

CABLES & ACCESSORIES FOR MEDICAL TECHNOLOGY



SAB Control

SAB Flex

SAB Robot

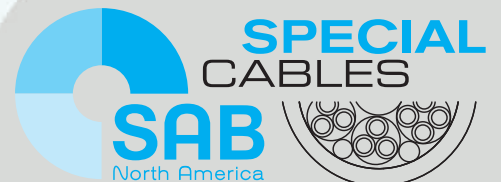
SAB CATLine

SAB Data

SAB MEDLine



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About Us



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.

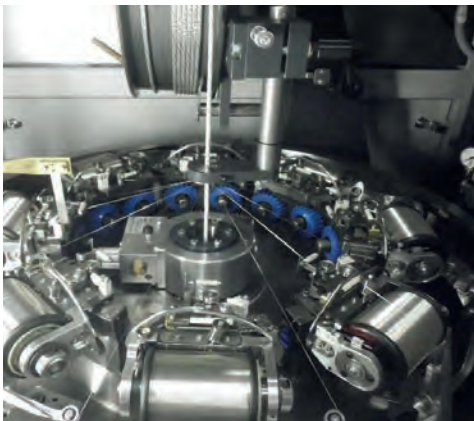
Whatever the need may be, look to SAB North America for Special Cables that can, for example, help minimize maintenance costs and increase productivity, reduce downtime, and solve specific problems. Here is a small sample of some of the challenges that Special Cables from SAB North America can help address:

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



Cables cannot compromise patient lives and safety, and they must maintain reliable connections amidst threats like frequent cleaning, disinfection, and handling, as well as be able to withstand abrasion, shock, impact, and tampering. Medical equipment OEMs must have complete certainty that the cables they choose are suitable for their design. SAB North America provides a wide variety of safe, reliable cables and over-molded cables for use in medical laboratories, operating rooms, and monitoring environments. SAB has more than 75 years of experience manufacturing quality, rugged cables for challenging applications so that you can be sure that SAB cable is a safe and reliable addition to your medical equipment.

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.

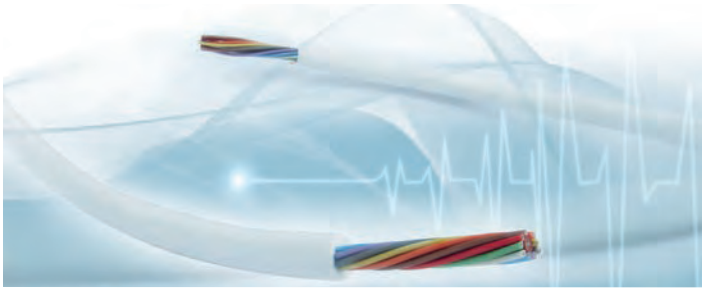
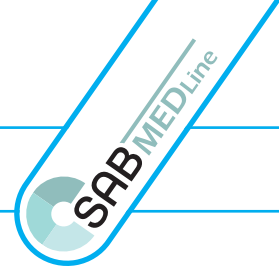


SAB Advantage...We make it Easy

- Small prototype runs on serialized production equipment
- Biocompatible material range to meet your unique requirements.
- The color of the jacket can be customized to match the medical device.
- Plug & play pre-assembled solutions are available.
- Twisting characteristics include high flexibility, easy to grip, and no risk of kink.

Cables for Medical Technology

Biocompatibility acc. to EN ISO 10993-1



BIOCOMPATIBLE MEDICAL CABLE WITH ULTRA SOFT JACKET

SABmed Line cables were developed for the medical device market.

SABmed Line is our product range of biocompatible, highly flexible, non-kinking cable solutions for medical devices that withstand the demanding requirements of cleaning, disinfection, and handling.

Jacket Material

Features

SABmed S UL

UL Certified power, data, bus, connection, or single-core cables for medical devices. Easy to grip and slide non-stick jacket does not require a parabellum coating.

SABmed T

Halogen-free and suited for gas or radiation sterilization. Useful in endoscope devices

All compounds mentioned above passed the examination for **biocompatibility (DIN EN ISO 10993-5 cytotoxicity)**. Furthermore we are able to produce in small batches especially interesting for pilot series and prototyping.

ADVANTAGES OF SABmed CABLES

- ✓ Biocompatible
- ✓ Autoclavable (SABmed S)
- ✓ UL Approved
- ✓ Pliable
- ✓ Non-sticky
- ✓ Tested to MOOP & MOPP
- ✓ Prototypes
- ✓ Customizable designs can include: PUR or Teflon tubes, hoses, COAX elements, optical fibers, strain relief, etc.

