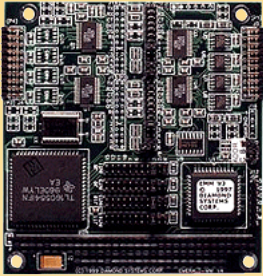


# EMERALD-MM

4 PORTS, RS-232/422/485 PROTOCOLS



- ? Industry-standard design compatible with any popular operating system
- ? 4 asynchronous serial ports
- ? RS-232, RS-422, and RS-485 on one board
- ? RS-232 mode includes all 8 signals
- ? Jumper-selected protocols, addresses, and interrupts
- ? 16C554 UART with 16-byte FIFOs
- ? 115.2K max baud rate
- ? Built-in interrupt sharing
- ? Low-cost RS-232-only version available
- ? +5V-only supply
- ? -40 to +85C operation

This top-selling serial port module has four independent PC-standard asynchronous serial ports based on the 16C554 quad UART chip.

The board is available in 3 models with different combinations of protocols (see ordering guide below). Each configurable port's protocol can be selected independently of any other port.

Protocol, address, and IRQ level are independently selected for each port. All configurations are made with jumpers for quick visual identification of the board's settings. Select from 8 I/O address combinations and 10 IRQ levels. All transceivers are already on the board, so no chips or modules need to be installed for configuration.

In RS-232 mode, each port has the full set of 8 signals plus ground. Termination resistors of 120Ω are provided for RS-422/485 protocols and are jumper-selectable. Interrupt sharing is supported with a built-in interrupt status register.

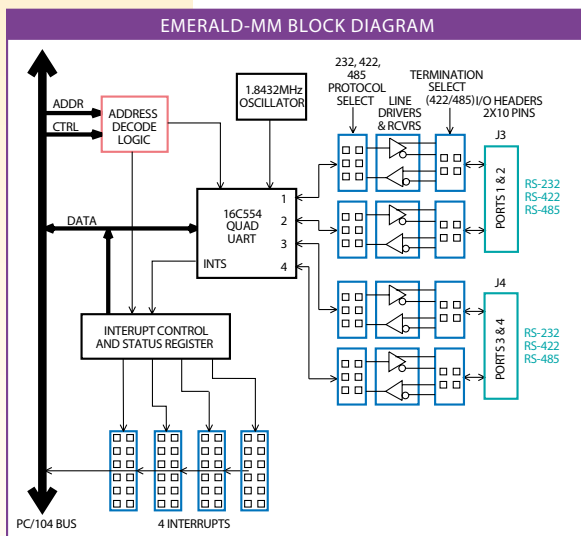
The board has 2 20-pin I/O headers, with 2 serial ports on each header. Use mating cable C-DB9M-2 (qty. 2). Emerald-MM requires only +5V supply and operates over the industrial temperature range of -40 to +85C.

## ORDERING GUIDE

- EMM-XT** Ports 1-2 configurable RS-232/422/485, Ports 3-4 fixed RS-232
  - EMM-4M-XT** Ports 1-4 configurable RS-232/422/485
  - EMM-4232-XT** Ports 1-4 fixed RS-232
- For cables and accessories, see pages 46-47.

## SPECIFICATIONS

SERIAL PORTS	
No. of serial ports	4
Protocol	RS-232, RS-422, RS-485 (jumper selected) depending on model
Maximum baud rate	115kbps
Communications	5, 6, 7, or 8 data bits; parameters Even, odd, or no parity
Short circuit protection	All outputs protected against continuous short circuit
RS-232 MODE:	
Input impedance	9K minimum
Input voltage swing	± 30V maximum
Output voltage swing	± 5V min, ±7V typical
RS-422, RS-485 MODES:	
Differential	-0.2V min, +0.2V max input threshold
Input impedance	12K Ω minimum
Input current	+1.0mA max (VIN = 12V) -0.8mA max (VIN = -7V)
Differential output voltage	2.0V min (RL ≥ 50)
High/low states differential output voltage symmetry	0.2V maximum
GENERAL	
I/O headers	Dual 20-pin headers; Two ports per header
Dimensions	3.55" x 3.775"
Power supply	+5VDC ±10%
Current consumption	80mA typical, all outputs unloaded
Operating temp.	-40 to +85°C Extended
PC/104 bus	8 bit and 16-bit bus headers are installed
Weight	2.5oz / 71g



## INPUT/OUTPUT HEADERS (2 PER BOARD)

RS-232 Mode		RS-422 Mode		RS-485 Mode	
DCD 1	1 2	DSR 1	N/C	1 2	N/C
RXD 1	3 4	RTS 1	N/C	3 4	TX/RX-1
TXD 1	5 6	CTS 1	N/C	5 6	N/C
DTR 1	7 8	RI 1	N/C	7 8	N/C
GND	9 10	N/C	N/C	9 10	N/C
DCD 2	11 12	DSR 2	N/C	11 12	N/C
RXD 2	13 14	RTS 2	N/C	13 14	TX/RX+2
TXD 2	15 16	CTS 2	N/C	15 16	N/C
DTR 2	17 18	RI 2	N/C	17 18	N/C
GND	19 20	N/C	N/C	19 20	N/C

Both ports in each example are shown with the same serial protocol for simplicity, however each port's protocol may be independently selected.