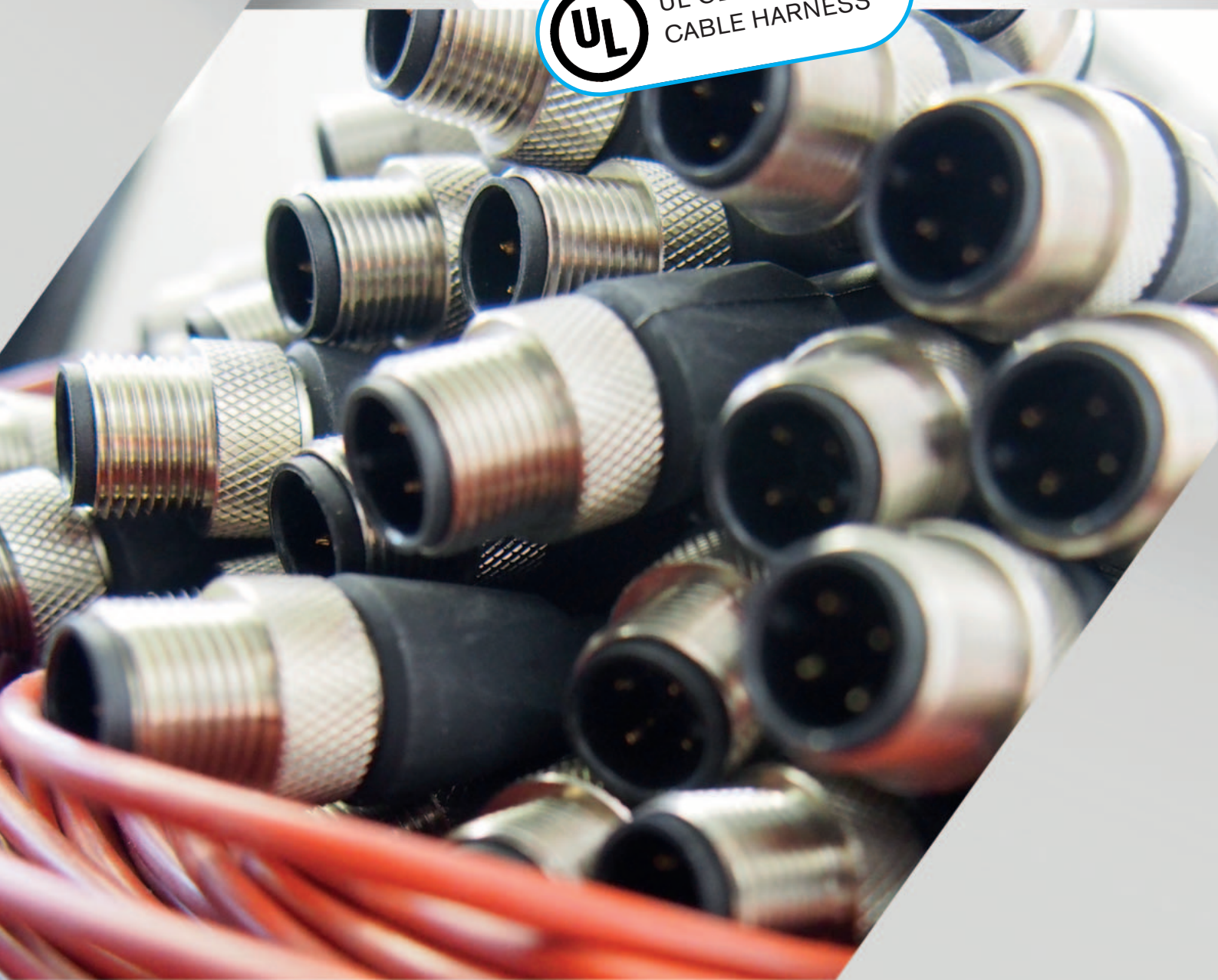


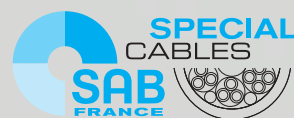
OUR HARNESSED CABLES CREATE INNOVATIVE CONNECTIONS



UL CERTIFIED
CABLE HARNESS



www.sab-cables.com





ENTREPRISE FAMILIALE
TRADITIONNELLE

DEPUIS 1947

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The examples shown above are only a selection of our possibilities. For other solutions our experts are always at your disposal. Please do not hesitate to contact our specialists who will advice you individually for your special application.

FAMILY BUSINESS IN THE THIRD GENERATION

75 years of experience in cable and wire manufacturing as well as in temperature measurement technology turned a one-man business into a company with more than 550 employees. We prove our strength every year with more than 1500 special products according to customers' requirements. Each product is a new challenge for our creative technical team. We at **SAB** see ourselves as a manufacturer and a service provider – in the sense of true partnership and the greatest possible customer orientation.

Today, the quality of our products is known and appreciated in more than 100 countries around the world. In all product ranges, we are certified according to DIN EN ISO 9001. Furthermore, we have implemented an environmental management system for our company according to DIN EN ISO 14001, an occupational health and safety management system according to NLF/ILO-OSH and DIN ISO 45001, and an energy management system according to DIN EN ISO 50001.

And also for the future, our 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 approved burnchamber and laboratory within the company.
EMPLOYEES/WORKERS:	approx. 430 at the plant in Viersen, 550 worldwide
YEARLY SALES:	over 134 Mio. € worldwide
PRODUCTS:	Special Cables Measurement Technology Cable Harnessing
CERTIFICATES AND APPROVALS:	<p>Quality management system acc. to DIN EN ISO 9001 for every manufacturing field</p> <p>Environmental management system acc. to DIN EN ISO</p> <p>Occupational health and safety management acc. to NLF/ILO-OSH and DIN ISO 45001</p> <p>Energy management system acc. to DIN EN ISO 50001</p>



HARNESSED CABLES



UL certified
cable harness

SAB Bröckskes has completed its range of harnessed cables with the certification acc. to UL Standard Wiring Harness „category ZPFW2 (UL)“ and „ZPFW8 (Canada)“ and herewith strengthens its position as cable specialist for cable harness acc. to customer's specification.

Whenever harnessed cables are produced as component part of a final product for the North American and Canadian market, an UL certified cable harness is necessary. With the UL certification **SAB** ensures the detailed traceability of individual components as for example cables, plugs or sleeves and offers highest planning reliability also with special harnessing products.

Underwriter Laboratories Inc. (UL), an independent American test and certification authority confirms the use of the materials and documents required by the final customer according to the UL certification for "Wiring Harness" acc. to ZPFW2 and ZPFW8. In the manufacturer's data base (www.ul.com) **SAB** is listed under file no. E473226 as a qualified and reliable manufacturer.

The requirements for UL certified cable harness are controlled by external audits every three months in order to guarantee the high requirements of the UL standards. Besides our cables, also harnessed versions, are tested in our own laboratory with regard to safety and reliability and are marked with the „Wiring Harness Label“.

On request **SAB** is able to manufacture cable harnessing products acc. to customer's specification acc. to UL Wiring Harnesses ZPFW2 and ZPFW8 from the cable to the harness and offers broad advice.

CERTIFICATE OF COMPLIANCE

Certificate Number 20150123-E473226
Report Reference E473226-20150123
Issue Date 2015-JANUARY-23

Issued to: SAB BROECKSKES GMBH & CO KG
GREFRATHERSTRASSE 204-212B
POSTFACH 12 01 60
41749 VIERSEN GERMANY

This is to certify that representative samples of COMPONENT - WIRING HARNESSSES
General Coverage

Have been investigated by UL in accordance with the Standard(s) indicated on this Certificate.

Standard(s) for Safety: Wiring Harnesses, Subject 764, and CSA Inform Wiring Harnesses No. 1

Additional Information: See the UL Online Certifications Directory at www.ul.com/database for additional information

Only those products bearing the UL Certification Mark should be considered as being covered by UL's Certification and Follow-Up Service.

Recognized components are incomplete in certain constructional features or restricted in performance capabilities and are intended for use as components of complete equipment submitted for investigation rather than for direct separate installation in the field. The final acceptance of the component is dependent upon its installation and use in complete equipment submitted to UL LLC.

Look for the UL Certification Mark on the product.

R. Mally
Rene Mally, Assistant Chief Engineer, Global Inspection and Field Services
UL LLC

Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL. For questions, please contact a local UL Customer Service Representative at www.ul.com/customer-service

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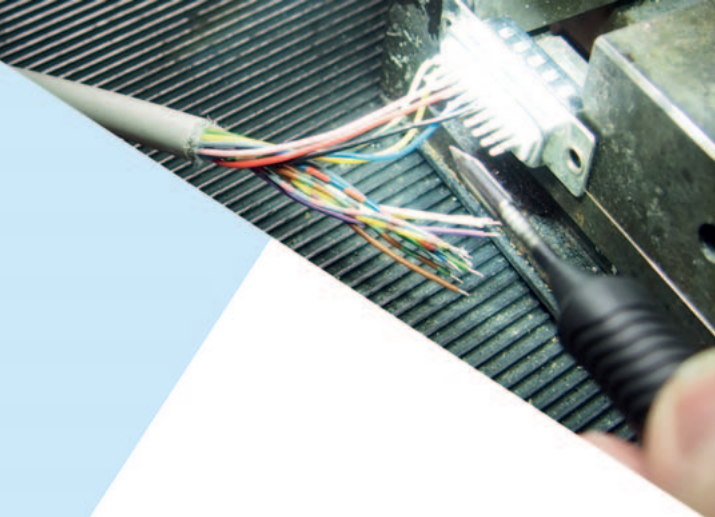
INTO OUR PRODUCTION

We at **SAB BRÖCKSKES** have enlarged our delivery program by the field of cable harnessing. No matter if standard or special construction, we design and produce high-quality cables and wires up to the ready-connected plug. Whether single conductor harnessing, harnessed cables or complete cable sets – we offer a broad program especially according to your requirements and specifications.

