J1939 Router

Datasheet

A-J1939

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CONTENTS

aparian

1. PREFACE

1.1. ABOUT THIS DOCUMENT

This document contains the technical data for the J1939 Router. The J1939 Router provides intelligent data routing between either EtherNet/IP and the SAE J1939 CAN bus network. This allows the user to integrate J1939 devices into a Rockwell Logix platform (e.g. ControlLogix or CompactLogix) with minimal effort.

1.2. FEATURES

The J1939 Router provides auto extraction and scaling of SPNs for standard SAE defined PGNs. These SPNs can then be mapped to Logix UDTs Tags which can also be automatically generated by the Slate software. This allows the user to create a J1939 Router project with all the required PGNs and then export a Logix L5X file which contains all the required Tags and UDTs for that specific J1939 Router project. This L5X file can be imported into Logix removing the hassle of creating UDTs for the numerous PGNs.

The J1939 Router is configured using the Aparian Slate application. This program can be downloaded from www.aparian.com free of charge.

The J1939 Router allows the user to select standard specification defined PGNs (e.g. PGN 61444 – Electronic Engine Controller 1) from a list in the Slate software. This will automatically build the mapping and scaling for each SPN which can be downloaded to the module. The user can then export a Logix UDT from the Slate software which maps the PGN selected. This can be imported into a Logix application and used as a destination tag for the configured PGN (greatly simplifying the application setup).

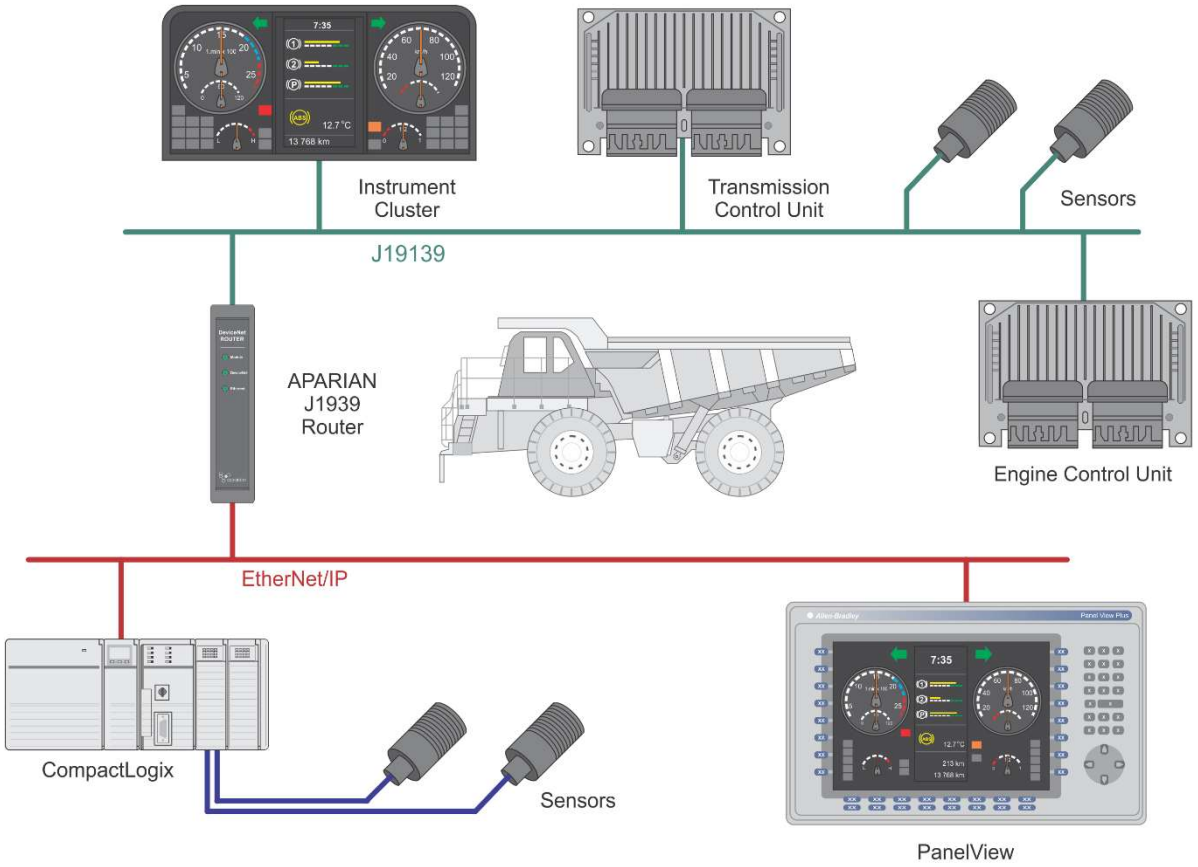

Figure 1.1. – Typical architecture using the J1939 Router

Slate also allows the user to map custom and/or propriety PGNs to a SINT array allowing the user to format the response data in the Logix environment. The module can be configured to either consume data from J1939 devices or produce data for other J1939 devices.

