

Train Subsystems Control



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Distribution Automation Solutions

INGESYS® is a multifunctional control platform based on flexible design and on the fulfillment of railway requirements for rolling stock subsystem control.

It is designed for Train Subsystems Control thanks to its robustness, modularity and advanced programming and monitoring functional features.

INGESYS®'s control platform flexibility enables Ingeteam to adapt the system's features and characteristics to the requirements of the application with the aim of achieving the best performance-cost ratio.

All our products are EN50155-compliant and the highest quality is guaranteed by stringent tests during the engineering process. This ensures that our products meet all requirements and all necessary standards.

Ingeteam offers the long-term product lifespan, service, and support demanded by the rail sector.

Control Systems



The INGESYS® control platform includes IEC 61131-3 and the C/C++ programming the language SSL. Additionally, model-based design with MATLAB®/SIMULINK® can be used for developing control applications.

A wide range of standard-based connectivity interfaces is available for integration with field devices and control and supervision systems buses (CAN, MVB, WTB, Ethernet, RS485, etc.).

A built-in web server including a panel configuration tool for user panel definition allows you to monitor tasks (items, active and historical alarm and events monitoring) and maintain tasks such as the system log and user management.

INGESYS® Compact solution provides different digital and analog inputs/outputs and communication port configurations. It can also be customised to meet the requirements of each application.

A mechanical design based on train space constraints and compliance with the EN50155 class TX standard ensure satisfactory operation in different Train Subsystems Control applications such as HVAC, WC, illumination, etc.

Gateway Systems



Ingeteam offers communication gateways that enable our customers to integrate different systems into a defined train communication network.

The modular structure of Ingeteam gateways allows you to select from the different possible communication networks and functional features available in order to integrate different train networks. The possible interfaces available are as follows:

- WTB
- MVB
- CAN
- Ethernet
- Serial link

TCN products are based on our own IP, enabling full system control and reducing dependencies and obsolescence issues.

Additionally, input/output modules can be added to the gateway allowing the system adjustment to application requirements.



