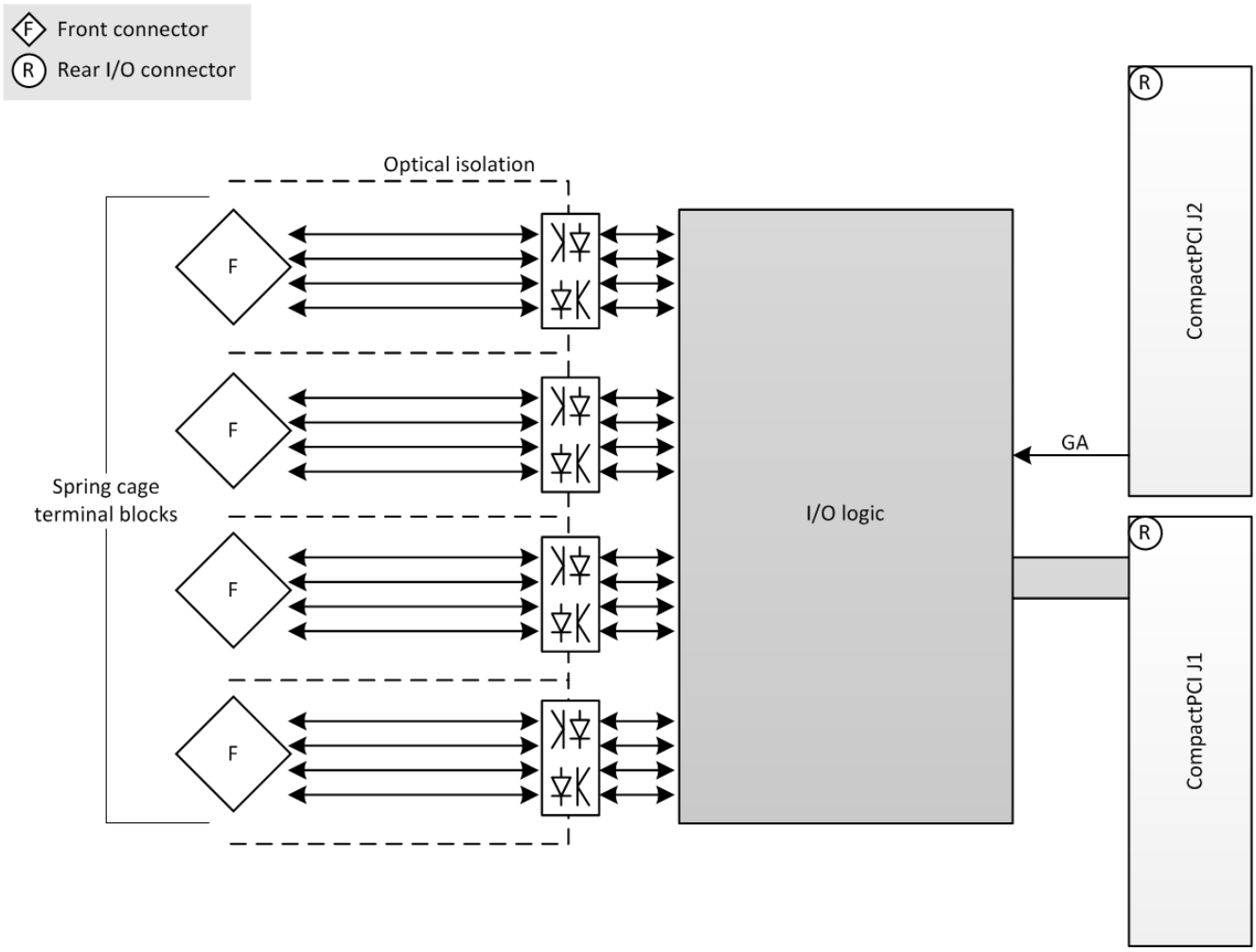
F403 – 3U CompactPCI® Binary I/O Card for Railways

- **4HP 32-bit/33-MHz CompactPCI®**
- **16 bidirectional binary I/Os**
- **Organized in 4 optically isolated groups**
- **Connected via spring cage terminal blocks**
- **Reduced wiring for fast installation**
- **I/O voltage range 14.4 VDC to 154 VDC**
- **Current output 1 A at 24 V**
- **Driver support for all common operating systems**
- **-40 to +85°C with qualified components**
- **Conformal coating**
- **EN 50155 compliant**

The F403 is a binary I/O CompactPCI® board especially 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 digital input/output channels, which are separated into four optically isolated groups.

