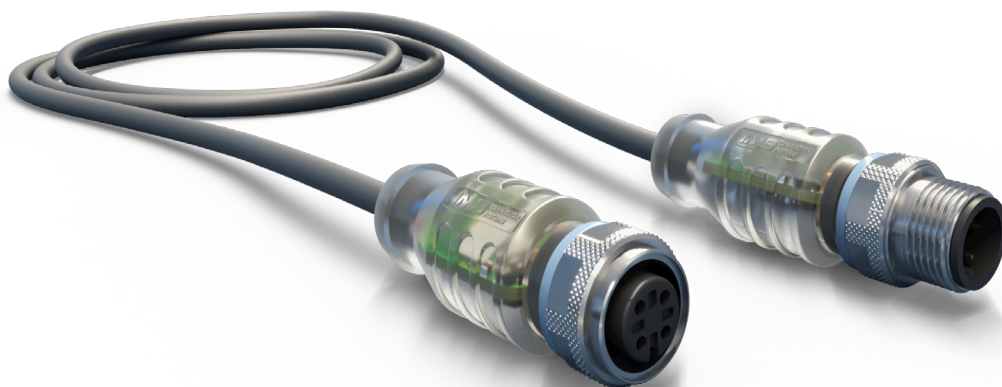




# SMARTMOD

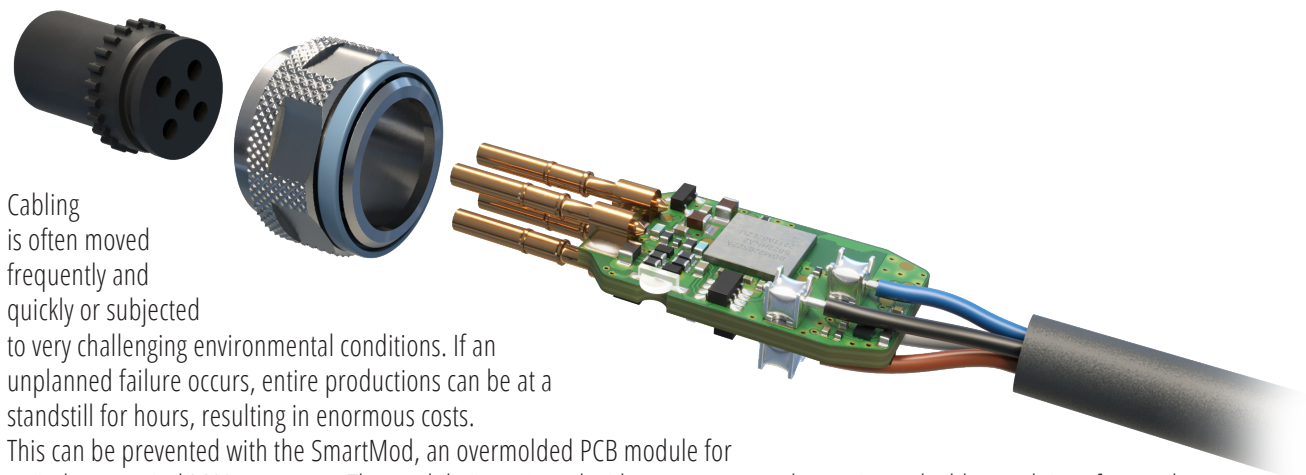
Your connector can do more

- » Online-Monitoring of voltage, current, power and temperature
- » 4 pole A-coded industrial round connector
- » One module for plug and jack
- » Wireless communication to smartphone, tablet and PLC



# SMARTMOD

## Adding functions to your standard



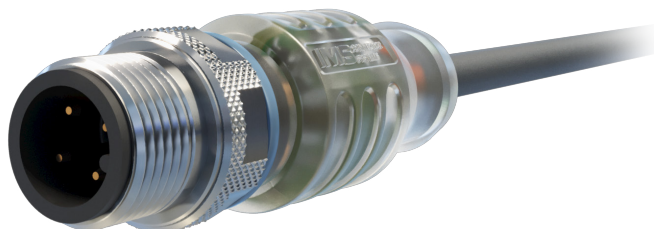
Cabling is often moved frequently and quickly or subjected

to very challenging environmental conditions. If an unplanned failure occurs, entire productions can be at a standstill for hours, resulting in enormous costs.

This can be prevented with the SmartMod, an overmolded PCB module for an industry typical M12 connector. The module is equipped with measurement electronics and a bluetooth interface and can measure voltage, current and power and calculate the cable resistance based on them. The measurements are taken continuously and provide at any time an current picture of all parameters. The SmartMod, in combination with the corresponding software, use these values to provide information about the quality/condition of the line. In this way, threatening failures and damage can be prevented at an early stage. If the cabling is equipped with a SmartMod, failure detection is noticeably faster. Because each connector has an unique address, its exact position can be stored in the control system, making it easy to locate faulty cabling. SmartMod cable assembly can be integrated into existing control systems. Storing the data directly in the cloud enables location-independent access via browser.

