



dpac

Distributed Programmable Automation Controller

Trends in Automation Controllers

Programmable automation controllers (PACs) are the latest solution for machine and industrial control systems. A PAC combines the features and capabilities of a PC-based control system with the reliability and ruggedness of a programmable logic controller (PLC) under an open and flexible software architecture. PACs are particularly beneficial to industrial applications which increasingly require:

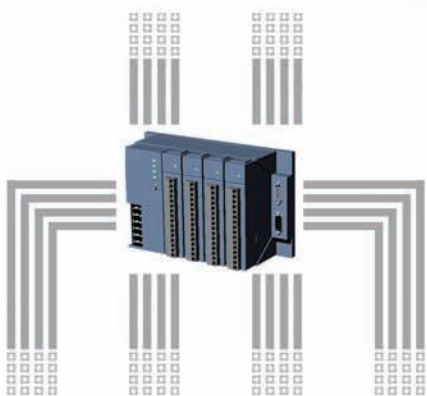
- > A cost-effective platform to integrate logic, motion control and process control.
- > A better platform that can offer more than PLCs—cost-effective interfaces such as Ethernet connectivity and cost-effective storage such as CompactFlash.
- > An embedded, compact, and rugged controller.
- > Functional control blocks that can be distributed via a fieldbus, unlike typical industrial PC configurations.
The wiring setup when using either PCI slots in a PC or functional slots in a PLC is very cumbersome and costly. Using distribution, the functional blocks can be placed near the sensors, actuators, or serve motors. Ethernet cable can then be used for wiring, thus greatly reducing costs.

Distributed Programmable Automation Controller

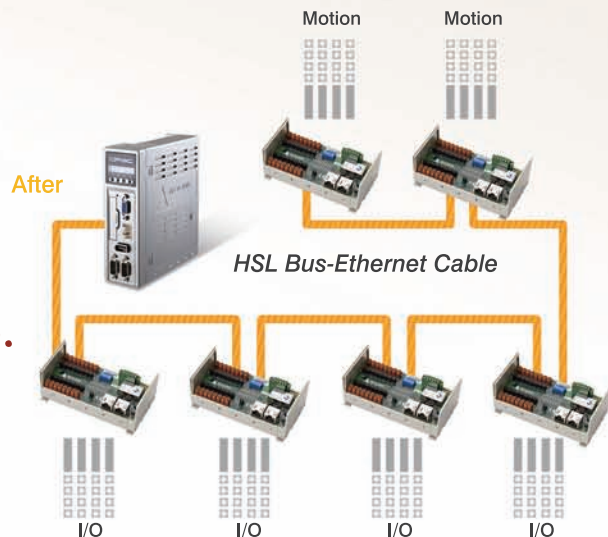
ADLINK's solution for this trend is the introduction of the PAC in distribution form, or **DPAC (Distributed Programming Automation Controller)**. A DPAC offers all the benefits as mentioned in the requirements above while offering the following advantages:

- > Multi-domain functionality, including logic, motion control, vision inspection, process control, and HMI
- > A standard programming language for developing platform
- > Simple customization and flexible integration in a stand-alone controller
- > Modular architecture via fieldbus
- > High vibration and shock tolerance

