data SHEET

ARCNET Interface Modules for PC/104™ Bus Computers

Like the PC10420 Series of Network Interface Modules (NIMs), the PC10422 Series enables ARCNET connectivity for PC/104 compatible computers. But this series is designed with the more advanced ARCNET controller chip which is the COM20022.

The COM20022 controller chip has benefits such as command chaining, sequential access to internal RAM, and duplicate node ID detection. Bus contention problems are decreased since the module only requires an I/O address. There is no requirement for wait-state arbitration. The +5 V only operation reduces system cost by eliminating multiple-voltage power sources.

Each NIM has two LEDs to monitor network operation and bus access. An 8-bit DIP switch can set the node address without the removing the module. The node address can be configured via software — leaving the DIP switch for user-defined functions such as data rate, cable interface, or master/slave status of the system.

This series implements three EIA-485 physical layers. The PC10422-485D supports DC-coupling while the PC10422-485X provides transformer coupling. If your software will set the backplane mode, choose the PC10422-4000 (transformer-coupled). All EIA-485 models are fitted with dual RJ-11s and a three-position screw terminal connector to ease field wiring.

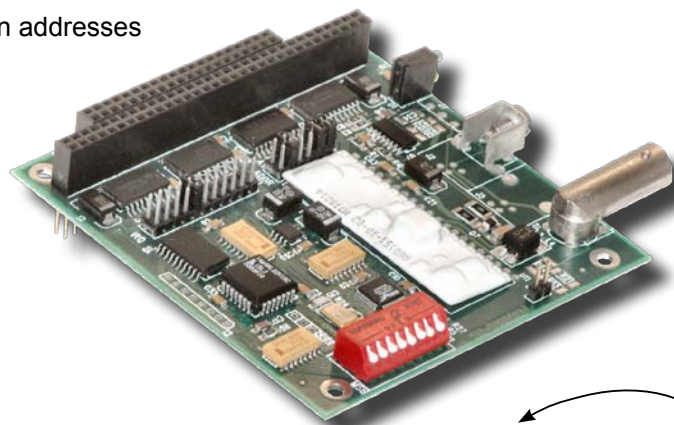Transceiver options are explained on the next page.

Features

- Supports coaxial and twisted-pair cabling including EIA-485
- Command chaining for enhanced performance
- Node address switch selects one of 255 possible station addresses
- Variable data rates up to 10 Mbps
- Suitable with all Contemporary Controls'
- MOD HUB and AI Series active hubs
- CMOS design for low-power consumption
- CE Mark
- RoHS compliant
- Utilizes COM20022 ARCNET controller
- Interfaces ARCNET with PC/104 bus computers
- Zero wait-state arbitration typical
- Enhanced software capabilities over earlier generation ARCNET controllers

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Transceiver Options

Dipulse (Analogue) Signals

Coaxial Bus Topology   (PC10422-CXB)

Cards with **-CXB** transceivers accept RG-62/u cable via BNC Tee connectors. Each node is a high-impedance in both powered and unpowered states. BNC-style 93Ω terminators must be applied to both ends of a bus segment. The maximum segment length is 305 metres and up to 8 devices can share the segment.

Coaxial Star Topology   (PC10422-CXS)

In a **-CXS** coaxial star system, devices connect in a point-to-point fashion with RG-62/u coaxial cabling not exceeding 610 metres. If more than two cards share the cabling, a hub is needed. A **-CXS** card provides the 93Ω of termination *internally*.

Twisted-Pair Bus Topology   (PC10422-TPB)

