CANopen Router

Datasheet

A-CANOR
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CONTENTS

aparian

1. PREFACE

1.1. ABOUT THIS DOCUMENT

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

1.2. FEATURES

The module can be configured to be either a CANopen Master or CANopen Slave allow the user to not only integrate CANopen devices into a Logix or Modbus system, but to also allow the user to use Logix or Modbus devices in an existing CANopen network (by using the CANopen Router in Slave mode).

In a Logix system the module uses Direct-To-Tag technology allowing CANopen devices to exchange data with a Logix controller without the need to write any ladder or application code in Studio 5000.

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

⚠️ **NOTE:** Although the CANopen Router supports the CiA443 objects, the CANopen interface is not fault-tolerant.
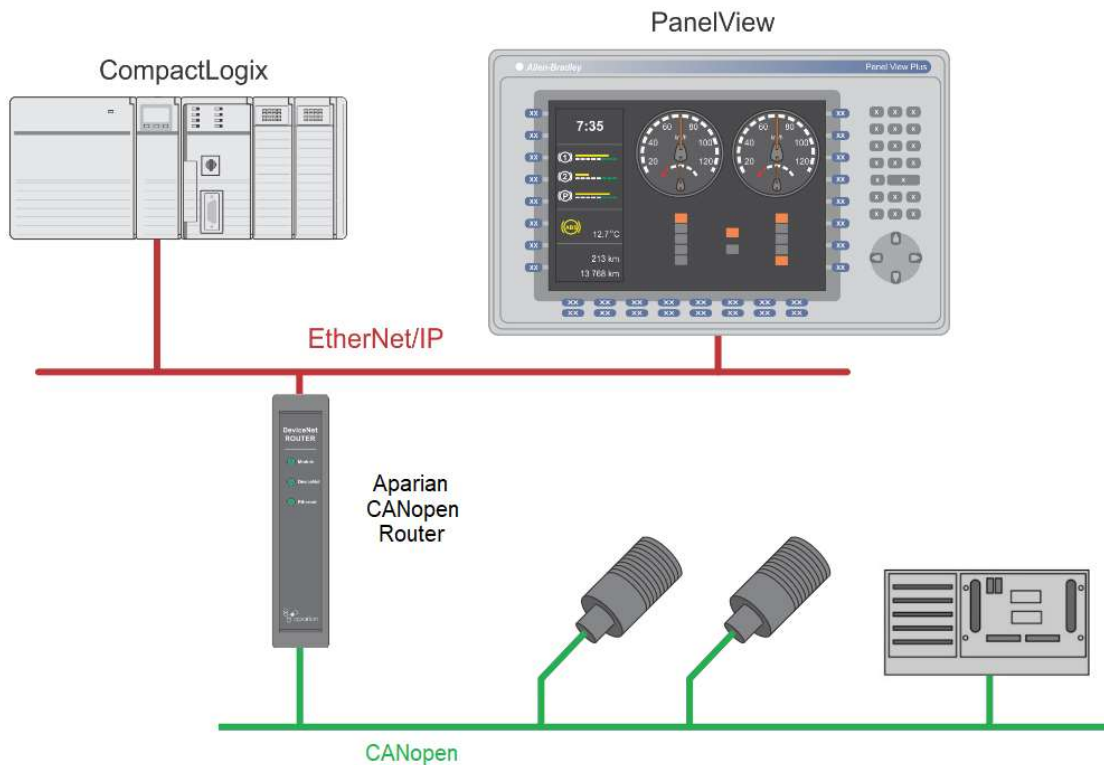
Figure 1.1. – Typical architecture using the CANopen Router

Slate allows the user to map up to 16 PDOs per CANopen Slave to Logix tags which will automatically be updated using Direct-To-Tag. When operating as a Modbus TCP Slave the module will provide various Modbus Holding registers to allow data exchange with a CANopen Slave.

