The BradCommunications™ Development Kits allow the easy integration of the PROFINET IO protocol into industrial controllers and field devices.

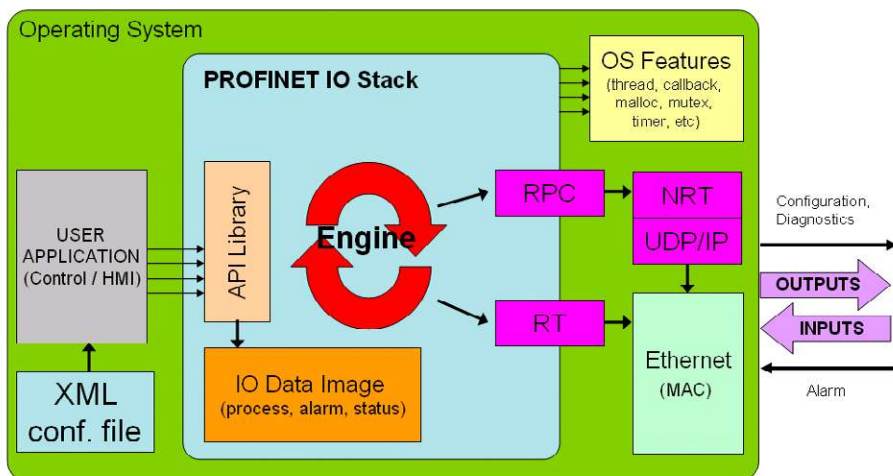# PROFINET IO Development Kit

Development package for PROFINET IO-Controller and IO-Device

Features

- **NEW!** Support of LLDP and MRP
- **Certified according PROFINET IO specifications v2.2**
- **Software stack:**
  - ☐ IO-Controller
  - ☐ IO-Device
- **Multi platform stack (Intel, ARM, PowerPC, Texas DSP, Fido)**
- **Support of Intel and Motorola data format**
- **Open configuration file based on XML format v1.0, v2.1 and v2.2**
- **Advanced OEM Engineering Configuration Console**

Typical applications

- **IO-Controller integration**
  - ✓ PLC
  - ✓ Industrial PC
  - ✓ Robot controller
  - ✓ OEM system controller
- **IO-Device integration**
  - ✓ IO modules
  - ✓ Drives
  - ✓ Robots
  - ✓ Instruments
  - ✓ etc

Molex is a member of PROFIBUS international and is PROFINET competence center (PCC) in France and Italy.

Overview

Promoted by PROFIBUS international, PROFINET protocol fulfills all requirements of using Ethernet networks within industrial applications. PROFINET capitalizes on the advantages that "Industrial Ethernet" brings to the automation environment while providing automation services comparable to PROFIBUS.

With the new BradCommunications™ PROFINET IO Development Kit, manufacturers can develop and market PROFINET more quickly. The kit allows designing PROFINET IO-Controller products like PLCs couplers, PC-based interface cards, Panel PC, Robot controllers or (by using the IO-Device stack) to develop slave devices such as I/O modules, robots, field instruments, regulators, etc.. The BradCommunications PROFINET IO Development Kit supports any hardware platform (little and big endian memory format) and is compatible with operating systems (real-time or not) implementing multithread user applications. The deliverable development kit package includes: ANSI C source code, electronic documentation, and examples of implementation in various operating systems.

Stack functionality

PROFINET IO-Controller Stack
- Context management
- Cyclic data exchange with PROFINET IO-Devices
- Full IO data image through consistent shared memory
- Sending and receiving of diagnostic and process alarms, and plug and pull alarms
- Stack initialization via open XML import file
- Assignment of IP addresses and device names via Ethernet

PROFINET IO-Device Stack
- Cyclic data exchange with a PROFINET IO-controller
- Sending and receiving of diagnostic and process alarms, and plug and pull alarms
- IP address and device name assignment via DCP / Local.

Network Interface

Stack Requirements

Specifications

Stack Requirements	

Hardware Compatibility	• Supports Motorola® and Intel® memory systems
	• The hardware platform requires a 32-bit processor
	• The stack has been validated on the following architecture
	   o Intel (Pentium)
	   o PowerPC
	   o ARM9
	   o Fido 1100
	   o Texas DSP

Stack Implementa-tion	Multi threaded application
Stack Resolution	Timing resolution in microseconds

Operating System	• Portable on any operating system
	• Multi threaded application
	• The stack has been validated on the following OS
	   o Windows
	   o VxWorks
	   o Linux
	   o QNX
	   o eCOS
	   o ThreadX
	   o Proprietary
	• Memory allocation only during stack initialization