OVER-MOLDED CABLE SOLUTIONS

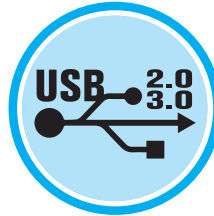
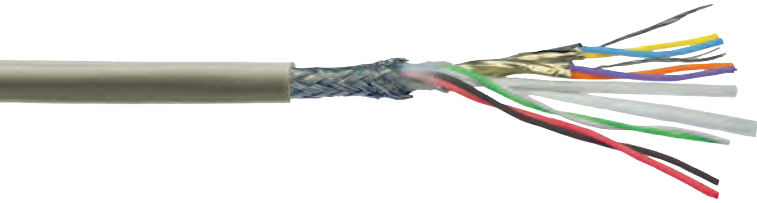
SAB North America offers high-quality cable solutions with a wide variety of material for plug & play solutions for medical equipment, even for prototypes and small runs.

Connection cables for medical devices are often subject to demanding requirements in daily use, be it through cleaning, disinfection, or handling. A well-thought-out system solution is a key factor for reliability and completes the individual application. SAB has expanded its range of medical cables with new plug & play over-molded solutions, made of medical-grade silicone or thermoplastic elastomers.



Manufacturers of medical devices will be able to use this complete system solution as a custom designed Plug & Play product "from a single source" for greater design freedom in the development of devices.

USB 3.0 M Cable



SAB offers high-quality cables that meet the high standards for high-resolution camera systems and data transmission.

Imaging systems are an integral part of medical, diagnostics, and surgical treatments. A brilliant and crystal clear image representation is crucial for evaluation, diagnosis, treatment, and therapy.

Due to the demand for ever-faster transmission systems and interference-free imaging devices, the designers of camera systems are facing a major challenge selecting the right cable. To be equipped for the picture imaging of tomorrow a “medical-grade” USB 3.0 cable has been developed. Developed by balancing between high flexible design features, low weight, and safe data transmission, this innovation is highly suitable for the manual positioning of the camera systems without affecting the device with unnecessary cable weight.

Features:

- Autoclavable
- UL Certified
- Overmolded assemblies available

CABLES FOR PROTOTYPE CONSTRUCTION

Prototype and small runs of production of connection cables for medical devices are a real challenge for manufacturers. Cable manufacturers generally offer customized designs only for huge minimum order quantities. Cables are rarely stocked to meet the exact requirements of every application. SAB North America can be your partner for the design of prototypes and small-batch productions.

Advantages of SAB North America:

- Prototype and sample-batch production on serialized production lines.
- SABmed line offers a wide range of biocompatible materials adapted to your individual needs. Corresponding certificates including EN ISO10993-1 (cytotoxicity acc. to EN ISO 10993-5) upon request.
- Outer jacket color adapted to the design of the medical device for a harmonious visual appearance.
- Cables with the highest flexibility, easier handling, and moveability with no risk of kinking because they are designed especially for use as handheld connection cables for medical devices.
- Plug and play pre-assembled cables available upon request.
- Non-stick jacket does not require a parabellum coating.





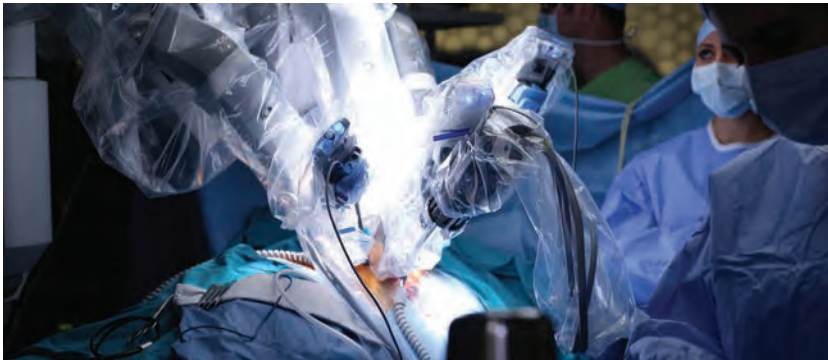
ENDOSCOPY

Endoscopic systems need, like other imaging systems, secure and reliable transmission connections in combination with smooth and user-friendly performance. SAB can provide an innovative custom-made solutions for your application as well as prototypes and harnessed assemblies for testing.