Slate will also provide the user with the ability to change all parameters (using SDOs) of the slave based on the EDS file.

The module also provides a range of statistics to simplify the diagnostic process as well as a CANopen packet capture for remote diagnosis.

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

- Module can operate as a CANopen Master or Slave.
- Module can interface to EtherNet/IP as well as Modbus TCP.
- Supports up to 64 CANopen Slaves (when in Master mode).
- Support for up to 16 PDOs (receive and transmit) per CANopen Slave.
- When using a Logix Controller the module supports Direct-To-Tag so no Logix coding is required.

- Slate software provides a CANopen packet capture for better diagnosis of issues.

- Supports CiA 443 bootloader auto-enable.

- In Master Mode supports NMT message to initialize network.

- Time Synchronization of the CANopen network.

- Master supports SYNC for PDO communication.

- Supports all error and emergency (EMCY) messages and handling.

- Small form factor – DIN rail mounted.

1.3. ARCHITECTURE

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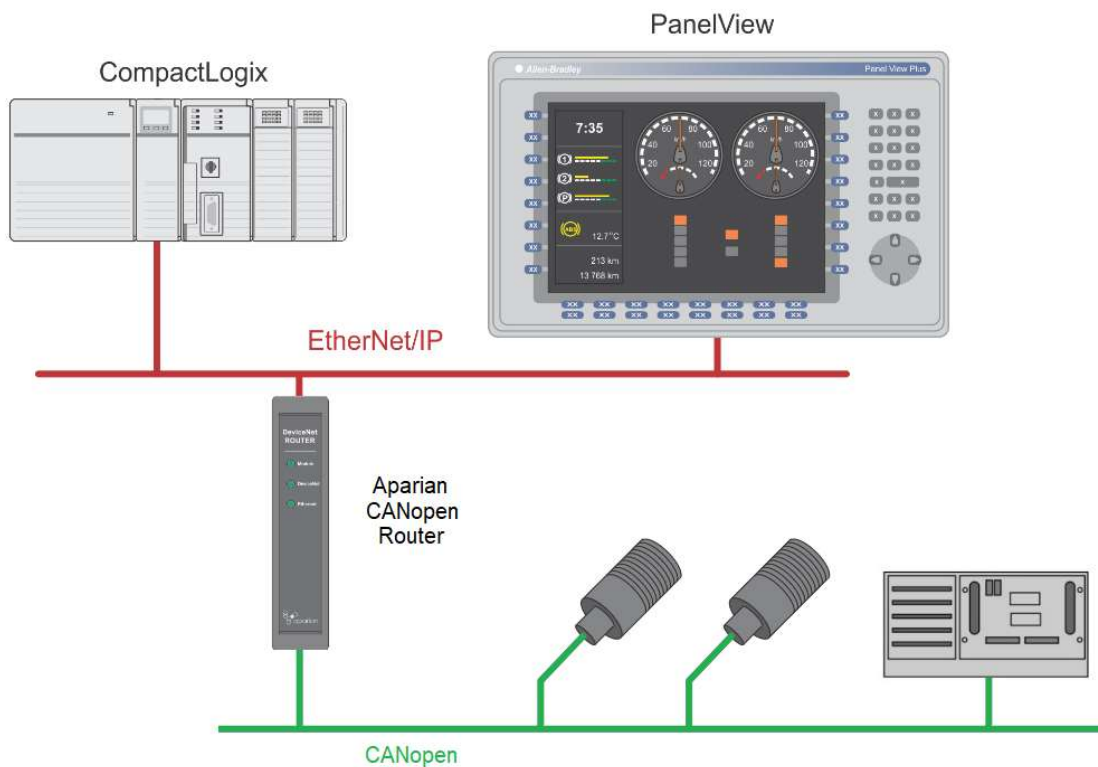

Figure 1.2. – Typical network setup for connecting CANopen Slaves to a Logix Controller