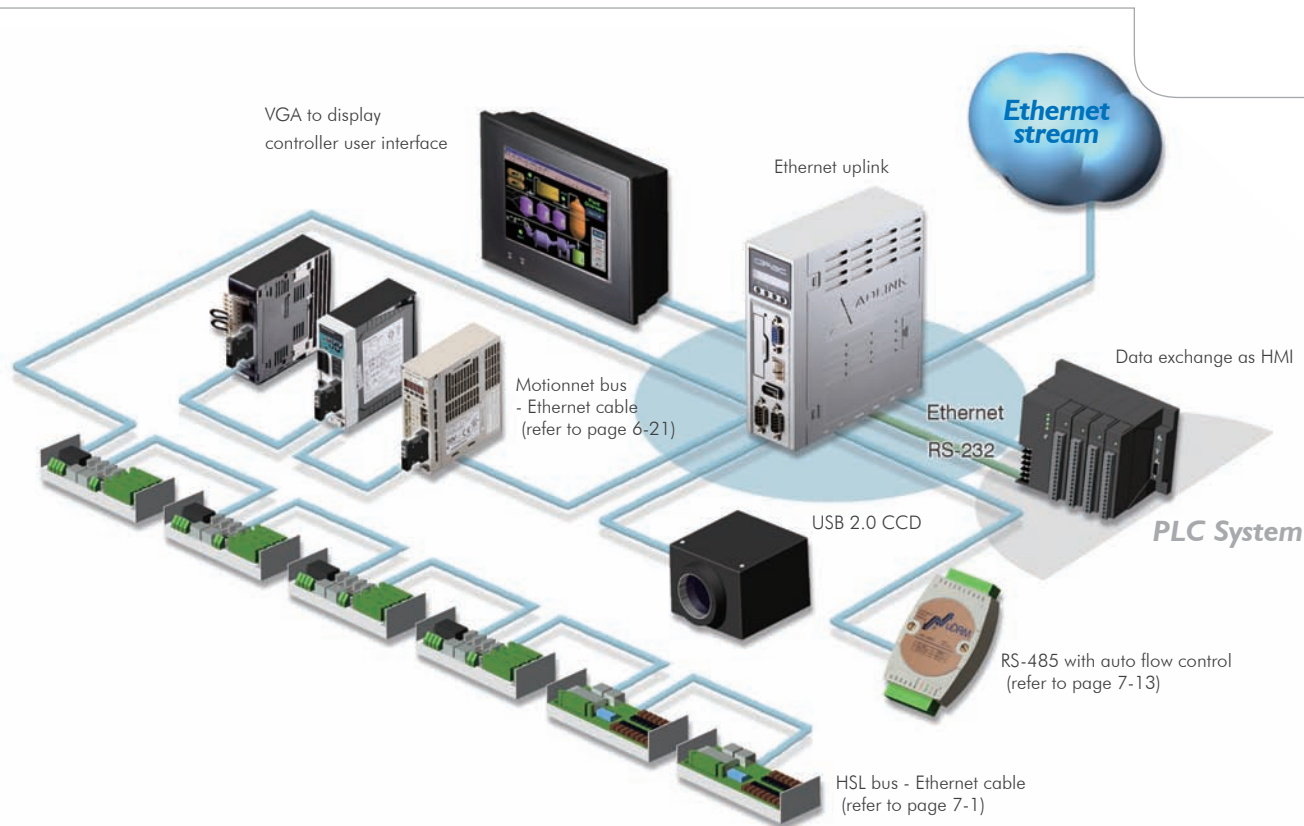
Before: Cumbrous and Costly Wiring Required



VS.



ADLINK DPACs in Industrial Automation



Compact size: 162 x 150 x 50 mm ▶

ADLINK DPAC Features

Compact & Fanless Design

The DPAC is a small (162 x 150 x 50 mm) distributed PC-based controller platform. The DPAC system incorporates a fanless design and optimal heat sink dissipation to ensure the operational reliability and stability.

High Tolerant Vibration and Shock Capability

Designed for industrial automation applications, the DPAC underwent harsh vibration and shock testing during its design to ensure durability. While in operation, the DPAC can tolerate shocks of up to 100 G and vibrations of up to 5 G.

Smart UI with Programmable Buttons and a Digital Display

One key feature of a DPAC system is the digital display and programmable button design. Compact computers can be easily found, but finding a PC-based controller platform that is both compact and reliable is another story. ADLINK's DPAC solution meets a wider variety of application requirements than standard compact computers by providing a digital display can be programmed to provide information and buttons that can be assigned to a controller task.

Function Extension by Distribution

Functional control blocks can be distributed via the fieldbus or serial communication ports depending on the configuration of the DPAC. This greatly reduces the wiring of the entire system whereas compact industrial computers typically require excessive and expensive wiring.



Programmable digital display and buttons for a flexible design ▼



- 1 DAQ
- 2 PXI
- 3 Modular Instruments
- 4 GPIB & Bus Expansion
- 5 PAC
- 6 Motion
- 7 Distributed I/O
- 8 Serial Comm
- 9 Vision
- 10 Software & Utilities
- 11 CPU & Industrial Systems
- 12 Accessories

Flexible Integrated Development Platform

Modules such as digital I/O, AD/DA devices, relay switch controls, thermocouple inputs, and motion controllers can be connected together and communicated to via the fieldbus or serial communication ports. If a fast and time deterministic response is needed, the DPAC provides HSL and Motionnet fieldbuses to achieve such performance requirements. The distributed nature of the DPAC means that all the functional blocks can be installed near the sensors, actuators, servo motors, etc.

Standard Programming Environment

ADLINK's DPAC supports IEC 61131-3 languages: LD (Ladder Diagram), FBD (Function Block Diagram), ST (Structural Text), IL (Instructional Language), and SFC (Sequential Flow Chart). By using these standard languages, software can be developed for the DPAC easier and quicker than with PC-based controller platforms.