## Product features

- » Online-Monitoring of voltage, current, power and temperature
- » 4 pole A-coded M12 industrial round connector in which 3 wires are monitored
- » Cable assembly with plug and jack in lengths of 1, 5, 10 and 20m available
- » Screw locking
- » Wireless communication to smartphone, tablet and PLC
- » Bluetooth interface
- » One module for plug and jack
- » Condition monitoring
- » Machine learning
- » Predictive maintenance



# CHARACTERISTICS

Monitoring of voltage, current, power and temperature

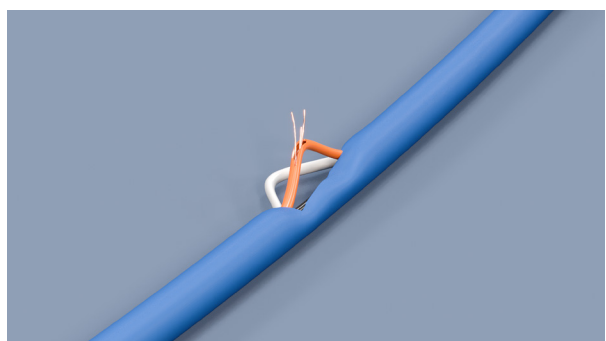
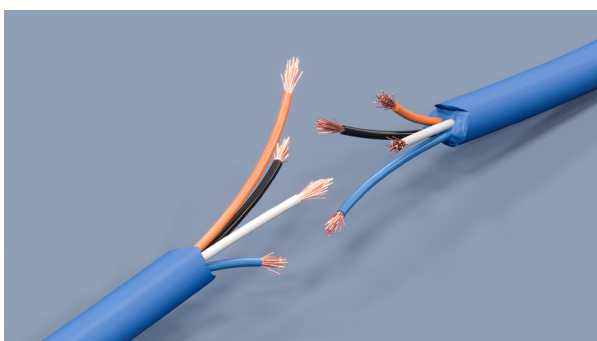
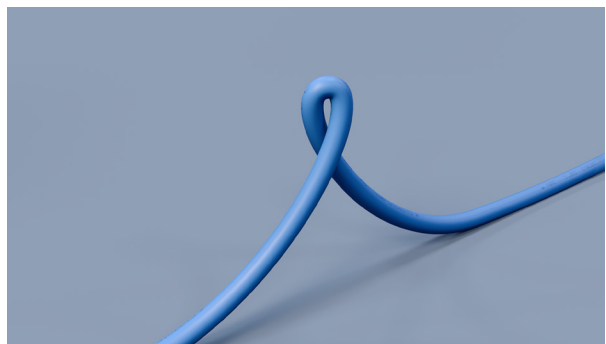
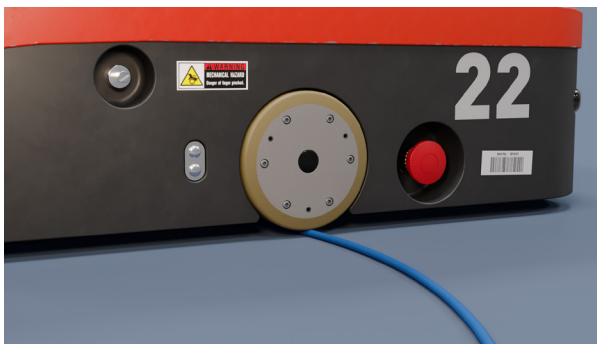
- » Bluetooth Low Energy 5.0
- » Wide supply voltage range: 7-30 VDC
- » Current capability:  $\pm 4$  A
- » Ambient temperature range in motion: -40°C up to +70°C
- » Transmit range: indoor 40m  
outdoor 100m
- » IP67 and IP69K in mated condition

## SmartMod function

With the SmartMod a detection of different failure cases is possible.

On the one hand, for dynamically stressed cables. Two SmartMods are used to monitor cable kinks, cable breaks and cable damage. Each individual SmartMod transmits current, voltage and power values. A PLC or gateway receives the data and evaluates the cable resistance. This allows conclusions to be drawn about the quality and condition of the cable.

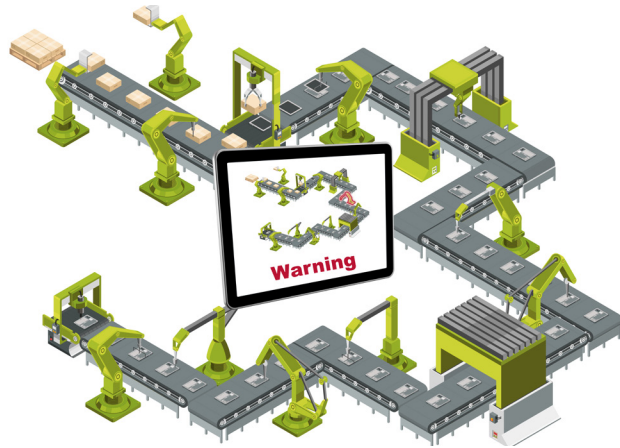
On the other hand, in case of non-dynamic cables. In this case, one SmartMod is sufficient to monitor the voltage supply and communication at the end device.





