07 Jul. 10
DW200591

applicomIO® Profibus-DP

Data acquisition for real time Control applications

PCI-Universal

PC/104

PCI Express

CompactPCI

Features

- **New!**
  - ☐ Support of Windows 32-bit and 64-bit (WoW64)
  - ☐ Support of Windows Seven and 2008 Server
  - ☐ Support of PCI Express 1x fomr factor

- Protocols supported:
  - ▪ Profibus-DP V0 Master/Slave Class-1 & 2
  - ▪ Profibus-DP V1 Master Class-1 & 2 (for PCI-Universal card only)
  - ▪ Profibus-DP Slave passive

- Connect PC-Based Control applications directly to I/O devices

- Available in various card form factor: PC/104, PCI-Universal and CompactPCI 3U

- 1 Serial or Ethernet port for remote configuration and diagnostic

- Automatic devices detection on the network

- Embedded Communication on the card for powerful data throughput

- Configuration stored in the device (Flash memory), with auto boot mode

Supported OS

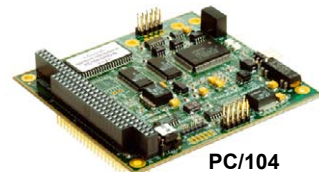### Standard package

- **Windows 32-bit and 64-bit (WoW64)**
  - ☐ Windows XP
  - ☐ Windows 2003 Server
  - ☐ Windows Vista
  - ☐ Windows Seven
  - ☐ Windows 2008 Server
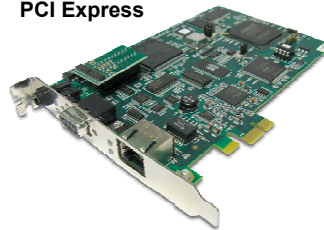 - ☐ Windows 2008 Server R2

Free Download

- **Other operating systems**
  - ☐ Ardence RTX
  - ☐ VxWorks
  - ☐ QNX
  - ☐ Linux
  - ☐ DOS

Woodhead

BradCommunications™

Overview

Some of the world's most demanding high-speed control and automation applications run on standard PCs using BradCommunications™ applicomIO® fieldbus interface cards. Dedicated DCS and PLC systems have been eliminated in favor of open platforms running PC-based control systems.

The benefits include:

- ▪ Reduced material costs
- ▪ Reduced development times
- ▪ More flexible and customizable systems
- ▪ Reduced field-support costs

applicomIO products are design so industrial applications can be designed independently of the fieldbus used. **OEMs**, **system integrators** and **end-users** can take advantage of developing standard control applications as well as selecting the fieldbus connectivity required from the applicomIO product range.

applicomIO products consist of a fieldbus card and engineering tools which quickly and easily setup communication. EVERYTHING is included for a successful implementation at a lower cost.

applicomIO provides connectivity support for all popular fieldbuses including **EtherNet/IP**, **PROFINET IO**, **Modbus TCP**, **PROFIBUS**, **DeviceNet** and **CANopen**. Our cards are developed in compliance with the technical specifications of industrial organizations and comply with the applicable industrial standards. applicomIO supports up to 8 cards in a single PC and can run on various operating systems including Windows 32-bits, Linux as well as real-time OS such as VxWorks, QNX, and VenturCom RTX.

Particularly, the **BradCommunications™ applicomIO® Profibus-DP** interface cards are equipped with 1 Profibus port handling Profibus protocol in **Master and/or Slave modes** up to 12 Mbps.

A smart A.D.M (Automatic Dual port ram Mapping) mechanism avoids the I/O tags configuration in the Dual Port RAM of the card. More than a simple I/O acquisition card, the applicomIO® interface cards provide the applications with additional information such as: *device status and diagnostics, process data read/write monitoring, communication tools for troubleshooting, hardware and software Watchdog, etc*..

The communication layers are completely embedded on the cards, allowing easy and fast communication with field devices resulting in remarkable application performance.

Product package includes:

- ▪ Fieldbus interface card
- ▪ Engineering console for configuration and diagnostic tools
- ▪ Data servers (OPC DA 3.0 & 2.05, DAServer, FastDDE/SuiteLink)
- ▪ Development libraries: Windows (DLL), VenturCom (RTX)
- ▪ Static library for non-windows OS (VxWorks, QNX, Linux, etc)