Our harnessed cables are used in various industrial branches. Thus, they are used for example in automobile industry, for machine plants and control system construction as well as in household appliance industries.

- various combinations of connector types and terminals
- many application fields of various materials and sheath materials
- construction according to your special requirements
- complete solutions
- high quality standard by continuous quality control

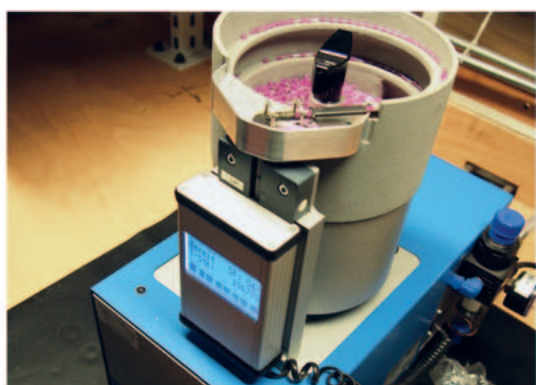




... EVERYTHING FROM ONE SOURCE



Good results are not achieved by good luck or by hazard. Years of experience, a sophisticated technology, expertise and the ability to develop new things as well as the ability to examine and improve the existing are of greatest importance. Our innovative strength is the base to meet successfully the challenges of the existing market and future developments. A permanent development of our products takes place to complete our range of services and to consolidate and expand our position on the market.



The varied combination possibilities of plug types and terminals as well as the different materials processed by us offer economic solutions.



In all product ranges we are certified acc. to DIN EN ISO 9001. Besides, we established an environmental management system for our company acc. to DIN EN ISO 14001, an occupational health and safety management acc. to NLF/ILO-OSH and DIN ISO 45001 as well as an energy management system acc. to DIN EN ISO 50001.



HARNESSED CABLES

USB 2.0 cable flexible at low temperatures

suitable for the application at extremely low temperatures



THE SPECIALIST FOR LOW TEMPERATURES

The requirements on automobiles of tomorrow are growing more and more and are highly specialised. In order to fulfil those requirements the applications outside are intensifying especially in the range of test vehicles. The test runs take place under harsh ambient conditions for example in arctic areas. As a consequence the requirements on the harnesses are also becoming harder. On this basis SAB has developed a USB 2.0 cable that is appropriate for permanent flexible use at -25°C.

CABLE CONSTRUCTION

conductor:	tinned copper strands / silver-plated copper strands
core insulation:	polymer
screen:	alu foil / tinned copper braiding
outer sheath:	Besilen®
sheath colour:	black (RAL 9011)
dimension:	(2 x 0,22 mm ²)ST + 2 x 0,50 mm ²

TECHNICAL DATA

temperature range	
flexible application:	-25°C/+180°C
fixed laying:	-40°C/+180°C
special feature:	flexible at low temperatures
outer diameter:	approx. 6,0 mm

Further cable types are possible on request for example:

- ✓ further dimensions
- ✓ other sheath colours and marking
- ✓ different cable lengths

Free choice of cable harness:

- ☐ USB-A-plug
- ☐ USB-A-socket
- ☐ USB-B-plug
- ☐ USB-B-socket

HARNESSED CABLES

Harnessed COAX cable

with BNC connector assembly



HIGH FREQUENCY TECHNIQUE FOR
RADIO, AUDIO AND VIDEO COMMUNICATION

SAB BRÖCKSKES offers different cable harnesses for high frequency technique (radio, audio and video communication), among others coax cables with different bayonet connectors (BNC). The bayonet offers a reliable connection. Also for this cable harness you can choose different cable and connector types in order to adapt the product to your special requirement profile. SAB has specialised on the particular industrial demands and has developed the corresponding solutions.

CABLE CONSTRUCTION

conductor:	silver-plated copper strands 0,55 mm ²
core insulation:	polymer
screen:	silver-plated copper braiding
outer sheath:	special material
sheath colour:	black (RAL 9005)

TECHNICAL DATA

temperature range	
flexible application:	-40°C/+125°C
fixed laying:	-50°C/+125°C
short-time use:	+150°C
special feature:	silicone free, 75 Ω

Among others the following cable types belong to our delivery program:

- ✓ RG 316
- ✓ RG 58
- ✓ RG 179
- ✓ coax cables with 50 Ω or 75 Ω
- ✓ cables with heat resistant silicone free outer sheath up to +125°C

Please choose from the following plug connectors:

- ☐ Huber & Suhner BNC plug connector
- ☐ Telegärtner BNC plug connector
- ☐ Amphenol BNC plug connector
- ☐ insulated and uninsulated BNC plug connector

HARNESSED CABLES

Harnessed COAX cable

with high frequency connector assembly



Besides cable harnesses with BNC plug connectors, SAB BRÖCKSKES offers further harnesses for high frequency applications for example coax cables with UHF-, mini-UHF or SMB connectors. We don't have a standard product range but special products for individual application ranges. These special applications are for example the requirements on temperature or flexibility.

CABLE CONSTRUCTION

conductor:	silver-plated copper strands 0,55 mm ²
core insulation:	polymer
screen:	silver-plated copper braiding
outer sheath:	special material
sheath colour:	black (RAL 9005)

TECHNICAL DATA

temperature range	
flexible application:	-40°C/+125°C
fixed laying:	-50°C/+125°C
short-time use:	+150°C
special feature:	silicone free, 75 Ω

Among others the following cable types belong to our delivery program:

- ✓ low-noise cable
- ✓ RG 316
- ✓ RG 58
- ✓ RG 179
- ✓ coax cables with 50 Ω or 75 Ω
- ✓ cables with heat resistant, flexible outer sheath up to +150°C

Please choose from the following plug connectors:

- ☐ UHF plug connector
- ☐ mini UHF plug connector
- ☐ MMCX plug connector
- ☐ SMB plug connector
- ☐ ...

HARNESSED CABLES

Connection cable

between CAN-BUS interface and module



CABLE AND PLUG COMBINATION FOR AN OPTIMAL CONNECTION

The SAB BRÖCKSKES delivery program also includes cable harnesses that are used as connection cable between CAN-BUS interfaces and different modules (for example thermo- or A/D module). There is the possibility to choose between different cable types and plug combinations. The connectors can be adapted to the module with regard to size, type, number of pins and pin configuration. Furthermore, different cables are available that are suitable for different applications.

CABLE CONSTRUCTION

conductor:	tinned copper strands
core insulation:	polymer
screen:	tinned copper braiding
outer sheath:	special material
sheath colour:	black (RAL 9005)

TECHNICAL DATA

temperature range	
flexible application:	-40°C/+125°C
fixed laying:	-50°C/+125°C
short-time use:	+150°C
special feature:	silicone free

Further cable types are possible on request for example:

- ✓ sheath material up to +125°C, silicone free
- ✓ different cable lengths
- ✓ variations regarding sheath colour and marking
- ✓ different dimensions, sections and numbers of cores (dependant on plug)

You can choose from the following plug connectors:

- | | |
|--|---|
| <input type="checkbox"/> Lemo connector | <input type="checkbox"/> Yamaichi connector |
| <input type="checkbox"/> ODU connector | <input type="checkbox"/> different SUB-D connector
(for example 9-pole/ 25-pole) |
| <input type="checkbox"/> Fischer connector | |

Connection ends for example:

- ✓ round plug connector 7-pole
SUB-D 9-pole

Cable variations for example:

- ☐ 2 x 0,15 mm²
- ☐ 7 x 0,15 mm²

HARNESSED CABLES

Connection cable

for measuring module and data logger



Also harnessed connection cables for measuring modules and data logger (CAN cable) belong to the SAB product range. These harnessed cables have been mainly developed for the application in test vehicles and test benches, nevertheless they can also be used in other fields. The customer can choose between different cable and plug combinations. The plugs can be adapted with regard to size, construction form, number of poles and pin assignment to the module respectively logger. Furthermore, different cable types can be chosen which are suitable for different application fields.

CABLE CONSTRUCTION

conductor:	tinned copper strands
core insulation:	polymer
screen:	tinned copper braiding
outer sheath:	special material
sheath colour:	black (RAL 9005)

TECHNICAL DATA

temperature range	
flexible application:	-40°C/+90°C
fixed laying:	-50°C/+90°C
short-time use:	+125°C
special feature:	silicone free

Further cable types are possible on request for example:

- ✓ sheath material up to +150°C, silicone free
- ✓ different cable lengths
- ✓ various sheath colours and marking
- ✓ different dimensions, sections and numbers of cores (dependant on plug)

You can choose from the following plug connectors:

- ☐ Lemo connector
- ☐ ODU connector
- ☐ Fischer connector
- ☐ Yamaichi connector

Connection ends for example:

- ✓ round plug connector 5-pole at both sides
- ✓ round plug connector 9-pole at both sides

Cable variations for example:

- ☐ 2 x AWG 28 + 1 x AWG 28 + 2 x 0,50 mm²
- ☐ 2 x AWG 28 + 8 x AWG 28

HARNESSED CABLES

Connection cable

helix/semi-helix for measuring module and data logger



Besides the straight versions SAB offers 2 special types of connection cables. The first one has got a complete helix with a cable length of 0,3 m. The second version is a semi-helix with a cable length of 0,15 m. The advantage of this construction type is that the measuring module respectively data logger can be placed and connected close beside each other. Also for this construction type you can choose between different cable and plug combinations. The plugs can be adapted to the module respectively logger with regard to size, type number of poles and pin assignment. Furthermore, you can choose between different cable types for different applications.

