	Burning characteristics acc. to IEC + VDE			●				●	●	●	●
	Fire performance: no flame propagation acc.to IEC 60332-3-24 + IEC 60332-3-25 CAT C resp. D										
	Fire performance: UL Horizontal Flame Test FT2										
	Fire performance: UL VW1										
	Corrosiveness of conflagration gases										
	Smoke density acc. to IEC 61034 + VDE 0482-1034							●			
	Toxicity acc. to EN 50305 + VDE 0260-305							●			
	UL recognized		●			●	●		●	●	●
	CSA approved					●	●				
	ABS approved										
	Rail type acc. to EN 45545-2							●			
Characteristics	Oil resistance acc. to internal standard	●	●								
	Oil resistance acc. to VDE				●	●	●				
	Oil resistance acc. to EN				●	●	●			●	●
	Chemical resistance										
	Weather resistance										
	Suitable for cable tracks					●			●		
	Torsion angle						2			1	
	Flexibility										

▮ from / to

1 = up to ± 360°/m
2 = up to ± 180°/m

*The temperature range for flexible application is mentioned on the corresponding catalogue page

USB 3.0 Cables

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

SAB Bus

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	nominal outer-ø inch	nominal outer-ø 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

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

CABLE ASSEMBLY POSSIBLE

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

transmission length up to 10 m

SAB Bus

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 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	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	nominal outer-ø inch	nominal outer-ø 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

CABLE ASSEMBLY POSSIBLE

SPECIAL CABLES SAB North America

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USB 2.0 Cables

transmission length up to 10 m

SAB Bus

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

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

Construction:	USB 2.0 S *suitable for cable tracks*	USB 2.0 S UL/CSA *suitable for cable tracks*	USB 2.0 RT UL/CSA *suitable for robots*
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 *suitable for cable tracks*	USB 2.0 S UL/CSA *suitable for cable tracks*	USB 2.0 RT UL/CSA *suitable for robots*
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, TMPU EN 50363-10-2 + VDE 0207-363-10-2	PUR, TMPU EN 50363-10-2 + VDE 0207-363-10-2	PUR, TMPU 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	nominal outer-ø inch	nominal outer-ø 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

CABLE ASSEMBLY POSSIBLE

SABIX® USB 2.0 R flex

Halogen-free continuous flex SABIX® USB 2.0 Rail cable

Marking for SABIX® USB 2.0 R flex 6019013:
SAB BRÖCKSKES · D-VIERSEN · SABIX® USB 2.0 R flex 4x28AWG 6019013

Construction:

Conductor:	bare copper strands, fine wires
Insulation:	SABIX®
Color code:	white, green, red, black
Shielding:	alu. foil + tinned copper braiding Drain AWG 30 of tinned copper under the braid
Jacket material:	SABIX®
Jacket color:	black (RAL 9005)

Outstanding features:

- **low smoke halogen-free (LSHF)**
- **continuous flex**
- **no flame propagation**
- **flame retardant and self-extinguishing**
- **good oil and fuel resistance**
- **fulfills fire protection requirements R15 (EL1A) and R16 (EL1B) acc. to EN 45545-2 for hazard levels HL1-3**
- **flame rertardant acc. to UN/ECE R118**

Technical data:

Peak operating voltage:	max. 30V
Testing voltage:	conductor/conductor: 600 V conductor/shielding: 600 V
Min. bending radius: *fixed installation:* *free movement:*	 5 x O.D. 10 x O.D.
Temperature range: *static:* *flexible*	 -50/+90°C -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.
Burning characteristics:	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 Flame retardant acc. to ISO 6722 (UN/ECE R118)
Toxicity:	acc. to EN 50305 + VDE 0260-305
Smoke density:	acc. to IEC 61034 + VDE 0482-1034
Oil and fuel resistance:	acc. to EN 50264-1 + VDE 0260-264-1
Absence of harmful substances:	acc. to RoHS directive of the European Union see page O/30

