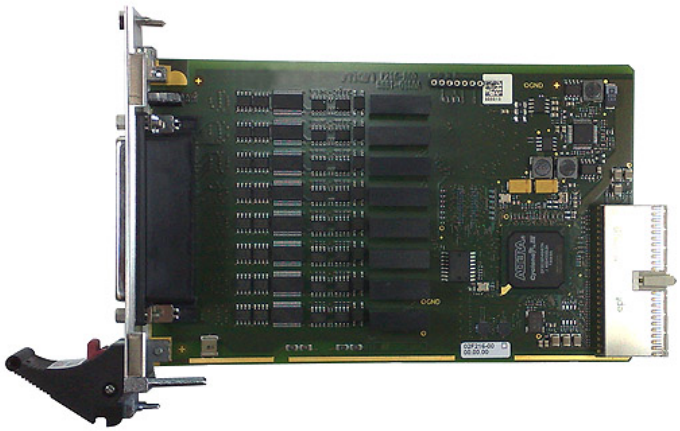
F216 – 3U CompactPCI® Octal UART

- **Octal 16550 UART**
- **RS232/422/485, isolated**
- **Large receive and transmit FIFOs**
- **Very high data rates up to 921 600 bit/s**
- **Full handshake support**
- **Hardware flow control for RS485 half duplex**
- **-40 to +85°C with qualified components**



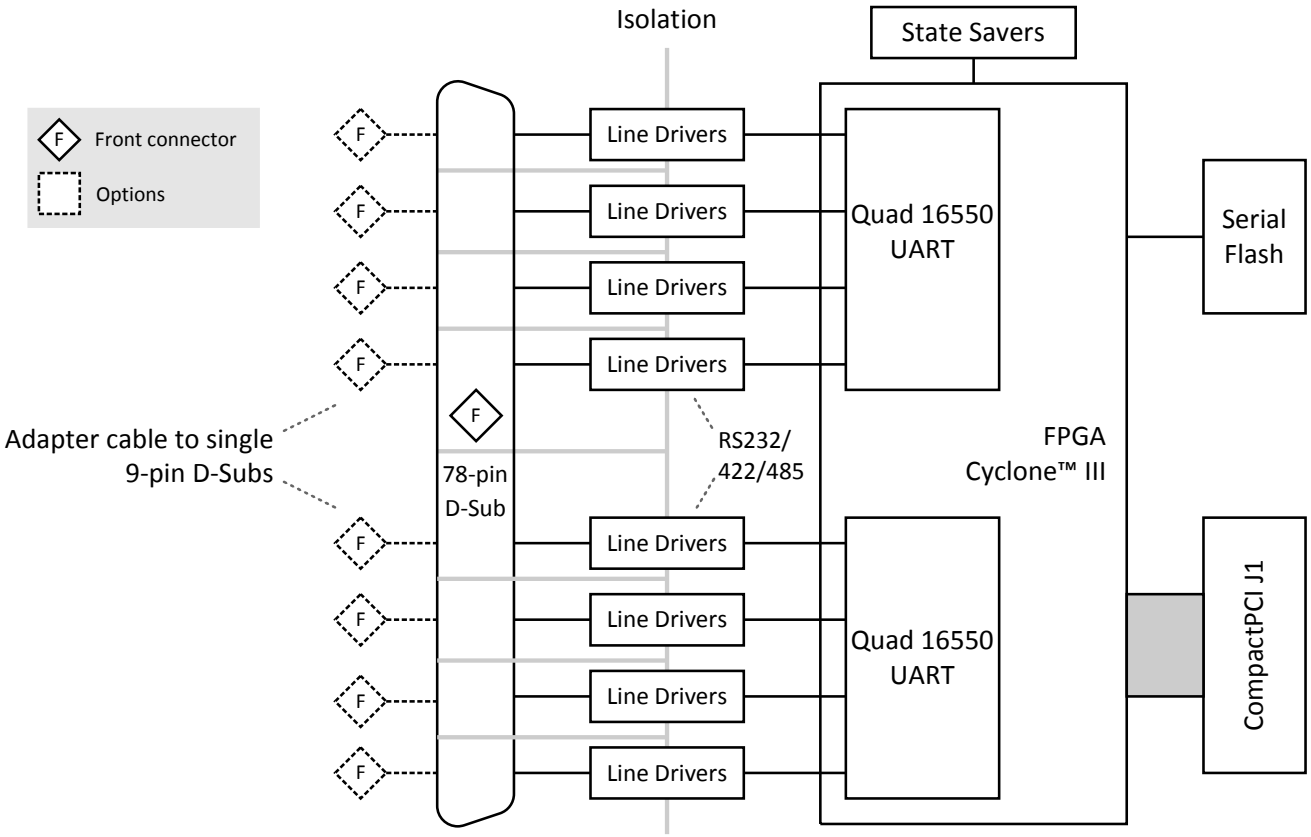
The F216 is an octal UART I/O board based on 3U CompactPCI®. Two UART controllers provide four full-duplex serial channels each. The physical layers are integrated on the board: each of the eight channels can be individually configured as single-ended RS232 or differential RS422 or RS485. The default setting is RS422.

The UART controller supports high data rates up to 921 600 bit/s, depending on the physical interface type. Its register set is fully 16550D compatible, even with larger, 60-byte FIFOs.

Each channel of the F216 has its own 500V isolation, with all ports being available on one 78-pin D-Sub connector. An adapter cable is also available to spread the 78-pin connector to eight standard 9-pin D-Sub connectors.