CABLE CONSTRUCTION

conductor:	tinned copper strands
core insulation:	polymer
screen:	tinned copper braiding
outer sheath:	special material
sheath colour:	black (RAL 9005)

TECHNICAL DATA

temperature range	
flexible application:	-40°C/+90°C
fixed laying:	-50°C/+90°C
short-time use:	+125°C
special feature:	silicone free

Further cable types are possible on request for example:

- ✓ sheath material up to +150°C, silicone free
- ✓ different cable lengths
- ✓ various sheath colours and marking
- ✓ different dimensions, sections and numbers of cores (dependant on plug)

You can choose from the following plug connectors:

- ☐ Lemo connector
- ☐ ODU connector
- ☐ Fischer connector
- ☐ Yamaichi connector

Connection ends for example:

- ✓ round plug connector 5-pole at both sides
- ✓ round plug connector 9-pole at both sides

Cable variations for example:

- ☐ 2 x AWG 28 + 1 x AWG 28 + 2 x 0,50 mm²
- ☐ 2 x AWG 28 + 8 x AWG 28

HARNESSED CABLES

Combined cable harness

current supply and connection cable for CAN-Bus interface



POWER AND CONNECTION IN ONE CABLE HARNESS

Another type is the combination of 2 functions in one cable harnessing product. In this way you can put the power supply and the connection cable for the CAN BUS interface in one cable harness. Herewith, you also have the possibility to choose from many components in order to develop a cable harnessing product according to the special requirements of the customer.

CABLE CONSTRUCTION

conductor:	tinned copper strands
core insulation:	polymer
outer sheath:	special material
sheath colour:	black (RAL 9005)

TECHNICAL DATA

temperature range	
flexible application:	-40°C/+90°C
fixed laying:	-50°C/+90°C
short-time use:	+125°C
special feature:	silicone free

Further cable types are possible on request for example:

- ✓ sheath material up to +150°C, silicone free
- ✓ different cable lengths
- ✓ various sheath colours and marking
- ✓ different dimensions, sections and numbers of cores (dependant on plug)

You can choose from the following plug connectors:

- ☐ Lemo connector
- ☐ ODU connector
- ☐ RJ 45 connector
- ☐ SUB-D connector
- ☐ segment connector

Construction examples:

- ☐ round plug connector
2 x segment plugs
+ 1 SUB-D connector
- ☐ round plug connector
2 x segment plugs
+ 1 round plug connector
- ☐ round plug connector
2 x segment plugs
+ RJ 45 plug

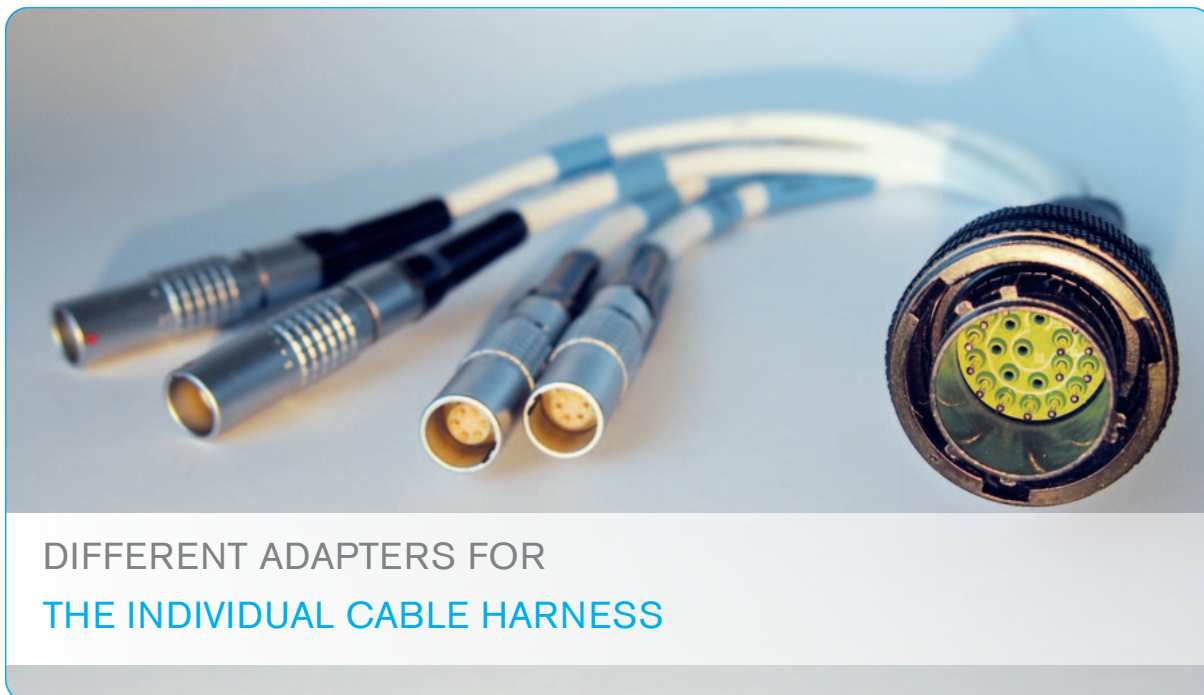
Cable variations for example:

- ☐ 2 x AWG 28 + 1 x AWG 28 +
2 x 0,50 mm²

HARNESSED CABLES

Adapter cable

for the suitable connection



SAB offers different adapters in its product range. These can be designed acc. to special requirements. For example to combine two connection cables so that they have a bigger total length or in order to prolong a sensor cable. The adapters are individually made for the corresponding cable harness or sensor (pin assignment, size, number of poles, etc.)

CABLE CONSTRUCTION

conductor:	tinned copper strands
core insulation:	polymer
screen:	tinned copper braiding
outer sheath:	special material
sheath colour:	black (RAL 9005)

TECHNICAL DATA

temperature range	
flexible application:	-40°C/+90°C
fixed laying:	-50°C/+90°C
short-time use:	+125°C
special feature:	silicone free

Further cable types are possible on request for example:

- ✓ sheath material up to +150°C, silicone free
- ✓ different cable lengths
- ✓ various sheath colours and marking
- ✓ different dimensions, sections and numbers of cores (dependant on plug)

You can choose from the following plug connectors:

- ☐ Lemo connector
- ☐ ODU connector
- ☐ Fischer connector
- ☐ Yamaichi connector

Connection ends for example:

- ✓ round plug connector 5-pole at both sides
- ✓ round plug connector 9-pole at both sides

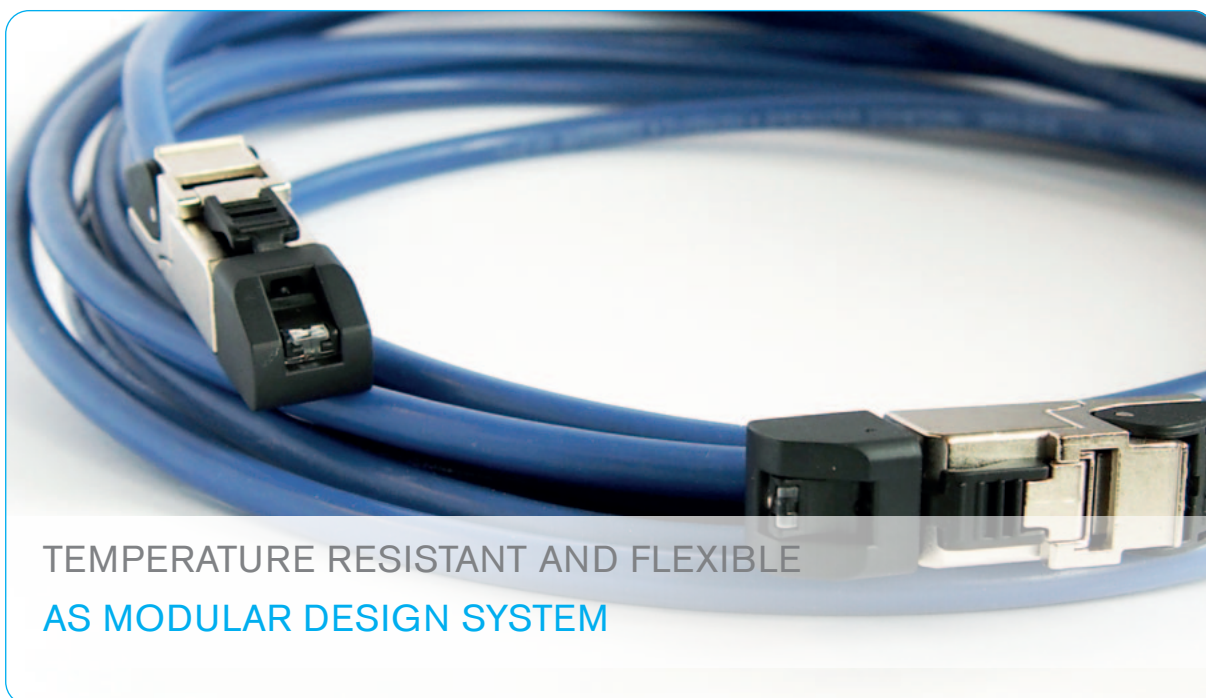
Cable variations for example:

- ☐ 2 x AWG 28 + 1 x AWG 28 + 2 x 0,50 mm²
- ☐ 2 x AWG 28 + 8 x AWG 28
- ☐ 2 x 2 x AWG 28 + 1 x AWG 28

HARNESSED CABLES

Patch cable

with RJ 45 connector assembly



Wherever patch or connection cables with RJ 45 connectors are needed for communication and network technique with particular requirements on temperature resistance or flexibility, SAB BRÖCKSKES has got the corresponding solution in its portfolio. Due to the offer of different plug connectors and our own cable production, the cable harness can be designed individually.

