

Communication Based Train Control - CBTC System

Industry	Transportation
Products	AWK-4121 Series AWK-3121 Series
In Brief	Communication Based Train Control (CBTC) is a an automated railway signaling system being deployed in modern metro systems around the world.

Background

Communication Based Train Control (CBTC) is a an automated railway signaling system being deployed in modern metro systems around the world. It is designed to provide immediate status updates and control to avoid accidents due to exceptional conditions, such as sudden break downs and power losses, in a railway system. Due to the mobile nature of this application, CBTC uses WLAN as its basis. Trains can update their status immediately to the control center via WLAN and also receive commands from the control center.

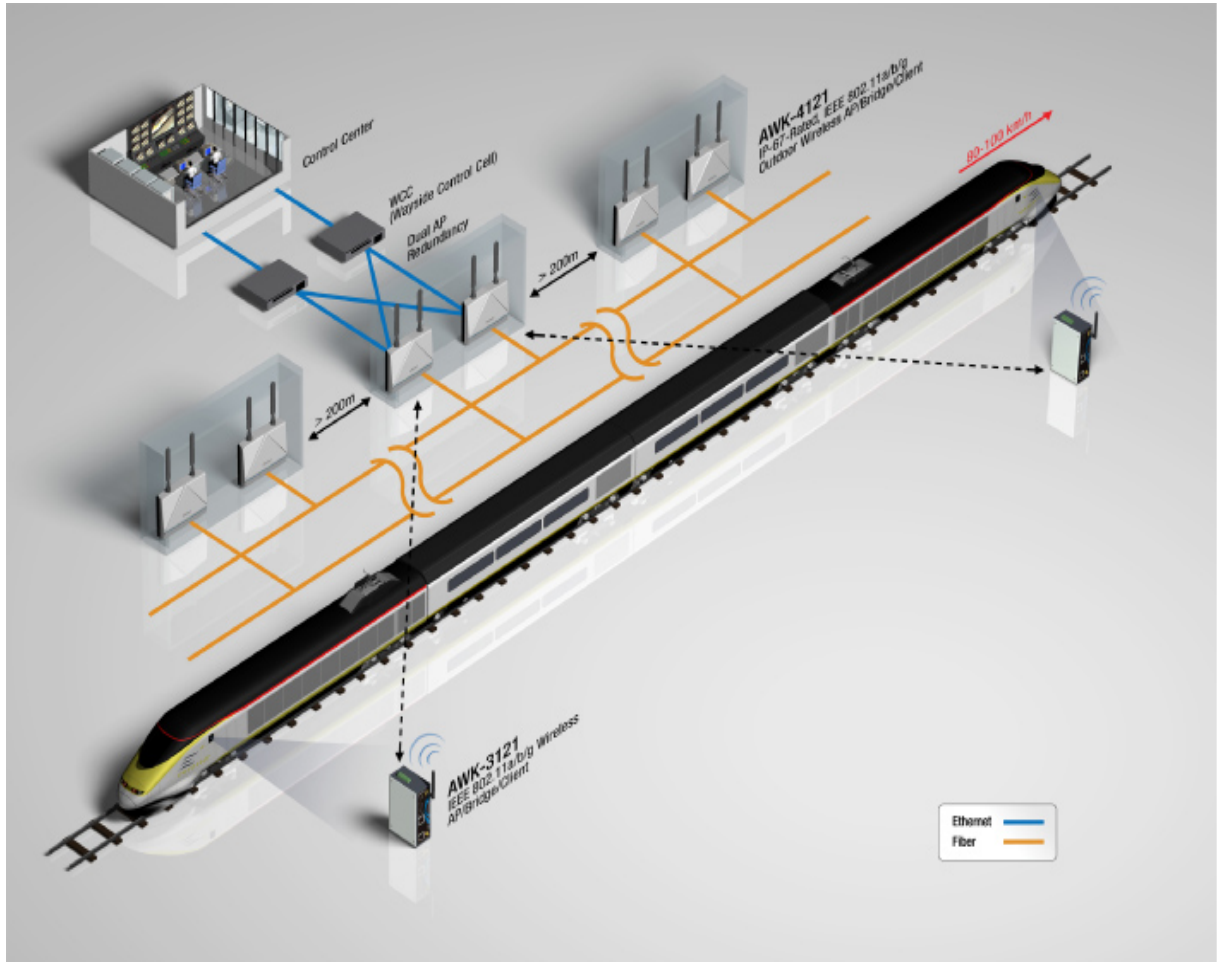
Application Requirements

- Wireless communication capability at speeds up to 100 km/hr
- Low system recovery time for seamless wireless connectivity
- STP/RSTP protocol to resume communication when a wired or wireless link fails
- EN50155 compliant for electronic equipment used on rolling stock

Solution Description

A well-designed CBTC system should include access points (AP) placed about 200 meters apart from each other along the rail. For network redundancy, two access points should be placed in the same place and all APs are connected to the control center via fiber cables. Each train also contains 2 APs onboard, one at the head and the other at the tail end. To ensure proper communication, the APs need to work properly under 80 to 100 km/h. Roaming must also be less than 500 ms for this kind of application and total delay from the train to the control center must also be under 2 seconds. Vibration protection is also important. In metro systems, the EN50155 certification for railways may serve as a reference for this kind of application.

System Diagram



Benefits

- Turbo roaming under 500 ms
- 100 km/h operating speed
- RSTP support
- EN50155 for railway applications