The same applies for interfacing CANopen Slaves to a Controller using Modbus TCP (as shown below).
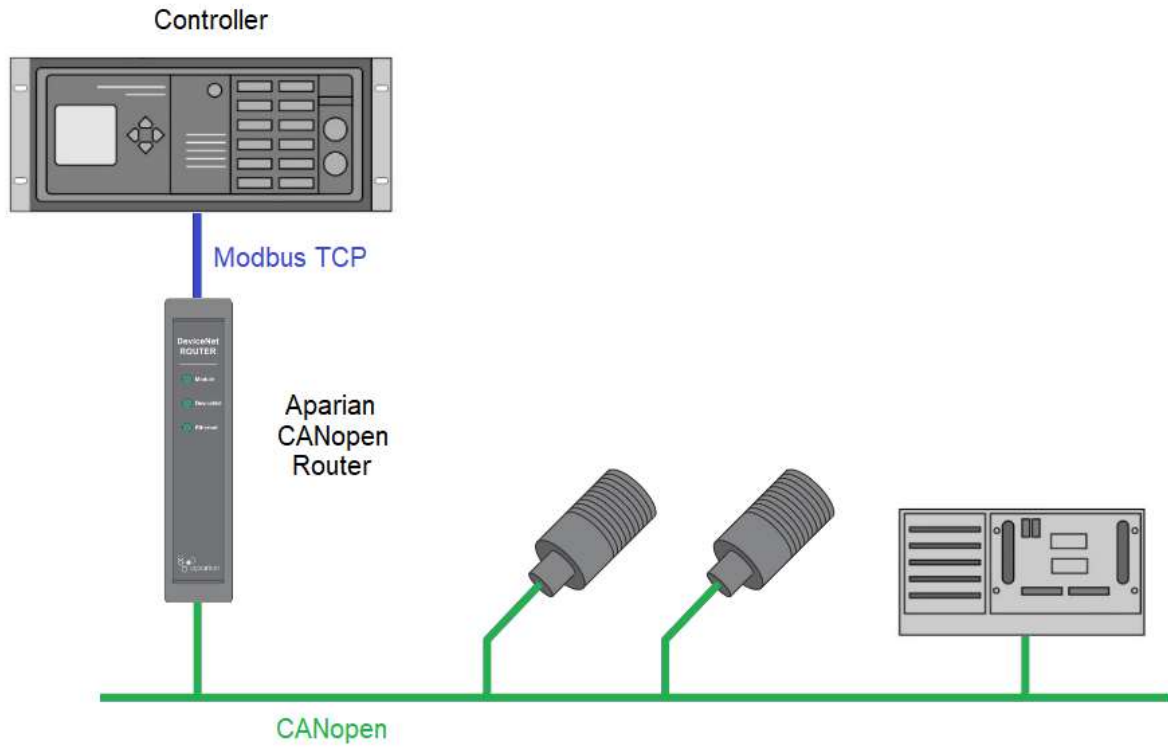
Figure 1.3. - Typical network setup for connecting CANopen Slaves to a Modbus Master

The next examples illustrate how the CANopen Router can be used as a CANopen Slave to allow Modbus devices and Logix controllers to integrate into an existing CANopen network.

