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Brad® applicomIO PROFIBUS-DP Network Interface Cards

112011, 112013, 112018

PCI Universal, PCI Express, Compact PCI and PC/104 bus

Brad® applicomIO fieldbus Network Interface Cards and software provide complete, all-in-one PC-based control and visualization solutions for high-speed industrial automation and process-control applications

End-users are increasingly eliminating the use of dedicated DCS (Distributed Control Systems) and PLC (Programmable Logic Controllers) in favour of PC-based platforms for control and/ or visualization of their high-speed custom systems for automation and process-control applications.

applicomIO is a turnkey, all-in-one solution ideal for customers with no/ limited knowledge in fieldbus technology. The applicomIO network interface card (NIC), configuration software, development libraries and data servers are provided in one complete package for successful, cost-effective implementation. applicomIO NICs are designed independently of the fieldbus used. Customers can take advantage of developing standard control applications as well as selecting the fieldbus connectivity required from the applicomIO product range. applicomIO configuration software provides an user-friendly environment for quick development of communication applications without the worry of knowing industrial communication protocols. Time-saving commissioning is supported by features such as automatic device detection, user configuration management, diagnostic information.

Brad applicomIO network interface cards provide connectivity for all popular fieldbuses including EtherNet/IP, PROFINET, Modbus TCP, PROFIBUS, DeviceNet and CANopen in various form factors. applicomIO supports up to 8 cards in a single PC and can run on various operating systems including Windows, Linux as well as real-time OS such as VxWorks and RTX.

Product package includes:

- Fieldbus Network Interface Card
- Engineering software console for configuration and diagnostics
- Data Servers (OPC DA v3.0 & v2.05, Wonderware DAServer and FastDDE SuiteLink)
- Development Libraries: Windows (DLL), IntervalZero (RTX)
- Static library for non-windows OS (VxWorks, Linux)

applicomIO hardware and software is 100% designed, developed and produced in Molex facilities. For additional information visit: www.molex.com/link/bradnics.html

PCI-Universal

PCI Express

PC/104

CompactPCI

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Features and Benefits

applicomIO package includes Network Interface Card + software	All-in-One PC-based control solution for customers with no / limited knowledge in fieldbus technology
Delivers connectivity for legacy and new Ethernet fieldbus protocols including: PROFIBUS DP, CANopen, DeviceNet, Modbus TCP, EtherNet/IP and PROFINET	Large range of fieldbus connectivity to meet needs of customers
Sophisticated, user-friendly configuration engineering software featuring automatic device detection, user configuration management and diagnostic information	Supports quick development of communication applications; no knowledge of fieldbus protocols required. Enables time-saving commissioning and diagnostics
Protocols run both Master and/or Slave modes	Allows the card to behave as a controller or a device on the network
Can be used on the latest Windows versions (XP, Seven and Eight) as well as real-time OS like Linux, VxWorks, QNX and IntervalZero RTX	Supports major operating systems
Available in PCI, PCI Express, PC/104, and CompactPCI bus form factors	Supports customer requirements with wide choice of PC form factors
Single development library	Allows to develop a single user application for all fieldbus
Onboard Ethernet port	Enables remote access for configuration and diagnostics for non-Windows OS
Simulation mode	Allows user application testing
Supports up to 8 cards plugged in a single PC	Can connect multiple fieldbus at the same time
Hardware and software are 100% designed, developed and produced in Molex facilities	Full technical support and expertise available from Molex

Applications

Machine builder

-Robotic controller
-Complex machine
-CNC machine

Factory automation

-Automotive assembly line
-Automotive body shop
-Material handling

Process control

-Wastewater treatment
-Agro food industry
-Oil and Gas
-Pharmaceutical

Material Handling

Robotic Controller

Wastewater Treatment

Oil and Gas

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Specifications

Brad® applicomIO PROFIBUS-DP Network Interface Cards

	Brad® applicomIO PCU-DP2IO	Brad® applicomIO PCIE-DP2IO
		
Key Benefits	• Fast data exchange (on-board processor take off the load of the host CPU) • Speed up to 12 Mbps • Ethernet port for remote configuration and diagnosis • DP Master and Slave modes simultaneously	

