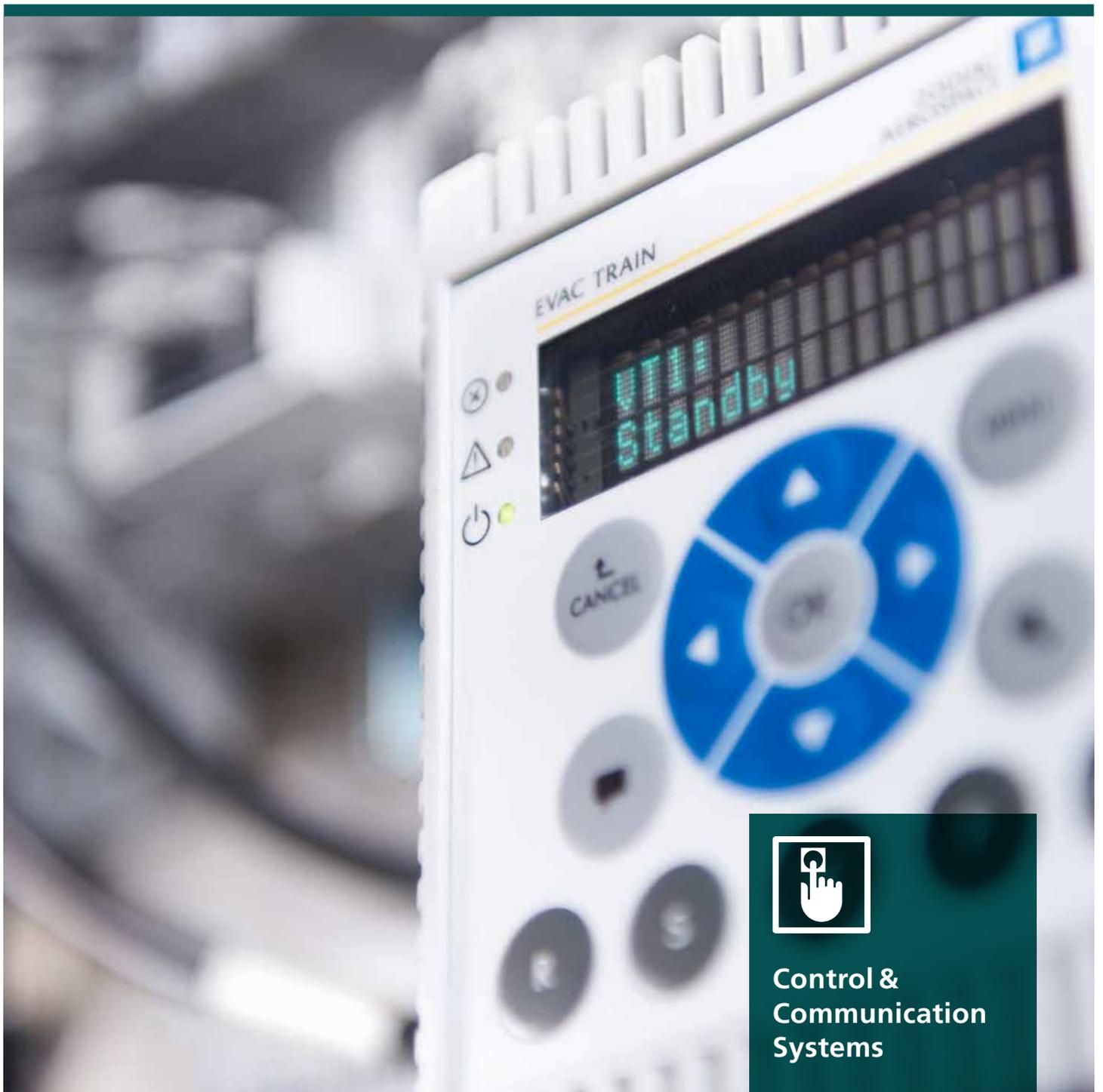




## Control & Communication Systems



Control &  
Communication  
Systems

# Product Overview

The vital ingredient for truly exceptional results



- » Every single product designed to meet highest technical expectations
- » Continuous innovations and updates guarantee future-proof investments
- » All products extensively tested and tailored to our clients' specifications