Below is a typical network when the user is planning to use a Modbus device on an existing CANopen network using the CANopen Router.
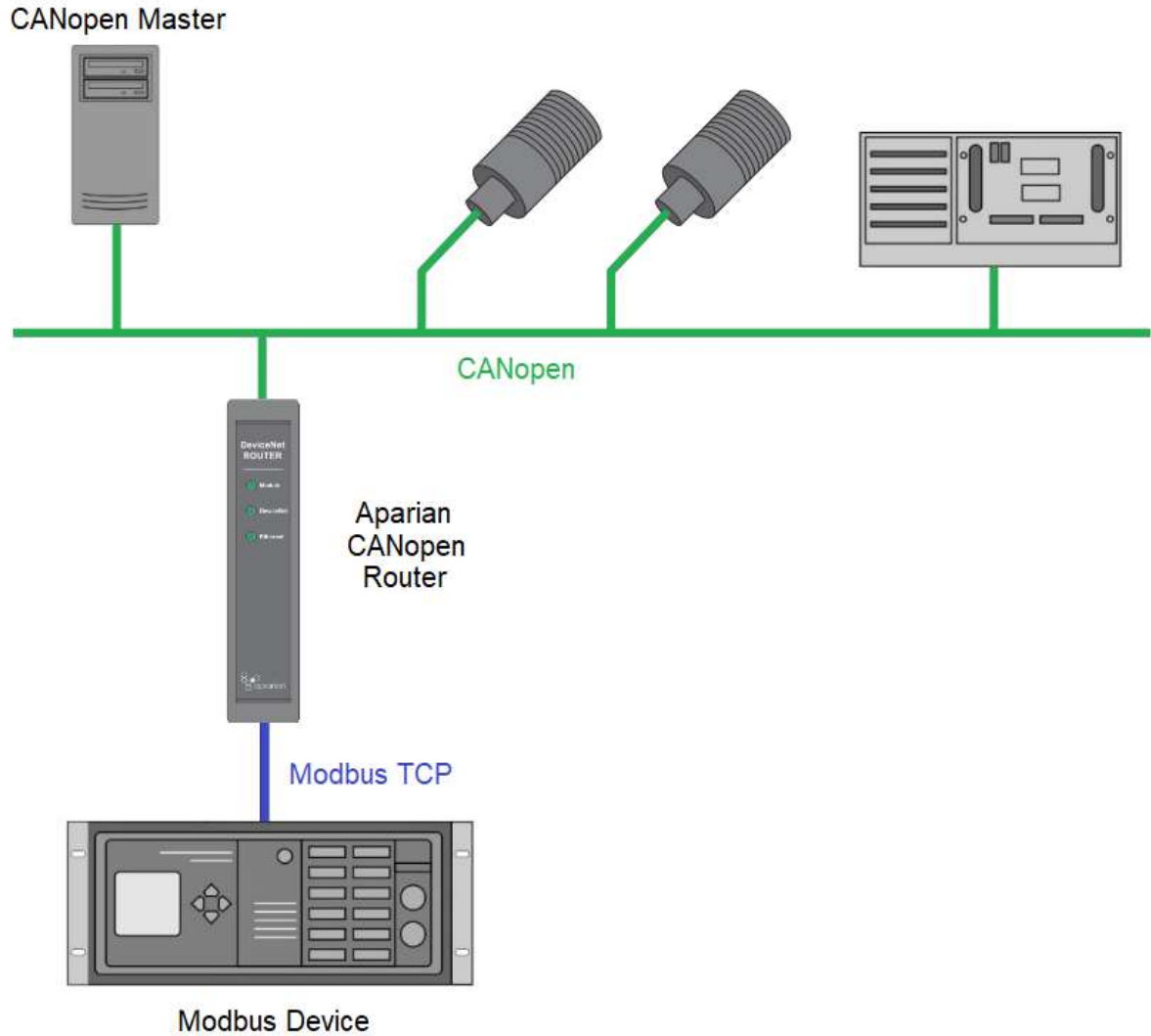
Figure 1.4. – Modbus Device acting as a CANopen Slave via the CANopen Router

