INGESYS® IC2 is a control system aimed at meeting automation requirements in the railway sector (tram, trains, etc.).

Its compact and robust design according to standard EN50155 is adapted to the demanding mechanical and environmental requirements of the sector.

Intelligent systems for railway applications

There are two possible architectures depending on the application: a compact architecture aimed at controlling train subsystems (HVAC, FDS, doors, catenary control and railway elements, etc.) and a distributed architecture based on standard field buses for application as a tram and train control system.

Its compact internal structure together with a wide range of digital and analog input/output modules make possible to offer a technical solution suited to each application at an optimum cost.

It includes a wide variety of standard communication interfaces used in the railway sector (RS232, RS485, Ethernet, CAN, TCN, TRDP, etc.) which permits its integration into the train communications networks most commonly used on the market.

It provides the user with programming tools which are compatible with the IEC61131-3 standard as well as the option to program in C/C++ and Matlab®/Simulink®. A comprehensive functions library (mathematical, regulation, data filing, communications, etc.) help the user to develop the application.

The integration of a web server allows the user to diagnose and monitor the system easily and flexibly to suit their needs.

Benefits:
· Designed for small spaces
· Custom-made solution with optimum costs
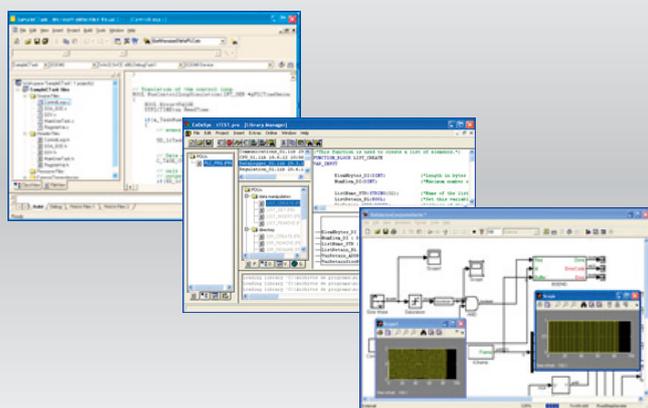· Compliance with regulations

Power Source	
Main Power Supply*	24Vdc (+25% / -30%) Class S1 (EN 50155:2007) 110Vdc (+25% / -30%) Class S1 (EN 50155:2007)
Maximum Consumption	24V @ 300mA / 110V @ 80mA
Dissipated Power	8W (max.)

Processor	
Main Processor	32bit, 400MHz
Program Memory	2MB
RAM	1,4MB
Non-Volatile Memory	32kB nVRAM, 32 MB Internal Flash (expandable up to 8GB)
Interface	1 USB 2.0 Type A (Maintenance and Register)

Communications	
Ethernet	2 x Ethernet 10/100-Base-TX M12 (Internal Switch). Protocols: TCP/IP, TRDP, Modbus TCP
Field Buses (optional up to 4)	CANOpen (Master / Slave), Profibus DP (Slave), RS232/485, RTSX, MVB ESD+, MVB OGF

Input/Output Modules**	
Digital inputs	- 16 x DI (24Vdc @ 3mA)
Digital Outputs	- 16 x DO (HSD 24Vdc @ 500mA)
Relay Outputs	- 3 outputs (150V @ 5A)
Mixed Digital I/Os	- 8 x DI (24Vdc @ 5mA) + 8 x DO (HSD 24Vdc @ 500mA) - 12 x DI (24Vdc @ 5mA) + 4 x DO (HSD 24Vdc @ 500mA)
Analog Inputs	- 8 x AI (13bit, ±10V or ± 20mA) - 8 x AI (16bit, PT100, NTC or Thermocouple)
Analog Outputs	- 8 x AO (16bit, ±10V or ± 20mA)

Environmental Characteristics	
Immunity and Emission	EN 50121-3-2:2007
Temperature Range	EN 50155:2007 [Class TX (-40ºC at +70ºC)]
Vibrations	EN 50155:2007 [Body Mounted, Class B] / IEC 61373:2007

Mechanical Features	
Assembly	Panel
Material	Aluminium
Dimensions (H x W x D)	(149mm to 524mm)*** x 135mm x 34.6mm

*   Optional   ** A combination of up to 10 modules   *** Depending on the number of I/O modules selected, each with a width of 37.5 mm.

Programming tools

HMI Web