



I-ETMS[®] PROTECT

*Interoperable Electronic
Train Management System*



ADVANCING SAFETY ON THE MAINLINE

I-ETMS[®] Protect is a safety-critical system that provides a means to enforce movement authorities, speed restrictions, work zones and switch positioning to help reduce the potential for train accidents. I-ETMS Protect integrates new technology with existing train control and operating systems to enhance train-operation safety.

With I-ETMS Protect, the rail operator remains in control of the train. The system monitors and ensures the crew's compliance with all operating instructions, while the I-ETMS Protect display provides the train crew enhanced situational awareness and a wealth of operating information.

1.6+

**Million kilometers
of active protection
on revenue service
every day**

97

**Global railroads
using I-EMTS Protect**

OUTCOMES

ENSURES SAFE TRAIN OPERATION

Constantly calculates warning and braking curves based on all relevant train and track information

Communicates with wayside devices to check for broken rails, proper switch position, and signal aspects

ENSURES CREW COMPLIANCE WITH OPERATING INSTRUCTIONS

Warnings provided to crew of impending violations

System initiates braking if no action is taken

PREVENTS

Track authority violations

Speed limit violations

Unauthorized movement into work zones

Movement through a switch in the wrong position

FEATURES & KEY CAPABILITIES

TRAIN MANAGEMENT COMPUTER (TMC)

The onboard TMC consists of train control processors, business application processors, input/output, ethernet switch.

- Enforces movement authorities, speed limits, hand throw switch alignment
- Triplex architecture on the onboard supports both safe operation and high availability
- Meets subpart I requirements for PTC systems
- Hosts energy management application CPU
- Hosts ITC message router (ITCM) CPU
- Utilizes virtual block technology, while remaining compatible with existing methods of authority such as signal base authority
- Dimensions (cm): 24.1 H x 29.2 W x 29.2 D

CAB DISPLAY UNIT (CDU)

Provides the train crew with a wealth of operating information:

- User friendly display:
 - Head end speed, max. allowable speed
 - Train location: rolling map, milepost
 - Stopping distance, warning distance
 - Track features, restrictions, work zones
 - Energy management
- Enhances situational awareness
- Crew entry of credentials
- Dual displays available to support additional crew with duties in cab
- Dimensions (cm): 26.0 H x 34.3 W x 10.2 D

CERTIFICATIONS

- I-ETMS Protect is a CENELEC certifiable system
- I-ETMS Protect TMC meets AAR Locomotive environmental, vibration, EMI specifications, -40° celsius to + 70° celsius

BENEFITS



Safety

Designed to help prevent train-to-train collisions, over-speed derailments, incursions into established work zones, and movements of trains through switches left in the wrong position.

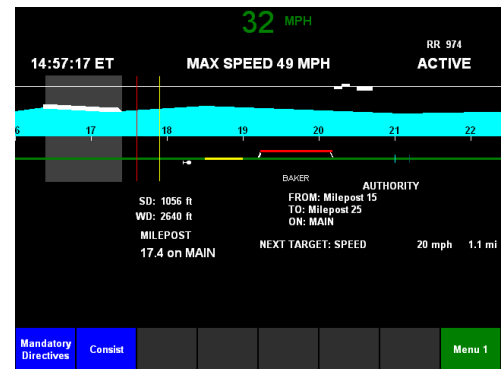


Foundation for Future Innovation

Potential to drive additional efficiencies to increase capacity, optimize service and reduce fuel use and emissions.



Train Management Computer



Cab Display Unit

CONTACT

Wabtec Corporation
30 Isabella Street
Pittsburgh, PA 15212 - USA
Phone: 412.825.1000
Fax: 412.825.1019