The module also provides a range of statistics to simplify the diagnostic process.

A built-in webserver provides detailed diagnostics of system configuration and operation, including the display of J1939 operation and communication statistics, without the need for any additional software.

1.3. ARCHITECTURE

The figure below provides an example of the typical network setup for connecting various J1939 devices to a Logix controller via the J1939 Router.

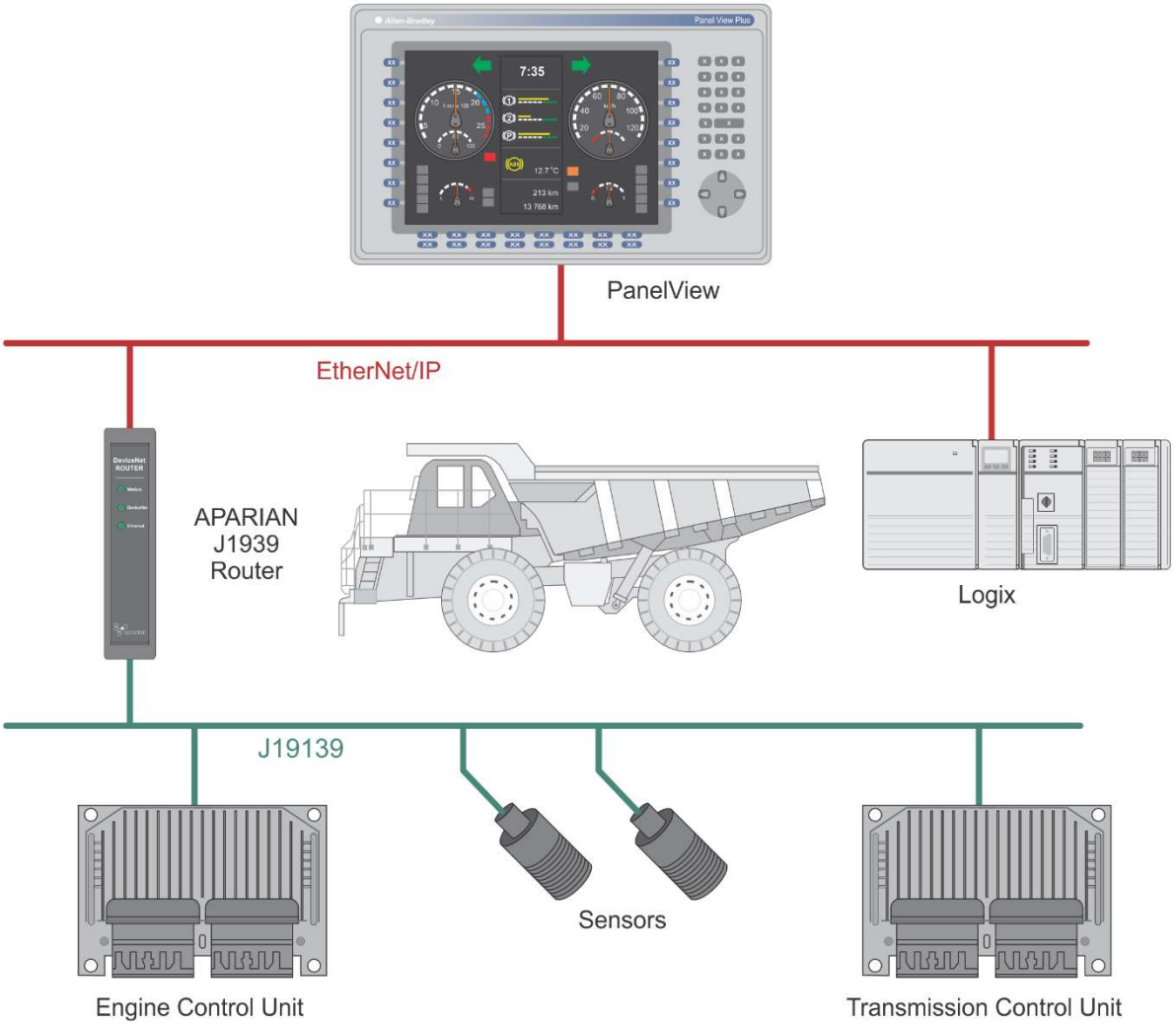

Figure 1.2. - Example of a typical network setup for connecting J1939 device to Logix

The next example illustrates how various sensors connected to Logix can produce J1939 data for the consumption of an Engine Control Unit (ECU).

