duagon

RAILWAY PERFORMANCE COMPUTING

High-performance platforms designed for a wide range of rail applications

In rail transport, large amounts of data need to be processed to ensure operational safety, reduce maintenance costs and improve passenger comfort through on-board connectivity. Modern transport systems therefore rely on embedded high-end computer applications with different interfaces to the train and the outside world.

Additional virtualization software makes it possible to run different applications on one computer that would otherwise require different computers on the train. This allows rail operators to reduce costs and improve operational efficiency, as only one computer needs to be used instead of many different computers on the train.

duagon's high-performance computing platforms are designed for a wide range of rail applications, such as predictive maintenance and mainframe for passenger WiFi, internet access and position services. Functions such as video surveillance, passenger counting or ticketing can also be integrated.

Our computers are equipped with 11th generation Intel® Core™ processors, which guarantee reliable data processing and long availability until 2032. As open virtualization platforms, they support Intel VT-x and VT-d technology for virtualization.

Train Server

The train server is a combination of a rack with a suitable power supply, CPU, local memory and various I/O modules. Each server is modular, flexible and can be individually configured to meet the requirements of our railway customers.

The train server can be equipped with an integrated and very robust monitorable fan unit to ensure operation even at very high ambient temperatures. All train server combinations meet the maximum requirements of EN50155.

G28M Embedded SBC with 11th Generation Intel® Core and Xeon W-11000 Processors

G239 Carrier Board for 5G Wireless Communication Modules

G501/G503 Dual/SATA HDD/SSD Shuttle & Raid Controller

The duagon G28M is a 3U CompactPCI Serial CPU board featuring the 11th generation Intel® Core™ and Intel® Xeon® W-11000E Series processors.

With 4 to 8 cores, a strong GPU and a fast 64 GB DDR4 DRAM with ECC included, the single board computer is well suited for high-end embedded computing rail onboard and wayside.

Optional 10 Gb Ethernet interfaces allow for high data throughput and direct connection to the network backbone.

Coming soon

In rail transport, 5G wireless systems enable more reliable, secure and higher data transmission rates and thus more flexible and efficient operation.

For predictive maintenance, diagnostic servers, internet-on-board or back-office communication, duagon has developed a new robust CompactPCI Serial carrier card for two 5G high-speed wireless modems with SIM slots and eSIM. A WLAN modem can also be added.

In addition, a high-precision GNSS receiver is integrated for precise track location. It is designed for an operating temperature range of -40 °C to +70 °C (+85 °C).
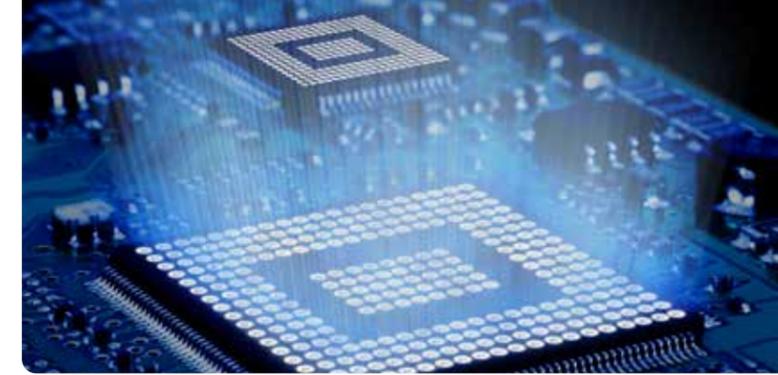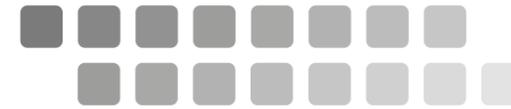
Coming soon

Both G501 and G503 are CompactPCI Serial hard disk drive carrier boards.

While G501 is designed to carry one 2.5" SATA hard disk drive or a solid state drive, with the G503 it is two 2.5" SATA hard disk or solid state drives.

The G503 can be used to supplement the RAID functionality provided by the CPU board, in order to implement data storage systems with high reliability and capacity.

G403 Railway I/O Board - Digital I/Os

G211X Quad Gigabit Ethernet Interface Board

Server Racks

The G403 is a digital I/O CompactPCI Serial board designed for railway applications.

The card is used for input/output of digital signals with different voltage levels and ground references.

It supports 16 bidirectional binary input/output channels, which are separated into four optically isolated groups.

The G211X quad Ethernet interface is a rugged single Eurocard CompactPCI Serial peripheral board. It provides four Gigabit Ethernet interfaces at the front panel which can be accessed on four M12 X-coded connectors.

In addition, the extended operating temperature design makes it especially suited for applications in harsh environments, such as rolling stock.

duagon offers a variety of customizable server racks in different sizes and form factors, with or without ventilation and monitoring to fulfill specific customer's needs.

As an option, the servers can be equipped with an integrated and very robust monitorable fan unit to ensure operation even at very high ambient temperatures.
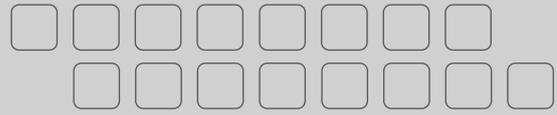
APPLICATION EXAMPLE

Train Server

By using powerful train servers, a wide range of applications such as Passenger Information System (PIS), passenger WiFi, seat reservation, firewall and more can be realized. All applications run virtually on one platform. For better availability, the computer platforms are redundant (installed on the train). The duagon train server is mounted on a rack and includes a single board computer (G28M) and a 5G wireless high-speed interface board (G239).
All train server combinations meet the high-level requirements of EN50155.

Product:
CPCI Serial 19" system (custom-specific)
G28M, G239

YOUR APPLICATION - OUR COMPETENCE

The duagon advantage

Complete service – reliable embedded electronic products and software, with integration and life cycle services.

› At duagon, our customers have the advantage of having everything they need for their secure application supplied by a single supplier. By having secure hardware products and software features all under one roof, our customers have one single point of contact working with them from the very beginning of their project, through to continued support once the system is running.

› For various train-borne communication network applications including network/zone separation, protocol translation and train backbone communication, duagon is your leading partner for reliable and secure data communication. Our systems are complemented by engineering services and high-quality application software support to provide the broadest range of train-borne communication protocols and key features like cyber security, virtualization and safe computing.

› duagon boards and systems are not only modular, customizable and secure but also developed to meet requirements such as temperature ranges between -40°C and +85°C through convection or conduction cooling, shock, vibration, chemical influence or the option of coating against humidity.

› duagon is certified according to ISO 9001 and ISO 14001, plus EN/AS 9100 (aerospace) and IRIS (railways) and provides systems according to ISO 7637-2 (road traffic) requirements.

› We carry out the preliminary qualifications in our own environmental test lab (temperature, shock, vibration, humidity), high-voltage and EMC chambers. We are accredited by DAkkS, according to DIN EN ISO 17025:2018 for EMC, environmental simulation tests and safety of electrical equipment.