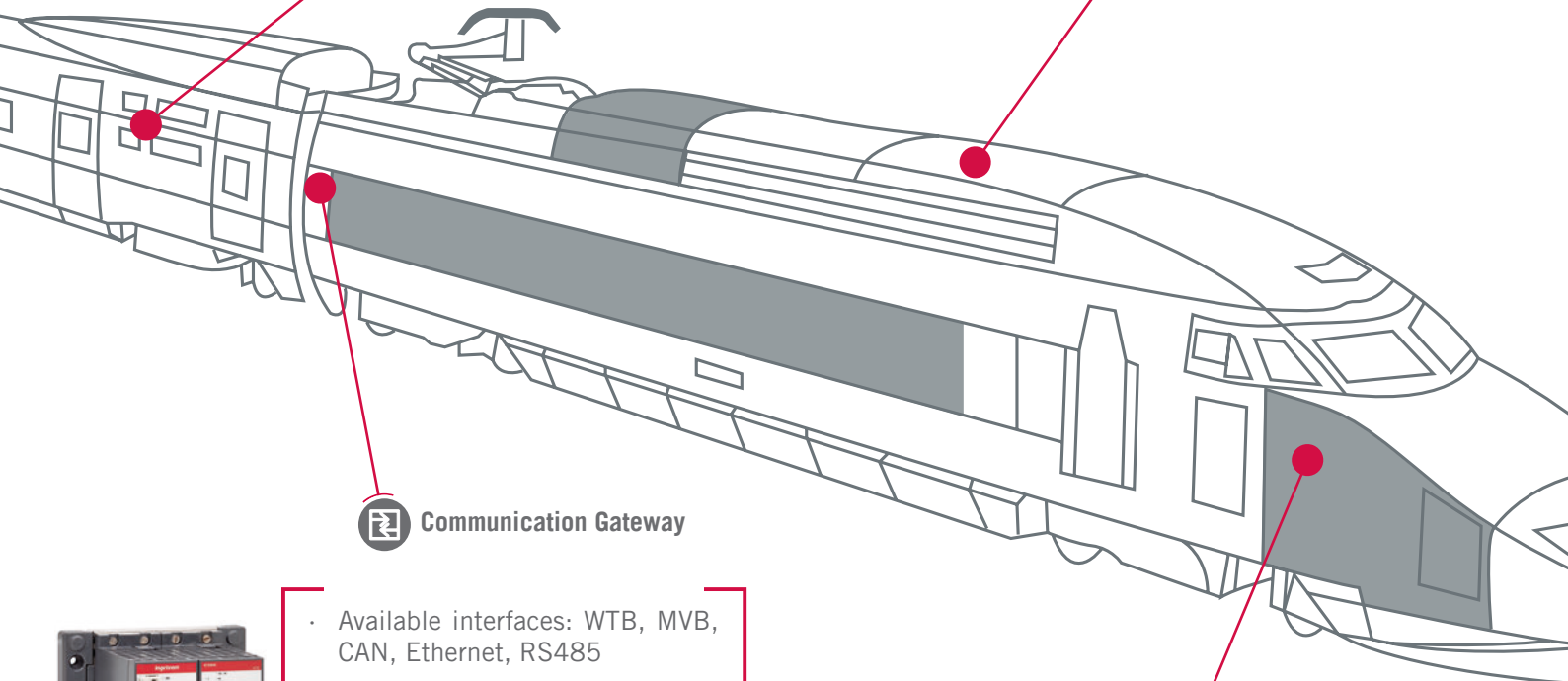


WC Control

- Different mechanical solutions to fit each application requirements
- Fully support of IEC 61131-3 standard languages and C/C++
- Wide range of standard connectivity solution
- Built-in Web Server



HVAC



Communication Gateway



- Available interfaces: WTB, MVB, CAN, Ethernet, RS485
- I/O modules can be added to achieve maximum performance
- Programmable or configurable system according to custom requirements



Condition Monitoring System



- Direct data collection and/or through communication interfaces
- Modular design to support application customization and cost effective solution
- Powerful diagnosis and analysis Tool Suite
- Centralized internet access to distributed CMS systems

Condition Monitoring Systems



CMS provides an open platform solution enabling the collection of real-time train condition data via a communication bus (CAN, MVB, etc.) or by directly interfacing with the train subsystems (brakes, doors, HVAC, pantograph, etc.), thus providing train operators, builders and maintainers with powerful information with which to improve monitoring and maintenance tasks based on real train conditions.

Support of C/C++ and IEC 61131-3 programming languages allows the system to be adjusted to more specific customer demands as well as easy integration into any system platform.

INGESYS® CMS Tool Suite is a comprehensive software for easy and extensive system configuration and diagnosis. Application specific objects help users simplifying system configuration and commissioning.

Different alarm and notification levels on signals or characteristics values, defined at the same machine operation status, can be user defined, generating alarm messages (physical outputs, emails, messages, etc.) to the monitoring service.

The monitoring and diagnosis expert has an extensive tool set at their disposal for signal monitoring and trend analysis. There is also an automatic report generation tool, significantly reducing maintenance tasks.

The tool suite also enables centralised internet access to distributed INGESYS® CMS systems located across different platforms, enabling train operators to optimise their operations based on the current and exhaustive condition of the various assets.

Technical Features



Hardware

EN50155 Class TX certified
Maximum configurability and adaptability with different mechanical options
Long-term availability



Programming

IEC 61131-3 standard languages, C/C+, MATLAB®/SIMULINK®



Communication interfaces

CAN, MVB, WTB, Ethernet, RS485



Built-in Monitoring

Recorder Module
Data logger functionality
Active alarms and historical data viewer
Events viewer
Remote access via web services.



Centralised Monitoring

Cloud architecture (diagnosis data centralised at one point)
Remote access through wireless solutions (GSM, WLAN, GPRS, etc.)

Services

As a result of over thirty years' experience in developing hardware and software for railway, industrial and energy sector applications, Ingeteam has an extended catalogue of control and monitoring systems adapted to the demanding standards of the railway sector.

As a product manufacturer, one of Ingeteam's priorities is to be available and accessible to our clients during the process of choosing the solution that best fits their requirements.

Following services are considered:

-  Product customisation to client-specific requirements
-  Advanced manufacturing & testing facilities to ensure product quality and flexibility
-  Application software design and coding, according to international standards
-  System engineering
-  Commissioning support
-  Cloud-based monitoring data services for system maintenance
-  20 years product availability, ensuring repair and maintenance service during 10 additional year

**CRS
360°** CUSTOMER
RELATIONSHIP
SERVICE
by *Ingeteam*

More than 30 years experience

Ingeteam

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