HARDWARE

Unit	PCI-Universal (3.3V/5V)	PCI Express 1x
Processor	Freescale PowerPC	Freescale PowerPC
PROFIBUS ASIC	Siemens ASPC2	Siemens ASPC2
Memory	64 Mbytes	64 Mbytes
Flash Memory	16 Mbytes	16 Mbytes
Interruption	Hardware Plug&Play	Hardware Plug&Play
DPRAM Address	Hardware Plug&Play (32 Kbytes)	Hardware Plug&Play (32 Kbytes)
Discrete Input	1x Opto-coupled discrete input, Voltage -> +10 to +24 VDC	1x Opto-coupled discrete input, Voltage -> +10 to +24 VDC
Discrete Output	1x “WatchDog” output contact free from potential (floating) (24 VDC, 0.25 A)	1x “WatchDog” output contact free from potential (floating) (24 VDC, 0.25 A)
Dimensions (LxW)	168mm x 107mm (6.61" x 4.21")	115mm x 97mm (4.58" x 3.82")
Consumption	5.5W (max. 1.2A)	5.5W (max. 1.2A)
Operating T°	0˚C (32˚F) up to +60°C (140°F)	0˚C (32˚F) up to +60°C (140°F)
Storage T°	-40˚ C (-40°F) up to +85˚C (185˚ F)	-40˚ C (-40°F) up to +85˚C (185˚ F)
EMC	EC Directive 2004/108/EC on basis of compliance with EN 61326-1:2006	EC Directive 2004/108/EC on basis of compliance with EN 61326-1:2006
Compliances	PI Certified, RoHS, FCC, KCC, ICES-003	PI Certified, RoHS, FCC, KCC, ICES-003

COMMUNICATION PORT

Port type	1 PROFIBUS port (EN 50170)	1 PROFIBUS port (EN 50170)
PROFIBUS Connector	D-Sub, 9 pin, female	D-Sub, 9 pin, female
LED Indicator	2 bicolor LEDs: bus fault and comm. status	2 bicolor LEDs: bus fault and comm. status
Electrical Interface	RS485 optical insulation (500 V)	RS485 optical insulation (500 V)
Baud Rate	9.6 kbps <-> 12 Mbps	9.6 kbps <-> 12 Mbps

PORT FOR REMOTE CONFIGURATION AND DIAGNOSTIC

Port Type	Ethernet port	Ethernet port
Connector type	RJ45	RJ45
LED indicators	4 LEDs - TX/RX/Link/100 Mbps	4 LEDs - TX/RX/Link/100 Mbps
Electrical interface	Ethernet	Ethernet
Speed	10/100 Mbps	10/100 Mbps

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Specifications

Brad® applicomIO PROFIBUS-DP Network Interface Cards

	Brad® applicomIO PC104-DPIO	Brad® applicomIO CPCU-DP2IO
		
Key Benefits	• Fast data exchange (on-board processor take off the load of the host CPU) • Speed up to 12 Mbps • Serial or Ethernet port for remote configuration and diagnosis • DP Master and Slave modes simultaneously	

HARDWARE

Unit	PC/104 bus	CompactPCI 3U bus, 5V
Processor	AMD SC520, 100 Mhz	Freescale PowerPC
PROFIBUS ASIC	Siemens ASPC2	Siemens ASPC2
Memory	8 Mbytes SDRAM	64 Mbytes
Flash Memory	512 Kbytes	16 Mbytes
Interruption	2, 3, 4, 5, 6, 7, 10, 11, 12, 14, 15	Hardware Plug&Play
DPRAM Address	From C8000 to DE000 (8 Kbytes used per card)	Hardware Plug&Play (32 Kbytes)
Discrete Input	1x Opto-coupled discrete input, Voltage -> +10 to +24 VDC	1x Opto-coupled discrete input, Voltage -> +10 to +24 VDC
Discrete Output	1x “WatchDog” output contact free from potential (floating) (24 VDC, 0.25 A)	1x “WatchDog” output contact free from potential (floating) (24 VDC, 0.25 A)
Dimensions (LxW)	95mm x 90mm (3.74" x 3.54")	100mm x 160mm (3.93" x 6.29") - 3U
Consumption	5.5W (max. 1.2A)	5.5W (max. 1.2A)
Operating T°	0˚C (32°F) up to +65˚C (149˚F)	0˚C (32˚F) up to +60°C (140°F)
Storage T°	-40˚ C (-40°F) up to +85˚C (185˚ F)	-40˚ C (-40°F) up to +85˚C (185˚ F)
EMC Compliance	EN55022 Class B, EN61000-6-2, EN61000-3-2, EN61000-3-3	EC Directive 2004/108/EC on basis of compliance with EN 61326-1:2006
RoHS Compliance	RoHS	PI Certified, RoHS, FCC, KCC, ICES-003

