



### Overview:

The **VRM-CU4-X** is a CompactPCI® card with a quad UART. The line transceivers are individually configurable according to either RS-232E or RS-485. The quad PCI UART is compatible to the widespread 16C550/650 series. Drivers are available by download for nearly all-popular operating systems. The **VRM-CU4-X** is suitable for a variety of industrial applications, i.e. data acquisition, PXI measuring systems or process control. All ports are directly available from the **VRM-CU4-X** front panel. Due to the height of 3U, the board is provided with four RJ45 jacks. Integrated LEDs signal status information. An external adapter is available from RJ45 to DB9 (D-Sub connector) in order to maintain PC COM port compatibility. Each port allows individual transceiver configuration according to either RS-232E or RS-485/422 by a single jumper. In addition, all 4 UART channels are wired as TTL-level signals to the rear connector J2 (option). By employing the CU9 rear I/O transition board and PHY transceiver modules (CU7 and CU8 series), all ports are also available from the back panel. The drivers allow arbitrary names i.e. COM4...COM8 to be associated with the ports of the **VRM-CU4-X**. For use in 6U systems, the front panel expansion kit is available.

As a scalable basic solution, the **VRM-CU4-X** is a functional and economic alternative compared to the intelligent CPCI boards, CU1 and CU2, which are equipped with a local CPU, thereby discharging considerably the system host. RJ1...RJ4 serial ports 1..4, 4x RJ45 jack, 4 integrated LEDs each signal data transmission (RxD, TxD) and hardwired-handshake (CTS, RTS), external adapters custom configurable RJ45 to DB9 male or female available as accessory. External adapters from RJ45 to DB9 plug (male) or receptacle (female) are available, which are pre-assembled for custom configuring. By means of pliers or an inserting tool, the jumper wires from the RJ45 jack are ready to be pushed into the appropriate spot on the DB9 connector. The adapter itself must be connected to the corresponding RJ (1..4) jack of the **VRM-CU4-X**. A suitable cable requires all 8 leads wired up straightforward 1:1. A short Ethernet patch cable could be used (avoid cross over patch cables, or old 4-wire Ethernet cables, or ISDN cables). A male DB9 connector is required to emulate the serial RS-232 interface (COM port) of a desktop PC. The adapter must be wired up according to the scheme below. Due to one missing signal line, the modern-signal RI (Ring Indicator) is not available across the RJ45 jacks. In order to connect the **VRM-CU4-X** to a desktop PC, an adapter with a female DB9 connector can be directly attached to the COM port of the PC. The wiring scheme of the adapter emulates a null-modem cable.

P1..P4 Optional 10-position dual-row pin headers, serial interfaces RS-232/RS-485. P5 Optional 26-position dual row pin header, IEEE 1284 compatible parallel port (EPP). As an alternative to the front panel connectors, the (optional) internal pin rows P1..P4 can be used. The P1..P4 rows may be used for attachment of a flat cable assembly with a D-Sub connector. In contrast to the RJ1..RJ4 jacks, the modem signal RI (RS-232 Ring Indicator) is supported in this configuration. Furthermore, when RS-485 mode is selected, in addition to the RxD/TxD data transmission lines, the DSR/DTR handshake signals are available across the P1..P4 connectors.

When preparing a suitable micro ribbon flat cable assembly, be sure that pin 1 of the row header matches pin 1 of the DB9 connector (use marked side of the flat cable). As an option, the **VRM-CU4-X** can be equipped with the dual-row pin header P5, which may be used as a parallel port. Typically, a flat cable assembly will be used for attachment of a 25-position female D-Sub connector, which then is pin compatible with a desktop LPT port.