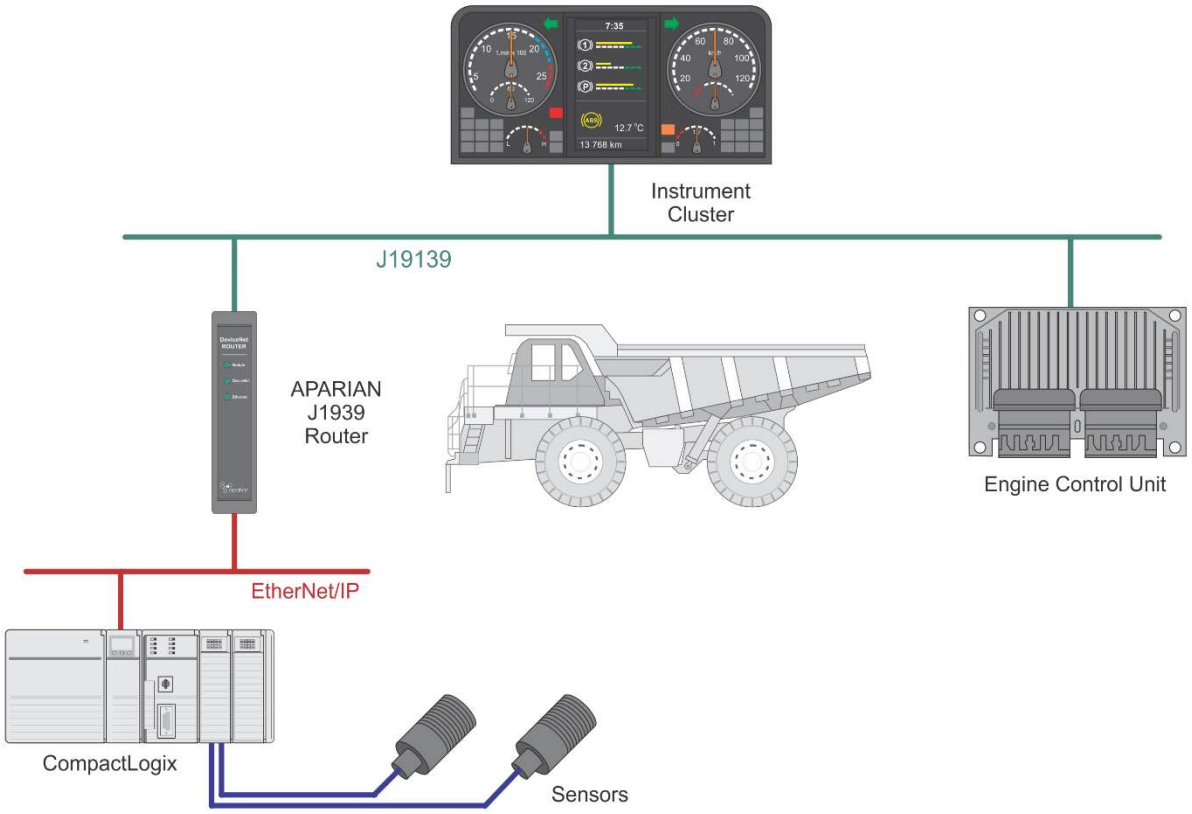

Figure 1.3. – Logix producing J1939 data

2. ETHERNET/IP NETWORK

Specification	Rating
Connector	RJ45
Conductors	CAT5 STP/UTP
ARP connections	Max 20
TCP connections	Max 20
CIP connections	Max 10
Communication rate	10/100Mbps
Duplex mode	Full / Half
Auto-MDIX support	Yes

Table 2.1 - Ethernet specification

3. J1939 NETWORK

Specification	Rating
Connector	5-way terminal, 5.08mm pitch.
Max PGN Mapping	40
Max PGN size supported	480 bytes
Supported Baud Rates	250k 500k
Arbitrary Address Capable	Yes
Support for multi-packets	Yes
Configurable J1939 Name	Yes

Table 3.1 – J1939 network specification

4. ELECTRICAL SPECIFICATIONS

Specification	Rating
Power requirements	Input: 10 – 28V DC, (70 mA @ 24 VDC)
Power consumption	1.7 W

