



# D507

# Data Sheet

## Protocol Translator

Ethernet-to-Ethernet Gateway for Real-Time Protocol Translation

- **High-performance Ethernet communication stack**
- **Optimized for cyclic process data**
- **Supports most common real-time Ethernet protocols**
- **Web server for remote diagnostics and firmware updates**
- **Standard C development library to design customer-specific gateway application**
- **-40 °C to +70 °C operating temperature**

## Product Description

### Ethernet-to-Ethernet Gateway

The D507 is an easy to configure Ethernet-to-Ethernet gateway with two Ethernet interfaces ETH0 and ETH1 on D-coded M12 connectors. This enables the gateway to translate between two Ethernet-based protocols, e.g. UDP Sockets to EtherNet/IP – CIP. The Ethernet interfaces comply with IEEE 802.3 supporting 10BASE-T or 100BASE-TX, full duplex mode, auto-negotiation and auto MDI-X.

### Variety of Product Options

duagon gateways are available in two varieties: as a classic "gateway" with a standard, configurable gateway application, or as a "platform" to build a customer-specific application. For extended or very special requirements, the platform variety is accompanied by a development library that enables fast and efficient design of specific applications, either by duagon as a service or by the customer.

### Extended Cybersecurity

duagon offers different cybersecurity packages to harden the D507. The available packages include features such as secure communication for remote access, centralized user access management, secure event logging and secure firmware updates.

### For Rolling Stock Environments

The D507 is designed for harsh rolling stock environment and complies with the EN 50155, EN 50121, and IEC 61373 standards: it withstands -40 °C to +70 °C ambient temperature, complies with interruption voltage supply class S2, is coated against humidity and provides enhanced EMI and vibration robustness.

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).



## Technical Data

### Ethernet Interface Functionality

- General network support: IPv4
- Protocols
  - Interface 0: TRDP, IPTCom, EtherNet/IP - CIP, CIP Scanner Light, TRDP with Safe Data Transmission (SDTv2), PROFINET, TCP/IP with UDP Sockets
  - Interface 1: TRDP, IPTCom, EtherNet/IP - CIP, CIP Scanner Light, TRDP with Safe Data Transmission (SDTv2), PROFINET, TCP/IP with UDP Sockets
- Web maintenance
  - duagon Web Maintenance
  - Alstom Web Maintenance
- Maintenance interfaces
  - Web-based interface
  - Command line interface (CLI)
  - FTP

### CPU

- FPGA-based soft CPU, 32-bit

### Cybersecurity

- Cybersecurity packages
  - duagon Basic Package
  - duagon Enhanced Package
  - Alstom Package

### Interfaces

- Ethernet: 2 × 10BASE-T/100BASE-TX, M12, D-coded, receptacle
- LED
  - Status: initialization, system status
  - Ethernet: link, activity

### Electrical Specifications

- Supply voltage
  - 24 V DC to 36 V DC nom. (EN 50155)
  - 48 V DC to 110 V DC nom. (EN 50155)
  - Power over Ethernet (PoE)
- Power consumption: 4 W max.
- Isolation voltage: 1500 V RMS

### Mechanical Specifications

- Dimensions: (W) 31.6 mm, (D) 106 mm, (H) 120 mm
- Weight: 415 g
- Mounting: DIN rail, wall/flat surface

### Product Compliance: Functions

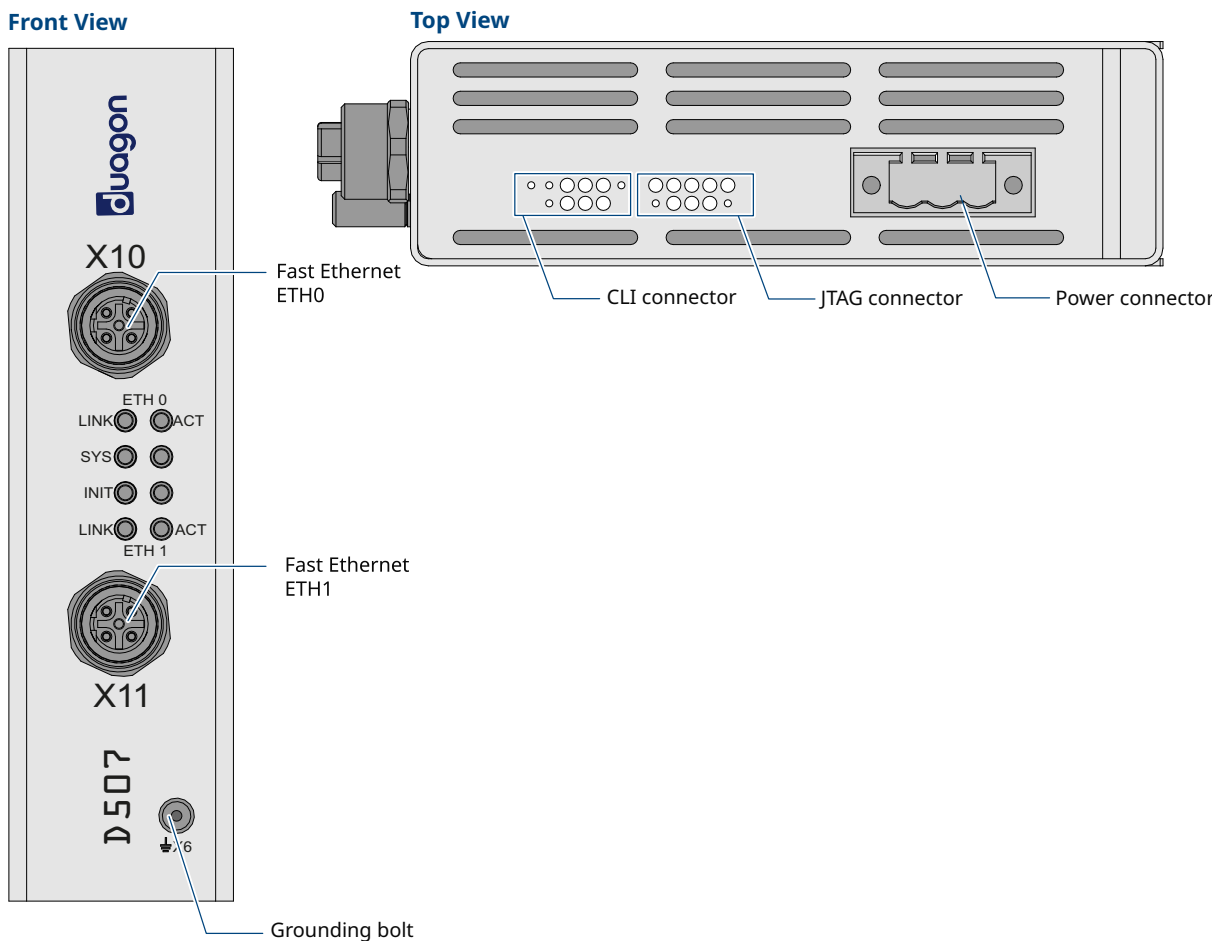
- Ethernet
  - Ethernet: IEEE 802.3-2012
  - Fast Ethernet (FE): IEEE 802.3u
  - Port-based network access control: IEEE 802.1X
  - Link Layer Discovery Protocol (LLDP): IEEE 802.1AB
  - Link Aggregation Control Protocol (LACP): IEEE 802.3ad