COMMUNICATION PORT

Port type	1 PROFIBUS port (EN 50170)	1 PROFIBUS port (EN 50170)
PROFIBUS Connector	Standard: HE13 (2 x 5 pins) Option: D-Sub, 9 pin, female	D-Sub, 9 pin, female
LED Indicator	2 bicolor LEDs: bus fault and comm. status	2 bicolor LEDs: bus fault and comm. status
Electrical Interface	RS485 optical insulation (500 V)	RS485 optical insulation (500 V)
Baud Rate	9.6 kbps <-> 12 Mbps	9.6 kbps <-> 12 Mbps

PORT FOR REMOTE CONFIGURATION AND DIAGNOSTIC

Port Type	Asynchronous Serial port	Ethernet port
Connector type	HE13 (2 x 5 pins)	RJ45
LED indicators	-	4 LEDs - TX/RX/Link/100 Mbps
Electrical interface	RS232 – 2 signals	Ethernet
Speed	9600, 38400, 115200 bps	10/100 Mbps

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Brad® applicomIO PROFIBUS-DP Network Interface Cards

Protocol Specifications

All Brad® applicomIO networks interface cards for PROFIBUS-DP support following protocols:

- DP-V0 Master/Scanner Class-1 & -2 and Slave modes simultaneously
- DP-V0 Slave passive mode only
- DP-V1 Master Class-1 & -2 (for PCU / PCIE / CompactPCI cards)

DP MASTER FEATURES

Access Modes	DPV0 Master/Scanner Class-1 for optimized exchange of input/output data with the slaves (Data_Exchange)
	DP-V0 Master Class-2 for: • Slave diagnostics • Reading inputs/outputs of a slave • Reading configuration data • Changing the slave address
	DP-V1 Master Class-1 & -2: • Read Data Block Class 1 • Write Data Block Class 1 • Read Data Block Class 2 • Write Data Block Class 2 • Abort Data Block Comm Class 2
Multi-master mode	Yes (able to share the bus with other DP masters connected on the network)
Watchdog control	Yes, enables the master to switch into error if no data has been exchanged during this period (Bus Fault)
Input / Output Data	• Memory of I/O data image: - PC/104: up to 2Kbytes - PCI-Universal: up to 8Kbytes - PCI Express: up to 8Kbytes - CompactPCI: up to 8Kbytes • Manage up to 244 data bytes per slave • Automatic organization of I/O data in the DPRAM memory
Max. DP Slave	Connect up to 125 slaves
Data consistency	Yes (i.e. user gets the data up to 122 bytes of a slave from one and the same DP cycle)
Data format	Direct access to variable types (bit, byte, word, double word)
Local DP slave	• Run simultaneously with Master mode. • Offers data exchange with another master on the network. The size of the input and output data is user configurable, and all exchange combinations are possible (from 0 to 244 bytes). The slave can ensure data consistency up to 122 bytes. (see DP-Slave features below for details)

DP SLAVE FEATURES

Access Mode	DP-V0 Slave passive (no management of PROFIBUS token)
Input memory size	Configurable from 0 to 244 bytes
Output memory size	Configurable from 0 to 244 bytes
Slave address	Configurable from 0 to 125 by software configuration
GSD files	Provided on the CD-ROM
Data Format	Configurable Intel or Motorola
Address Assignment Master (Set_Slave_Address)	Not supported
Extended Diagnostic	Not supported

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Brad® applicomIO PROFIBUS-DP Network Interface Cards

