

F305

Quad Fast Ethernet & Real-Time Ethernet Interface Board 3U CompactPCI

- » 4 HP 32-bit/33-MHz CompactPCI
- » 4 Ethernet channels, 100 Mbit/s
- » Real-time Ethernet capability
- » Optical isolation from other cards
- » Full EN 50155 compliance
- » -40 °C to +85 °C
- » Conformal coating
- » For rolling stock and wayside applications



Fast Ethernet for Railway Applications

The F305 is a 3U CompactPCI 100-Mbit/s networking controller with a strong focus on railway applications. It comes in a compact 4 HP, one-slot width even with its rugged M12 connectors.

The card provides four Fast Ethernet channels, supporting full-duplex or half-duplex with 10BASE-T and 100BASE-TX physical layers for distances up to 100 m. As an assembly option, the board is available with or without a real-time Ethernet controller and extended connectivity, making it scalable to system requirements.

Real-Time Ethernet for menTCS

The F305 has a special function as the real-time Ethernet component inside the controller of the MEN Train Control System. menTCS is a platform to perform safe control functions, for example in rolling stock applications like Automated Train Operation (ATO) or Automated Train Protection (ATP). It usually consists of the MH50C menTCS controller system and safe remote I/O boxes.

Ring Topology

The distributed menTCS subsystems are connected via RT Ethernet in a ring, tolerating single failures.

For example, in case of a broken cable, the entire system is still fully operational, as all menTCS subsystems can still be reached from the other end of the ring.

The F305 offers the capability of short-connecting two front channels via software.

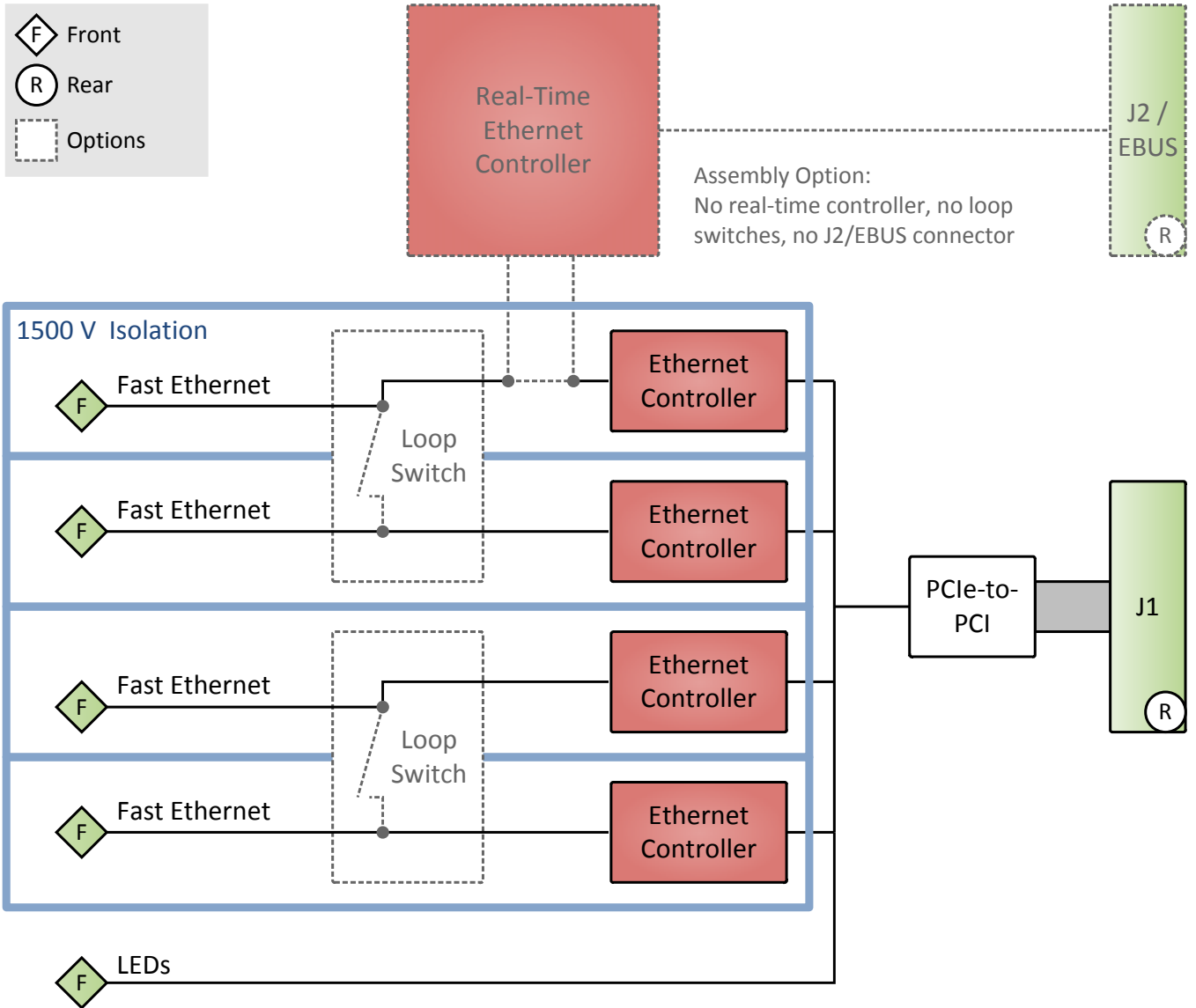
Access to System-Internal menTCS I/O Cards

