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.

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**Example of System Configuration**

- **VCU**: Vehicle Control Unit
- **RIO**: Remote I/O unit
- **DDU**: Driver Display Unit
- **BECU**: Brake Electronic Control Unit
- **HVAC**: Heating, Ventilation, and Air Conditioning system
- **DCU**: Door Control Unit
- **APU**: Auxiliary Power Supply Unit
- **PCU**: Propulsion Control Unit
System Configuration Procedure for the Customer

- **Design**
  - Determining configuration based on the system specifications.

- **Procure**
  - Selecting and ordering components such as enclosures, boards and power supplies.

- **Configure**
  - Configuring and confirming the unit operation of the device.*

- **Install**
  - Installing the devices on vehicles.

- **Test**
  - Confirming correct system operation.

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

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**Development Terminal**

- **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

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**CANopen 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

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**PLC Tool**

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