IO-Controller Stack	
PROFINET Specifications	PROFINET IO v2.2
Stack Conformance	Class-A and Class-B
Real-Time Communication	RT (RT Class-1 and RT Class-2)
Context Management	Yes
IO Data	Yes (cyclic data exchange) in various format (Bit, Byte, Word, DWord, Float)
Alarm Management	Yes
Max. IO-Device	256 IO-Devices, with up to 1440 Inputs and 1440 Outputs per device
Supported Services per IO-Device	• 1 x AR • 1 x IO Output CR • 1 x Record Data CR • 1 x Alarm CR • 1 x IO Input CR
IP Device Configuration	DCP / Local / DHCP
Services	• LLDP – PROFINET mandatory MIB ← **NEW** • MRP – Media Redundancy (option) ← **NEW**
Controller Configuration	• Standard: Open XML file • Optional: Advanced Configuration Console based on GSDML v1.0 and v2.1
Hardware Compatibility	Compatible with 32-bit microprocessor
Operating System	Portable on any Real Time OS supporting multi-thread.
Content of delivery	• A firmware stack in ANSI C source code • Comprehensive implementation manual • Sample programs • Example of porting under vaious OS

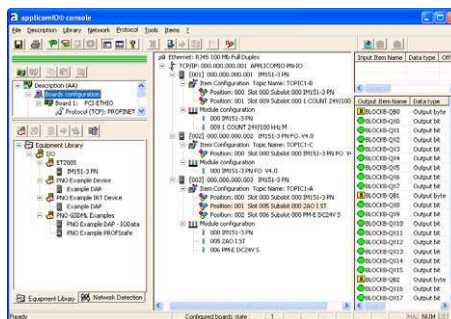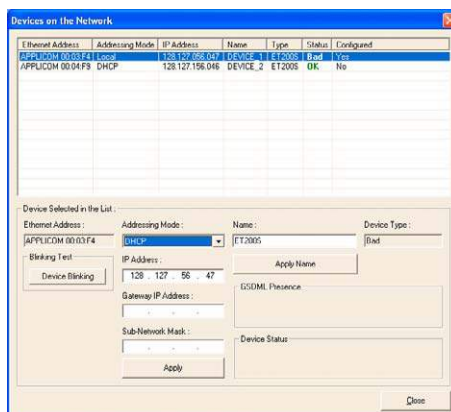| IO-Device Stack	
IO-Data	Up to 1440 Inputs and 1440 Outputs
Alarm Management	Yes
Real-time Communication	RT (RT Class-1 and RT Class-2)
Supported Services	• 1 x AR • 1 x IO Output CR • 1 x Record Data CR • 1 x Alarm CR • 1 x IO Input CR
IP Device Configuration	DCP / Local / DHCP
Services	• LLDP – PROFINET mandatory MIB ← **NEW** • MRP – Media Redundancy (option) ← **NEW**
GSD File	Yes for integration with any IO-Controller
Content of delivery	• A firmware stack in ANSI C source code • Comprehensive implementation manual • Sample programs • Example of porting under vaious OS

PROFINET IO Development Kit

Engineering Console

BradCommunications™ PROFINET Development Kits include a powerful and easy-to-use Windows-based software console to generate configuration files in order to initialize PROFINET IO stacks.

The console includes advanced features to quickly setup and defines the IO-Devices connected to your controller. A sophisticated network detection mechanism is able to discover and build your network topology based on the integrated GSDML device library. Acting as an IO-Supervisor, the console allows for each device to set name, IP address for each IO-Device.

- OEM engineering Console -

PROFINET Console functionality
- Configuration file in XML format
- Device description compatible with GSDML v1 and v2.1 files
- Automatic Network Detection
- Online Actions (IP configuration, diagnostics, etc)
- Automatic generation of devices items based on GSDML device description
- IO-Device diagnostic

- IO-Device commissioning -

Ordering information

Part Number	SAP Number	Description
SDK-PFN-CON	1121065005	PROFINET IO-Controller SDK
SDK-PFN-CON-UPD	1121065006	PROFINET IO-Controller SDK, annual maintenance update
SDK-PFN-CON-L	1121065010	PROFINET IO-Controller SDK, License fee
SDK-PFN-CON-CNF-U	1121065012	PROFINET OEM Engineering Configuration Console for IO-Controller SDK
SDK-PFN-DEV	1121065001	PROFINET IO-Device SDK
SDK-PFN-DEV-UPD	1121065002	PROFINET IO-Device SDK, annual maintenance update
SDK-PFN-MRP	1121065007	Client/Manager Media Redundancy Protocol
SDK-PFN-EDS	8600000142	Engineering dev. support for PROFINET SDK
SDK-PFN-TRN	8600000144	PROFINET SDK training

Network Interface

Stacks also available:
- EtherNet/IP Scanner/Adapter
- EtherNet/IP Adapter
- EtherNet/IP OEM Engineering configuration console
- EtherNet/IP Explicit Messaging DLL Driver
- EtherNet/IP Services (training and Engineering support)

Brad
from **molex**®