data SHEET

ARCNET Interface Modules for PC/104™ Bus Computers

The PC10420 Series of Network Interface Modules (NIMs) links PC/104 compatible computers with the ARCNET local area network. It uses the COM20020 ARCNET controller chip and has features such as command chaining and an internal 2K x 8 RAM buffer. Bus contention problems are reduced since the module only needs an I/O address. There is no requirement for wait-state arbitration.

Each NIM has two LEDs to monitor network operation and bus access and an 8-bit DIP switch to set the node address — without the need to remove the module.

Seven transceiver options accommodate dipulse and EIA-485 operation and are explained on the next page.

EIA-485 considerations: The AC-coupled EIA-485 transceiver offers certain advantages. Signal polarity is of no concern and bias adjustments are unnecessary since each transceiver has its own fixed bias network isolated by a pulse transformer. But DC-coupled technology offers longer distances and will operate over all six data rates. If the software driver you intend to employ will set the COM20020 into backplane mode, you must use the PC10420-485 version.

Features

- No requirement for wait-state arbitration
- Enhanced software capabilities over earlier generation ARCNET controllers
- Node address switch selects one of 255 possible station addresses
- Variable data rates up to 5 Mbps
- Supports coaxial, fibre optic and twisted-pair cabling including EIA-485
- Suitable with all Contemporary Controls hubs
- CMOS design for low-power consumption
- CE Mark
- RoHS
- Utilises COM20020 ARCNET controller
- Interfaces ARCNET with PC/104 bus computers
- I/O-only mapping reduces bus contention problems

CONTEMPORARY CONTROLS®

DS-PC104200-BA0

Data Sheet — PC10420 Series
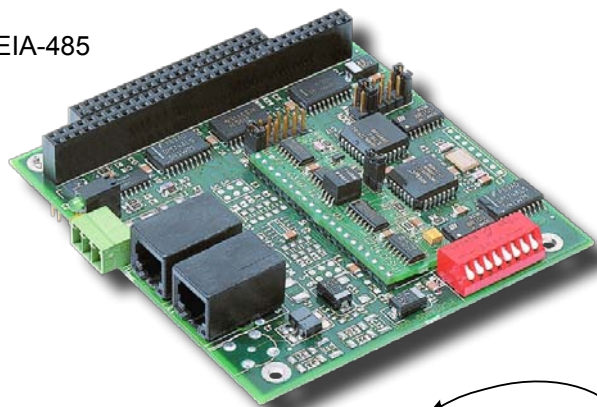
Transceiver Options

Dipulse (Analogue) Signals

Coaxial Bus Topology (PC10420-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 (PC10420-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 (PC10420-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 (PC10420-485 or PC10420-485D)

EIA-485 backplane mode is invoked in the **-485** card via user software and in the **-485D** card via the card's own hardware. Either card supports twisted-pair up to 274 metres 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.
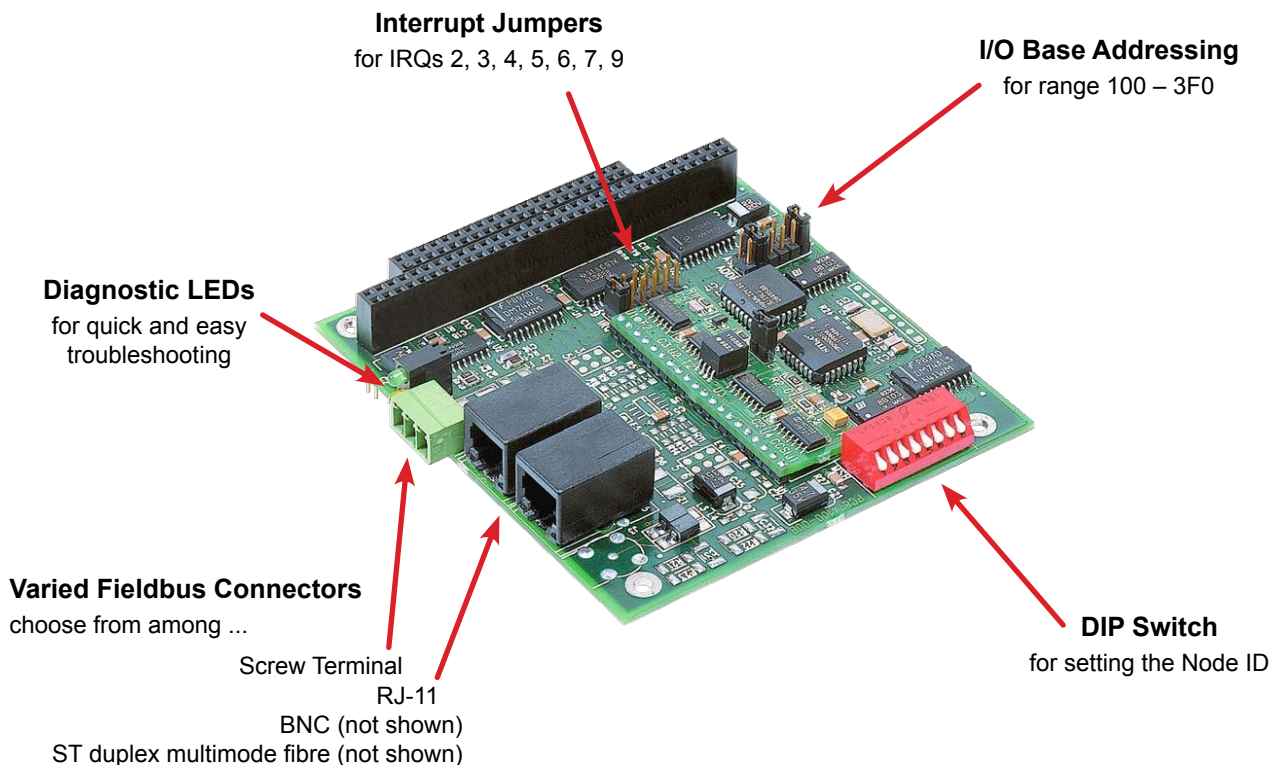
AC-coupled EIA-485 (PC10420-485X)