The F216 is designed for use in rugged environments. For example, all components are specified for an operating temperature of -40 to +85°C. The card easily expands CompactPCI® systems by an additional eight UARTs on 4 HP where the CPU does not provide enough COM interfaces.

Diagram


Isolation
State Savers
F
Front connector
Options
F
F
F
F
F
Line Drivers
Line Drivers
Line Drivers
Line Drivers
Quad 16550
UART
Serial
Flash
Adapter cable to single
9-pin D-Subs
78-pin
D-Sub
RS232/
422/485
FPGA
Cyclone™ III
F
F
F
F
Line Drivers
Line Drivers
Line Drivers
Line Drivers
Quad 16550
UART
CompactPCI J1

Technical Data

UART Interfaces	■ Eight RS232/RS422/RS485 UARTs ■ Software-configurable ■ Default at start-up: RS422, can be customized through non-volatile state saver ■ Two 16Z125_UART controllers with four UARTs each ■ Data rates: □ Up to 921,600 bit/s with RS422/RS485 □ Up to 230,400 bit/s with RS232 ■ 60-byte transmit/receive buffer ■ Handshake lines: full support with RS232 ■ Full-duplex operation with RS422, half-duplex operation with RS485 ■ Isolation between channels: 500V ■ Accessible on front-panel 78-pin D-Sub connector
Miscellaneous	■ Four status LEDs at front panel □ One status LED to signal FPGA configuration (UARTs ready) □ Three user LEDs, FPGA-controlled by 16Z034_GPIO controller
CompactPCI® Bus	■ Compliance with CompactPCI® Core Specification PICMG 2.0 R3.0 ■ Peripheral slot ■ V(I/O): +3.3V (+5V tolerant)
Electrical Specifications	■ Supply voltage/power consumption: □ +5V (-3%/+5%), 430mA □ +3.3V (-3%/+5%), 170mA
Mechanical Specifications	■ Dimensions: conforming to CompactPCI® specification for 3U boards ■ Front panel: 4HP with ejector ■ Weight: 182g
Environmental Specifications	■ Temperature range (operation): □ -40..+85°C (qualified components) □ Airflow: min. 1m/s ■ Temperature range (storage): -40..+85°C ■ Relative humidity (operation): max. 95% non-condensing ■ Relative humidity (storage): max. 95% non-condensing ■ Altitude: -300m to + 3,000m ■ Shock: 15g/11ms ■ Bump: 10g/16ms ■ Vibration (sinusoidal): 2g/10..150Hz ■ Conformal coating on request
MTBF	■ 96,149h @ 40°C according to IEC/TR 62380 (RDF 2000)
Safety	■ PCB manufactured with a flammability rating of 94V-0 by UL recognized manufacturers
EMC	■ Conforming to EN 55022 (radio disturbance), IEC1000-4-2 (ESD) and IEC1000-4-4 (burst)
Software Support	■ Driver software for Windows®, Linux, VxWorks®, QNX® ■ For more information on supported operating system versions and drivers see Downloads.

Configuration & Options

Options

Cooling Concept	■ Also available with conduction cooling in MEN CCA frame

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 F216 Models	**02F216-00**	8 serial interfaces via 78-pin D-Sub, RS232/422/485 hardware-configurable, -40..+85°C qualified
Miscellaneous Accessories	**05F216-00**	78-pin HD D-Sub to 8x 9-pin D-Sub cable, 1000 mm, -40..+85°C qualified
Software: Linux	This product is designed to work under Linux. See below for potentially available separate software packages from MEN.	
	13Z017-06	MDIS5™ low-level driver sources (MEN) for 16Z034_GPIO, 16Z037_GPIO and 16Z127_GPIO
	13Z025-90	Linux native driver (MEN) for 16Z025_UART, 16Z057_UART and 16Z125_UART
Software: Windows®	This product is designed to work under Windows®. See below for potentially available separate software packages from MEN.	
	10Y000-78	Windows® Embedded Standard 7 BSP for F11S, F19P, F21P, F22P, F75P, G20, G22, XM1L, XM2, MM1, MM2, SC21, SC24, SC27, BC50M, BC50I, BL50W, BL50S, DC13, F206, F210, F215, F216, G215, P506, P507 and P511
	13F216-77	Windows® Installset (MEN) for F216 (Includes all free drivers developed by MEN for the supported hardware.)
Software: VxWorks®	This product is designed to work under VxWorks®. For details regarding supported/unsupported board functions please refer to the corresponding software data sheets.	
	13Z017-06	MDIS5™ low-level driver sources (MEN) for 16Z034_GPIO, 16Z037_GPIO and 16Z127_GPIO
	13Z025-60	VxWorks® native driver (MEN) for 16Z025_UART, 16Z057_UART and 16Z125_UART
Software: QNX®	This product is designed to work under QNX®. For details regarding supported/unsupported board functions please refer to the corresponding software data sheets.	
	13Z017-06	MDIS5™ low-level driver sources (MEN) for 16Z034_GPIO, 16Z037_GPIO and 16Z127_GPIO
	13Z025-40	QNX® 6.3 native driver (MEN) for 16Z025_UART and 16Z125_UART
	13Z025-41	QNX® 6.4 native driver (MEN) for 16Z025_UART and 16Z125_UART
	13Z025-42	QNX® 6.5 native driver (MEN) for 16Z025_UART and 16Z125_UART

For operating systems not mentioned here contact MEN sales.

Documentation	Compare Chart 3U CompactPCI® / PlusIO CPU cards » Download	
	Compare Chart 3U CompactPCI® / PlusIO peripheral cards » Download	
	20F216-00	F216 User Manual
	21Z025-90	16Z025_UART and 16Z125_UART under Linux User Manual

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