Technical data

	applicomIO® PCU-DPIO	applicomIO® PCIE-DPIO
Key Benefits		
	• **Fast data exchange (on-board processor take off the load of the host CPU)** • **Speed up to 12 Mbps** • **Serial or Ethernet (only for PCU card) port for remote configuration to use with exotic OS**	
	• **DP-V0 Master Class 1 & 2/Slave simultaneously** • **DP-V1 Master Class 1 & 2**	
Hardware		
Unit	PCI-Universal 3.3/5V, PCI-X compatible	PCI Express 1x
Processor	AMD SC520, 133 Mhz	AMD SC520, 133 Mhz
Profibus ASIC	UART High Speed	UART High Speed
Memory	16 Mbytes SDRAM	16 Mbytes SDRAM
Flash Memory	4 Mbytes	4 Mbytes
Interruption	Hardware Plug&Play	Hardware Plug&Play
DPRAM Address	Hardware Plug&Play (32 Kbytes)	Hardware Plug&Play (32 Kbytes)
Discrete Input	1 x Opto-coupled discrete input, Voltage -> +10 to +30 V DC or 24 V AC (50-60 Hz)	1 x Opto-coupled discrete input, Voltage -> +10 to +30 V DC or 24 V AC (50-60 Hz)
Discrete Output	1 x "WatchDog" output contact free from potential (floating) (24 V DC, 0.25 A)	1 x "WatchDog" output contact free from potential (floating) (24 V DC, 0.25 A)
Dimensions (LxW)	168mm x 107mm (6.61" x 4.21")	168mm x 107mm (6.61" x 4.21")
Consumption	5.5W (max. 1.2A)	5.5W (max. 1.2A)
Operating T°	0ºC (32ºF) up to +65°C (149°F)	0ºC (32ºF) up to +65°C (149°F)
Storage T°	-40° C (-40°F) up to +85ºC (185° F)	-40° C (-40°F) up to +85ºC (185° F)
EMC Compliance	EN55022 Class B, EN61000-6-2, EN61000-3-2, EN61000-3-3	EN55022 Class B, EN61000-6-2, EN61000-3-2, EN61000-3-3
RoHS Compliance	YES	YES
Communication port		
Port type	1 Profibus port (EN 50170)	1 Profibus port (EN 50170)
Connector	Profibus D-Sub, 9 pin, female	Profibus D-Sub, 9 pin, female
LED Indicator	2 bicolor Leds: bus fault and communication status	2 bicolor Leds: bus fault and communication 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

Technical data

	applicomIO® PC104-DPIO	applicomIO® CPCI-DPIO
Key Benefits		
	• **Fast data exchange (on-board processor take off the load of the host CPU)** • **Speed up to 12 Mbps** • **Serial or Ethernet (only for PCU card) port for remote configuration to use with exotic OS**	
	• **DP-V0 Master Class 1 & 2/ Slave simultaneously**	
Hardware		
Unit	PC/104 bus	CompactPCI bus, 5V
Processor	AMD SC520, 100 Mhz	AMD SC520, 133 Mhz
Profibus ASIC	ASPC2	ASPC2
Memory	8 Mbytes SDRAM	8 Mbytes SDRAM
Flash Memory	512 Kbytes	512 kbytes
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 (16 Kbytes)
Discrete Input	1 x Opto-coupled discrete input, Voltage -> +10 to +30V DC or 24V AC (50-60 Hz)	1 x Opto-coupled discrete input, Voltage -> +10 to +30V DC or 24V AC (50-60 Hz)
Discrete Output	1 x "WatchDog" output contact free from potential (floating) (24 V DC, 0.25 A)	1 x "WatchDog" output contact free from potential (floating) (24 V DC, 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°	0ºC (32°F) up to +65ºC (149ºF)	0º C (32º F) ↔ +65º C (149º F)
Storage T°	-40º C (-40°F) up to +85ºC (185º F)	-40º C (-40°F) up to +85ºC (185º F)
EMC Compliance	EN55022 Class B, EN61000-6-2, EN61000-3-2, EN61000-3-3	EN55022 Class B, EN61000-6-2, EN61000-3-2, EN61000-3-3
RoHS Compliance	NO	YES
Communication port		
Port type	1 Profibus port (EN 50170)	1 Profibus port (EN 50170)
Connector	In standard: HE13 (2 x 5 pins) or in option: 9-pin, Sub-D, female	Profibus D-Sub, 9 pin, female
LED Indicator	2 bicolor Leds: bus fault and communication status	2 bicolor Leds: bus fault and communication 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	Asynchronous Serial port
Connector type	HE13 (2 x 5 pins)	9-pin, Sub-D, male
LED indicators	-	2 Leds - TX/RX
Electrical interface	RS232 – 2 signals	RS232 – 2 signals
Speed	9600, 38400, 115200 bps	9600, 38400, 115200 bps

Protocol Specifications

All BradCommunications™ 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 card)

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 4Kbytes
	
	▪ Manage up to 244 data bytes per slave
	
	▪ Automatic organization of I/O data in the DPRAM memory

Max. DP Slave	Connect up to 126 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 modes. Offers data exchange with another master on the network. The size of the input and output data is user-definable, 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 passive 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 126 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

