General Features

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 120Ω or 150Ω 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.

Key Benefits

- Proprietary high-performance Ethernet communication stack; optimised 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.

Application Examples

- Retrofitting of existing train communication networks based on legacy field buses.
- Accessing train communication networks for diagnostic and maintenance purposes from train operator or IT networks.

D504 Hardware Architecture
## Technical Data

### Ethernet Interface
- 100BASE-TX or 10BASE-T physical layer according to IEEE 802.3
- M12 connectors (female, D-Coded) according to IEC 61076-2-101
- Support for full duplex mode, auto-negotiation, auto MDI-X
- 1.5 kVAC galvanic isolation

### Ethernet Protocols
- TCP/IP, UDP Sockets
- IPTCom
- EtherNet/IP - CIP
- TRDP
- PROFINET®

### CAN Interface
- Up to two CAN interfaces, CAN0 and CAN1 available. Both connectors are 9-pin male SUB-D.
- Galvanically isolated to the digital logic and to each other
- Supports virtually all CAN operating modes and baud rates: Version 2.0a and 2.0b, with up to 1 Mbaud. The CAN controller is compatible to the Philips SJA1000 widely used in the industry

### CPU base System
- 32-bit soft processor
- Programmable in standard C with accompanying development library
- Flash file system

### Diagnostic / Service
- Device status information available through serial interface, telnet or web server
- Firmware update via Ethernet
- JTAG and serial line externally accessible

### Supply Voltage
- Single power supply 24 – 110 V DC
- Power over Ethernet (PoE), PD

### Power Consumption
- Powered directly from battery $P_{max} < 3$ W
- Interruption voltage supply Class S2

### Operating Conditions
- Ambient temperature: –40 to +70 °C (EN 50155, class TX)
- Relative humidity: 75%, max 95% for 30 days per year (conformal coating) according to EN 60068
- Shock and vibration: According to IEC 61373 category 1, class B
- EMI: According to EN 50121 and EN 50155

### Physical Characteristics
- Housing: Stainless steel, ingress protection IP30
- Dimensions: 120 × 106 × 32 mm
- Weight: 415 g (may vary depending on the selected configuration)

### Environment
- Fully compliant with RoHS and REACH
- 100% cyclic climatic testing

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## Product Ordering Table

### Product Type
- Platform: D504H
- Gateway: D504G

### Ethernet Protocols Interface
- TCP/IP, UDP Sockets
- IPTCom
- EtherNet/IP - CIP
- TRDP
- PROFINET®

### CAN Type
- CANopen
- CANopen Master J1939

### Number of CAN Interfaces
- 1 Interface
- 2 Interfaces

### Power Supply
- 48-110 Vdc
- 24 – 36 Vdc
- PoE (+) powered

### Grounding Bolt
- No Grounding Bolt
- Grounding Bolt

### Sub-D Bolts
- M3 Bolts
- UNC Bolts

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1 default order options
2 Ethernet “Sockets” is included on all interfaces
3 contact duagon for lead times and availability

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## Related Documents

- Data Sheet D504: D504_DS.pdf
- Product Ordering Guide: order_ug.pdf

Available at: [www.duagon.com](http://www.duagon.com)

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