External GPIO as Trigger Signal

The DPAC is equipped with a 4-CH external GPIO. These GPIO signals can be used as triggers to synchronously control other devices.

dpac

- Programmable digital display and buttons for a flexible design
- Wide DC power input range: 10-30 Vdc, 30 W
- Four integrated GPIO lines for triggering and receiving external devices
- RS-485 auto flow control








External CompactFlash slot for data storage



Dual LAN 10/100 Base-T



Battery backup to protect data

Vertical and wallmount designs

Vibration tolerance up to 5 G (operational)

Shock tolerance up to 100 G (operational)

162 mm

- USB 2.0 x 2 (DPAC-1200 and DPAC-3200)
- USB 1.1 x 2 (DPAC-1100 and DPAC-3100)
- PS/2 port for keyboard/mouse

Selection Guide

1 DPAC
2 PPI
3 Modular Instruments
4 GPIB & Bus Expansion
5 PAC
6 Motion
7 Distributed I/O
8 Serial Comm
9 Vision
10 Software & Utilities
11 CPU & Industrial Systems
12 Accessories

HSL U Series Slave Modules – High-speed Distributed I/O



Model Name	Description	Page
Discrete Digital I/O Modules		
HSL-DI16DO16-US/-UJ/-UD	16-CH Discrete Input, 16-CH Discrete Output Modules	7-5
HSL-DI32-US/-UJ/-UD	32-CH Discrete Input Modules with U Profile	7-6
HSL-DO32-US/-UJ/-UD	32-CH Discrete Output Modules with U Profile	7-6
Extension Modules		
HSL-HUB3/Repeater	High Speed Link Extension Module	7-8
Motion Control Modules		
HSL-4XMO-CG-N/-P	4-axis Pulse Train Motion Control Module	7-9
HSL-4XMO-CD-N/-P	4-axis Pulse Train Motion Control Module with D-sub Connection Interface	7-9

Motionnet – Distributed Single-Axis Slave Modules



Model Name	Description	Page
MNET-J3	Motionnet Distributed Single-Axis Motion Control Module for Mitsubishi J3-A	6-23
MNET-S23	Motionnet Distributed Single-Axis Motion Control Module for Yaskawa Sigma II, III, and V	6-23
MNET-MIA	Motionnet Distributed Single-Axis Motion Control Module for Panasonic MINAS A4	6-23

NuDAM – Remote Data Acquisition & Control Modules



Model Name	Description	Page	Model Name	Description	Page
Analog Modules					
ND-6013	3-CH RTD Input Module	7-16	ND-6021	1-CH Analog Output Module	7-16
ND-6017	8-CH Analog Input Module	7-16	ND-6024	4-CH Analog Output Module	7-16
ND-6018	8-CH Thermocouple Input Module	7-16			
Digital Modules					
ND-6050	Digital I/O Module	7-17	ND-6058	28-CH PPI Module	7-18
ND-6052	8-CH Isolated Digital Input Module	7-17	ND-6063	8-CH Relay Output Module	7-18
ND-6053	16-CH Digital Input Module	7-17	ND-6067	8-CH AC Relay Output Module	7-18
ND-6054	15-CH Isolated Digital Input Module	7-17	ND-6060	Relay Output & Digital Input Module	7-18
ND-6056	15-CH Isolated Digital Output Module	7-17	ND-6080	2-CH Counter/Frequency Input Module	7-18

Ordering Information

Model Name	Description	Model Name	Description
DPAC-11XC-ZN	AMD Geode™ LX 800 CPU with 4 COM ports	Accessories	
DPAC-12XC-ZN	Intel® Celeron® M 1 GHz CPU with 4 COM ports	General-purpose I/O	1 M length cable with single-end open wire
DPAC-31YC-ZN	AMD Geode™ LX 800 CPU with HSL & Motionnet bus	Li battery	CR2032 type battery for data backup protection
DPAC-32YC-ZN	Intel® Celeron® M 1 GHz with HSL & Motionnet	Industrial-grade CF	4 GB storage for DPAC external slot

X	COM2	COM3	COM4	Y	COM2	Z	OS Language Support
0	RS-232	RS-232	RS-232	0	RS-485	1	Windows XP Embedded (English)
1	RS-232	RS-232	RS-422	1	RS-422	2	Windows XP Embedded (Traditional Chinese)
2	RS-232	RS-232	RS-485	2	RS-232	3	Windows XP Embedded (Simplified Chinese)
3	RS-232	RS-422	RS-422	C		4	Windows XP Embedded (Japanese)
4	RS-232	RS-422	RS-485	CF Size		5	Windows XP Embedded (Korean)
5	RS-232	RS-485	RS-485	0	2 GB		
6	RS-422	RS-422	RS-422	1	4 GB		
7	RS-422	RS-422	RS-485	2	8 GB		
8	RS-422	RS-485	RS-485				
9	RS-485	RS-485	RS-485				

