

siemens.com/mobility

Trainguard 100 and 200 on-board equipment

Compact and modular for ETCS Level 1 and Level 2

The European Train Control System (ETCS) is the train control system of the future. During the next few years, it will replace the national systems in Europe. Thanks to its standardized technology, it will enable rail vehicles to be used beyond network boundaries. ETCS on-board equipment produced by different manufacturers functions with the ETCS trackside equipment of other manufacturers in different countries on an interoperable basis. Their control and display and their system functions are identical for train drivers in any country.

Siemens has been heavily involved in the technical standardization of ETCS from the very beginning. Siemens has contributed this ETCS competence with more than 70 years of experience in the field of train control to development of the Trainguard® 100 and Trainguard 200 interoperable on-board equipment in line with TSI (technical specification for interoperability).

The use of ETCS reduces the number of train control systems required onboard vehicles in cross-border traffic. This involves a major cost-cutting factor for rolling stock operators. Special significance is then attached to the question about how well ETCS technology can be integrated into the relevant tractive unit.

ETCS has also become a worldwide standard for modern train control. Siemens has implemented many projects worldwide.

Benefits

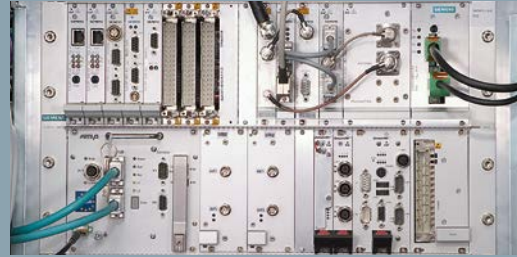
Compact design (19" mounting frame)
One multi-system antenna for all balise-based systems
Bi-standard Zub 262ct and PZB
Baseline 2 and Baseline 3 on the same hardware – for protection of your investment
Open communication architecture (Ethernet, USB, GSM, MVB, PROFINET, PROFIBUS)
Optimized maintenance and diagnostic concepts for low life-cycle costs
Optional with ATO functions
Supports GSM-R and TETRA radio
Optimal for retrofitting due to its small size and standardized interfaces



messMa double display



Juridical recorder unit



European vital computer



Multi-system antenna

Trainguard 100 and 200 on-board equipment comprises:

European Vital Computer (EVC)

- ETCS Level 1 functionality (Trainguard 100)
- ETCS Level 1 and Level 2 functionality (Trainguard 200)
- ETCS Version Baseline 2 or Baseline 3, NoBo-certified including MR1 and L1/LS
- Tried-and-tested Simis® computer platform for safety-critical functions
- CompactPCI® PC board for diagnostic, communication and additional functions
- Integrated tool chain for maintenance and diagnostics
- Fail-safe and reliable distance and speed measurement
- Flexible integration into any train operations control system

Balise channel and antenna

- Integrated BTM for a compact design
- External BTM for extended functions:
 - KER interface for operation in Finland, Sweden, Norway and France
 - 19" design also for installation in a cabinet
 - IP54 package for flexible installation in the vehicle
- Multi-system antenna for all balise systems: ETCS (balise and loop), KER systems (France, Scandinavia), Zub, SCMT, TBL1+
- Small and light-weight balise antenna

Driver-machine interface (DMI)

- ETCS cab signaling and operator control
- Operator control of national systems
- Adaptable to specific customer requirements
- DMI also available as double display unit

Juridical Recorder Unit (JRU)

- Reliable recording of train running data, also of national systems

Efficient, compact design

- Compact integrated ETCS on-board equipment
- On-board computer with EVC, balise channel, input / output interfaces, communication and diagnostic unit and GSM-R mobile radio terminals in a six unit high 19" design (483 x 264 x 235 mm), power consumption < 200 W





Integration of Class B systems

- Integration of Class B systems as a bi-standard approach
- Reception of balise information via a multi-system antenna for all balise-based train control systems: ETCS balise and loop, KER systems (France, Scandinavia), Zub, SCMT, TBL1+
- Pre-integration of all European train control systems
 - Trainguard Basic Indusi (PZB) as a bi-standard including TLH4 transition
 - LZB 80E and LZB80/16 including transition according to TLH4 specification
 - Zub 262ct and Zub 262ce as a bi-standard
 - TBL1+ including Memor
 - STM DK, ZUB 123
 - SHP
 - ASFA
 - EVM120, LS90 (MIREL)
 - ATC-2, JKV
 - ATB
 - TPWS / AWS
 - SCMT
 - KVB*
 - TVM*
 - CONVEL*

*) planned

Future-oriented and open technology

- Hardware platform with sufficient reserves for future requirements
- Optimized maintenance and diagnostic concepts for low life-cycle costs
- Open system architecture with future-proof communication interfaces (Ethernet, USB, GSM, MVB, PROFINET, PROFIBUS)
- Tool chain flexibly adjustable and integratable into existing maintenance systems
- Optional integration of ATO functions for energy-optimized and / or automatic train operation

Extensive operating experience

- More than 50 million kilometers of operation
- Commercial operation since 2004
- Highly reliable operation on high-speed lines in Spain, Switzerland, China and further countries as for example in Austria, Belgium and Saudi Arabia
- Even highest availability requirements are met

Standardized Interface

- Easy connection over the standardized connection box
- completely pretested entity – avoidance of installation errors in the vehicle
- Delivery of complete assortments such as cables, connectors and mounting materials
- Easy integration into cabinet
- Support of all common voltage versions



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The information in this document contains general descriptions of the technical options available. The required features should therefore be specified in each individual case at the time of closing the contract. For the secure operation of Siemens products and solutions, it is necessary to take suitable preventive action and integrate each component into a holistic, state-of-the-art security concept. Third-party products that may be in use should also be considered.

