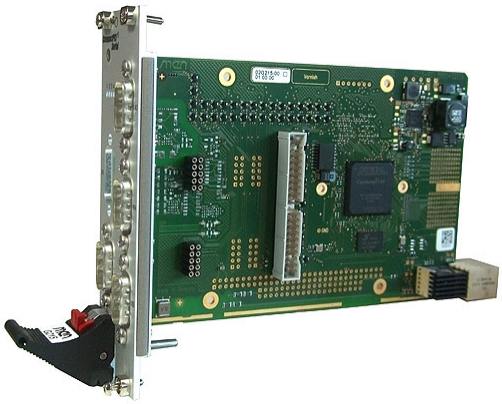
G215

UART, CAN Bus & Digital I/O Interface Board

3U CompactPCI Serial

- *5 interfaces at 8 HP front: 2 UARTs, 2 CAN bus, 1 digital I/O port*
- *Other function combinations via FPGA IP cores*
- *For protocols/physical layers like RS232/RS422/ RS485, HDLC, CAN bus, IBIS, GPS, digital I/O*
- *Physical layers via SA-Adapters*
- *-40 °C to +85 °C*
- *PICMG CPCI-S.0 CompactPCI Serial peripheral card*



The G215 is a universal interface board based on 3U CompactPCI Serial. The physical layer can be realized individually for each channel by means of SA-Adapters. SA-Adapters are small universal boards providing the line drivers for legacy serial I/O, fieldbus interfaces and other small I/O functions. Most SA-Adapters use 9-pin D-Sub connectors which are accessible at the front panel. Alternatively, the adapter can be connected to the front panel via ribbon cable. The SA concept allows to add additional I/O interfaces to the G215, enhancing flexibility with regard to the line transceivers and isolation requirements.

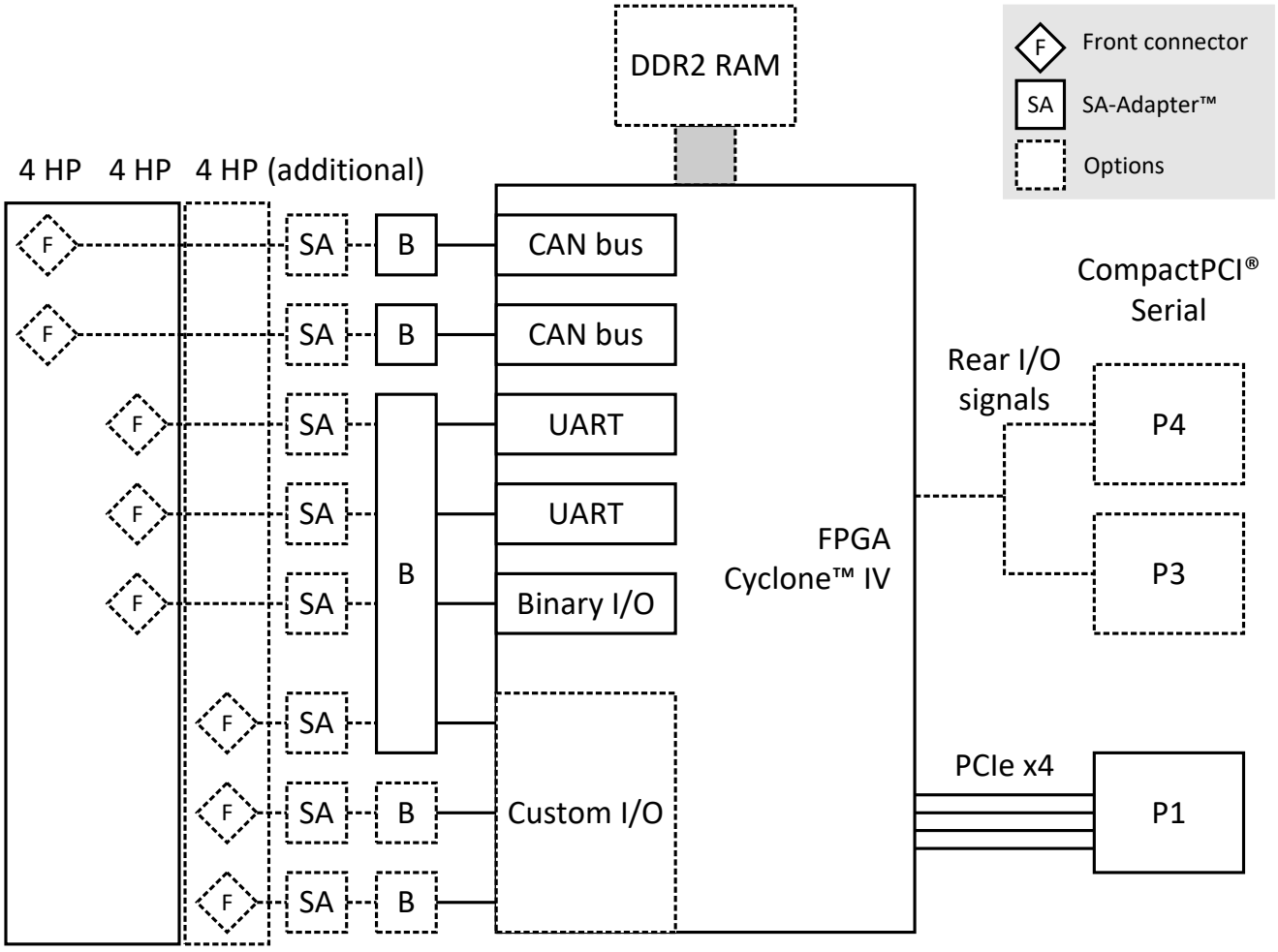
Two SA-Adapters can be mounted directly on the G215, the other maximum six adapters need more front-panel space and are connected to the carrier via ribbon cable. The G215 comes in a standard configuration with five pre-defined functions on 8 HP: two CAN interfaces, two UARTs and one 8-channel digital I/O interface. SA-Adapters are not included in the delivery, because different types are available, e.g. for the UARTs. They can be ordered as needed.

