

# SAB CATLine Cables: Durable, Flexible Ethernet Cables Create Intelligent Automation Systems That Optimize Production

*SAB North America's CATLine is a full range of Category cables that covers a broad range of industrial applications, movement types and corresponding Category data rates while providing designers with a host of protection options.*

By SAB Engineering Department



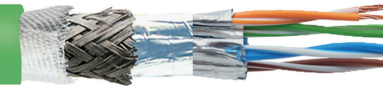
There's a growing digital transformation occurring in manufacturing sectors as legacy systems give way to intelligent automation technologies. Once monitored and analyzed, sensor-based data from robots and other machines can determine responsive actions. Not only will robots share more information, they will also adapt to changing conditions via artificial intelligence. Industrial Ethernet will also continue to evolve as part of the manufacturing sector's digital transformation efforts.

To exchange the ever-increasing volumes of data that make intelligent automation possible, your data cables must be as innovative as the technologies they support. And, they must be able to withstand continuous flexing or torsional movements, very high loads, extreme temperatures and contact with various chemicals, oils or cleaning agents.

At SAB, we responded to these digitization trends with a series of Industrial Gigabit Ethernet Cables that can handle the increasing data transmission rates in automation. Not only do these cables ensure fast and efficient data exchange, they are also extremely robust.

Depending on your requirements, multi-pair CAT 6A and 7A cables are available with different designs.

 BRÖCKSKES · D-VIERSEN · CATLine CAT 7A RT



 BRÖCKSKES · D-VIERSEN · CATLine CAT 6A HT



## SAB CATLine Multi-Pair Cable Solutions

### CATLine CAT 7A RT - Robot-compatible, Gigabit Ethernet Cable with UL/CSA

The world's first robot-compatible Gigabit Ethernet cable offers torsional movement, as well as excellent resistance to chemical and thermal stresses encountered by Cartesian, SCARA and articulated arm robots.

### CATLine CAT 7A S - Gigabit Ethernet Flexible Cable Track Cable with UL/CSA

This highly flexible cable track cable has a small bending radius of 10 x O.D. (flexible application) and 15 x O.D. (continuously flexible).

### CATLine CAT 6A HT - Temperature Resistant Ethernet Cable

Our temperature-resistant cable is suitable for use in harsh, industrial conditions at temperatures up to -90°C/+180°C (stationary) and -55°C/+180°C (moving).

### CATLine CAT 7A DR - Coilable CAT 7A Gigabit Ethernet Cable

Applications for this cable to be coiled on a drum include theater technology and high-bay warehouse technology.

### CATLine CAT 7A R - Halogen-free Industrial Ethernet cable for Railroad Applications

Compliant with EN 45545-2, this halogen-free data cable was specially developed for use in rail vehicles. It is flame retardant and self-extinguishing according to EN 60332-1-2 and meets the no fire propagation requirements of EN 60332-3-25 and EN 50305 sections 9.1.1 and 9.1.2.

### CATLine CAT 7A BL - Halogen-free Industrial Ethernet Cable for Maritime Use

The halogen-free maritime cable CATLine 7A BL with ABS Type and UL approvals is especially suitable for use in shipbuilding industry applications.

In addition to these standard cables, our manufacturing capabilities include special cables designed to address unique requirements. We also create custom cables in small batch sizes to accommodate small and pilot series designs.

## Staying Ahead of Data Demands

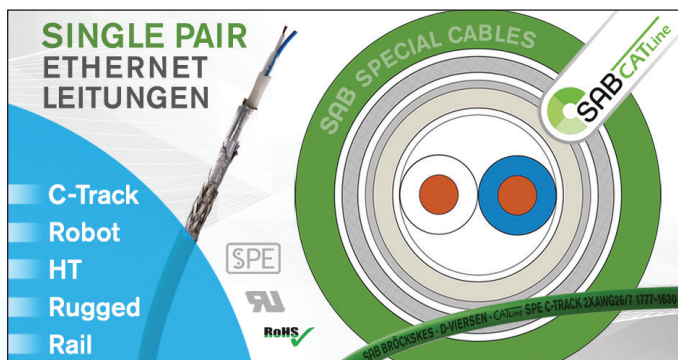
When it comes to connecting automated equipment, industrial network designers have a lot to worry about. As production equipment connects to the rest of the enterprise and to the Cloud, the list of challenges grows longer. It includes demands for higher data transmission speeds, managing a complexity of protocols, establishing real-time communication and running bulky cables long distances across the factory floor. On top of these challenges, cables must be able to endure harsh conditions without fail.