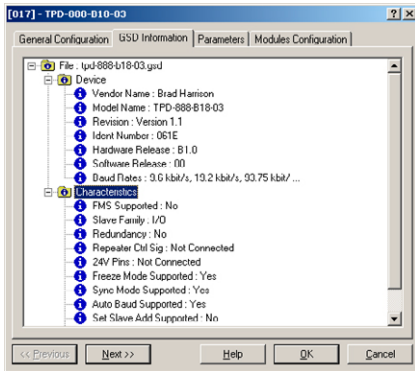# applicomIO® Profibus-DP

Network Interface

Software tools

The core of BradCommunications™ applicomIO® PC Network Interface cards lies in effective software tools enabling fast integration of industrial communication into your applications.
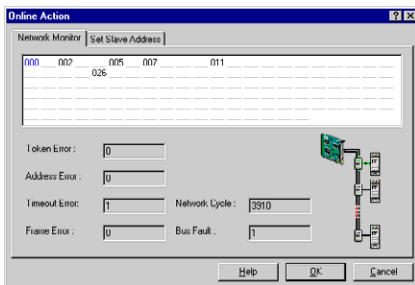
More precisely, applicomIO® package includes configuration software called **Console** used to set up card, network and equipments connected to the fieldbus. The Console performs dynamic network diagnostic and allows defining access items to the input/output data used by the software interfaces (OPC server, ActiveX Control, DAServer, DDE/SuiteLink server).

The console is common to all fieldbuses offer as EtherNet/IP, PROFINET IO, Modbus TCP, DeviceNet and CANopen. Other great features managed by the Console:
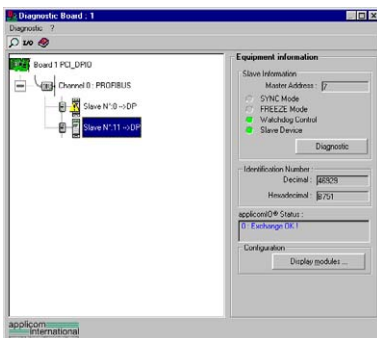- Powerful Graphical User Interface
- Automatic detection of cards plugged into the host computer
- User configuration manager: create, backup and restore many user configurations
- Manual or Automatic device configuration
- Profibus scanner (automatic configuration by detection of slaves connected)
- GSD library. Add/Remove GSD file
- Diagnostic monitor; scan devices connected on the bus, able to change DP slave address
- Card Status indicator: allows you to quickly find the initialization status of each card
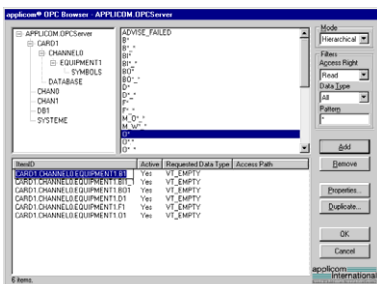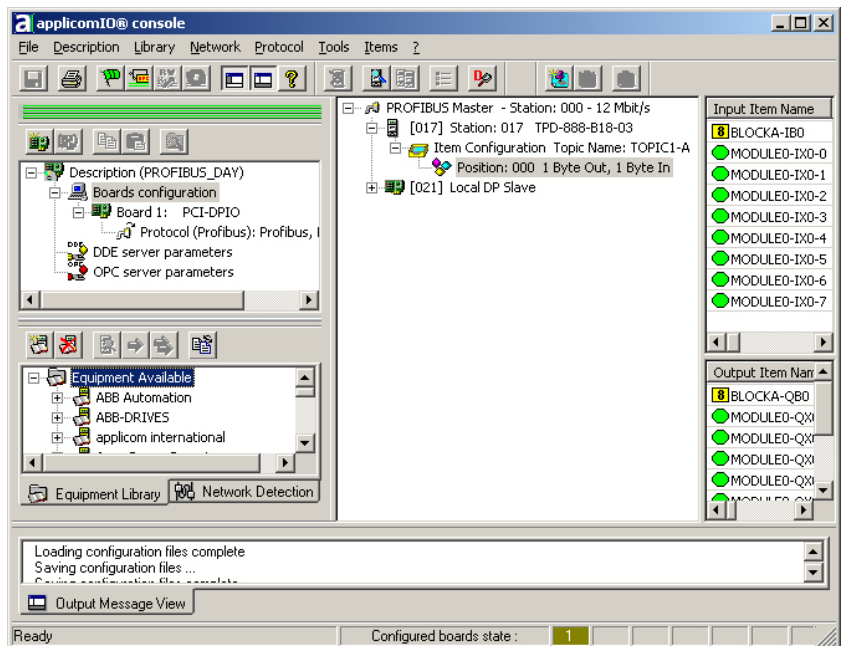
- Device Configuration -

- Profibus Network Monitoring -

- Troubleshooting & Testing tool –

- Browsing of OPC Server -

Ordering Information

Part Number	SAP	Product Description
DRL-DPM-PCU	112011-0008	BradCommunications™ applicomIO® PCU-DPIO Profibus-DP Master/Slave 12 Mbps, PCI-Universal bus, 3.3/5V
DRL-DPM-PCIE	112011-5028	BradCommunications™ applicomIO® PCU-DPIO Profibus-DP Master/Slave 12 Mbps, PCI Express 1x
DRL-DPM-CPI	112018-5004	BradCommunications™ applicomIO® CPCI-DPIO Profibus-DP Master/Slave 12 Mbps, CompactPCI bus 3U
DRL-DPM-104	112013-0003	BradCommunications™ applicomIO® PC104-DPIO Profibus-DP Master/Slave 12 Mbps, PC/104 bus