The board's I/O functions are realized by means of an FPGA, making it a very flexible, inexpensive solution for dedicated serial I/O. The card can become "everything" from a customized I/O combination to a specialized 8-port CAN card or even an intelligent I/O board including a Nios soft core, on 4, 8 or 12 HP. As an option, further I/O signals, including high-speed interfaces, can be accessed via rear I/O on CompactPCI Serial connectors P3 and P4. The FPGA is loaded automatically after power-up from a 4 MB serial Flash. It is also possible to access this Flash to update its contents.

Up to 64 MB DDR2 SDRAM are optionally available for complementing the functions of the FPGA. This DRAM can be used for example as a large buffer memory for more complex protocols.

The G215 is designed for use in rugged environments. For example, all components are soldered-on and are specified for an operating temperature of -40°C to +85°C.

Data Sheet


DDR2 RAM
Front connector
SA
SA-Adapter™
Options
4 HP
4 HP
4 HP (additional)
F
SA
B
CAN bus
CAN bus
UART
UART
Binary I/O
Custom I/O
FPGA
Cyclone™ IV
CompactPCI®
Serial
Rear I/O
signals
P4
P3
PCIe x4
P1

Diagram

I/O Interfaces

- Different variations possible through FPGA IP cores and SA-Adapters:
  - RS232
  - RS422
  - RS485
  - IBIS master/slave
  - CAN bus
  - HDLC
  - Binary I/O
  - GPS
  - The FPGA offers the possibility to add customized I/O functionality. Contact duagon for more information.
  - Option matrix showing possible IP cores and SA-Adapters (PDF)
- Accessible via onboard connectors
  - Physical interface at front panel using SA-Adapters
  - Two interfaces for direct onboard connection of SA-Adapters
  - Up to six interfaces for connection of SA-Adapters via 10-pin ribbon cable
- Standard factory interface configuration:
  - 8 HP front panel with five SA-Adapter cut-outs for
  - 2 CAN bus interfaces
  - 2 UART interfaces
  - 1 binary I/O interface
  - No SA-Adapters included by standard; they can be selected as needed
- Standard factory FPGA configuration:
  - 16Z029_CAN - CAN controller (controls CAN X1)
  - 16Z029_CAN - CAN controller (controls CAN X2)
  - 16Z125_UART - UART controller (controls UARTs X3/X4)
  - 16Z037_GPIO - GPIO controller (8 I/O lines on X5)

Memory

- 4 MB serial Flash for FPGA configuration
- Up to 64 MB DDR2 SDRAM, FPGA-controlled, e.g., as a buffer memory for more complex protocols (on request)

Miscellaneous

- Four status LEDs at front panel
  - One status LED to signal FPGA configuration (interfaces ready)
  - Three user LEDs, FPGA-controlled by 16Z034_GPIO controller

CompactPCI Serial

- Compliance with CompactPCI Serial PICMG CPCI-S.0 Specification
- Peripheral slot
- Host connection:
  - One PCI Express x4 link
  - PCIe 1.x support
  - Data rate 1 GB/s in each direction (2.5 Gbit/s per lane)
- Up to 128 I/O signals on CompactPCI Serial connectors P3 and P4 (on request)
  - FPGA-controlled
  - Also for high-speed interfaces
  - In addition to SA-Adapter I/O

Electrical Specifications

- Supply voltage/power consumption:
  - +12 V (-5%/+5%), 0.125 A

Mechanical Specifications

- Dimensions: conforming to CompactPCI Serial specification for 3U boards
- Front panel: 8 HP with ejector
  - For up to five interfaces
- 4 HP with 2 onboard SA-Adapters (on request)
- 12 HP with 8 SA-Adapters (on request)
- Weight: 168 g (w/o SA-Adapters)

Environmental Specifications

- Temperature range (operation):
  - -40 °C to +85 °C
  - Minimum: -50 °C (on request)
  - Airflow: min. 1.0 m/s
  - Conduction cooling (on request)
- Temperature range (storage): -40 °C to +85 °C
- Relative humidity (operation): max. 95% non-condensing
- Relative humidity (storage): max. 95% non-condensing
- Altitude: -300 m to +3000 m
- Shock:
  - 15 g, 11 ms (EN 60068-2-27)
  - 50 m/s², 30 ms (EN 61373)
- Bump: 10 g, 16 ms (EN 60068-2-29)
- Vibration (sinusoidal): 1 g, 10 Hz - 150 Hz (EN 60068-2-6)
- Vibration (function): 1 m/s², 5 Hz - 150 Hz (EN 61373)
- Vibration (lifetime): 7.9 m/s², 5 Hz - 150 Hz (EN 61373)

MTBF

- 529 954 h @ 40 °C according to IEC/TR 62380 (RDF 2000)

Safety

- PCB manufactured with a flammability rating of 94V-0 by UL recognized manufacturers

EMC

- Tested according to EN 55022 (radio disturbance), IEC 61000-4-2 (ESD) and IEC 61000-4-4 (burst)

Software Support

- Driver software for Windows, Linux, VxWorks, QNX
- Flash update tools for Windows, Linux, VxWorks
- For more information on supported operating system versions and drivers see Software.

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www.duagon.com/products/g215/

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