Below is a typical network when the user is planning to use a Logix controller on an existing CANopen network using the CANopen Router.
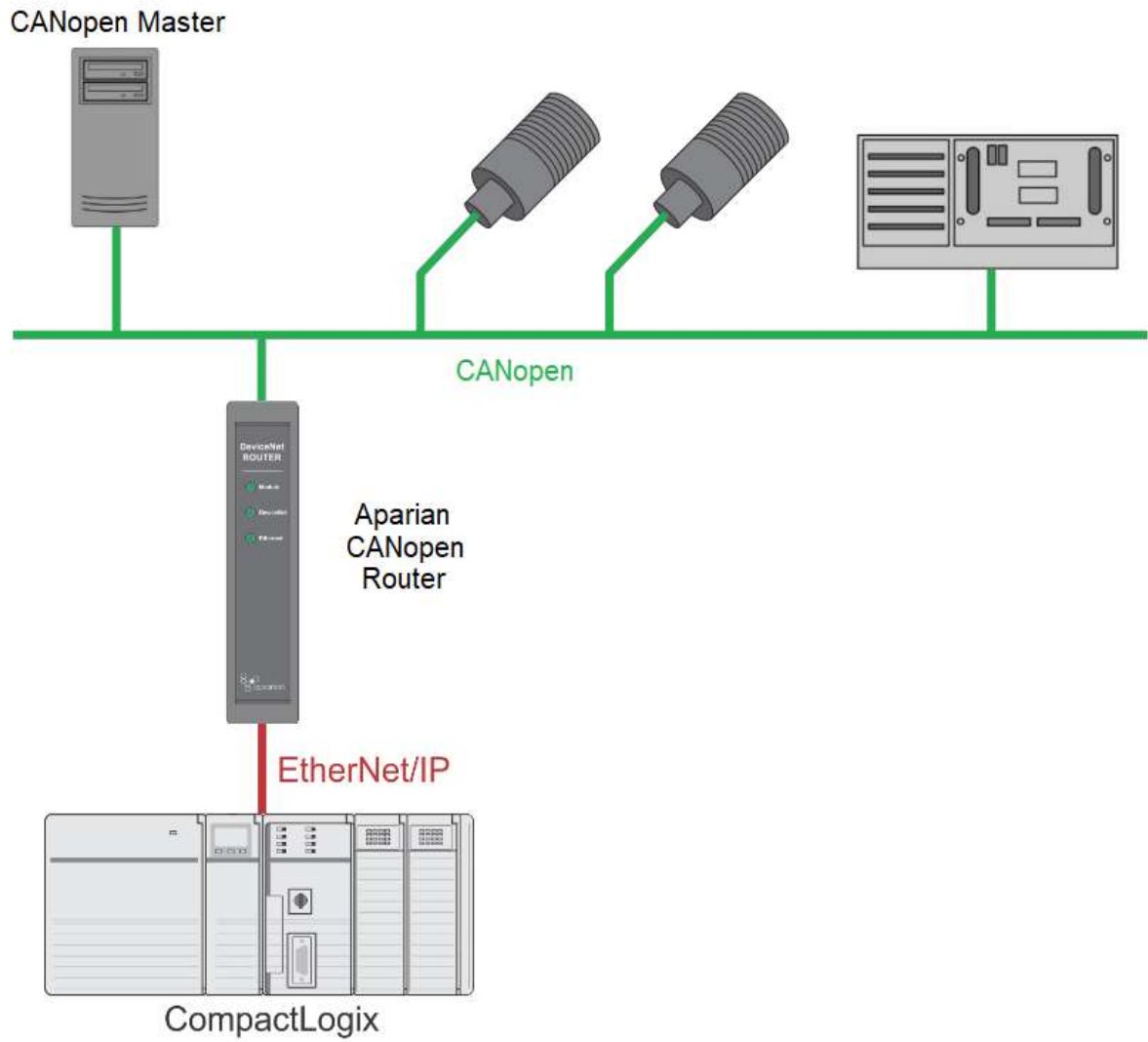
Figure 1.5. – Logix Controller acting as a CANopen Slave via the CANopen Router

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. CANOPEN NETWORK

Specification	Rating
Connector	5-way terminal, 5.08mm pitch.
Modes	CANopen Master CANopen Slave
CANopen Slave Count	64
PDO Count per Device	16
Supported Baud Rates	50k 125k 250k 500k 800k 1M
CiA 443 Support	Yes
NMT messages	Operational Control (eg. Stopped, Pre-operational, Operational) SYNC TIME EMCY

Table 3.1 – CANopen network specification

NOTE: Although the CANopen Router supports the CiA443 objects, the CANopen interface is not fault-tolerant.