**Single-Pair Ethernet (SPE)** promises to solve many of these problems that have traditionally strained industrial networks in the growing Industrial Internet of Things (IIoT).

The cables use a single twisted pair of conductors for data exchange, providing high-bandwidth data transmission and deterministic communication critical to industrial automation. This technology is expected to replace fieldbus protocols with a common Ethernet communications standard to handle industrial networking's future demands.

### SPE Network

As an early member of the SPE network, SAB Bröckskes' ambition is to help establish SPE technology on the international market and drive new fields of application in the different industries. To this end, the cable specialist from Viersen has developed a complete product range for diverse applications.



In keeping with these developments, we developed UL approved SPE cables for automated machinery applications. As part of our CATLine family, these cables are designed to provide safe and reliable data transmission in challenging industrial conditions. The **CATLine SPE** offering includes two cables that can handle repetitive motion in automated machinery: the **CATLine SPE C-Track** for cable tracks and chains, and the **CATLine SPE Robot** for robotic systems. The cables deliver all the benefits of single-pair Ethernet cable technology to the factory floor, such as:

- **High bandwidth:** CATLine SPE cables offer bandwidths from 1 to 600 MHz.
- **Small size:** C-Track and Robot cables have an outer diameter (OD) of 0.209 inches and 26 AWG gauge size.
- **Lightweight:** Cables weigh 25 pounds per thousand feet.

## Designed For Tough Environments

These cables exhibit exceptional durability thanks to special polymer insulation, polyurethane jacketing and SABIX® inner jacketing. These materials mean you'll get all the protective features you can expect from CATLine cables, such as:

- Mechanical stress resistance with bend radii of 5 × OD fixed, 10 × OD flexible and 15 × OD continuous flex.
- Halogen-free meeting IEC 60754-1 and VDE 0482754-01 requirements.
- Oil resistance meeting EN and VDE requirements.
- Resists contamination from chemicals and cleaning agents.
- Good electrical characteristics, including a UL voltage rating of 300V and a peak operating voltage of 90V. They have 100Ω ± 10Ω impedance rating and meet the CD IEC 61156-12 ED1 high frequency requirement.
- In addition to cables for automation, our CATLine also includes an industrial single-pair Ethernet cable — the **CATLine SPE HT** — that performs in temperatures up to 180°C.

## Standards & Transmission Quality

A T1 SPE C-Track cable must meet the electrical and transmission requirements of draft standard CD IEC 61156-12 Ed. 1.0. Connectors are available from Harting. Used in combination, full compliance with the standard is then assured.

Based on current information, SPE requires no more bandwidth than Cat.7A. SAB cables have already been successfully tested to these requirements

## Special Solutions for Special Applications

SAB's manufacturing capabilities extend not only to basic types and standard dimensions, but, in particular, to special cables designed according to each customer's requirements. Production can also be carried out in small batch sizes for small and pilot series.

## Connectorized Solutions

SAB Bröckskes can mount or mold RJ45/M12 connectors with our industrial ethernet cable product range. These assemblies can be used in cable tracks, robots, and reeling applications. These cordsets can be customized by choosing plug types, specific marking, and colors. Preassembled patch cables for industrial Ethernet applications are suitable for easy and time saving connections on site for highly flexible applications including automation and robotics.



## Conclusion

Ethernet cables are now finding extensive use in industrial facilities. SAB North America's CATLine supports the high data rates and extensive motion requirements for industrial automation and robotics, and many carry the necessary approvals for mobile applications like railways. This combination of data handling capabilities, motion flexibility, and a wide selection of robust features and protections against harsh environments makes multi-pair CATLine cables essential for the smart, automated factory.

Single-pair Ethernet technology is poised to enable a digital revolution in factories as the IIoT places greater data demands on cable connections. At SAB, we responded with CATLine cables that deliver the high bandwidth that automated equipment with moving parts will need to exchange larger volumes of data faster. The result: smarter, more efficient production without worrying about increasing data demands.

***For more information about SAB's CATLine Ethernet cables or Assemblies, download our brochures.***