CABLE CONSTRUCTION

conductor:	silver-plated copper strands
core insulation:	PE
screen:	alu foil / tinned copper braiding
outer sheath:	special material
sheath colour:	blue (RAL 5015)

TECHNICAL DATA

temperature range	
flexible application:	-40°C/+90°C
fixed laying:	-50°C/+90°C
short-time use:	+125°C
special feature:	silicone free, Cat. 6

Further cable types are possible on request for example:

- ✓ Besilen® flexible with cold temperatures to -40°C / Besilen® heat resistant up to +220°C
- ✓ sheath material up to 150°C, silicone free
- ✓ different cable lengths
- ✓ various sheath colours and marking
- ✓ different dimensions, sections and number of cores appropriate for CAT 5, CAT 6, CAT 7

You can choose from the following plug connectors:

- ☐ Harting
- ☐ Weidmüller
- ☐ Telegärtner
- ☐ Yamaichi

Free choice of pin assignment:

- ☐ EIA/TIA 568A
- ☐ EIA/TIA 568B
- ☐ IEC
- ☐ REA
- ☐ DIN 47.100

Also possible as crossover cable!

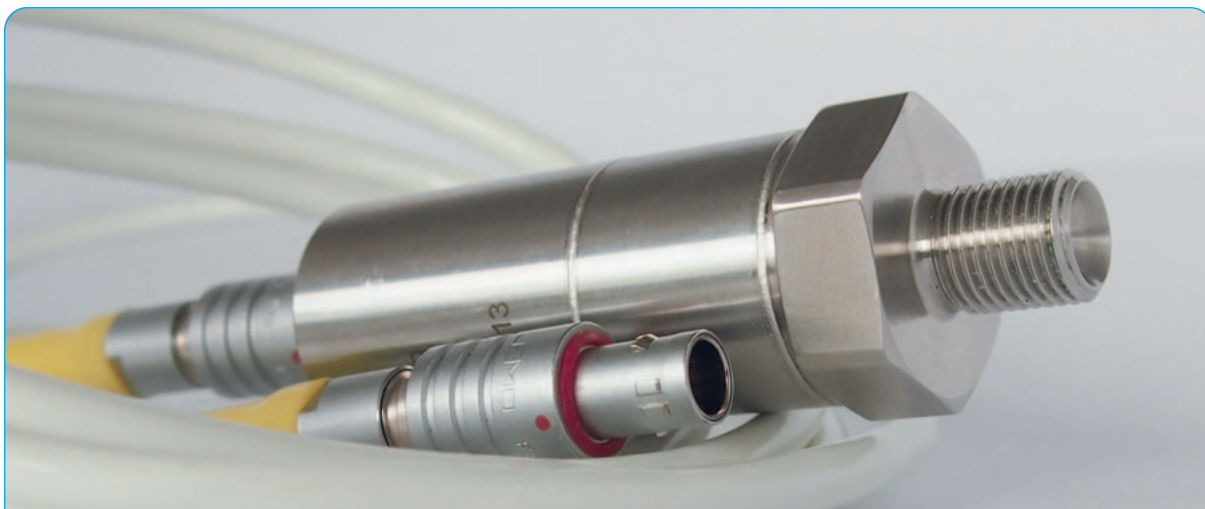
Cable variations for example:

- ☐ 2 x 2 x 0,22 mm²
- ☐ 4 x 2 x 0,22 mm²

HARNESSED CABLES

Sensor cable

with circular connector assembly



HARNESSED SENSOR CABLES FOR PRESSURE, ACCELERATION AND FLOW SENSORS

For different products in sensor technique, SAB BRÖCKSKES offers harnessed sensor cables. It doesn't matter if it concerns pressure, acceleration or flow sensors, we have the adequate solution in our product portfolio. One type is the cable harness with round connectors. These can be adapted with regard to number of poles, encoding, size, etc. to your special application. We can also offer the cable harness with one free end.

CABLE CONSTRUCTION

conductor:	tinned copper strands
core insulation:	polymer
screen:	tinned copper braiding
outer sheath:	special material
sheath colour:	white (RAL 9010)

TECHNICAL DATA

temperature range	
flexible application:	-40°C/+90°C
fixed laying:	-50°C/+90°C
short-time use:	+125°C
special feature:	silicone free

Further cable types are possible on request for example:

- ✓ Besilen® flexible with cold temperatures to -40°C / Besilen® heat resistant up to +220°C
- ✓ sheath material up to 150°C, silicone free
- ✓ different cable lengths
- ✓ various sheath colours and marking
- ✓ different dimensions, sections and number of cores (dependant on plug)

Cable variations for example:

- ☐ 2 x 2 x AWG 24 + x AWG 24/7
- ☐ 7 x 0,15 mm²

You can choose from the following plug connectors:

- ☐ Lemo connector
- ☐ ODU connector
- ☐ Fischer connector
- ☐ Yamaichi connector

HARNESSED CABLES

Sensor cable

with M12 plug connector



HARNESSED CABLES WITH M 12 CONNECTOR

Harnessed sensor cable with a round plug connector and a M12 connector for the linking of the sensor (for example pressure sensor) with a module. The harnessed product can be designed according to the individual application. There are different plug and cable types available.

CABLE CONSTRUCTION

conductor:	tinned copper strands
core insulation:	FEP
screen:	tinned copper braiding
outer sheath:	FEP
sheath colour:	white (RAL 1013)

TECHNICAL DATA

temperature range	
flexible application:	-55°C/+180°C
fixed laying:	-90°C/+180°C
short-time use:	+205°C
special feature:	silicone free chemical resistance

Among others the following cable types belong to our delivery program:

- ✓ sheath material up to + 125°C or + 150°C, silicone free and flexible
- ✓ different cable lengths
- ✓ various sheath colours and marking
- ✓ different dimensions, sections and number of cores (dependant on plug)

You can choose from the following plug connectors:

- ☐ M12 connector, molded
- ☐ Lemo round connector
- ☐ ODU round connector

HARNESSED CABLES

BNC Sensor cable

with circular connector assembly



A "PERFECT" CONNECTION OF SENSOR AND MODULE

Harnessed sensor cable with a round plug connector and a BNC plug for the linking of the sensor with the module. The harnessed product can be designed according to the individual application. There are different plug and cable types available.

CABLE CONSTRUCTION

conductor:	silver-plated copper strands 0,55 mm ²
core insulation:	polymer
screen:	silver-plated copper braiding
outer sheath:	special material
sheath colour:	white (RAL 9010)

TECHNICAL DATA

temperature range	
flexible application:	-40°C/+125°C
fixed laying:	-50°C/+125°C
short-time use:	+150°C
special feature:	silicone free, 75 Ω

Among others the following cable types belong to our delivery program:

- ✓ RG 316
- ✓ RG 58
- ✓ RG 179
- ✓ coax cables with 50 Ω or 75 Ω
- ✓ cables with heat resistant, silicone free outer sheath up to +125°C

You can choose from the following plug connectors:

- ☐ Huber & Suhner BNC plug connector
- ☐ Telegärtner BNC plug connector
- ☐ Insulated and not insulated BNC plug connector
- ☐ Lemo round plug connector
- ☐ ODU round plug connector

HARNESSED CABLES

RG 316 - Multiple coaxial cable with total screen

for the easy cabling of 8 or 16 measuring channels



Measuring tasks are becoming more and more complex and the number of measuring points to be evaluated is increasing. This causes a bigger cabling effort. In order to simplify this task, SAB BRÖCKSKES has developed two new cable types. Both cables are highly flexible and robust at the same time. With the used PUR outer sheath temperatures of up to + 125 °C (2500h) can be achieved. For long distances the cables can be mounted on cable drums which can be handled easily.

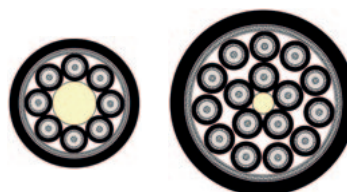
CABLE CONSTRUCTION

conductor:	tinned copper strands
core insulation:	FEP
screen:	tinned copper braiding
inner sheath:	TPE, black numbered
total screen:	tinned copper braiding
outer sheath:	PUR
sheath colour:	black (RAL 9005)

TECHNICAL DATA

voltage:	900 V
temperature range	
flexible application:	-40°C/+90°C
fixed laying:	-50°C/+90°C
short-time use:	+125°C (2500h)
characteristic impedance:	50 Ω ± 5 Ω
frequency range:	max. 3 GHz

Item no.	nominal cross-section mm ²	outer-ø mm	copper figure kg/km	cable weight kg/km
3600-9025	8 x 26 AWG	11,6	132,0	189
3600-9026	16 x 26 AWG	15,0	253,2	339



Available as plug and measuring solution with harnessed BNC connector assembly resp. SUB-D connectors.

HARNESSED CABLES

Connecting cable module/PC

for extreme demands



DIFFERENT MEASURING TECHNIQUE VALUES ANALYSE AND DISPLAY

In order to be able to analyse and show the different measurement values on the display unit, a connection between PC and laptop is needed. For this purpose SAB BRÖCKSKES has different types for the individual requirements in its product range. Among others the values can be transferred at arctic temperatures with flexible cables even at low temperatures. The application isn't impeded by a rigid cable.