IMAGING TECHNIQUES

Medical diagnostic imaging devices require a reliable connection for transmission. SAB offers a variety of possibilities to fulfill your demands with a custom-made solution. Design possibilities for highly flexible hybrid cables range from including COAX-elements or special electrical screens or simply a custom color jacket.



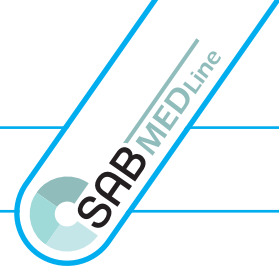
ROBOT SURGERY SYSTEMS

Robot surgery systems demand cables with high mechanical properties as well as million cycles of torsional and bending movements. To fulfill these high requirements, SAB tests the performance and durability of our products in our in-house testing facility. The combination of different insulation and jacket materials allows the use of various disinfectants and cleaning substances, including autoclaving and clean-room applications.



ELECTRO-SURGICAL SYSTEMS

Whether the application is monopolar or bipolar - the manufacturing at SAB always takes place on the highest quality level using bio-compatible materials. Versions with increased screen protection to avoid disturbance of the imaging quality can be designed and manufactured.



ELECTRO-THERAPY DEVICES

Connection cables in the field of electrotherapy with electric stimulation and/or magnetic flux are designed and manufactured to the customer's specification. Some of the requirements SAB can meet are extreme flexibility and motion-friendly performance, resistance against wipe-disinfection, and even space-saving hybrid cable designs. Also cable harnessing is possible.



DENTAL TECHNOLOGY

Dental technology applications range from flexible, smooth silicone cables in handheld applications to torsional flexing in swivel arms to miniaturized connection cables. The wide range of SAB medLine material allows us to design to your exact requirements.



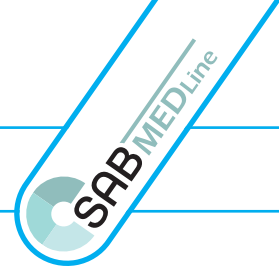
MONITORING

To keep up with the latest developments in medical monitoring and information techniques, SAB has developed a variety of new cable solutions. For example, for the application of linked surgery systems, we can offer flexible CAT5, CAT6, and CAT7-cables with temperature and chemical resistance as well as drumable and robot suitable variations.



OPERATING TABLES

The use of SABmedLine cables on operating tables or in treatment units makes patient positioning easier. Whether we produce helix-cables with harnessed ends, connection cables or hybrid cables with high-flexible performance - we can satisfy your demands at the highest level.



SURGICAL LIGHTS

For medical lighting, cables need to withstand high and fluctuating ambient temperatures up to +180°C. For this application, SAB offers a broad range of Besilen® silicone insulated cables and strands. These are used for the inner wiring of lamps and devices, as well as for the wiring of switch and distribution boards with low mechanical stress.



LABORATORY EQUIPMENT

For the demands of laboratory equipment, SAB offers a wide range of innovative products: very flexible Besilen® silicone cable with high-temperature resistance up to +250°C or connection cables designed for permanent movement at the door of appliances. Steam-tight versions are possible as well as autoclavable connection cables, even with international standards.



ELECTRO-MOBILITY

Based on our experiences in the field of vehicle technology and battery-charging systems, SAB offers a wide range of products for electro-mobility. The special advantage is the easy installation, even with narrow space conditions.



STERILIZATION & DISINFECTION

SAB produces connection cables and products for temperature measurement for sterilization and disinfection. Steam-tight versions are possible as well as autoclavable connection cables.

Cables for Medical Technology

FLEXIBLE POWER & CONTROL CABLES

Applications Include: Radiology/Imaging Equipment, Operating Room Equipment, Sterilization Equipment, Laboratory Equipment, Hospital and Dental equipment, Electro-mobility



Features:

- Flexible for easy installation
- Shielded versions available
- NFPA 79 compliant
- Abrasion and notch resistant
- Easy to crimp conductors
- Halogen free versions
- Harmonized versions available

Suggested Cables:

- CC 600 & CC 600 CY (UR/CSA/CE) - Flexible, Unshielded & Braid Shielded, Chemical Resistant PVC Control Cable
- CC 600 P & CC 600 CP (UR/CSA/CE) - Flexible, Unshielded & Braid Shielded, Notch Resistant PUR Control Cable

CONTINUOUS FLEX CABLES

Applications Include: Operating Room Equipment, Laboratory Equipment, Hospital and Dental Equipment, Electro-mobility



Features:

- Applications requiring alternate bending or continuous motion
- Long service life- millions of bending cycles
- Abrasion resistant

