General Features

The D504 is a CAN-to-Ethernet gateway. It provides up to two CAN interfaces CAN0 and CAN1 on 9-pin male SUB-D connectors and up to two Ethernet interfaces ETH0 and ETH1 on M12 connectors.

The Ethernet interfaces comply to IEEE 802.3 and the internal logic is prepared for the future "Ethernet on traction vehicles" standard IEC 61375-3-4.

The D504 is designed for the harsh traction environment and conforms to the

EN 50121 / EN 50155 / EN61373 standards, e.g. by:

- -40 to +70°C operating temperature
- coating against humidity
- enhanced EMI and vibration robustness

The gateway is integrated in a stainless-steel housing that is mounted on a DIN rail or using M4 screws. The device is powered directly from the vehicle battery.

The D500 Ethernet Gateway Family covers modules with connections to the following vehicle bus systems:

- D501: Ethernet-RS232
- D502: Ethernet-RS485/RS422
- D503: Ethernet-MVB
- D504: Ethernet-CAN (this document).

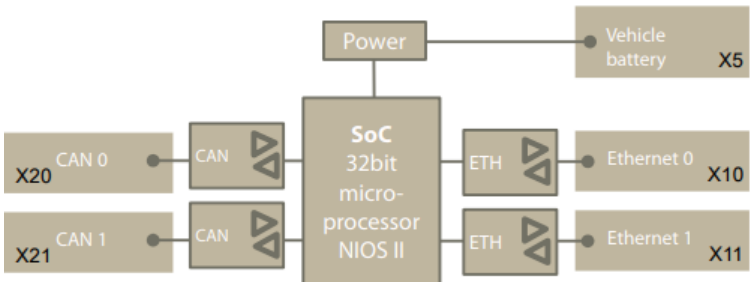
Key Benefits

- Integrated train manufacturer specific webservices
- Hardware prioritisation within the duagon's own Ethernet controller
- Proprietary high-performance UDP Stack (optimised for cyclic process data telegrams)
- Encapsulation of real-time Ethernet protocol stacks
- Fully compliant to IEEE 802.3, EN 50121, EN 50129, EN 50155, EN 60529, IEC 61373 and IEC 61375, IEC 61076

Application Examples

- Generic Ethernet Gateway for various real-time protocols

D504 Hardware Architecture



Life Cycle Cost

Total cost of ownership was an important aspect when creating the installation, maintenance and service concept.

Furthermore, to avoid service expenses, the gateway has strictly been designed without the usage of electrolytic capacitors

Technical Data

CPU base System	– 32bit softcore CPU running – Programmable in standard C – Flash file system – Webserver for maintenance
Ethernet Interface 0 + 1	– Provides up to two independent Ethernet interfaces ETH0 (X10) and ETH1 (X11) with M12 connectors (with D coding) – Fully compliant with IEEE 802.3 and IEC61375 – 10/100 Mbit/s – Full duplex mode – Auto-Negotiation, Auto-Polarity, Auto-Crossing
Ethernet Protocols	– IPTCom – TRDP – EtherNet/IP, CIP – PROFINET – TCP/IP, UDP
CAN Interface 0 + 1	– Up to two CAN interfaces, CAN0 (X20) and CAN1 (X21) available. Both connectors are 9-pin male SUB-D. – Galvanically insulated 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
Supply Voltage	– Single power supply 24 – 110V – Power over Ethernet
Diagnostic/ Service	– Device status information/ identification readable through host interface – Firmware update via Ethernet – JTAG and serial line available
Power Consumption	– Powered directly from battery Pmax = 3W – Interruption Class C2 ceramic capacitor on board, no need to replace capacitors due to aging
Operating Conditions	– Temperature: –40 to +70°C (EN 50155 class TX) – Relative humidity: 75%, max 95% for 30 days per year (conformal coating) EN 60 068 – Shock and vibration: According to IEC 61373 category 1, class B – EMI: According to EN 50121 and EN 50155
Dimensions/ Weight	– Housing: Metal, IP30 protection – Dimensions: 120 × 106 × 32 mm – Weight: 415g
Environment	– Fully compliant to RoHS and REACH – 100% 48h cyclic climatic testing

d-041497-041530

Order Code and Hardware Options

ProductType: **D504H** - [ ] - [ ] - [ ] - [ ] - [ ] - [ ] - [ ] - [ ] - [ ]

EXAMPLE: **D504H-I-O-M-B-T-HV**

Product Type	Ethernet Interface	CAN Type	Number of Ethernet Interfaces	Number of CAN Interfaces	CAN Termination	Power Supply	DSUB Bolts	Grounding Bolt
Gateway **D504G**	TCP/IP, UDP **I**	CANpie **L**	1 ETH Interface **M**	1 CAN Interface **B**	120Ω **T**	24 – 36 Vdc **LV**	UNC Bolts **UNC**	Grounding bolt **-G**
Platform **D504H**	EtherNet/IP, CIP **C**	CANopen **O**	2 ETH Interfaces **MM**	2 CAN Interfaces **BB**	150Ω **D**	48 - 110 Vdc **HV**	M3 Bolts **<empty>**	No bolt **<empty>**
	TRDP **TR**	CANopen Master **OM**			none **<empty>**	PoE powered **PoE**		
	IPTCom **B**	J1939 **J**						
	PROFINET **R**							

Related Documents

Data Sheet D504 D504_DS.pdf

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