CABLE CONSTRUCTION

conductor:	silver-plated copper strands
core insulation:	PE
screen:	alu foil / tinned copper braiding
outer sheath:	special material
sheath colour:	blue (RAL 5015)

TECHNICAL DATA

temperature range	
flexible application:	-40°C/+90°C
fixed laying:	-50°C/+90°C
short-time use:	+125°C
special feature:	silicone free, Cat. 6

Further cable types are possible on request for example:

- ✓ Besilen® flexible with cold temperatures to -40°C / Besilen® heat resistant up to +220°C
- ✓ sheath material up to 150°C, silicone free
- ✓ different cable lengths
- ✓ various sheath colours and marking
- ✓ different dimensions, sections and number of cores appropriate for CAT 5, CAT 6, CAT 7 (dependant on plug)

You can choose from the following plug connectors:

- | | |
|---|--|
| <input type="checkbox"/> Harting RJ 45 plug | <input type="checkbox"/> Weidmüller RJ 45 plug |
| <input type="checkbox"/> Telegärtner RJ 45 plug | <input type="checkbox"/> ODU round connector |
| <input type="checkbox"/> Lemo round connector | |

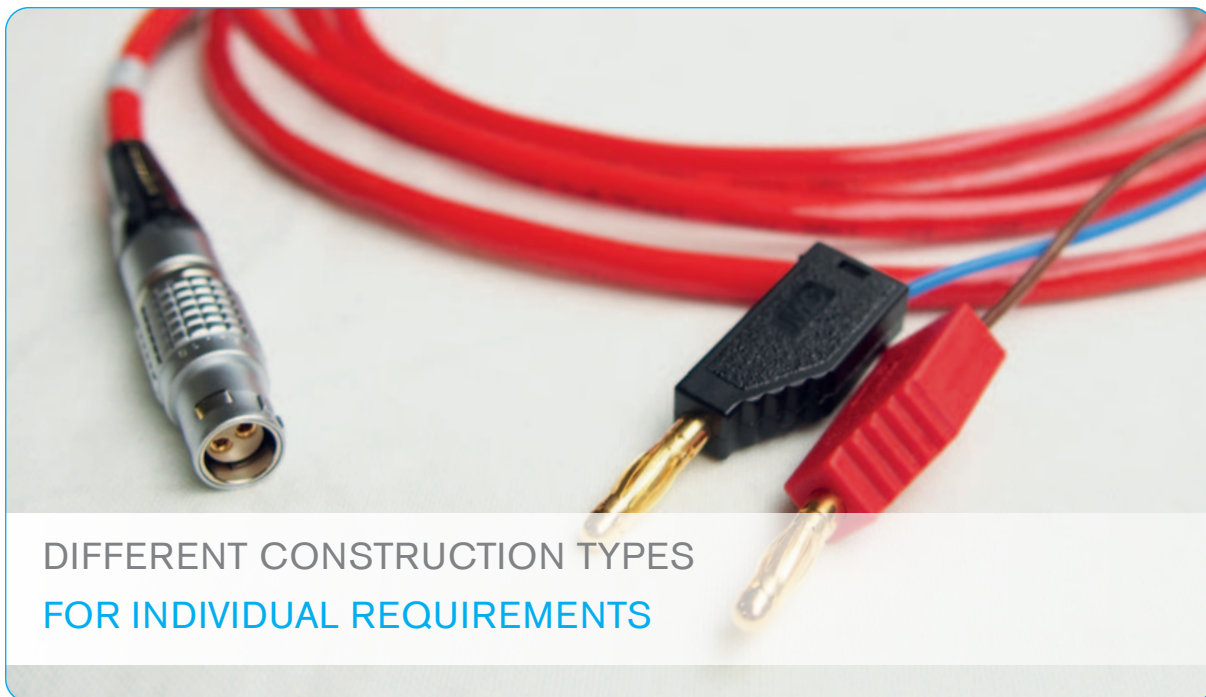
Cable variations for example:

- ☐ 2 x 2 x 0,22 mm²
- ☐ 4 x 2 x 0,22 mm²

HARNESSED CABLES

Current supply cable

for data transmission and voltage supply of modules



Besides different harnesses cables for data transmission, SAB BRÖCKSKES also offers various harnessing products for the current supply of modules. There are also different construction types available that can be adapted to your special requirements.

CABLE CONSTRUCTION

conductor: tinned copper strands
core insulation: FEP
outer sheath: special material
sheath colour: traffic red (RAL 3020)

TECHNICAL DATA

temperature range
flexible application: -40°C/+90°C
fixed laying: -50°C/+90°C
short-time use: +125°C
special feature: silicone free

Further cable types are possible on request for example:

- ✓ sheath material up to +150°C, silicone free
- ✓ different cable lengths
- ✓ various sheath colours and marking
- ✓ different dimensions, sections and numbers of cores (dependant on plug)

You can choose from the following plug connectors:

- ☐ Lemo plug connector
- ☐ ODU plug connector
- ☐ Fischer plug connector
- ☐ Yamaichi plug connector
- ☐ segment plug

Connection ends for example:

- ☐ round plug connector 2-pole
2 x segment plugs
- ☐ Lemo round plug connector 6-pole
2 x segment plugs

Cable variations for example:

- ☐ 2 x 0,75 mm²
- ☐ 2 x AWG 28 + 1 x AWG +
2 x 0,50 mm²

HARNESSED CABLES

Special cable

with male connector and socket plug assembly



PRODUCT SOLUTIONS FOR ROBOT APPLICATIONS

Another industrial sector in which SAB cable harnessing products are used is the robot industry. We offer a variety of product solutions which are adapted to the individual application conditions, for example a cable harness product for the control of the robot welding tongs. For this cable harness a divided, abrasion resistant servo cable is used that is connected to heavy industrial connectors with a double cable outlet.

CABLE CONSTRUCTION

conductor: bare copper strands
core insulation: TPK
screen: tinned copper braiding
outer sheath: PUR
sheath colour: black (RAL 9005)

TECHNICAL DATA

temperature range
flexible application: -40°C/+80°C
fixed laying: -50°C/+80°C
special feature: abrasion resistant

Among others the following cable types belong to our delivery program:

- ✓ Besilen® flexible with cold temperatures to -40°C / Besilen® heat resistant up to +220°C
- ✓ sheath material up to 150°C, silicone-free
- ✓ different cable lengths
- ✓ various sheath colours and marking
- ✓ different dimensions, sections and number of cores (dependant on plug)

You can choose from the following plug connectors:

- ☐ Harting plug connector
- ☐ Weidmüller plug connector
- ☐ Wieland plug connector

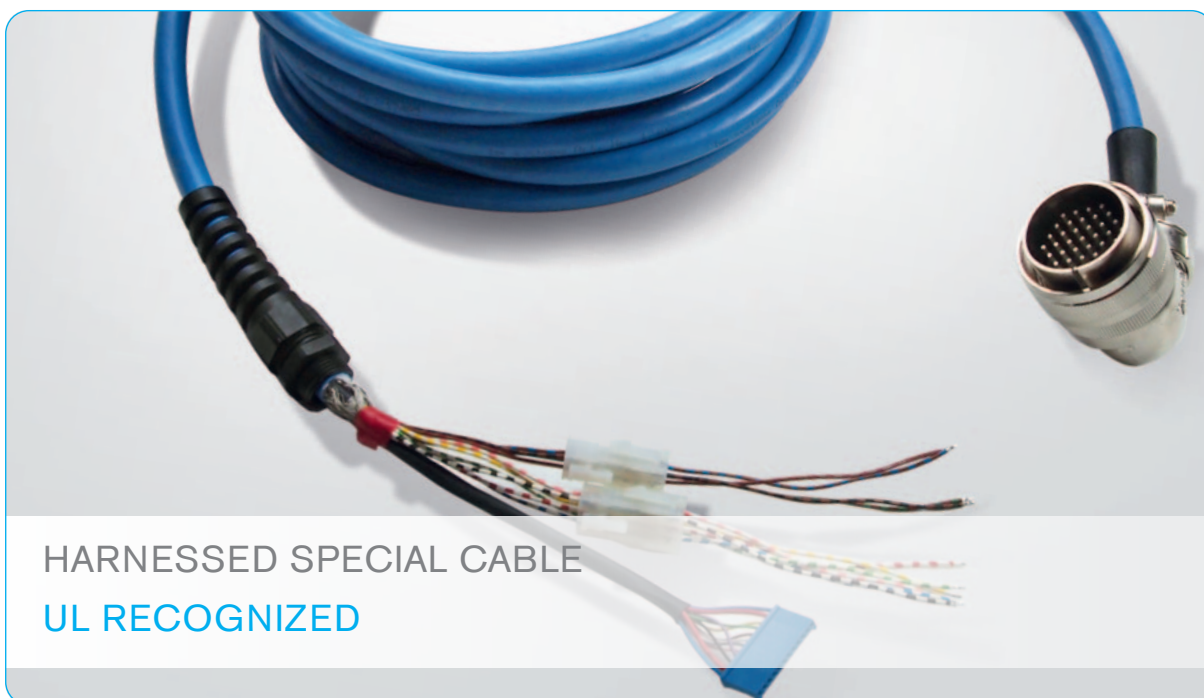
Cable variations for example:

- ☐ (4 x 2 x 0,25 mm²)D + 2 x (2 x 0,50 mm²)D + (5 x 0,50 mm²)D + (5 x 1,5 mm²)D
- ☐ (4 x 2 x 0,25 mm²)D + 2 x (2 x 0,50 mm²)D + (5 x 0,50 mm²)D + (4 x 0,75 mm²)D

HARNESSED CABLES

Cable harness for robots

with 37-pin angle plug, AMP/Molex connector assembly



The shown product is equally used for the robot industry, particularly for paint robots. This type has got a 37-pole angle plug on the one side and an AMP Molex connector on the other side. According to the customer's requirements the cable harness can be adapted individually.

CABLE CONSTRUCTION

conductor: bare copper strands
core insulation: TPK
screen: tinned copper braiding
outer sheath: PUR
sheath colour: black

TECHNICAL DATA

temperature range
flexible application: -40°C/+80°C
fixed laying: -50°C/+80°C
special feature: UL recognized

Further cable types are possible on request for example:

- ✓ Besilen® flexible with cold temperatures to -40°C / Besilen® heat resistant up to +220°C
- ✓ sheath material up to 150°C, silicone-free
- ✓ different cable lengths
- ✓ various sheath colours and marking
- ✓ different dimensions, sections and number of cores (dependant on plug)

You can choose from the following plug connectors:

- ☐ Molex plug connector
- ☐ Weidmüller plug connector
- ☐ Wieland plug connector
- ☐ ITT plug connector

Cable variations for example:

- ☐ (8 x 0,50 mm²)C + (4 x 0,50 mm²)C + 4 x 2 x 0,25 mm² + 4 x 0,50 mm² + 6 x 1 x 0,50 mm²D

HARNESSED CABLES

Cable harness for robots

with Harting connector assembly and signal socket connector assembly



Here is shown another cable harnessing product for robot industry. This type shows a Harting plug connector on one side and a signal socket connector on the other side. According to the customer's requirements the cable harness can be adapted individually.