Backplane mode is invoked by the hardware in the **-485X** card which supports up to 13 devices and a segment length of 213 metres. Apply 120Ω termination at each end of the bus.

Multimode Fibre Optic Signals

ST-connected Duplex Fibre (PC10420-FOG-ST)

Fibre models use the ST style connector to support duplex cable of 50, 62.5 or 100 micron diameter.

Interrupt Jumpers for IRQs 2, 3, 4, 5, 6, 7, 9

I/O Base Addressing for range 100 – 3F0

Diagnostic LEDs for quick and easy troubleshooting

Varied Fieldbus Connectors choose from among ...
Screw Terminal
RJ-11
BNC (not shown)
ST duplex multimode fibre (not shown)

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

PC10420-CXB, -CXS, -TPB	2.5 Mbps
PC10420-485, -485D	5 Mbps, 2.5 Mbps, 1.25 Mbps, 625 kbps, 312.5 kbps, 156.25 kbps
PC10420-485X	5 Mbps, 2.5 Mbps, 1.25 Mbps
Dimensions	99 mm x 109 mm (3.9" x 4.3")
I/O mapping	Supports I/O mapping on any 16-byte boundary
Interrupts	Supports strapping of IRQ 2/9, 3, 4, 5, 6 or 7
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
PC10420-485[2]	200 mA	N/A
PC10420-485D	200 mA	N/A
PC10420-485X	200 mA	N/A
PC10420-CXB	200 mA	50 mA
PC10420-CXS	200 mA	20 mA
PC10420-FOG-ST	300 mA	N/A
PC10420-FOG-ST	300 mA	N/A
PC10420-FOG-ST	300 mA	N/A
PC10420-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
ST	50/125 duplex fibre optic	0[5]	915 m (3000 ft)	2
ST	62.5/125 " " "	0[5]	1825 m (6000 ft)	2
ST	100/140 " " "	0[5]	2740 m (9000 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.
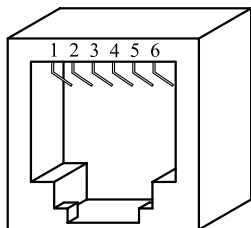
[2] Backplane mode operation.

[3] One three-position screw terminal and two RJ-11 connectors are on each NIM.

[4] T-P = Twisted-pair, IBM Type 3

[5] This minimum is achieved by removing a jumper on the transceiver circuitry.
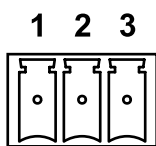
RJ-11 Pin Assignments

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

1 2 3

Ordering Information

Model	Description	Fieldbus Connector
PC10420-485	20020 PC/104 DC-coupled EIA-485 NIM (backplane set by software)	RJ-11, screw
PC10420-485D	20020 PC/104 DC-coupled EIA-485 NIM (backplane set by hardware)	RJ-11, screw
PC10420-485X	20020 PC/104 DC-coupled EIA-485 NIM (backplane set by hardware)	RJ-11, screw
PC10420-CXB	20020 coaxial bus NIM*	BNC
PC10420-CXS	20020 coaxial star NIM*	BNC
PC10420-FOG-ST	20020 ST fibre optic NIM*	ST
PC10420-TPB	20020 twisted-pair bus NIM*	RJ-11, screw

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