



**BradCommunications™ applicomIO® Profibus-DP network interface cards allow deterministic I/O data acquisition for PC-based control applications.**

07 Jul. 10  
DW200591

## applicomIO® Profibus-DP

Data acquisition for real time Control applications

### Features

• **New!**

- ❑ Support of Windows 32-bit and 64-bit (WoW64)
- ❑ Support of Windows Seven and 2008 Server
- ❑ Support of PCI Express 1x form 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**

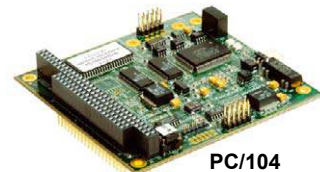
- **Windows 32-bit and 64-bit (WoW64)**
  - ❑ Windows XP
  - ❑ Windows 2003 Server
  - ❑ Windows Vista
  - ❑ Windows Seven
  - ❑ Windows 2008 Server
  - ❑ Windows 2008 Server R2

**Free Download**

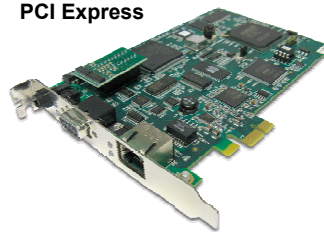
- **Other operating systems**
  - ❑ Ardence RTX
  - ❑ VxWorks
  - ❑ QNX
  - ❑ Linux
  - ❑ DOS



PCI-Universal



PC/104



PCI Express



CompactPCI

### 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
- More flexible and customizable systems
- Reduced development times
- 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 <sup>®</sup> PCU-DPIO	applicomIO <sup>®</sup> PCIE-DPIO
		
<b>Key Benefits</b>	<ul style="list-style-type: none"> <li>• Fast data exchange (on-board processor take off the load of the host CPU)</li> <li>• Speed up to 12 Mbps</li> <li>• Serial or Ethernet (only for PCU card) port for remote configuration to use with exotic OS</li> <li>• DP-V0 Master Class 1 &amp; 2/Slave simultaneously</li> <li>• DP-V1 Master Class 1 &amp; 2</li> </ul>	
<b>Hardware</b>		
<b>Unit</b>	PCI-Universal 3.3/5V, PCI-X compatible	PCI Express 1x
<b>Processor</b>	AMD SC520, 133 Mhz	AMD SC520, 133 Mhz
<b>Profibus ASIC</b>	UART High Speed	UART High Speed
<b>Memory</b>	16 Mbytes SDRAM	16 Mbytes SDRAM
<b>Flash Memory</b>	4 Mbytes	4 Mbytes
<b>Interruption</b>	Hardware Plug&Play	Hardware Plug&Play
<b>DPRAM Address</b>	Hardware Plug&Play (32 Kbytes)	Hardware Plug&Play (32 Kbytes)
<b>Discrete Input</b>	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)
<b>Discrete Output</b>	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)
<b>Dimensions (LxW)</b>	168mm x 107mm (6.61" x 4.21")	168mm x 107mm (6.61" x 4.21")
<b>Consumption</b>	5.5W (max. 1.2A)	5.5W (max. 1.2A)
<b>Operating T°</b>	0°C (32°F) up to +65°C (149°F)	0°C (32°F) up to +65°C (149°F)
<b>Storage T°</b>	-40° C (-40°F) up to +85°C (185° F)	-40° C (-40°F) up to +85°C (185° F)
<b>EMC Compliance</b>	EN55022 Class B, EN61000-6-2, EN61000-3-2, EN61000-3-3	EN55022 Class B, EN61000-6-2, EN61000-3-2, EN61000-3-3
<b>RoHS Compliance</b>	YES	YES
<b>Communication port</b>		
<b>Port type</b>	1 Profibus port (EN 50170)	1 Profibus port (EN 50170)
<b>Connector</b>	Profibus D-Sub, 9 pin, female	Profibus D-Sub, 9 pin, female
<b>LED Indicator</b>	2 bicolor Leds: bus fault and communication status	2 bicolor Leds: bus fault and communication status
<b>Electrical Interface</b>	RS485 optical insulation (500 V)	RS485 optical insulation (500 V)
<b>Baud Rate</b>	9.6 kbps ↔ 12 Mbps	9.6 kbps ↔ 12 Mbps
<b>Port for remote configuration and diagnostic</b>		
<b>Port Type</b>	Ethernet port	Ethernet port
<b>Connector type</b>	RJ45	RJ45
<b>LED indicators</b>	4 Leds - TX/RX/Link/100 Mbps	4 Leds - TX/RX/Link/100 Mbps
<b>Electrical interface</b>	Ethernet	Ethernet
<b>Speed</b>	10/100 Mbps	10/100 Mbps