CABLE CONSTRUCTION

conductor:	bare copper strands
core insulation:	TPK
screen:	tinned copper braiding
outer sheath:	PUR
sheath colour:	black

TECHNICAL DATA

temperature range	
flexible application:	-15°C/+80°C
fixed laying:	-50°C/+80°C
special feature:	UL recognized, CSA approved

Further cable types are possible on request for example:

- ✓ Besilen® flexible with cold temperatures to -40°C / Besilen® heat resistant up to +220°C
- ✓ sheath material up to 150°C, silicone-free
- ✓ different cable lengths
- ✓ various sheath colours and marking
- ✓ different dimensions, sections and number of cores (dependant on plug)

You can choose from the following plug connectors:

- | | |
|---|--|
| <input type="checkbox"/> Harting plug connector | <input type="checkbox"/> Weidmüller plug connector |
| <input type="checkbox"/> Wieland plug connector | <input type="checkbox"/> ITT plug connector |
| <input type="checkbox"/> Intercontec plug connector | |

Cable variations for example:

- ☐ 8 x (2 x 2 x 0,14 mm² + 2 x 0,34 mm²)C + 4 x 0,50 mm²

HARNESSED CABLES

Multi bus cable

with 17-pole socket and plug connector



This cable harnessing product is used in the robot industry as highly flexible type for the robot cable-hose assembly or as standard flexible type connected to the robot base. Both types guarantee full protection against electro magnetic interference. M23 round plug connectors in straight and angle version are used. Metal or plastic types are available.

CABLE CONSTRUCTION

conductor: bare copper strands
core insulation: TPK
screen: tinned copper braiding
outer sheath: PUR
sheath colour: red lilac

TECHNICAL DATA

temperature range
flexible application: -20°C/+70°C
fixed laying: -30°C/+70°C
special feature: EMC protected

Further cable types are possible on request for example:

- ✓ Besilen® flexible with cold temperatures to -40°C / Besilen® heat resistant up to +220°C
- ✓ sheath material up to 150°C, silicone-free
- ✓ different cable lengths
- ✓ various sheath colours and marking
- ✓ different dimensions, sections and number of cores (dependant on plug)

You can choose from the following plug connectors:

- | | |
|--|---|
| <input type="checkbox"/> Binder plug connector | <input type="checkbox"/> Hummel plug connector |
| <input type="checkbox"/> Weidmüller plug connector | <input type="checkbox"/> Intercontec plug connector |
| <input type="checkbox"/> Phoenix plug connector | |

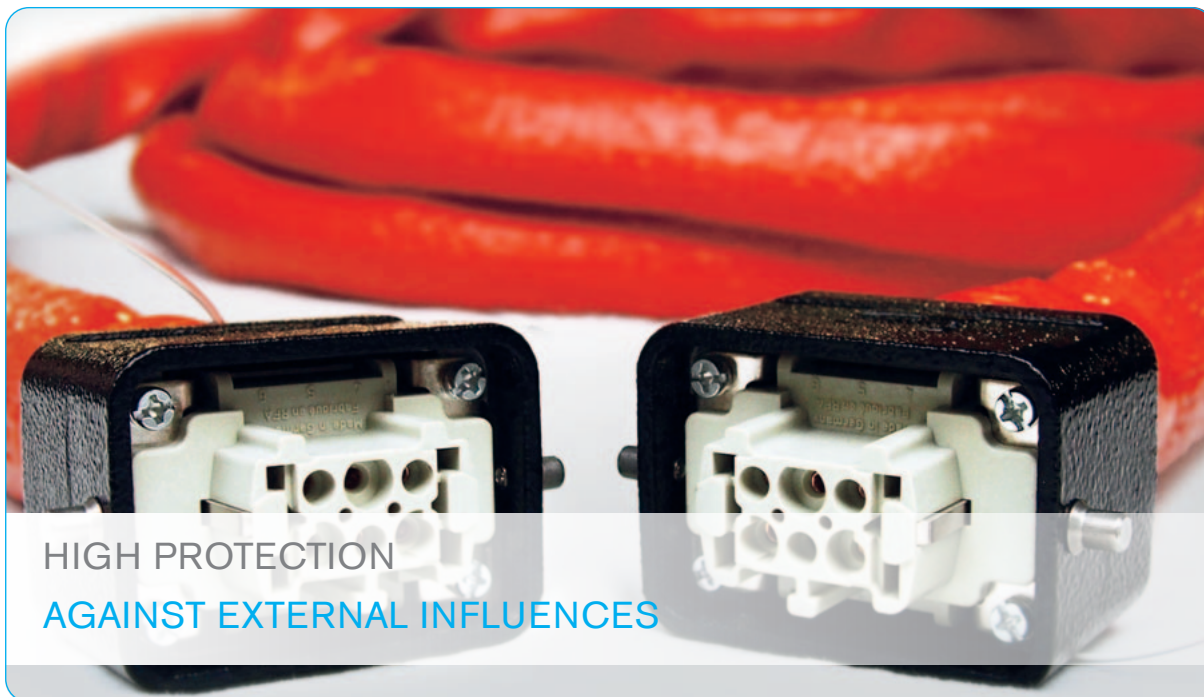
Cable variations for example:

- ☐ 2 x (2 x 0,25 mm²)D + 2 x (2 x 0,34 mm²)D + 1,0 mm² + (2 x 0,29 mm²)D + 2 x (2 x 1,0 mm²)D

HARNESSED CABLES

FEP insulated hybrid cable

with connector housing



The steel industry is another field where SAB BRÖCKSKES cable harnessing products are used. The above shown cable harness consists of a hybrid cable and 2 connector housings. Additionally a heat shrinkable sleeve protects the cable against external influences (for example fire). This special combination transfers data (Profibus) and power at the same time.

CABLE CONSTRUCTION

conductor: tinned copper strands
core insulation: FEP
screen: tinned copper braiding
outer sheath: FEP

TECHNICAL DATA

temperature range
flexible application: -55°C/+180°C
fixed laying: -55°C/+180°C

Among others the following cable types belong to our delivery program:

- ✓ Besilen® flexible with cold temperatures to -40°C / Besilen® heat resistant up to +220°C
- ✓ sheath material up to 150°C, silicone-free
- ✓ different cable lengths
- ✓ various sheath colours and marking
- ✓ different dimensions, sections and number of cores

Cable variations for example:

- ☐ 2 x 0,22 mm² + 3 x 1,50 mm²

You can choose from the following plug connectors:

- ☐ Binder plug connector
- ☐ Weidmüller plug connector
- ☐ Phoenix Contact plug connector
- ☐ Harting plug connector

HARNESSED CABLES

Cable harness with valve connector

for special machine construction



Machine construction is another field where products from SAB BRÖCKSKES GmbH & Co. KG are used. Cable harnesses are for example installed in textile machines. The above shown product contains a current-carrying cable to supply an energy-efficient textile machine. On one side a valve connector is mounted and on the other side a conductor plate. For special machine construction, SAB offers a variety of product solutions.

CABLE CONSTRUCTION

conductor: bare copper strands
core insulation: PVC
screen: tinned copper braiding
outer sheath: PVC
sheath colour: grey

TECHNICAL DATA

temperature range
flexible application: + 5°C/+70°C
fixed laying: -40°C/+70°C

Further cable types are possible on request for example:

- ✓ Besilen® flexible with cold temperatures to -40°C / Besilen® heat resistant up to +220°C
- ✓ sheath material up to 150°C, silicone-free
- ✓ different cable lengths
- ✓ various sheath colours and marking
- ✓ different dimensions, sections and number of cores

Cable variations for example:

- ☐ 3 x 1,0 mm²

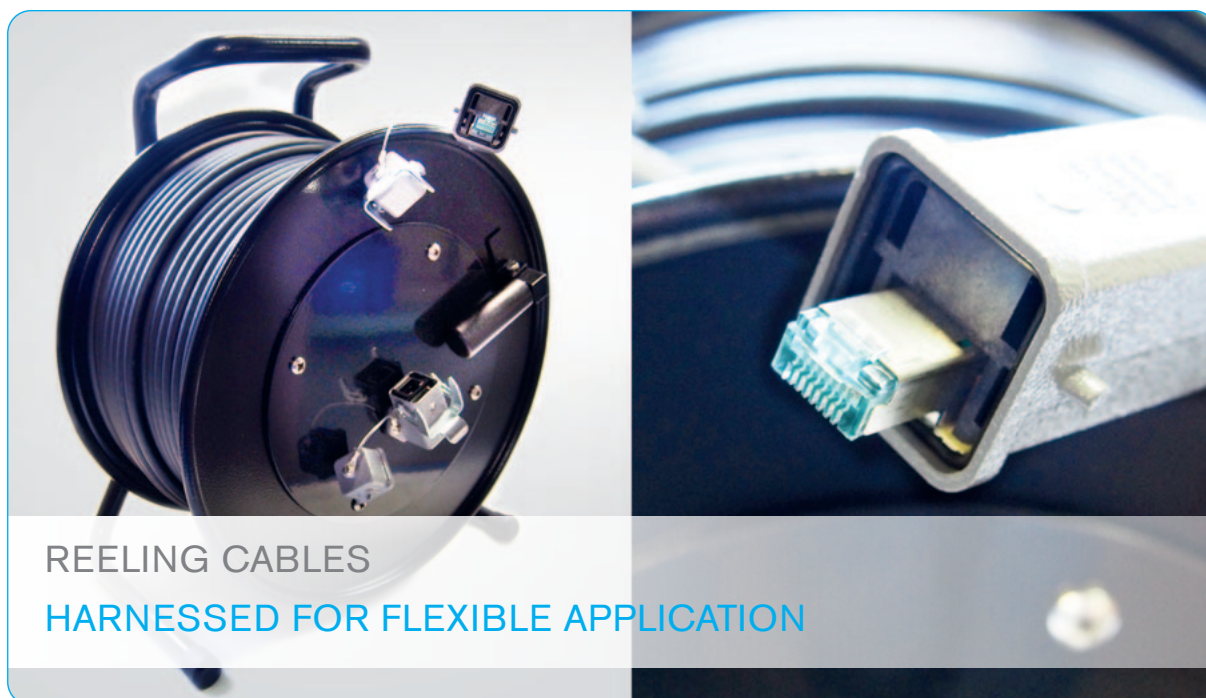
You can choose from the following plug connectors:

