Ethernet to CAN Converter Discovery Protocol

Document version: 1A
Date: April 5, 2021
Written by: Oleksandr Bogush, Axiomatic Technologies Corporation.

Contents

Introduction

The following document describes a proprietary discovery protocol used by Axiomatic Ethernet to CAN and WiFi to CAN converters.

The document contains terminology and acronyms from the internet TCP/IP protocols. Their meaning is explained in the appropriate TCP/IP documentation.

The document version contains a number and an optional letter. The number reflects changes in the actual protocol (all changes must be backward compatible), and the letter is used to change the protocol description.

Protocol Basics

The protocol is binary based. It runs on top of the standard UDP internet protocol.

The protocol uses the *Common Message Structure* defined in [1].

Protocol ID

The discovery protocol uses the *Protocol ID* = 1.

Message IDs

The following *Message IDs* are defined in the current version of the protocol.

Table 1. Message IDs.

Message ID	Message Name
0	Undefined Message
1	Configuration Request
2	Configuration Response

The *Undefined Message* has no parser associated with it. Messages with IDs not shown in Table 1 are not processed by the current version of the protocol. They are treated the same way, as *Undefined Messages*.

Configuration Request

The *Configuration Request* message with *Message ID* = 1 is sent to the global address 255.255.255.255, port 35100. The converter must listen to the port and respond with the *Configuration Response* message.

The *Configuration Request* message does not contain any data.

Configuration Response

The *Configuration Response* message with *Message ID* = 2 is sent by the Ethernet to CAN converter in response to the *Configuration Request* message. The *Configuration Response* message is always sent to the global address: 255.255.255.255 and the port requesting the configuration.

Configuration Response Data Fields

The *Configuration Response* message has the following format:

$$\mathbf{CRM} = \{MAC_1,\ldots,MAC_6, IP_1,\ldots,IP_4, WP_1,WP_2, DP_1,DP_2, DPT, PN_1,\ldots,PN_{26}, SN_1,\ldots,SN_{16}\}, \quad (1)$$

Where:

$MAC_1,\ldots,MAC_6$ – MAC address, 6 bytes, **MSB first**;

$IP_1,\ldots,IP_4$ – IP address, 4 bytes, **MSB first**;

WP_1,WP_2 – Webserver port, LSB first;

DP_1,DP_2 – Device port, LSB first;

DPT – Device port type, one-byte, DPT={UDP=0, TCP=1};

$PN_1,\ldots,PN_{26}$ – Part number null-terminated string. Can contain up to 25 ASCII characters.

$SN_1,\ldots,SN_{16}$ – Serial number null-terminated string. Can contain up to 15 ASCII characters.

This format allows not only IP discovery of the converter, but also automatic connection to the converter device port by various external clients.

References

[1] O. Bogush, "Ethernet to CAN Converter Communication Protocol. Document version: 4," Axiomatic Technologies Corporation, April 5, 2021.

Document Version History

Document Version	Date	Author	Changes
1A	April 5, 2021	Olek Bogush	Added WiFi to CAN converters in *Introduction* section. Updated *References* section.
1	October 26, 2016	Olek Bogush	Initial version.