

## Connectivity solutions for railway applications



**Uncompromising traffic safety and high availability networks are a top priority in the transport automation industry. Belden has the right connectivity solutions for your railway station and on-board passenger information systems.**



Uncompromising safety and availability are top priority in transport automation today.

**With its complete portfolio of products and solutions, Belden perfectly fulfills all these requirements.**



## **Safety and reliability in railway applications**

As one of the worldwide leading providers of connectivity solutions, Belden fulfills the highest requirements in railway applications. With a wide and innovative spectrum of products from the Belden, Hirschmann™, Lumberg Automation™ brands, as well as our outstanding solution and service expertise, we ensure that our clients reach their goals in transport automation and monitoring – more quickly and more safely.

Whether high-speed trains, metros, subways or other rail vehicles – in tunnels, in train stations or on the open track, Belden has the right solution for any network requirement and application.

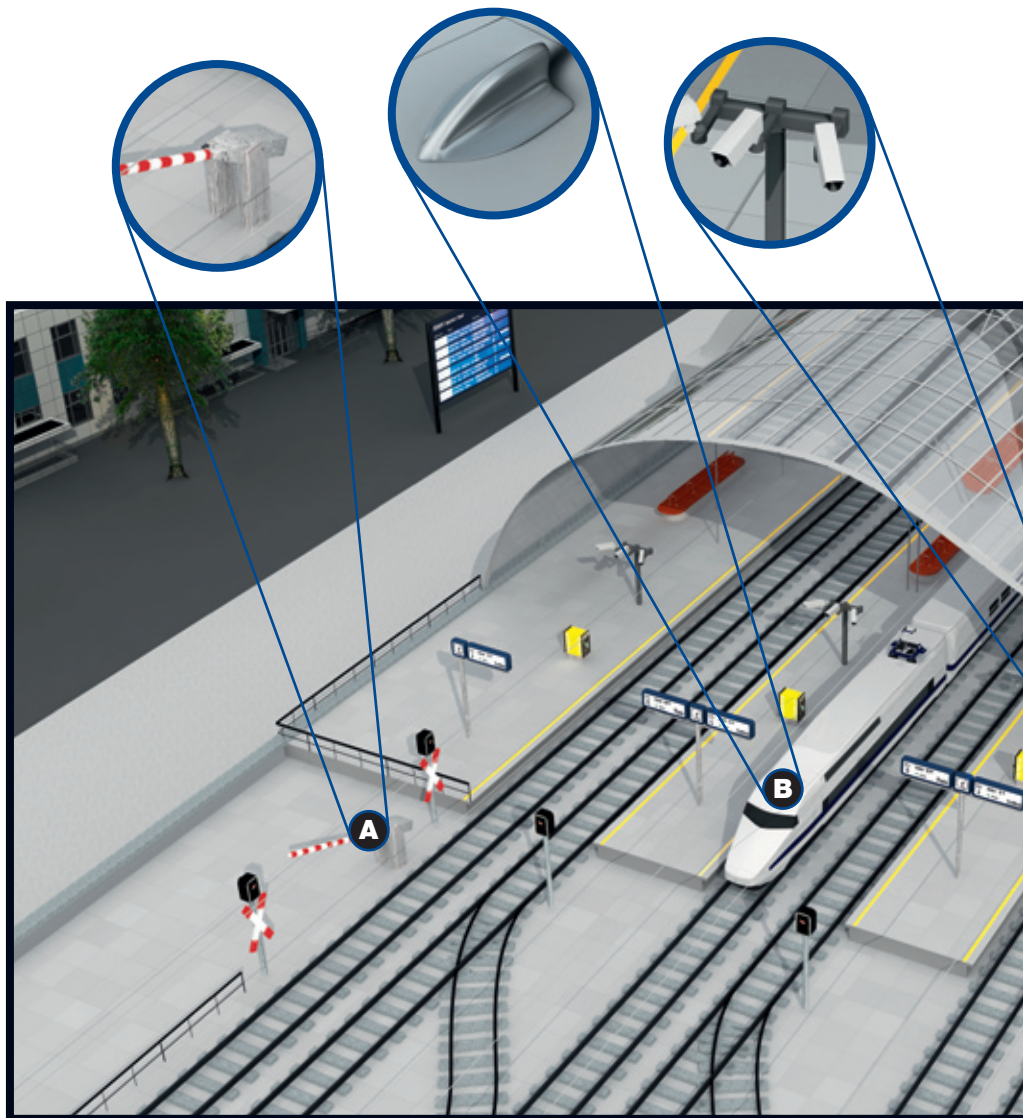


## Staying on the safe side

Make sure that you stay ahead of the game. Our products contribute to passenger safety. Belden ensures maximum availability based on resilient redundant technologies:

- traffic monitoring and control for operation centers
- network management systems for metros through to high-speed trains
- IP camera-based platform surveillance
- public announcement systems in train stations

In train station surveillance, highly available connectivity solutions from Belden successfully put their strengths in monitoring and network management to the test.





