



# TCMS for LRV

(Train Control and Monitoring System for Light Rail Vehicles)

## Mitsubishi Electric has developed the TCMS mainly for the light rail vehicle using CANopen.

This system is a user-configurable system enabling reducing cost of installation and maintenance.

### System Configuration

The system can be configured using devices and development tools supplied by Mitsubishi Electric.

### Component

Mitsubishi Electric supplies VCU and RIO as the components of this system.

### Open System

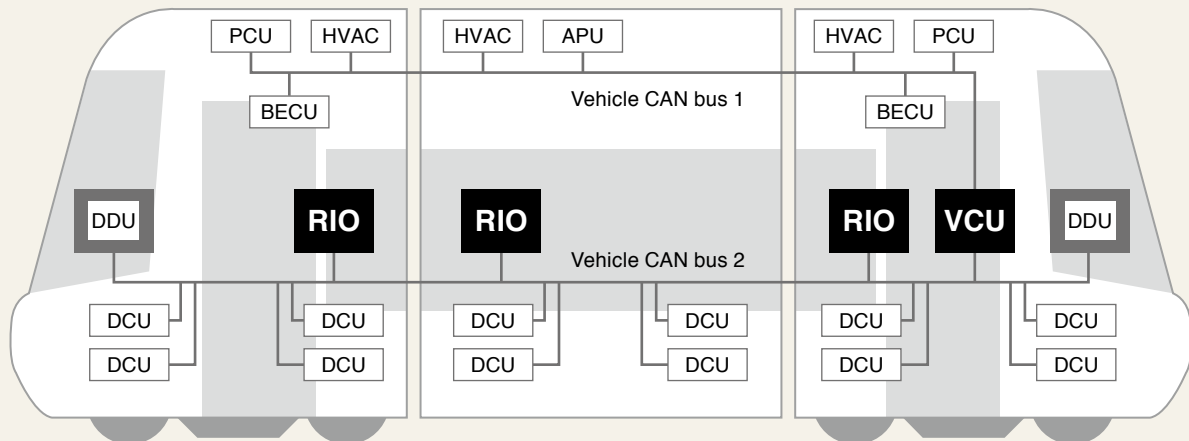
This system conforms to IEC 61375-3-3 (\*1) and IEC 61131-3. (\*2)

\*1:CANopen Consist Network  
\*2:Programmable controllers

### Development Tool

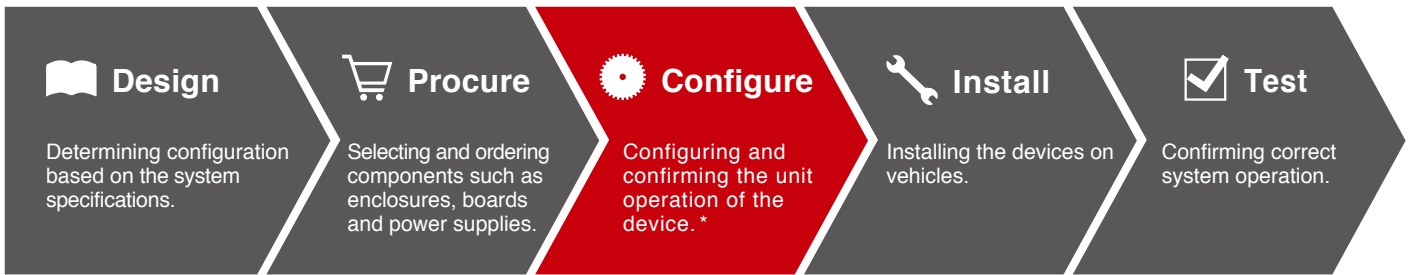
Mitsubishi Electric supplies tools to configure the devices and to develop applications.