A **-TPB** dipulse transceiver supports up to 8 devices and 122 metres of shielded or unshielded twisted-pair. Apply terminators at each end of the bus.
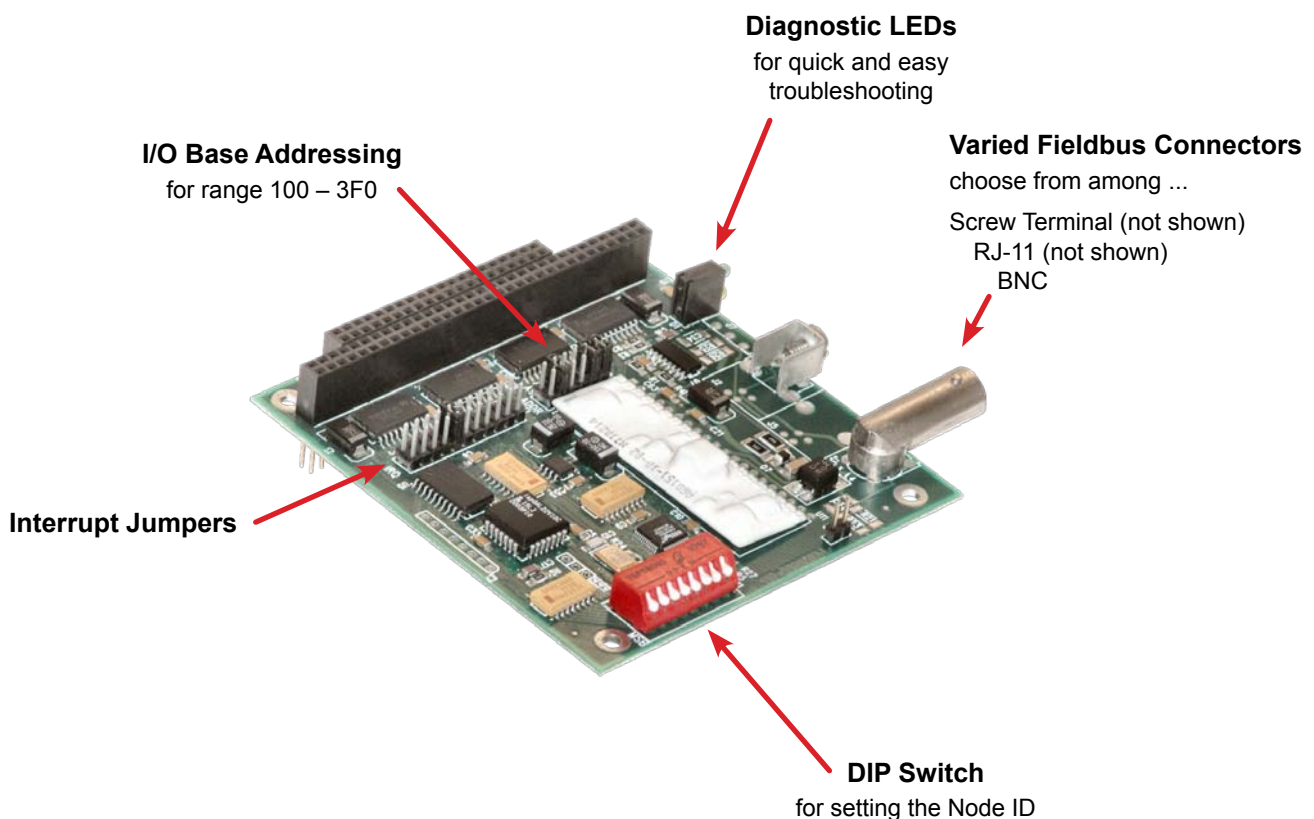
EIA-485 (Digital) Signals

DC-coupled EIA-485   (PC10422-485D)

Backplane mode is invoked in the **-485D** card via the card's own hardware for twisted-pair up to 274 m in length and up to 17 nodes. Use proper cable and maintain wiring phase integrity among all nodes. Use 120Ω termination and proper bias at each end of the bus.

AC-coupled EIA-485   (PC10422-4000 or PC10422-485X)

For backplane operation controlled by software, the **-4000** card supports up to 8 devices and a segment length of 80 m. Backplane mode is set by hardware in the **-485X** card which supports up to 13 devices and a segment length of 213 m. Apply 120Ω termination at each end of the bus for either card.

Diagnostic LEDs
for quick and easy troubleshooting

I/O Base Addressing
for range 100 – 3F0

Varied Fieldbus Connectors
choose from among ...