- Train Communication Network (TCN)
  - Part 1: General architecture: IEC 61375-1:2012
  - Part 2-3: TCN communication profile, Annex A: Train Real-Time Data Protocol (TRDP): IEC 61375-2-3:2015
  - Part 3-4: Ethernet Consist Network (ECN): IEC 61375-3-4:2014

### Product Compliance: Rail - Rolling Stock

- Operating temperature: -40 °C to +70 °C, +85 °C for 10 min (EN 50155:2017, class OT4, ST1)
- Rapid temperature variations: EN 50155:2017, class H1, no requirements
- Storage temperature: -40 °C (EN 50155:2017) to +85 °C (EN 60068-2-2)
- Pollution degree: EN 50124-1:2017, class PD2
- Shock: 30 ms @ 50 m/s<sup>2</sup> (EN 61373:2010/AC:2017-09, vehicle body, cat. 1, class B)
- Fire protection: EN 45545-2:2013 + A1:2015, HL3
- EMC emission: EN 50121-3-2:2016 + A1:2019
- EMC immunity: EN 50121-3-2:2016 + A1:2019
- Protective coatings: EN 50155:2017, class PC2 (Any PCB protected on both sides)
- Useful life: 20 years (EN 50155:2017, class L4)

## Interfaces



## Ordering Information

### Ordering Options

D507 [1] - [2] - [3] - [4] - [5] - [6] - [7]

D507 H - TR - I - N - LV - G (example)

| Position | Description            | Options                                  | Code    |
|----------|------------------------|------------------------------------------|---------|
| 1        | Product Type           | Gateway                                  | G       |
|          |                        | Platform                                 | H       |
| 2        | Ethernet Interface 0   | IPTCom                                   | -B      |
|          |                        | EtherNet/IP - CIP                        | -C      |
|          |                        | CIP Scanner Light                        | -CSL    |
|          |                        | TCP/IP, UDP sockets                      | -I      |
|          |                        | PROFINET                                 | -R      |
|          |                        | TRDP                                     | -TR     |
|          |                        | TRDP with Safe Data Transmission (SDTv2) | -TRS    |
| 3        | Ethernet Interface 1   | IPTCom                                   | -B      |
|          |                        | EtherNet/IP - CIP                        | -C      |
|          |                        | TCP/IP, UDP sockets                      | -I      |
|          |                        | PROFINET                                 | -R      |
|          |                        | TRDP                                     | -TR     |
|          |                        | TRDP with Safe Data Transmission (SDTv2) | -TRS    |
| 4        | Web Maintenance        | Alstom web maintenance                   | -AWM    |
|          |                        | duagon web maintenance                   | -dWM    |
|          |                        | None                                     | -N      |
| 5        | Power Supply           | 24 V to 36 V DC                          | -LV     |
|          |                        | 48 V to 110 V DC                         | -HV     |
|          |                        | Power over Ethernet (PD)                 | -PoE    |
| 6        | Grounding Bolt         | No grounding bolt (legacy)               | <empty> |
|          |                        | With grounding bolt                      | -G      |
| 7        | Cybersecurity Packages | None                                     | <empty> |
|          |                        | Alstom Package                           | -ACS    |
|          |                        | duagon Basic Package                     | -CSB    |
|          |                        | duagon Enhanced Package                  | -CSE    |

**2+3** -TRS: SDTv2 is a purely functional implementation, it does **not** meet SIL requirements.

**2+3** -R: **Contact duagon** for availability and lead times.

**4+7** Not all combinations of Web Maintenance and Cybersecurity are possible. **Contact duagon** for availability.

**7** Cybersecurity packages offer features to reach a security level up to SL2 according to IEC 62443-4-2. **Contact duagon** for availability and lead times.