### Example of System Configuration

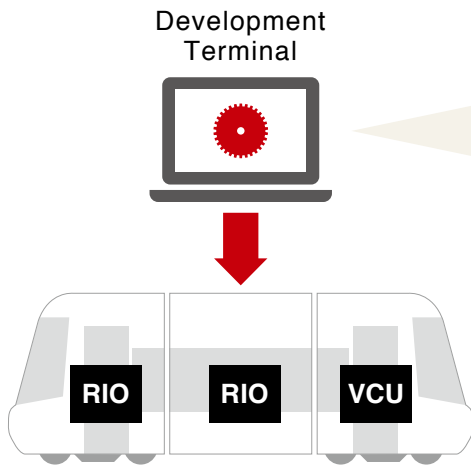


- |   |                                    |  |
|---|------------------------------------|--|
| <b>VCU</b> Vehicle Control Unit                               | <b>RIO</b> Remote I/O unit         | <b>DDU</b> Driver Display Unit         |
| <b>BECU</b> Brake Electronic Control Unit                     | <b>DCU</b> Door Control Unit       | <b>APU</b> Auxiliary Power Supply Unit |
| <b>HVAC</b> Heating, Ventilation, and Air Conditioning system | <b>PCU</b> Propulsion Control Unit |  |

# System Configuration Procedure for the Customer



\* Mitsubishi Electric can support or perform this process, if necessary



## CANopen Setting

Configuring the settings for the interface between devices using a CANopen tool.

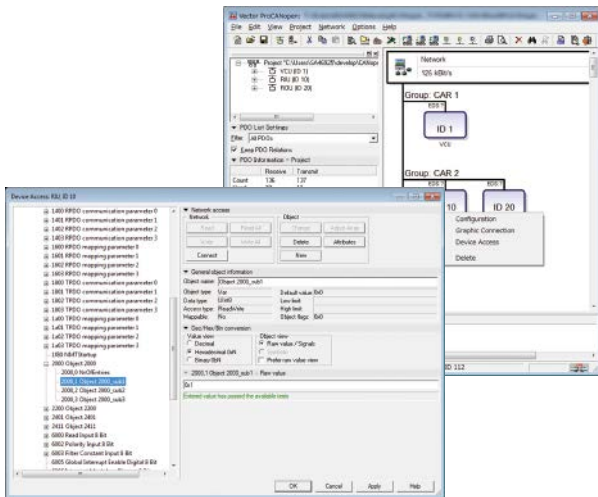
## PLC Programming

Developing the application using a PLC tool (VCU only)

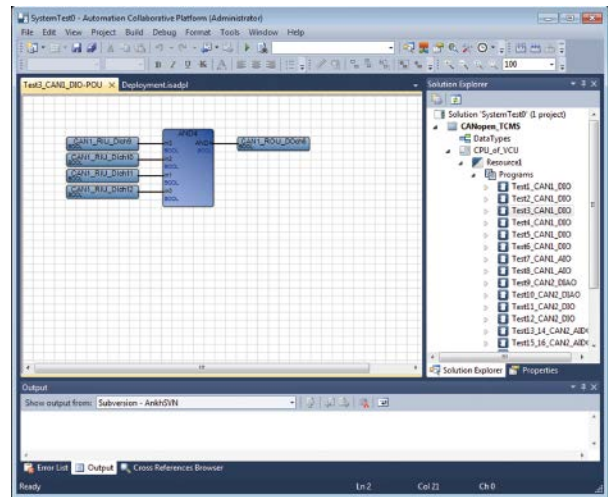
## Setting Writing

Writing the above settings in the devices

### ● CANopen Tool



### ● PLC Tool



- Mitsubishi Electric recommends the Vector ProCANopen shown above. This tool allows the user to adjust the settings and write to the devices
- The tool is commercially available and the customer can utilize the existing CANopen tool, if any

- IsaGRAF® is used. This tool allows the user to develop applications and write them to the devices
- The tool is commercially available

**MITSUBISHI ELECTRIC CORPORATION**

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