- | | |
|---|--|
| <input type="checkbox"/> Harting plug connector | <input type="checkbox"/> Weidmüller plug connector |
| <input type="checkbox"/> Wieland plug connector | <input type="checkbox"/> ITT plug connector |

HARNESSED CABLES

Reeling CAT 5 cable

highly flexible with 8-pole RJ45 plug on a cable drum with angle plug



Besides the cables and cable harnesses for flexible application, SAB also offers harnessed products with reeling cables. Due to a special construction it is for example possible to produce an Ethernet cable as reeling type. This is for example used for speed measurement devices and is appropriate for outdoor use. On request SAB also offers customized solutions for a broad application range.

CABLE CONSTRUCTION

conductor:	tinned copper strands
core insulation:	special material
screen:	alu foil / tinned copper braiding
outer sheath:	PUR
sheath colour:	black (RAL 9005)

TECHNICAL DATA

temperature range	
flexible application:	-20°C/+90°C
fixed laying:	-20°C/+90°C
special feature:	silicone free, Cat. 5

Among others the following cable types belong to our delivery program:

- ✓ Besilen® flexible with cold temperatures to -40°C / Besilen® heat resistant up to +220°C
- ✓ sheath material up to 150°C, silicone-free
- ✓ different cable lengths
- ✓ various sheath colours and marking
- ✓ different dimensions, sections and number of cores suitable for CAT 5/ CAT 6/ CAT 7

Cable variations for example:

- ☐ 4 x 2 x 0,75 mm²

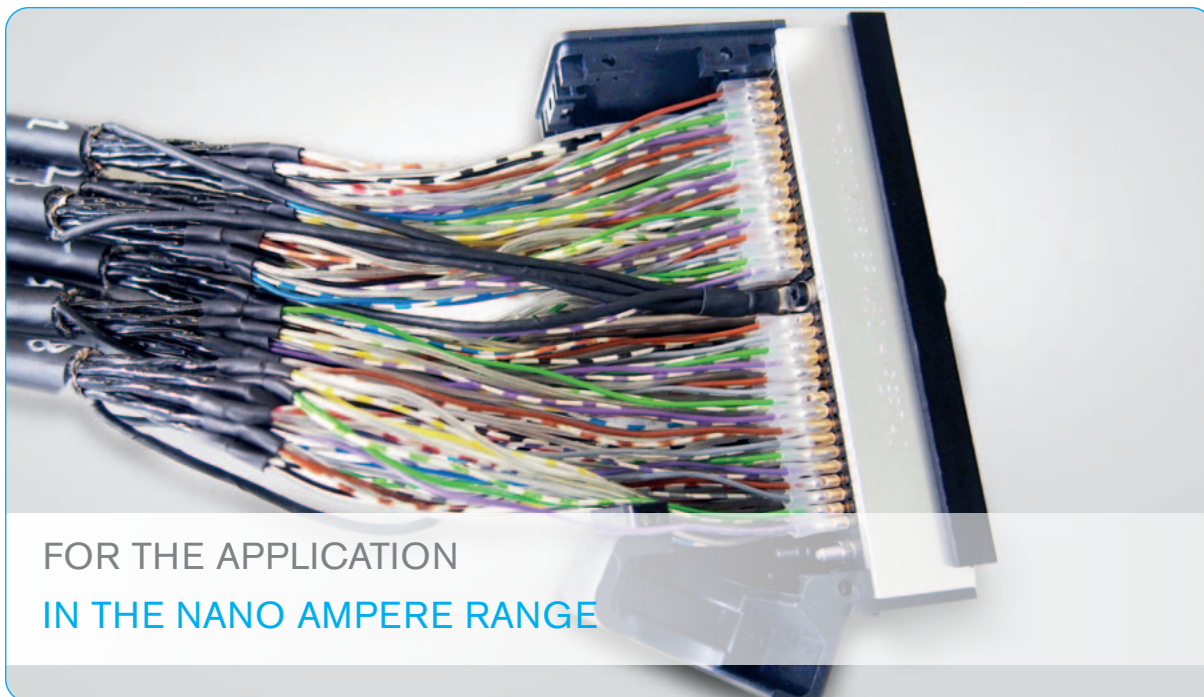
You can choose from the following plug connectors:

- ☐ Harting RJ 45 plug
- ☐ Weidmüller RJ 45 plug
- ☐ Telegärtner RJ 45 plug
- ☐ different cable drums

HARNESSED CABLES

Special connection cable

with 320-pin port connector and 50-pin Sub-D male connector



This cable harnessing product is used in test equipment. This test equipment is used for the electric function control with the production of wafers. The SAB cable harness is applied to transfer the voltage from the electronics to the specimen. Herewith, currents within the Nano ampere range are treated. It is important for this cable harnessing product that a constant current is available and the soiling of the contact surface by greases has to be avoided.

CABLE CONSTRUCTION

conductor: tinned copper strands
core insulation: TPK
screen: alu foil
outer sheath: PUR
sheath colour: black (RAL 9005)

TECHNICAL DATA

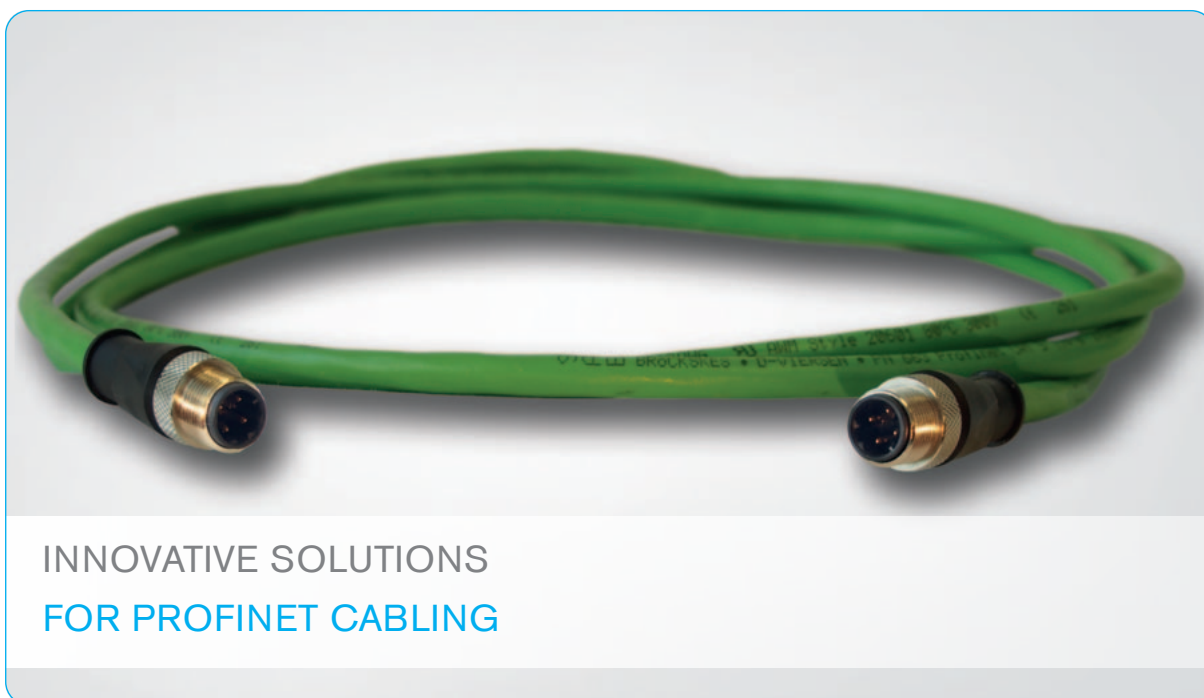
temperature range
flexible application: -20°C/+60°C
fixed laying: -20°C/+60°C

Cable variations for example:

- ☐ multi core cables, screened

Harnessed Profinet cable

suitable for cable tracks with M12 male connector assembly



INNOVATIVE SOLUTIONS FOR PROFINET CABLING

For the field bus cabling of Profinet field bus systems in industrial sectors. This cable type is used for example in cable chain applications for automation and machine and plant construction with rough environments. The PUR outer sheath is resistant against rough environmental conditions.

CABLE CONSTRUCTION

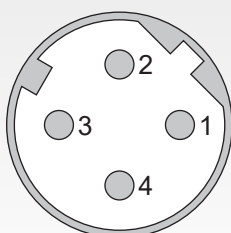
conductor:	tinned copper strands
core insulation:	special polymer
screen:	alu foil and tinned copper braiding
outer sheath:	PUR
sheath colour:	green (RAL 6018)

TECHNICAL DATA

min. bending radius:	continuously flexible 15 x d
temperature range	
flexible application:	-20/+70°C
fixed laying:	-30/+70°C
special feature:	characteristic impedance 100Ω ± 10Ω CAT 5 with reference to EN 50173-1, oil resistant, suitable for cable tracks

Pin configuration:

pin1:	yellow
pin2:	white
pin3:	orange
pin4:	blue
housing:	screen



Plug types:

- ☐ M12 plug(male) 4-pole, D-coded
- ☐ M12 socket (female) 4-pole, D-coded
straight or tilted
moulded or mounted

Harnessed Profibus cable

suitable for cable tracks with M12 male connector assembly



PROFIBUS CABLES FOR CABLE CHAIN APPLICATIONS

For the field bus wiring in automation technique. These bus cables transfer Profibus signals with different cable and plug combinations. The PUR cable for cable chain applications is resistant against rough environmental conditions in industrial applications.