J1: 32-bit CPCI interface, J2: Optional connector, required for rear I/O across transition board CU9-2 and PHY-modules CU7/CU8. The rear I/O connector J2 is stuffed as an option only. In order to avoid potential conflicts, before installing the **VRM-CU4-X** with the J2 populated, ensure that the system is not equipped with a P2 CompactPCI 64-bit expansion backplane. The signal assignment of the optional J2 connector matches the transition board VRM-CU9-2. Across the transition board, rear-I/O PHY-modules of the CU7/CU8 series may be attached by means of a flat cable. For systems with a P2 64-bit CompactPCI expansion backplane, the connector J2 on the **VRM-CU4-X** must not be stuffed! The TTL signals from J2/P2 are routed across the rear-I/O transition board to its shrouded pin headers H13..H16. By means of a short flat ribbon cable, the PHY modules CU7-RS485 or CU8-RS232 are attached. Up to four PHY modules CU7 and CU8 can be mounted at the 3U/12HP back-panel of the VRM-CU9-2.

### Features:

- 3U Eurocard (100x160mm<sup>2</sup>), front panel width 20.3mm (4HP), EMC gasket, ejector lever
- Asynchronous, serial protocol: 1 start bit; 7 or 8 data bits; 1 or 2 stop bits; optional even/odd parity; standard bit rates RS-232 up to 230.4 kbps
- Quad PCI UART, compatible with 16C550 (and also 16C450, 16C650, 16C750, 16C950), FIFO 1/16/128Byte
- RS-232E or RS-485 (EIA/TIA-485) full-duplex (RxD/TxD) individually selectable for each port, dual-mode transceiver SP334 (up to 230.4kbps with RS-232, 921, 6kbps and higher with RS-485), 2kV ESD protection
- 4 x RJ45 8-pos. I/O connectors in the front panel, integrated status LED display for RxD/TxD/RTS/CTS, external adapter RJ45 to DB9 available as accessory
- Optional 4 x 10-position pin header (dual-row 2 x 5) 2.54mm pitch, suitable for optional attachment of a flat cable assembly with a DB9 connector at the opposite end (PC COM Port compatible when RS-232 is selected)
- Additionally all UART ports available as buffered TTL signals across CompactPCI J2 connector for external transition-board and PHY\_modules (option only, J2 must be omitted for 64-bit CPCI bus slots)
- Serial drivers for Microsoft® Windows® 98/ME/NT4/2000/XP available by download
- Optional pin header 2x13 position, 2.54mm pitch, for optional attachment of a flat cable assembly with a DB25 connector at the opposite end (PC LPT port compatible), complies with IEEE-1284 EPP parallel port standard, drivers for Microsoft® Windows® 98/ME/NT4/2000/XP available by download
- Connector J1: 32-bit 33 MHz 5V Interface (blue keying)
- Connector J1 Power requirements: +5V  $\pm$ 5% 0.4° max. (optional consumption of external PHY-modules not included)
- Operating temperature 0-70°C (commercial grade version)
- Humidity 5-90% non condensing (commercial grade version).



### Ordering Options:

**VRM-CU4-1:** 3U, CompactPCI quad serial interface, alternatively (individually jumper configurable) as RS-232 or RS-485, serial port connectors mounted in the front panel, optionally across J2 connector TTL compatible signals for rear-I/O interface modules (J2 is optional on request in order to avoid short circuit situations when the system is provided with a 64-bit CPCI backplane).

**VRM-CU4-2:** Same as CU4-1, except with J2 connector, suitable for rear I/O

**VRM-CR9-ADP:** Front panel expansion adapter for 3U board mounting in 6U racks.

**VRM-CU7-1-RS485:** RS-485/RS-422 Rear-I/O PHY module, 1 port, 2.5Mbps, 2-wire half-duplex (party line network), optically isolated

**VRM-CU7-2-RS485:** RS-485/RS-422 Rear-I/O PHY module, 1 Port, 2 x 2.5Mbps, 4-wire full-duplex (point to point connection), optically isolated

**VRM-CU8-1-RS232:** RS-232E rear-I/O PHY interface module

**VRM-CU9-2:** Transition board, connection between VRM-CU4-X (J2) and rear-I/O PHY interface modules, 4 ports, 3U/12HP back panel included

**VRM-261.92.009.01:** Adapter, RJ45 jack to male D-Sub connector 9-pos., customer configurable, suitable i.e. for COM-port emulation

**VRM-261.91.009.01:** Adapter, RJ45 jack to female D-Sub connector 9-pos., customer configurable, suitable i.e. for null-modem emulation.