Suggested Cables:

- S 960 & S 960 CY (UR/CSA/CE) - Unshielded & Braid Shielded, PVC Cable
- S 200 & S 200 C (CE) TPE/PUR - Unshielded & Braid Shielded Cable, Extreme Temperatures, & Tight Bending Radius
- S 980 P & S 980 CP (UR/CSA/CE) - Unshielded & Braid Shielded, PUR Cable
- S 900 & S 900 P (UR/VDE/CE) - PVC & PUR Single Conductor, Tight Bend Radius for Confined Areas

TORSIONAL CABLES

Applications Include: Robotic Surgery Systems, X-ray Equipment, Surgical Lighting, Electro-mobility



Features:

- Designed for torsional movement
- Rugged PUR jacket
- Abrasion resistant
- Cleanroom version available

Suggested Cables:

- RT 123 (UR/CSA/CE) - TPE/PUR Torsional and Continuous Flex Cable for $\pm 450^\circ$ / 1/2 m Available Shielded and Unshielded
- RT 113 (UR/CSA/CE) - TPE/PVC Torsional and Continuous Flex Cable for $\pm 270^\circ$ / 1/2 m Available Shielded and Unshielded

Cables for Medical Technology

DATA & SENSOR CABLES

Applications Include: Radiology/Imaging, Diagnostic and Monitoring Equipment, Sterilization equipment, Laboratory Equipment, Hospital and Dental Equipment, Electro-Surgical Equipment, Therapy Devices, Electro-Mobility

CSA TYPE CMG or AWM I/II A/B 105°C 300V FT4



D-VIERSEN · LIYY 32x0.25mm² CE



Features:

- 26 AWG to 16 AWG data/communication cables
- Shielded, unshielded and paired with overall shield
- Flexible for easier routing

Suggested Cables:

- DC 105, DC 105 C, & DC 105 TP (UL PLTC, ITC, CMG)(CSA/CE)- Flexible Multi-Conductor & Paired Cable, Shielded & Unshielded, PVC
- DC 300 DS & DC 300 TP (UR/CSA) - Flexible Multi-Conductor & Paired Cable, Shielded & Unshielded, PVC
- LiYY, LiYCY, & LiYCY TP (VDE/CE) - General Purpose, Multi-Conductor and Twisted Pair, Shielded & Unshielded, PVC



FLEXIBLE INDUSTRIAL BUS & ETHERNET CABLES

Applications Include: Radiology/Imaging, Diagnostic and Monitoring Equipment, Sterilization equipment, Laboratory Equipment, Hospital and Dental Equipment, Electro-Surgical Equipment, Therapy Devices, Electro-Mobility

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



01-0222 UL AWM Style 2655 80°C 300V CE



Features:

- CATLine is available for continuous flex & torsion/robotic applications
- Available with PLTC rating for use in tray
- Cleanroom versions available
- CAT 5e, CAT 6, CAT 6A, or CAT 7A
- USB 2.0 and 3.0 versions also available.
- Profinet: Type A, B, & C

Suggested Cables:

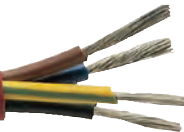
- Profinet/CAT5 Cables for Type A, B, & C Applications Plus Torsion and Reeling (UL/CSA)
- DeviceNet™ Cables for Flexible, Continuous Flex, and Torsion Applications (UL/CSA)
- Profibus Cables for Flexible, Continuous Flex, Torsion, and Outdoor Applications, Halogen-Free (UL/CSA)
- CATLine 5e, 6, 6A, 7A Cables for Continuous Flex, Torsion, Reeling, and High Temperature Applications (UL/CSA)



FLEXIBLE HIGH TEMPERATURE CABLE

Applications Include: Surgical Lights, Laboratory Testing Equipment, Sterilization Equipment

600V CSA AWM I/II A 150°C 600V FT1 FT2 CE



Features:

- Suitable for areas with high ambient temperatures in dry, damp or wet areas
- Resist temperatures as low as -50°C
- Resist high temperatures up to 180°C for continuous operation and up to 250°C for short periods.
- Continuous flex versions available

Suggested Cables:

- SC 600 HDTR (UR/CSA/CE) - Heavy-Duty, Tear Resistant Silicone Multi-Conductor Cable, Shielded Available
- SC 113 (CE) - 300 Volt Silicone Hook-Up Wire & SC 123 (CE) 500 Volt Silicone/Fiberglass Hook-Up Wire