In menTCS systems the F305 has a direct link to I/O cards on the same backplane, using the menTCS EBUS, power supply, and address lines. As the F305 itself has no special safety mechanisms and certification, the board must be considered as a black channel.

EN 50155 Rolling Stock and EN 50121-4 / EN 50125-3 Wayside Compliance

The F305 was fully designed to meet the requirements both for vehicle and wayside applications. Its operating temperature complies with the class TX specifications of -40 °C to +70 °C (10 minutes up to +85 °C). Standard boards include conformal coating.

Along with its railway standard compliance and long-term availability of a minimum 10 years, the F305 is a rail-ready component, saving time to market and costs.



Front Interfaces

- Ethernet
 - Four M12 connectors, 100BASE-T
 - Two link and activity LEDs per channel
 - Channel 1/2 and channel 3/4 can be software-switched to form a loop; optional

Rear Interfaces

- EBUS; optional
 - Two real-time Ethernet channels, ETG.1000
- menTCS; optional
 - Chassis ID

Backplane Standard

- CompactPCI Core Specification PICMG 2.0 R3.0
 - Peripheral slot
 - 32-bit/33-MHz CompactPCI bus
 - V(I/O): +3.3 V (+5 V tolerant)
- ETG.1000 EBUS; optional

Electrical Specifications

- Supply voltages
 - +5 V (-5%/+5%)
 - +3.3 V (-5%/+5%)
- Power consumption
 - +5 V: 0.7 A typ. (model 02F305-00)
 - +3.3 V: 1.24 A typ. (model 02F305-00)
- Isolation voltage
 - 1500 V AC

Mechanical Specifications

- Dimensions: 3U, 4 HP
- Weight: 294 g (model 02F305-00)

Environmental Specifications

- Classification for railway applications
 - EN 50155: Rolling stock, vehicle body
 - EN 50125-3: Wayside, at least 3 m off the track inside a switch box
- Temperature range (operation):
 - -40°C to +85°C (EN 50155, class TX; EN 50125-3, low temp. class T2, high temp. class TX)
- Cooling concept
 - Air-cooled, natural convection
- Temperature range (storage): -40°C to +85°C
- Humidity
 - EN 50155: Rolling stock, vehicle body
 - EN 50125-3: Wayside, at least 3 m off the track inside switch box
- Vibration/Shock
 - EN 50155: Rolling stock, vehicle body class B
 - EN 50125-3: Wayside, at least 3 m off the track
- Altitude: -300 m to +3000 m
- Pollution Degree: PD 2
- Useful Life: 20 years

Reliability

- MTBF
 - 756 598 h @ 40°C according to IEC/TR 62380 (RDF 2000) (model 02F305-00)

Safety

- Electrical Safety
 - EN 50155: Rolling stock, vehicle body
 - EN 50121-4: Wayside, at least 3 m off the track
- Flammability (PCBs)
 - UL 94 V-0
- Fire Protection
 - EN 45545

EMC

- EN 50155: Rolling stock, vehicle body
- EN 50121-4: Wayside at least 3 m off the track

Software Support

- Windows
- Linux
- QNX
- For more information on supported operating system versions and drivers see Software.

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www.duagon.com/products/f305/

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