

- Flexible module configuration.
- Modules arranged along the train.



## DESCRIPTION

This is the module used for the physical connection between the various items of equipment on the train and the COSMOS system.

The design **modularity** permits the adaptation of the specific characteristics of each train, both in the use of the number of input/output channels and connectivity to the train networks.

The **flexible** architecture of this module is based on its configurability: the type of boards (inputs/outputs), its nature (digital/analogue), as well as its quantity is adapted to the particularities of each project. There are different sizes of racks, where the modules are housed with the boards, to adjust these modules to each specific application.

The module electronic boards are fitted with abnormal situation **protections**. They are equipped with failsafe modes, and implement self-check mechanisms, whereby apart from the information of the inputs/outputs, there is also information regarding the signal quality.

Based on TRANTIC's experience, the design contemplates parameters such as robustness with regards to train conditions (temperatures, transients), configuration simplicity, **maintainability** and **repairability** by boards.

This is a **robust** and **reliable** design, developed in accordance with quality standards, also considering **safety**.

The module can be supplied already set, or it can be set by the user to adjust the data movements according to the specific requirements.

*\*See Services sheet*

The module is also designed to minimise space, consumption and in general to provide a competitive cost solution, taking into account the complete service life of the product.

## CHARACTERISTICS

The technical information of the I/O module of all the components making up the module as a single assembly:

- Railway standard:
  - > EN50155 class T3, S2.
  - > EN50121-3-2 criteria A.
  - > IEC 61373.
  - > IEC 61375 – EMD – class 1.
- Interfaces:
  - > MVB – EMD – Class 1.
  - > RS485.
  - > RS232 (configuration).
- Reliability (according to I/O type module):
  - > MKBF: 5.645.790 km (average speed of 30km/hour).
  - > MTBF: 188.193 hours (50°C air temperature).
- Design under safety considerations EN50126.
- Selftest System.
- Consumption (according to the boards composition): less than 35W.
- Battery voltage: 24-110 VDC.

## COMPONENTS

These modules are made up of the following items, according to the specific requirements of each project:

- Digital Inputs Boards.
- Digital Outputs Boards (Relay and Mosfet).
- Analogue Input/Output Boards.
- Communications Boards.
- Filter Boards.
- 24-110 VDC Power Sources.