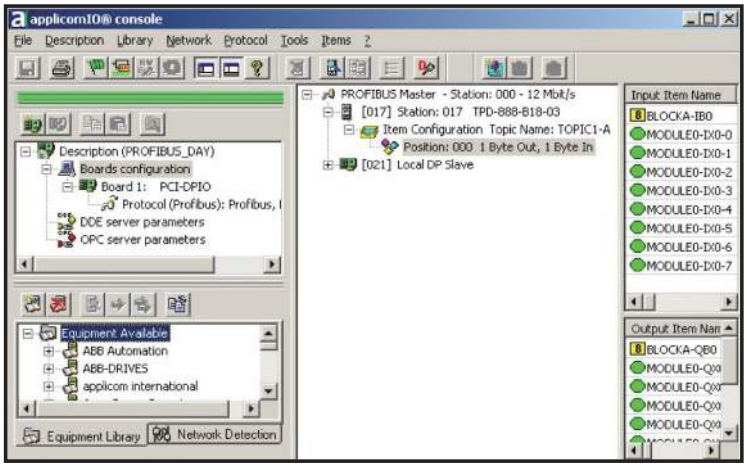
Software Tools

The core of Brad® applicomIO PC Network Interface cards lies in effective software tools enabling fast integration of industrial communication.

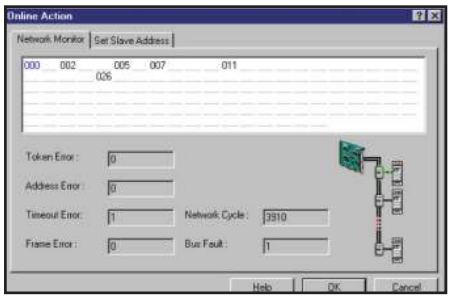
The applicomIO package includes a configuration software console used to set up card, network and devices connected to the fieldbus. The console performs dynamic network diagnostic and allows defining access items to the input/output data used by the software interfaces (OPC server, ActiveX Control, DAServer, DDE/SuiteLink server).

The console is common to all fieldbuses offered EtherNet/IP, PROFINET, Modbus TCP, DeviceNet and CANopen. Additional features managed by the console:

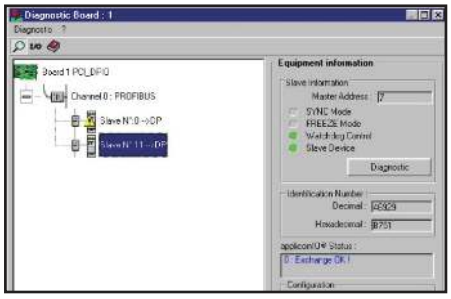
- Powerful graphical user interface
- Automatic detection of cards plugged into the host computer
- User configuration manager: create, backup and restore many user configurations
- Manual or Automatic device configuration
- PROFIBUS master (automatic configuration by detection of slaves connected)
- GSD library (Add/Remove GSD files)
- Diagnostic monitor; scan devices connected on the bus, able to change DP slave address
- Card Status indicator: quickly find the initialization status of each card



Device Configuration



PROFIBUS Network Monitoring



Troubleshooting & Testing tool

Ordering Information

Order No.	Engineering No.	Description
112011-5033	DR2-DPM-PCU	PCU-DP2IO PROFIBUS-DP Master/Slave 12 Mbps, PCI Universal bus
112011-5034	DR2-DPM-PCU-B25	PCU-DP2IO PROFIBUS-DP Master/Slave 12 Mbps, PCI Universal bus, Bulk of 25 pc
112011-5035	DR2-DPM-PCIE	PCIE-DP2IO PROFIBUS-DP Master/Slave 12 Mbps, PCI Express 1x
112018-5005	DR2-DPM-CPU	CPCU-DP2IO PROFIBUS-DP Master/Slave 12 Mbps, CompactPCI bus 3U
112013-0003	DRL-DPM-104	PC104-DPIO PROFIBUS-DP Master/Slave 12 Mbps, PC/104 bus, HE13 connector
112013-0005	DRL-DPM-104-B25	PC104-DPIO PROFIBUS-DP Master/Slave 12 Mbps, PC/104 bus, HE13 connector, Bulk of 25 pc

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