Connector	5-way terminal, 5.08mm pitch.
Conductors	24 – 18 AWG
Enclosure rating	IP20, NEMA/UL Open Type
Temperature	-20 – 70 °C
Earth connection	Yes, terminal based
Emissions	IEC61000-6-4
ESD Immunity	EN 61000-4-2
Radiated RF Immunity	IEC 61000-4-3
EFT/B Immunity	EFT: IEC 61000-4-4
Surge Immunity	Surge: IEC 61000-4-5
Conducted RF Immunity	IEC 61000-4-6

Table 4.1 - Electrical specification

5. CERTIFICATIONS

Certification	**Mark**
RoHS2 Compliant	RoHS2
CE Mark	CE
UL Mark File: E494895	c UL us LISTED CLASS 1, DIV 2, GROUPS A, B, C, D

Table 5.1 – Certifications

6. DIMENSIONS

Below are the enclosure dimensions as well as the required DIN rail dimensions.

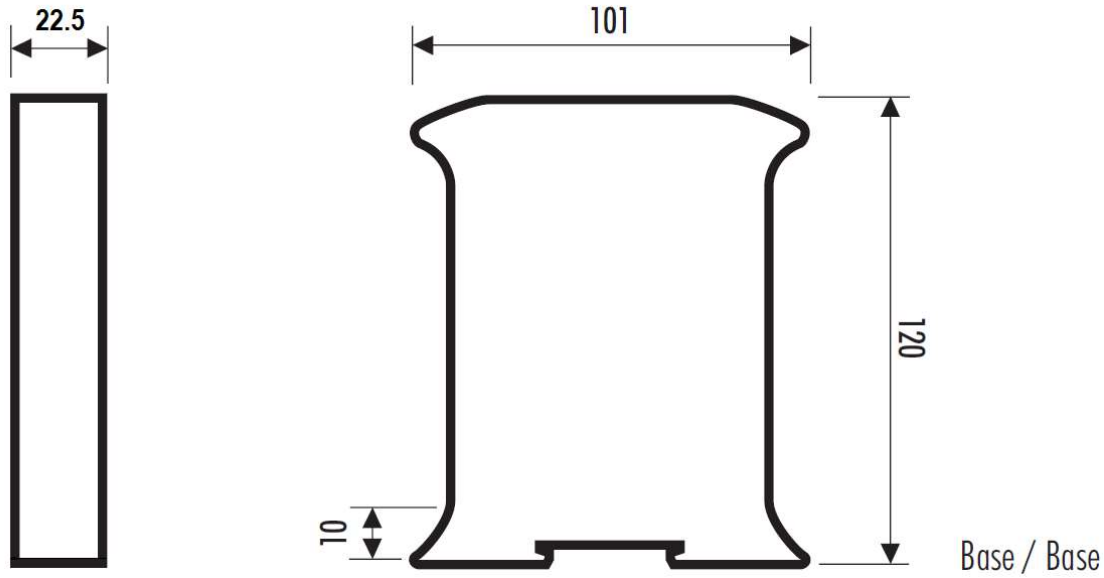

Figure 6.1 – J1939 Router enclosure dimensions

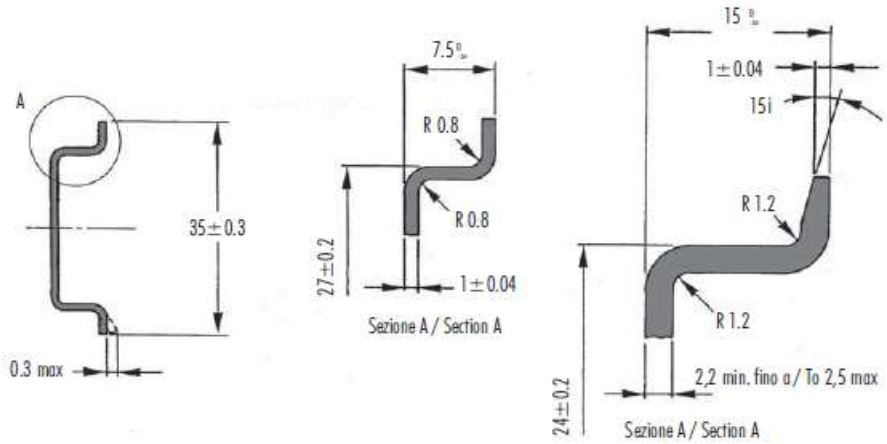

Figure 6.2 - Required DIN dimensions