## Technical data

	applicomIO <sup>®</sup> PC104-DPIO	applicomIO <sup>®</sup> CPCI-DPIO
		
<b>Key Benefits</b>	<ul style="list-style-type: none"> <li>• Fast data exchange (on-board processor take off the load of the host CPU)</li> <li>• Speed up to 12 Mbps</li> <li>• Serial or Ethernet (only for PCU card) port for remote configuration to use with exotic OS</li> <li>• DP-V0 Master Class 1 &amp; 2/ Slave simultaneously</li> </ul>	
<b>Hardware</b>		
<b>Unit</b>	PC/104 bus	CompactPCI bus, 5V
<b>Processor</b>	AMD SC520, 100 Mhz	AMD SC520, 133 Mhz
<b>Profibus ASIC</b>	ASPC2	ASPC2
<b>Memory</b>	8 Mbytes SDRAM	8 Mbytes SDRAM
<b>Flash Memory</b>	512 Kbytes	512 kbytes
<b>Interruption</b>	2, 3, 4, 5, 6, 7, 10, 11, 12, 14, 15	Hardware Plug&Play
<b>DPRAM Address</b>	From C8000 to DE000 (8 Kbytes used per card)	Hardware Plug&Play (16 Kbytes)
<b>Discrete Input</b>	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)
<b>Discrete Output</b>	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)
<b>Dimensions (LxW)</b>	95mm x 90mm (3.74" x 3.54")	100mm x 160mm (3.93" x 6.29") - 3U
<b>Consumption</b>	5.5W (max. 1.2A)	5.5W (max. 1.2A)
<b>Operating T°</b>	0°C (32°F) up to +65°C (149°F)	0° C (32° F) ↔ +65° C (149° F)
<b>Storage T°</b>	-40° C (-40°F) up to +85°C (185° F)	-40° C (-40°F) up to +85°C (185° F)
<b>EMC Compliance</b>	EN55022 Class B, EN61000-6-2, EN61000-3-2, EN61000-3-3	EN55022 Class B, EN61000-6-2, EN61000-3-2, EN61000-3-3
<b>RoHS Compliance</b>	NO	YES
<b>Communication port</b>		
<b>Port type</b>	1 Profibus port (EN 50170)	1 Profibus port (EN 50170)
<b>Connector</b>	In standard: HE13 (2 x 5 pins) or in option: 9-pin, Sub-D, female	Profibus D-Sub, 9 pin, female
<b>LED Indicator</b>	2 bicolor Leds: bus fault and communication status	2 bicolor Leds: bus fault and communication status
<b>Electrical Interface</b>	RS485 optical insulation (500 V)	RS485 optical insulation (500 V)
<b>Baud Rate</b>	9.6 kbps ↔ 12 Mbps	9.6 kbps ↔ 12 Mbps
<b>Port for remote configuration and diagnostic</b>		
<b>Port Type</b>	Asynchronous Serial port	Asynchronous Serial port
<b>Connector type</b>	HE13 (2 x 5 pins)	9-pin, Sub-D, male
<b>LED indicators</b>	-	2 Leds - TX/RX
<b>Electrical interface</b>	RS232 – 2 signals	RS232 – 2 signals
<b>Speed</b>	9600, 38400, 115200 bps	9600, 38400, 115200 bps



## Protocol Specifications

All BradCommunications™ applicomIO<sup>®</sup> 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	
<b>Access Modes</b>	<b>DPV0 Master/Scanner Class-1</b> for optimized exchange of input/output data with the slaves (Data_Exchange).
	<b>DP-V0 Master Class-2</b> for: <ul style="list-style-type: none"> <li>▪ Slave diagnostics</li> <li>▪ Reading inputs/outputs of a slave</li> <li>▪ Reading configuration data</li> <li>▪ Changing the slave address.</li> </ul>
	<b>DP-V1 Master Class-1 &amp; -2:</b> <ul style="list-style-type: none"> <li>▪ Read Data Block Class 1</li> <li>▪ Write Data Block Class 1</li> <li>▪ Read Data Block Class 2</li> <li>▪ Write Data Block Class 2</li> <li>▪ Abort Data Block Comm Class 2</li> </ul>
<b>Multi-master mode</b>	Yes (able to share the bus with other DP masters connected on the network)
<b>Watchdog control</b>	Yes, enables the master to switch into error if no data has been exchanged during this period (Bus Fault)
<b>Input/Output Data</b>	<ul style="list-style-type: none"> <li>▪ Memory of I/O data image: <ul style="list-style-type: none"> <li>○ PC/104: up to 2Kbytes</li> <li>○ PCI-Universal: up to 8Kbytes</li> <li>○ PCI Express: up to 8Kbytes</li> <li>○ CompactPCI: up to 4Kbytes</li> </ul> </li> <li>▪ Manage up to 244 data bytes per slave</li> <li>▪ Automatic organization of I/O data in the DPRAM memory</li> </ul>
<b>Max. DP Slave</b>	Connect up to 126 slaves
<b>Data consistency</b>	Yes (i.e. user gets the data up to 122 bytes of a slave from one and the same DP cycle)
<b>Data format</b>	Direct access to variable types (bit, byte, word, double word)
<b>Local DP slave</b>	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	
<b>Access Mode</b>	DP-V0 Slave passive (no management of Profibus token)
<b>Input memory size</b>	Configurable from 0 to 244 bytes
<b>Output memory size</b>	Configurable from 0 to 244 bytes
<b>Slave address</b>	Configurable from 0 to 126 by software configuration
<b>GSD files</b>	Provided on the CD-Rom
<b>Data Format</b>	Configurable Intel or Motorola
<b>Address Assignment Master (Set_Slave_Address)</b>	Not supported
<b>Extended Diagnostic</b>	Not supported





