



### Main Features

- ▶ CAN 2.0a and 2.0b protocol with up to 1 Mbaud is supported.
- ▶ Proprietary high-performance Ethernet communication stack; optimized for cyclic process data.
- ▶ Support for most common real-time Ethernet protocols including TRDP, IPTCom and EtherNet/IP – CIP.
- ▶ Optional redundant Ethernet interface.
- ▶ duagon web server for remote diagnostics and firmware updates; possibility to implement customer-specific web pages.
- ▶ Standard C development library to design customer-specific gateway application

## Overview

The D504 is an easy to configure Ethernet-to-CAN gateway. It provides up to two CAN interfaces (CAN0 / CAN1) as well as up to two 10/100 Mb/s Ethernet interfaces (ETH0 / ETH1). The Ethernet connectors comply with IEC 61076-2-101 (D-coded; female).

The Ethernet interfaces comply with IEEE 802.3 supporting 10BASE-T or 100BASE-TX, full duplex mode, auto-negotiation and auto MDI-X. Furthermore, the internal logic supports the "Ethernet on traction vehicles" standard IEC 61375-3-4.

The optional second Ethernet interface ETH1 is intended to be used as a redundant line or as a separate channel for remote diagnostic and maintenance purposes.

The CAN interfaces support various protocols including CANpie, CANopen (slave and master) and J1939. Optionally, a 120 Ω or 150 Ω termination can be selected.

duagon's gateways are available in two variants – as platform to build a customer-specific application or as gateway with a standard configurable gateway application. The platform variant is accompanied by a development library that enables fast and efficient design of customer-specific applications.

The gateway is integrated in a stainless-steel housing that can be mounted on a DIN rail or using M4 screws. The device can be powered directly from the vehicle battery or by Power over Ethernet (PoE).

The D504 is designed for the harsh traction environment and conforms to the EN 50155, EN 50121, and IEC 61373 standards in general, but particularly by:

- -40 °C to +70 °C ambient temperature range
- Interruption voltage supply class S2
- Coating against humidity
- Enhanced EMI and vibration robustness

The D500 Ethernet gateway series covers the following train communication networks:

- D501 Ethernet – RS232 Gateway
- D502 Ethernet – RS485/RS422 Gateway
- D503 Ethernet – MVB Gateway
- D504 Ethernet – CAN Gateway (this document)
- D507 Ethernet – Ethernet Gateway (protocol translation)

## Technical Specification

### PHYSICAL DATA

Ethernet connectors	M12, female, D-coded
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CAN connectors	9-pin male SUB-D
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Maintenance port connector	JTAG (Socket, 10-pin) Serial Interface (Socket, 10-pin)
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<b>Visual indicators (LEDs)</b>	Ethernet: link, activity; CAN activity; system status and initialization
<b>Power supply voltage range</b>	24 – 110 VDC
<b>Power consumption</b>	<3 W
<b>Overall dimensions</b>	120 x 106 x 32 mm
<b>Weight</b>	415g (may vary depending on selected configuration)
<b>Ingress Protection</b>	IP30
<b>Operating temperature</b>	-40 to +70°C, according to EN 50155; Class OT4
<b>Storage temperature</b>	-40 °C to +85 °C
<b>Relative humidity</b>	yearly average ≤75%, 95% for 30 consecutive days max. (EN 50155)
<b>Useful life</b>	20 years, according to EN 50155 Class L4

## COMPLIANCE

<b>EN 50155</b>	Railway Applications (Electronic equipment used on rolling stock)
<b>EN 50121-3-2</b>	Electromagnetic compatibility rolling stock apparatus
<b>EN 61373</b>	Shock & Vibration
<b>EN 45545-2</b>	Fire protection, HL3
<b>IEC 61375-3-4</b>	Ethernet Consist Network (ECN)
<b>ISO 11898</b>	Controller Area Network (CAN)

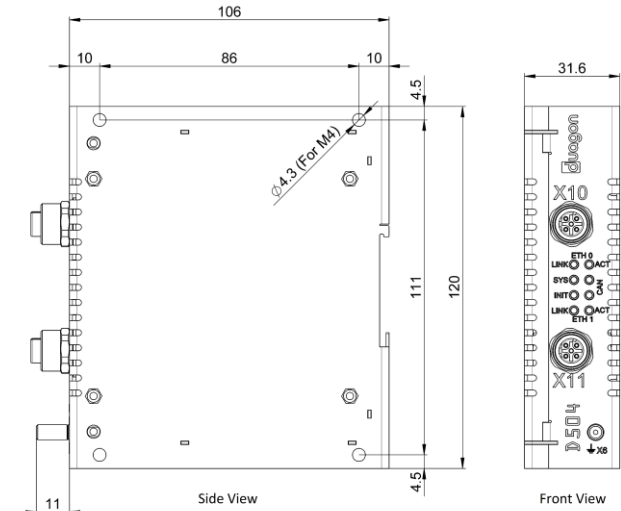
<b>RoHS</b>	Restriction of the Use of Certain Hazardous Substances
<b>REACH</b>	Registration, Evaluation, Authorisation and Restriction of Chemicals

## IEEE STANDARDS

<b>IEEE 802.3u</b>	Fast Ethernet (FE)
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## Dimensions

Dimensions only for reference



## Ordering Information

Product: **D504H** - **I** - **L** - **M** - **B** - **T** - **HV** - **-** - **-** - **-** Example: **D504H-I-L-M-B-T-HV<sup>1</sup>**

<b>Product Type</b> Platform <b>D504H</b> Gateway <b>D504G</b>	<b>Ethernet Protocols Interface<sup>2</sup></b> TCP/IP, UDP Sockets <b>I</b> IPTCom <b>B</b> EtherNet/IP - CIP <b>C</b> TRDP <b>TR</b> PROFINET* <b>R</b>	<b>Number of Ethernet Interfaces</b> 1 Interfaces <b>M</b> 2 Interfaces <b>MM</b>	<b>CAN Termination</b> 120 Ω <b>T</b> 150 Ω <b>D</b> None	<b>SUB-D Bolts</b> M3 Bolts UNC Bolts <b>UNC</b>	<b>Cyber Security</b> No Cyber Security duagon Basic Package* <b>CSB</b> duagon Extended Package* <b>CSE</b>
<b>CAN Read-Only</b> No Yes* <b>S</b>	<b>CAN Type</b> CANpie <b>L</b> CANopen* <b>O</b> CANopen master* <b>OM</b> J1939* <b>J</b>	<b>Number of CAN Interfaces</b> 1 Interface <b>B</b> 2 Interfaces <b>BB</b>	<b>Power Supply</b> 48-110 Vdc <b>HV</b> 24 - 36 Vdc <b>LV</b> PoE (+) powered <b>PoE</b>	<b>Grounding Bolt</b> No Grounding Bolt Grounding Bolt <b>G</b>	

<sup>1</sup> default order options

<sup>2</sup> Ethernet "Sockets" is included on all interfaces

\* contact duagon for lead times and availability

duagon AG  
 Riedstrasse 12  
 CH-8953 Dietikon  
 Phone +41 44 743 73 00  
 Fax +41 44 743 73 15

www.duagon.com