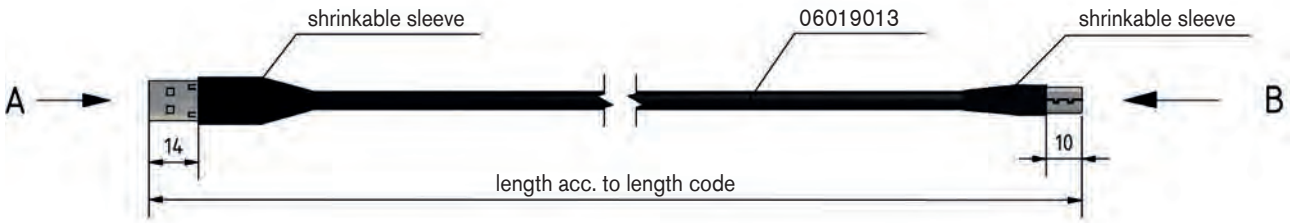
item no.	type	dimensions AWG	nominal outer-ø inch	nominal outer-ø mm	cable weight ≈lbs/mft	ohmic resistance at 20°C max.Ω/km
► 6019013	SABIX® USB 2.0 R flex	28 (7 strand)/4c	0.205	5.2	28	223.8

Other dimensions and colors are available on request

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

CABLE ASSEMBLY POSSIBLE

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

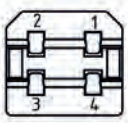


view A (2:1)

Pin configuration

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

view B (3:1)

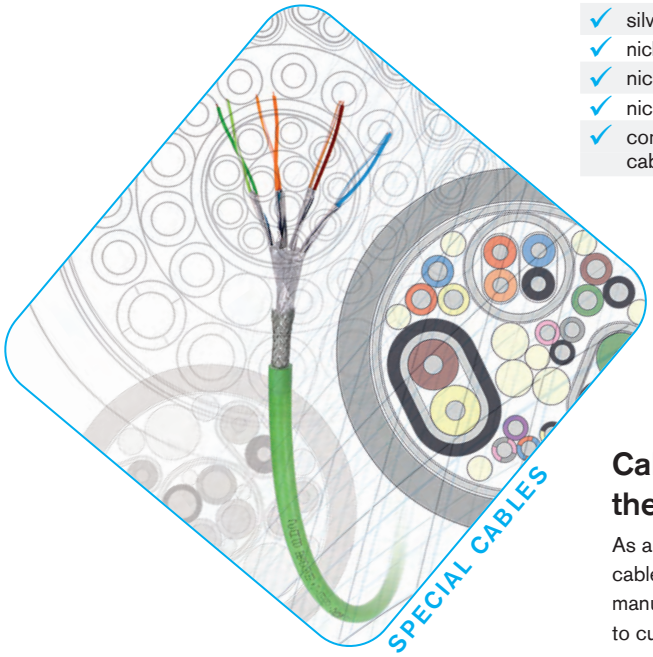


view soldering side

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

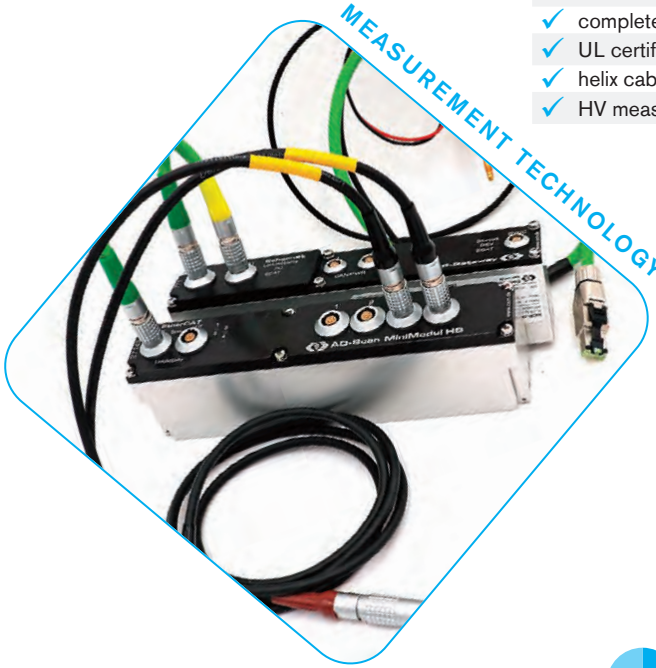
Conductors:

- ✓ 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



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

SPECIAL CABLES
SAB North America

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