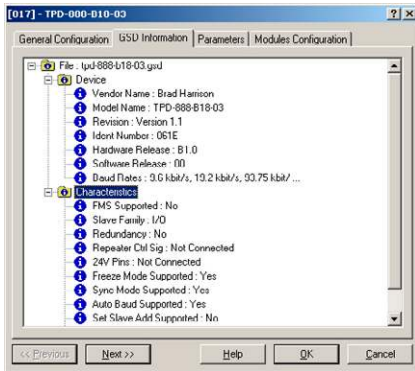
## Software tools

The core of BradCommunications™ applicomIO® PC Network Interface cards lies in effective software tools enabling fast integration of industrial communication into your applications.

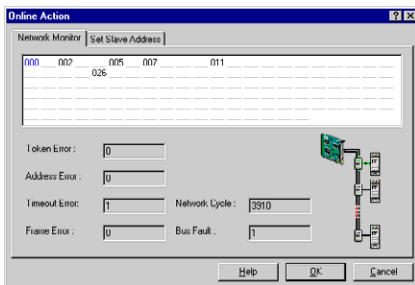
More precisely, applicomIO® package includes configuration software called **Console** used to set up card, network and equipments connected to the fieldbus. The Console performs dynamic network diagnostic and allows defining access items to the input/output data used by the software interfaces (OPC 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:

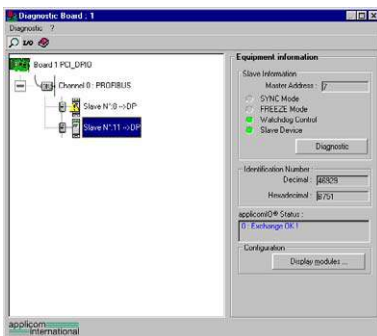
- Powerful Graphical User Interface
- Automatic detection of cards plugged into the host computer
- User configuration manager: create, backup and restore many user configurations
- Manual or Automatic device configuration
- Profibus scanner (automatic configuration by detection of slaves connected)
- 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



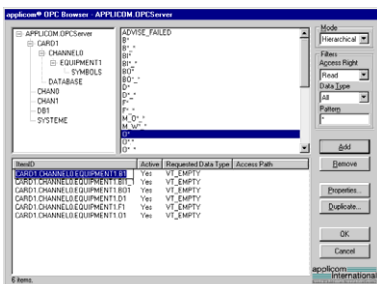
- Device Configuration -



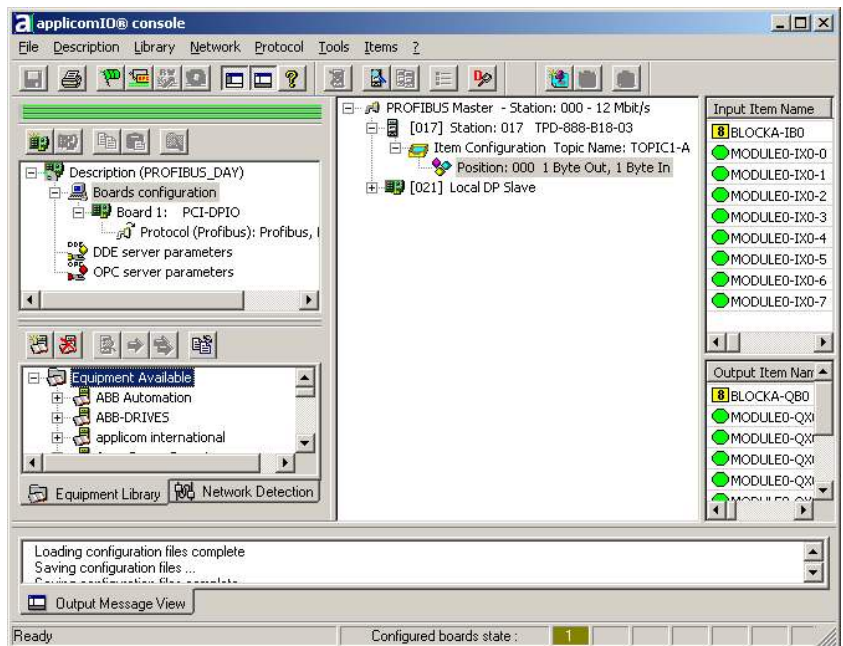
- Profibus Network Monitoring -



- 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® CPCU-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

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