## A Signaling technology

### OCTOPUS family

- ruggedized switch family for extreme conditions
- open system with standardized M12 technology
- IP67 protection class and EN 50155 approvals



### Cable solutions

- engine control cable
- data communication cable
- UIC cables for internal and external vehicle wiring
- WTB and MVB databus cables



### microFX

- IP67 Ethernet connector
- industrial M12 technology
- optical and electrical contacts



## B Train-to-ground communication

### BAT family

- wireless access points and clients
- bridge functionality
- high bandwidth and optimal roaming behavior
- IP67 protection class



## C Video surveillance

### PoE switches

- Power over Ethernet (PoE) technology
- available as switches and routers



### Connectivity solutions

- actuator/sensor connecting and inter-connecting cables
- field attachable connectors
- M8, M12, M23, 7/8"
- valve connectors A, B and C design
- IP65 – IP69k protection class



### Receptacle connectors

- standard connectors or individual solutions "straight out of a construction kit"
- multiple options for external chassis threads



## D Control room

### MACH family

- Gigabit backbone Layer 2/3 switches with up to 48 Gigabit Ethernet ports and three 10Gigabit Ethernet ports
- hot-swappable modules
- optional redundant power supply



### Network Management Software

- operator edition for network supervision
- engineering edition for device configuration
- OPC and ActiveX for SCADA integration



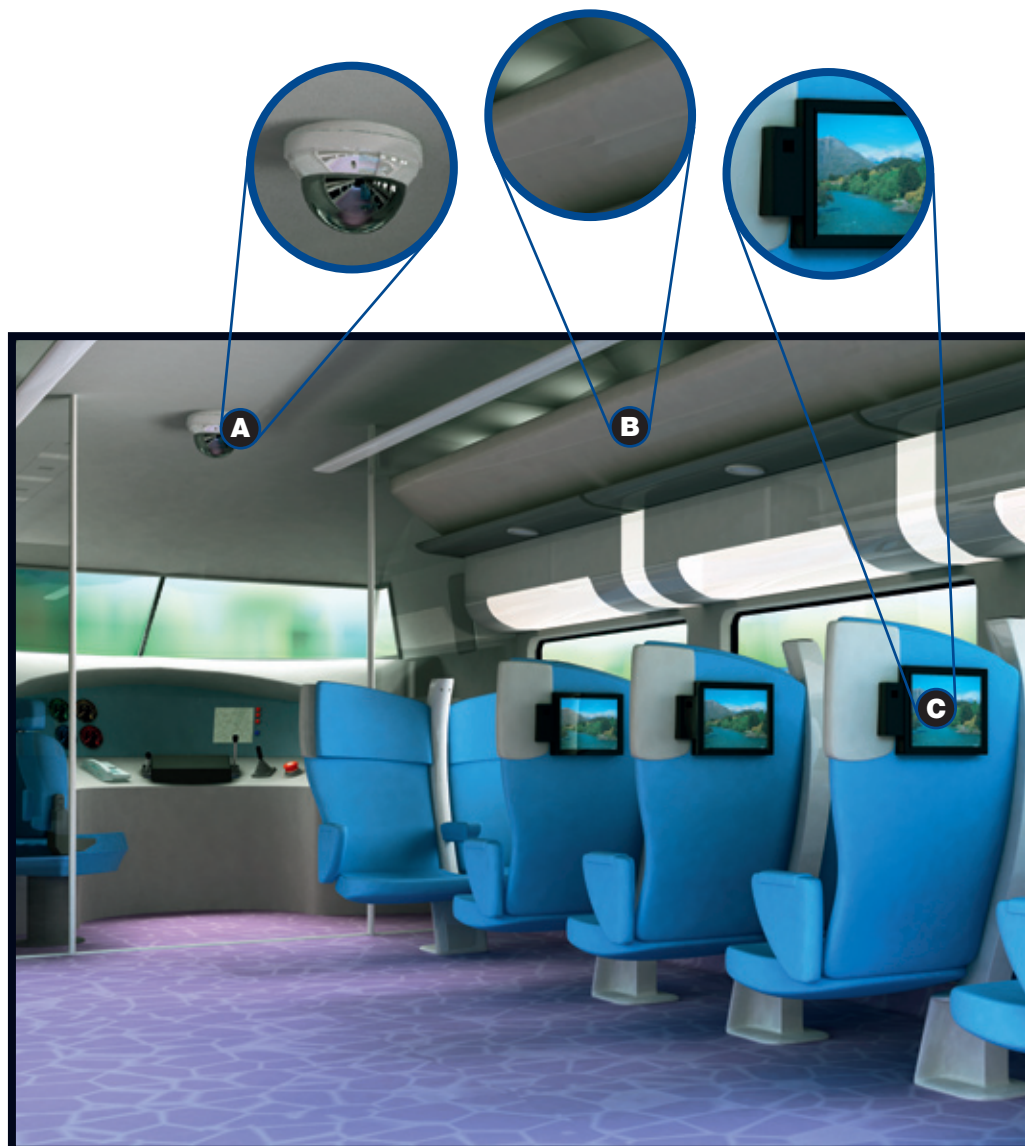
## Information all the time

The passenger requirements concerning comfort and safety are increasing. On-board as well as in railway stations passengers demand actual information about arrival time, connecting trains, platform numbers, etc.

### Transport automation applications require special features including:

- surveillance of passenger carriages with IP cameras
- networking for passenger information entertainment systems
- engine control cables
- customer information systems
- passenger counters

Always updated on board: Reliable solutions from Belden ensure the right entertainment and ongoing information for passengers in the trains as well.





## **A** Passenger surveillance

### **OCTOPUS family**

- ruggedized switch family for extreme conditions
- open system with standardized M12 technology
- IP67 protection class and EN 50155 approvals



### **microFX**

- IP67 Ethernet connector
- industrial M12 technology
- optical and electrical contacts



## **B** On-board communication

### **BAT family**

- wireless access points and clients
- bridge functionality
- redundant WLAN links for reliable data transfer
- IP67 protection class



### **RSR**

- compact ruggedized DIN rail switches
- extremely high EMI resistance
- withstands tremendous shocks and vibrations



## **C** Passenger information system

### **Cable solutions**

- engine control cable
- data communication cable



## GLOBAL LOCATIONS

For worldwide Industrial Sales  
and Technical Support, visit:  
[www.belden.com/industrial](http://www.belden.com/industrial)