Its voltage range from 14.4 VDC to 154 VDC and its current output of 1 A at 24 V complies with EN 50155, which makes the board ready for immediate use in train applications.
The four front connectors are implemented by using spring cage terminal blocks causing only low wiring outlay and supporting fast installation.
The binary railway I/O supports all safety measures necessary for mobile environments like trains including voltage and temperature supervision and readback of outputs.

Diagram


F Front connector
R Rear I/O connector
Optical isolation
F
F
F
F
Spring cage
terminal blocks
I/O logic
GA
R
CompactPCI J2
R
CompactPCI J1

Technical Data

Binary I/Os	■ 16 binary signals □ 4 optically isolated groups □ 4 channels for each group ■ Individual use of each channel as input or output ■ Individual edge-triggered interrupts ■ Input/output load on ground ■ High-side output switches ■ High output current: max. 1 A per channel at 24 V ■ Temperature and voltage supervision
Output Characteristics	■ Output voltage range □ Limits continuous: 0 VDC to +138 VDC □ Limits (duration <1s): 0 VDC to +154 VDC ■ Switching time for output change: min. 400 µs (rise time) / min. 600 µs (fall time)
Input Characteristics	■ Input voltage range □ Limits continuous: 0 VDC to +138 VDC □ Limits (duration <1s): -0.7 VDC to +154 VDC ■ Input voltage of external supply voltage □ Can be configured individually for each group □ Nominal: +24 VDC to +110 VDC □ Limits continuous: +16.8 VDC to +138 VDC □ Limits (duration <1s): +14.4 VDC to +154 VDC ■ Switching threshold: 40% (+15%/-15%) of external supply voltage
Front Connection	■ 4 spring cage terminal blocks
CompactPCI® Bus	■ Compliance with CompactPCI® Core Specification PICMG 2.0 R3.0 ■ Peripheral slot ■ 32-bit/33-MHz PCI Bus ■ V(I/O): +3.3 V ■ J2 connector with geographical addressing for distinguishing boards in a system with several boards
Electrical Specifications	■ Isolation voltage: □ 1500 VAC between isolated side and digital side □ 1500 VAC between the channels ■ Supply voltage/power consumption from CompactPCI®: □ +5V (+5%/-5%), 130 mA typ.
Mechanical Specifications	■ Dimensions: conforming to CompactPCI® specification for 3U boards ■ Front panel: 4 HP with ejector ■ Weight: approx. 300 g
Environmental Specifications	■ Temperature range (operation): □ -40..+85°C (qualified components) □ Airflow: 1.0 m/s ■ Temperature range (storage): -40..+85°C ■ Relative humidity (operation): max. 95% non-condensing ■ Relative humidity (storage): max. 95% non-condensing ■ Altitude: -300 m to +3000 m ■ Shock: 50 m/s², 30 ms (EN 61373) ■ Vibration (function): 1 m/s², 5 Hz - 150 Hz (EN 61373) ■ Vibration (lifetime): 7.9 m/s², 5 Hz - 150 Hz (EN 61373) ■ Conformal coating (standard)
MTBF	■ 418 612 h @ 40°C according to IEC/TR 62380 (RDF 2000)

Technical Data

Safety	■ Flammability □ PCB manufactured with a flammability rating of 94V-0 by UL recognized manufacturers ■ Electrical Safety □ Insulation measurement test according to EN 50155 (10.2.9.1) □ Voltage withstand test according to EN 50155 (10.2.9.2) □ Information technology equipment test according to EN 60950
EMC Conformity	■ EN 55011 (radio disturbance) ■ IEC 61000-4-2 (ESD) ■ IEC 61000-4-3 (electromagnetic field immunity) ■ IEC 61000-4-4 (burst) ■ IEC 61000-4-5 (surge) ■ IEC 61000-4-6 (conducted disturbances)
Software Support	■ The F403 is supported by standard OS UART drivers

Configuration & Options

Options

Channels	■ 16 inputs (no outputs) ■ 8 bidirectional channels
CompactPCI® Bus	■ 66 MHz

Please note that some of these options may only be available for large volumes. Please ask our sales staff for more information.

Ordering Information

Standard F403 Models	**02F403-00**	16 binary I/Os, -40..+85°C with qualified components, conformal coating
Documentation	Compare Chart 3U CompactPCI® / PlusIO CPU cards » Download	
	Compare Chart 3U CompactPCI® / PlusIO peripheral cards » Download	
	20F403-00	F403 User Manual

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