# SMART CONNECTOR IN USE

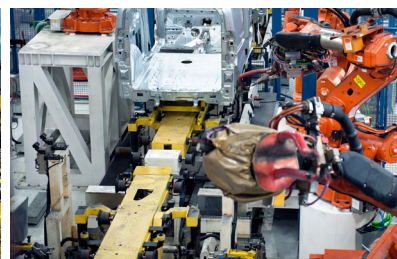
Digitalization in production is advancing and the end-to-end infrastructure is necessary. Connector, cabling and connectivity technologies play a major role. The greatest goal, whether for components or complete production lines, is maximum availability. If an unplanned breakdown occurs, complete productions can come to a stop and thus will generate enormous costs. If the cabling is equipped with SmartMod, error detection and locating the failed equipment is noticeably more efficient. The more complex the machines are, the greater the time savings. Even areas that are difficult to access can be easily checked via remote service, the status of critical cabling can be determined and failures can be specifically identified at a glance.



## Applications

The SmartMod cable assembly is used in areas where cabling is moved frequently and quickly and it submits to challenging environmental conditions. The SmartMod prevents costly spontaneous failures.

- » Robotics
- » Mobile machinery
- » Retrofit of plants and machines
- » Storage and transportation logistics
- » Factory automation
- » Railway vehicles and ships
- » Basically moving energy and data transmission

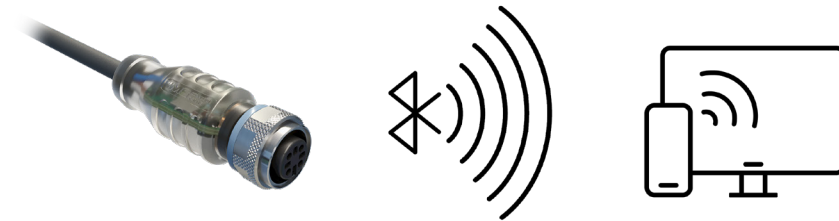


# How is the SmartMod integrated into the control system?

To simplify the integration, the SmartMod communicates wireless with the higher level controller. There are various options for this.

## 1. Mobile device

- » Can be used if no central controller is available
- » Direct reading of values via bluetooth using smartphone, tablet, laptop etc.

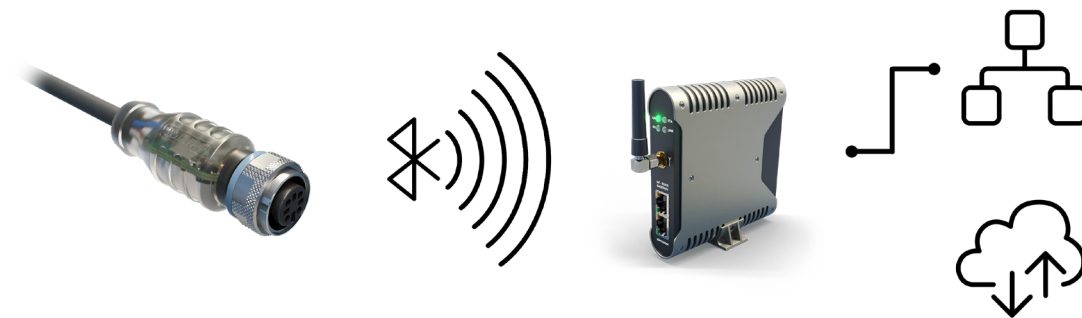


## 2. Bluetooth Gateway

- » Can be used when direct wireless communication is not possible
- » Using a bluetooth gateway for integration into an existing control system
- » Signals are transmitted to established interfaces such as ProfiNet, Ethernet, Modbus, EtherCat
- » With the corresponding software, the data are displayed graphically, among other things. Alarm values and notifications can be set in order to be able to react as quickly as possible in case of an error.

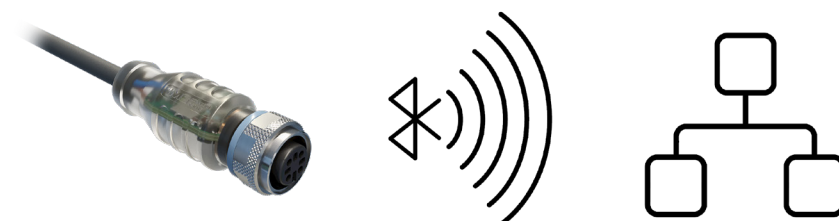
Optional:

- » Data are directly saved from the gateway to the controller or cloud
- » Cloud data can then be accessed via a browser



## 3. Existing control with bluetooth function

- » Direct integration of the signals into the controller





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