Screw Terminal (not shown)
RJ-11 (not shown)
BNC

Interrupt Jumpers

DIP Switch
for setting the Node ID

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Specifications

Environmental/Mechanical

Operating temperature	0°C to 60°C
Storage temperature	–40°C to +85°C
Relative humidity	10–95%, non-condensing

Functionality

Data rate

PC10422-CXB, -CXS, -TPB	2.5 Mbps
PC10422-485D	10 Mbps, 5 Mbps, 2.5 Mbps, 1.25 Mbps, 625 kbps, 312.5 kbps, 156.25 kbps
PC10422-4000, -485X	10 Mbps, 5 Mbps, 2.5 Mbps, 1.25 Mbps
Dimensions	90 mm x 95 mm (3.55" x 3.775")
I/O mapping	Supports I/O mapping on any 16-byte boundary
Interrupts	Supports strapping of IRQ 3, 4, 5, 6, 7, 9, 10, 11, 12, 14 or 15
Compliance	ATA 878.1-1999
	PC/104 Specification 2.3 (June 1996)

LED indicators

Green — flashes when the unit receives ARCNET traffic from the network

Yellow — flashes when the unit is communicating with its host computer

Dimensions

64 mm x 95 mm   (2.50" x 4.72")

Shipping Weight

0.45 kg   (1 lb.)

Regulatory Compliance

CE Mark

RoHS

CFR 47, Part 15 Class A

Power Requirements

Model	+5 V	–12 V
PC10422-4000[2]	200 mA	N/A
PC10422-485D	200 mA	N/A
PC10422-485X	200 mA	N/A
PC10422-CXB	200 mA	50 mA
PC10422-CXS	200 mA	20 mA
PC10422-TPB	200 mA	50 mA

Fieldbus Connectors and Cabling

Connector	Cable	Segment Length Min[1]	Max	Max Nodes per Segment
RJ-11, 3-pin[3]	T-P[4]	0	274 m (900 ft)	17
RJ-11, 3-pin[3]	T-P[4]	0	274 m (900 ft)	17
RJ-11, 3-pin[3]	T-P[4]	0	213 m (700 ft)	13
BNC	RG-62/u	2 m (6 ft)	305 m (1000 ft)	8
BNC	RG-62/u	0	610 m (2000 ft)	2
RJ-11, 3-pin[3]	T-P[4]	2 m (6 ft)	122 m (400 ft)	8

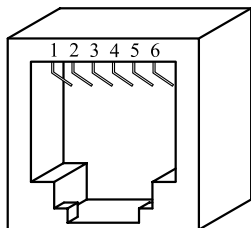[1] Minimum distance between any two network devices.

[2] Backplane mode controlled by software.

[3] One three-position screw terminal and two RJ-11 connectors are on each NIM.
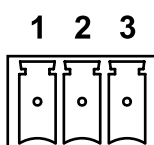
[4] T-P = Twisted-pair, IBM Type 3

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RJ-11 Pin Assignments

Modular Connector Pin Assignments	
6-Contacts	
Pin	Usage
1	Not Available
2	Not Used
3	Line+
4	Line–
5	Not Used
6	Not Available

Screw Connector Pin Assignments

	TRANSCEIVER			
	-485	-485D	-485X	-TB5
PIN				
1	LINE+	LINE+	LINE	LINE+
2	LINE–	LINE–	LINE	LINE–
3	SHIELD	SHIELD	SHIELD	SHIELD

Ordering Information

Model	Description	Fieldbus Connector
PC10422-4000	20020 PC/104 DC-coupled EIA-485 NIM (backplane set by software)	RJ-11, screw
PC10422-485D	20020 PC/104 DC-coupled EIA-485 NIM (backplane set by hardware)	RJ-11, screw
PC10422-485X	20020 PC/104 DC-coupled EIA-485 NIM (backplane set by hardware)	RJ-11, screw
PC10422-CXB	20020 coaxial bus NIM*	BNC
PC10422-CXS	20020 coaxial star NIM*	BNC
PC10422-TPB	20020 twisted-pair bus NIM*	RJ-11, screw

* NIM is an abbreviation for *network interface module.*