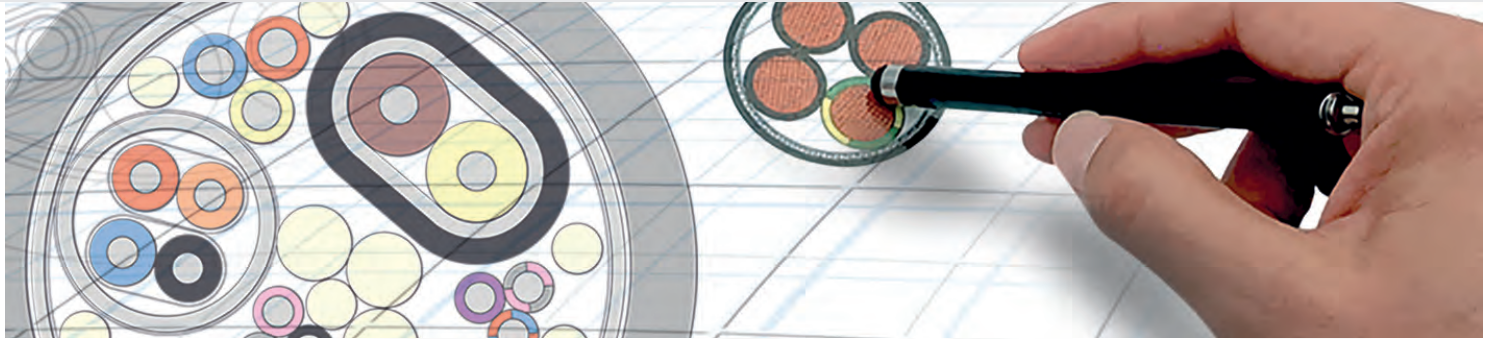


Cables for Medical Technology

Manufacturing Capabilities

Specialty flexible cables built for specific needs and approvals for demanding applications.

Order minimums are as low as 1,500 feet, and we can test your unique product in our lab. No matter your application's requirements, SAB Special Cables expand the possibilities of standard cables and address your design challenges.



Conductor Materials

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

Conductor Sizes

- 0.14 mm² - 300 mm²
(26 AWG to 500 MCM)
- variety of stranding styles

Insulation and Jacketing Materials

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

Conductor Count Ranges

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

Temperature Ranges (based on material)

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

Shielding and Braiding Materials

- Bare copper
- Tinned copper
- Galvanized steel
- Stainless steel
- Aluminum foil
- Fiberglass
- Aramid

Approvals

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



Cables for Medical Technology

Measurement Technology & Cord Grips and Accessories



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

SECURE AND PROTECT YOUR CABLE

CG 100 Polyamide Cord Grips

Dome cap, black or gray available in NPT, PG, or metric thread

Liquid tight seal, fast and easy installation, wide clamping range, multi-purpose applications, easy handling.



CG 200 Polyamide Cord Grips

Flex cap, black or gray available in NPT, PG, or metric thread

Strain relief gland offers maximum protection against conductor fatigue caused by flexing cables



CG 300 Nickel Plated Brass Cord Grips

Available in NPT, PG, or metric thread

Impact resistant, suitable for industrial applications, water tight, corrosion resistant.



CG 350 SS303 or SS316 Stainless Steel Cord Grips

Available in NPT, PG, or metric thread

Impact resistant, suitable for industrial applications, water tight, corrosion resistant.



EMC-2 Grounding Cord Grips

Nickel plated brass EMC cable gland available in NPT, PG, or metric thread

EMC-2 is a nickel plated brass strain relief with integral grounding springs in the gland.

Features:

- One Direction Installation
- Affordable
- Nickel Plated Brass with Tinned Copper Springs



EMC-4 Grounding Cord Grips

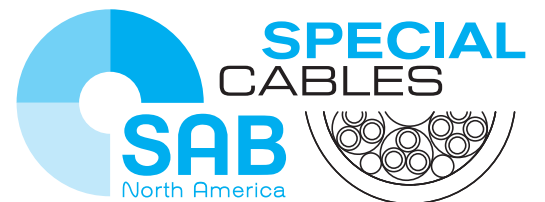
Nickel plated brass, EMC cable gland, vibration proof, available in NPT, PG, or metric thread

EMC-4 is a nickel plated brass strain relief with integral grounding springs in the gland that will allow the cable to move without damage to the shield.

Features:

- Bi-directional Installation
- Great Anti-Vibration Mechanisms
- Nickel Plated Brass with Tinned Copper Springs





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