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	 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.
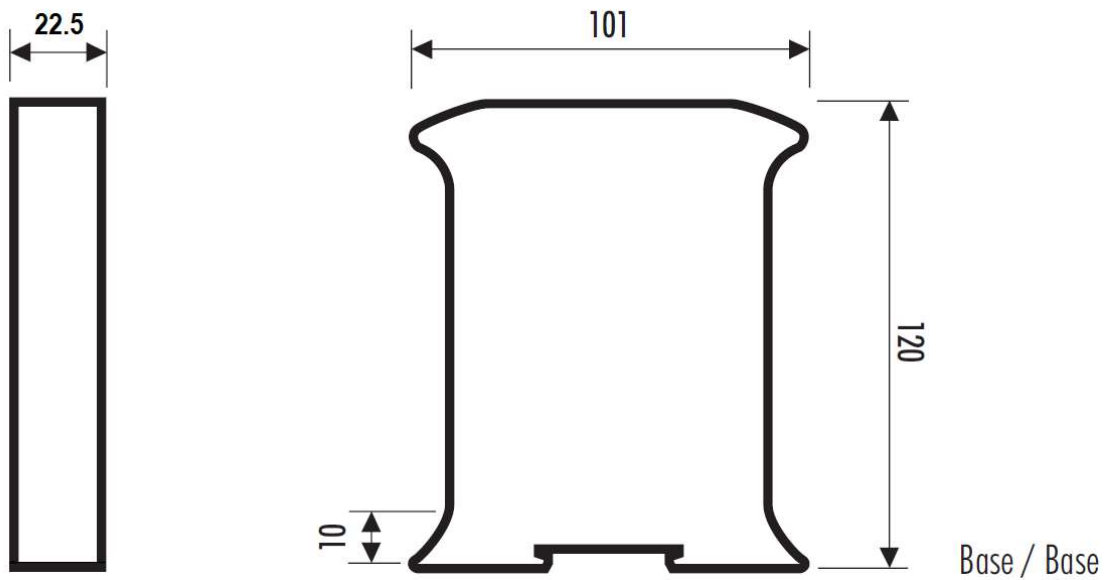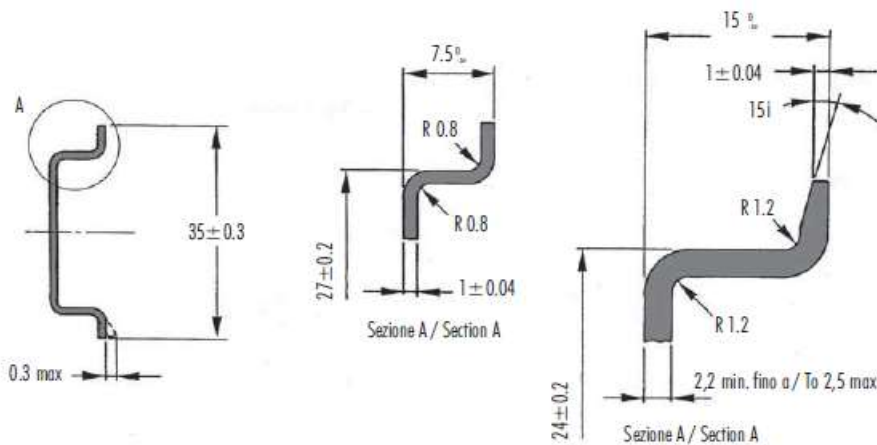

Figure 6.1 – CANopen Router enclosure dimensions

Figure 6.2 - Required DIN dimensions