CABLE CONSTRUCTION

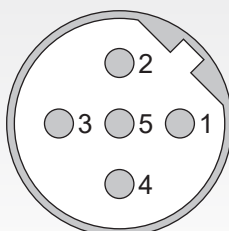
conductor:	bare copper strands
core insulation:	TPK
screen:	alu foil und tinned copper braiding
outer sheath:	PUR
sheath colour:	red lilac (RAL 4001)

TECHNICAL DATA

min. bending radius:	continuously flexible 12 x d
temperature range	
flexible application:	-40/+80°C
fixed laying:	-40/+80°C
special feature:	characteristic impedance at 3 - 20 MHz: 150Ω ± 10% with reference to EN 50170, oil resistant, suitable for cable tracks

Pin configuration:

pin1:	n.b.
pin2:	green
pin3:	n.b.
pin4:	red
pin5:	n.b.
housing:	screen



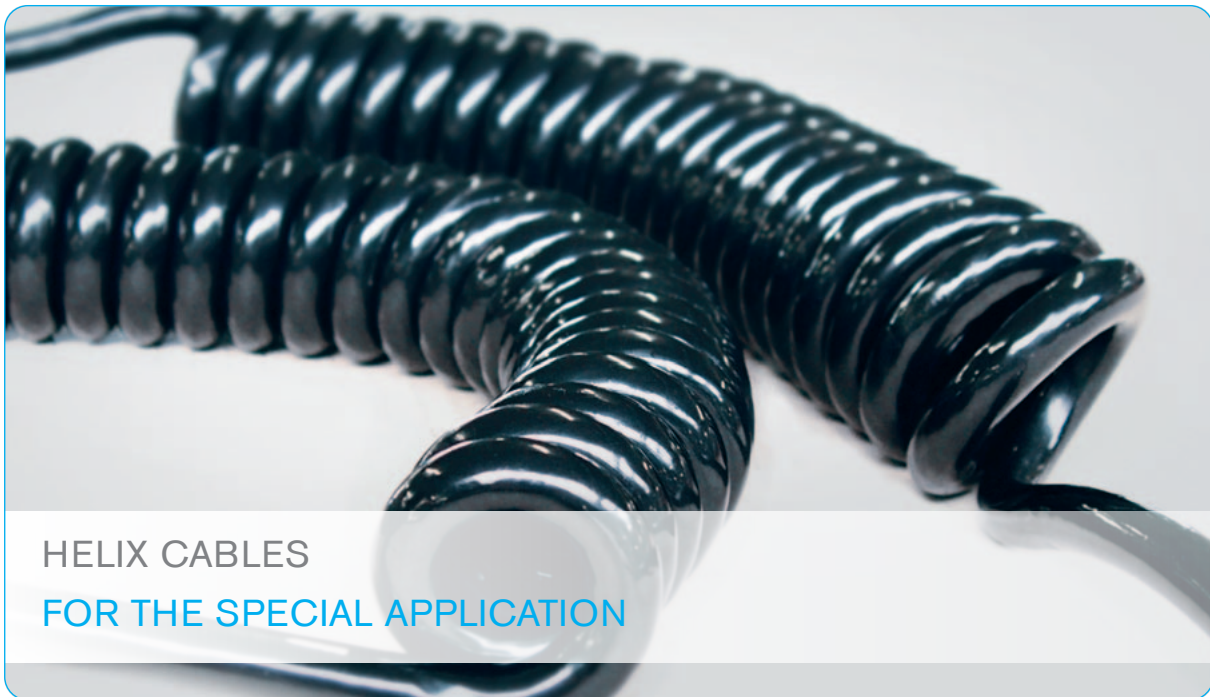
Plug types:

- ☐ M12 plug(male) 5-pole, B-coded
- ☐ M12 socket (female) 4-pole, D-coded straight or tilted moulded or mounted

HARNESSED CABLES

Helix cable

with axial and radial outgoing cable ends



HELIX CABLES
FOR THE SPECIAL APPLICATION

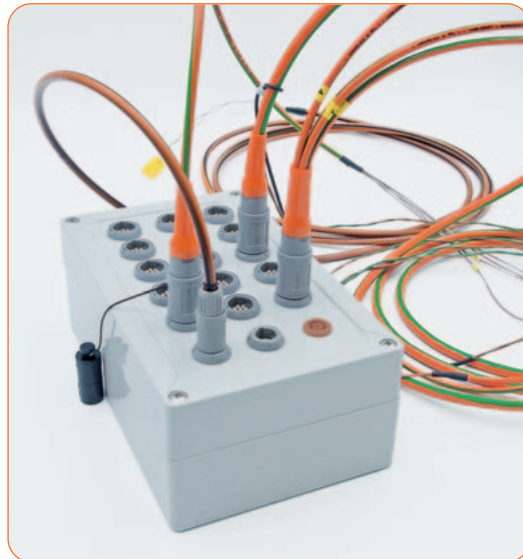
SAB BRÖCKSKES GmbH & Co. KG also offers to design cable harnessing products with helix cables. The construction of the cable harness can be adapted to your special demands. In order to fix detailed parameters we offer this contact form.

Besides the existing cables in the SAB catalogue "Flexible cables" also special cables can be offered. For such an offer we kindly ask you to furnish all details available (for new productions please note possible minimum order quantities).

It doesn't matter if radial or axial outgoing cables, end sleeves, M12 or special connectors, the cables can be chosen individually. This is also valid for the required cable lengths and helix parameters. We would be glad to submit to you our individual offer.

HV measurement technology / connection box

equipotential bonding of installed HV sensors type K / NTC



Connection box with fifteen 8-pole Redel sockets for thermal contacts and 2 NTC connections with 5-pole Redel socket. The box is used to connect HV sensors and to bundle all contacts on one potential. The voltage tap is made by a 4 mm safety socket.

■ **connections: sensor connections (IN)**

15 x 8-pole Redel HV connector for connection of HV thermosensors

2 x 5-pole Redel HV connector for connection of NTC

■ **sensors: connections (OUT)**

1 x 4 mm safety socket brown

■ **dimensions:**

202 x 122 x 74 (l x w x h)

■ **item number:**

S0005-9013-00000

■ **part number MB:**

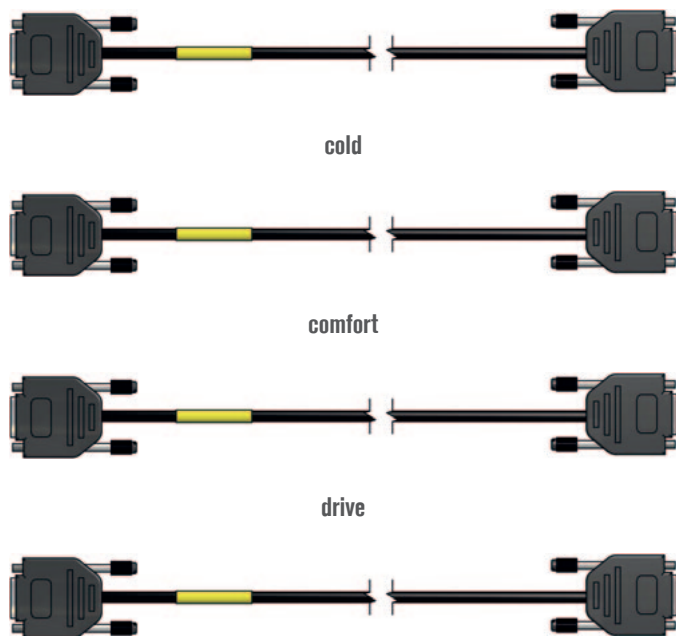
HEI999344N008

**Other
configuration
possible!
Please contact us!**



HARNESSED CABLES

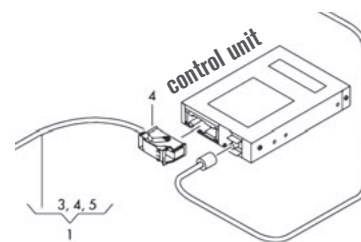
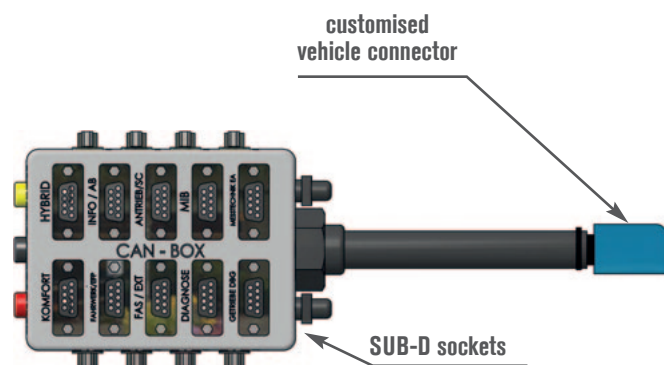
Products for voltage tap of CAN signals in the vehicle



**distribution by CAN-FD cables
with SUB - D connectors**

S0620-4001-00010

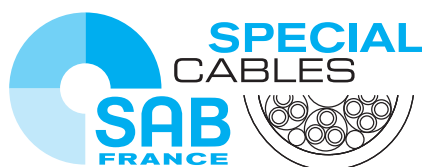
other lengths and
coloured identification also possible



**voltage tap by vehicle connector and dis-
tribution to individual CAN bus signals
(cold, comfort, drive etc.)**

S0992-5114-00000

vehicle plugs can vary,
as well as the number of CAN channels.



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