# Control & Communication Systems

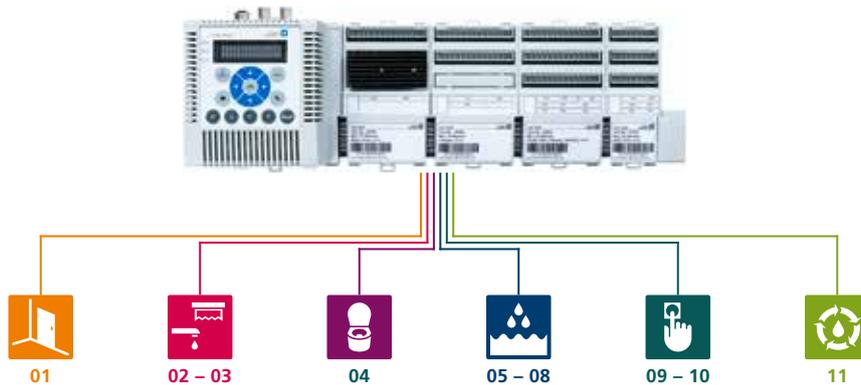
Frictionless. Seamless. Made to measure.

## System Overview

Sophisticated control & communication systems are at the heart of any advanced vacuum toilet solution. Steering the frictionless interplay between all integrated system components and processing status information, system parameters and user input is essential, as is the seamless interaction with other on-train systems. With Evac, high availability, maintainability and easy integration go hand in hand.

Our made-to-measure approach to control & communication includes individual toilet controls, level sensors and human-machine interfaces (HMI) / displays as well as integrated cabin solutions with a centralized automation and control system. And, of course, it does not stop at the system itself, but also covers data transmission across train-wide system buses, living up to Evac's reputation as the system integrator.

Evac's Modular Logic Controller (MLC)



- 01 Cabin module
- 02 Automatic door gear
- 03 Automatic water tap
- 04 Vacuum toilet system
- 05 Water heater
- 06 Fresh water tank
- 07 Tank combination
- 08 Waste water tank
- 09 Buttons
- 10 System controller (MLC)
- 11 Grey water re-use system

## Compliance



- EN 45545:** Fire protection
- EN 501212 – 3-2:** EMC standard
- EN 61131-3:** Programmable logic controllers
- EN 50128:** Safety-related software standard
- EN 50129:** Safety-related hardware standard (communication, signaling and processing systems)
- EN 50155:** Electronic equipment used on rolling stock for railway applications

## S.A.M.T. (Service and Maintenance Tool)



### Real-time monitoring of system activities

Evac's dedicated Service and Maintenance Tool (S.A.M.T.) is the perfect way to monitor live and logged system data such as filling status of tanks, number of flushes, door functions and system events. All data is presented in a clear, informative manner (diagrams, charts and tables can be individually customized according to clients' needs), and the event log file can be easily downloaded for further analysis, providing an ideal basis for system optimization.

### One central interface for service and maintenance

The S.A.M.T. allows to view and adjust I/O status and parameters of the entire cabin, including the vacuum toilet itself, door gear, waste water system and heating. In case of maintenance or malfunction, service flushes, decalcification, tank cleaning and other service, test and self-repair routines can be directly activated via S.A.M.T. A system manual is embedded as standard. Tools for troubleshooting and guided services can be accessed by direct links.

### Easy adaptation to different service routines

As maintenance concepts and requirements vary between railway operators, the S.A.M.T. interface has been designed for easy adaptation to different service routines and environments. In addition to its function as the central information and service hub for the toilet cabin and all its components, the S.A.M.T. allows to view and update software versions of controllers and other system components.

# Evac Train – Integrating Excellence



For more than 40 years, Evac solutions have been known for outstanding reliability, efficiency and low maintenance. As the world's leading provider of completely integrated sanitary systems for trains, we have been generating state-of-the-art components with "built-in" field experience of about 80,000 vacuum systems installed worldwide – and counting.

With extensive expertise and rigid quality assurance, we develop and integrate high-class components into seamless systems that, just like railways, are much more than the sum of their parts – individually tailored for the demands and conditions of vastly different markets in many countries. Introducing a maximum level of performance and stability into any system while using minimum resources and space is our day-to-day business. This is why integrating Evac is integrating excellence.

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# EVAC TRAIN

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