DPAC-1000 Series

Distributed Programmable Automation Controller with Four COM Ports
(AMD Geode™ LX 800 / Ultra Low Voltage Intel® Celeron® M 1.0 GHz)



Specifications

Model number		DPAC-1100-IN	DPAC-1100-II	DPAC-1200-IN	DPAC-1200-II	
System	CPU	AMD Geode™ LX800		Ultra Low Voltage Intel® Celeron® M 1.0GHz		
Hardware	Cache	128 KB L2 Cache		512 KB on-die Advanced Transfer Cache		
	System Memory	512 MB DDR SDRAM				
	Battery Backup SRAM	264 kb, battery model: CR2032 (recommended)				
	BIOS	Award BIOS, supports PnP, customized by ADLINK				
	Programmable Button	Four (specific functions are user programmable)				
	Digital Display	Five digits, user programmable				
	Internal Storage	2 GB CompactFlash (factory default)				
	External Storage	CompactFlash Type I, optional				
	VGA	CRT: 1920 x 1440 resolution at 32-bit @ 85 Hz or 1600 x 1200 resolution at 32-bit @ 100 Hz LCD: 1280 x 1024 resolution at 24-bit color		CRT: 1600 x 1200 @ 32bpp LCD: 1280 x 1024 resolution at 24-bit color		
	Watchdog Timer	Time-out timing selectable 1-255 seconds				
Keyboard/ Mouse	Combined PS/2 type mini-DIN connectors					
Communication	USB	2 USB ports, rev 1.1 compliant		2 USB ports, rev 2.0 compliant		
	Ethernet	Dual LAN, 10/100 Base-T RJ-45 ports				
	COM Port	COM1 supports RS-232; COM2 supports RS-232/422/485 with DB-9 connectors (RS-485 with auto data flow control) COM3 and COM4 supports RS-232/422/485 with RJ-45 connectors (RS-485 with auto data flow control)				
Environment	Humidity	95% @ 50°C		95% @ 50°C		
	Operating Temperature	0-50°C @ 5-85% RH		0-50°C @ 5-85% RH		
	Vibration Protection (In operation Test)	IEC 68 2-64 (Random 3 axes, 30 min/axis) CompactFlash: 5 Grms @ 5-500 Hz				
	Shock Protection (In operation Test)	IEC 68 2-27 CompactFlash: 100 G @ wall mount, half sine, 11 ms				
General	Certification	CE/FCC Class A				
	Mounting	Wall mounting, vertical placement				
	Power Input	10 VDC to 30 VDC with 3-pin connector				
	Power Consumption	30 W (typical), Isolation				
	Dimensions	162 mm (H) x 150 mm (D) x 50 mm (W) (vertical placement)				
	Embedded OS	Windows XP Embedded (English version, factory default)				
	CoDeSys (SoftPLC) Run Time	No	Yes	No	Yes	

DPAC-3000 Series

Distributed Programmable Automation Controller with HSL and Motionnet Buses
(AMD Geode™ LX 800 / Ultra Low Voltage Intel® Celeron® M 1.0 GHz)



Specifications

Model number		DPAC-3100-IN	DPAC-3100-II	DPAC-3200-IN	DPAC-3200-II
System	CPU	AMD Geode™ LX800		Ultra Low Voltage Intel® Celeron® M 1.0 GHz	
Hardware	Cache	128 KB L2 Cache		512 KB on-die Advanced Transfer Cache	
	System Memory	512 MB DDR SDRAM			
	Battery Backup SRAM	264 kb, battery model: CR2032 (recommended)			
	BIOS	Award BIOS, supports PnP, customized by ADLINK			
	Programmable Button	Four (specific functions are user programmable)			
	Digital Display	Five digits, user programmable			
	Internal Storage	2 GB CompactFlash (factory default)			
	External Storage	CompactFlash Type I, optional			
	VGA	CRT: 1920 x 1440 resolution at 32-bit @ 85 Hz or 1600 x 1200 resolution at 32-bit @ 100 Hz		CRT: 1600 x 1200 x 32 bps LCD: 1280 x 1024 solution at 24-bit color	
	Watchdog Timer	Time-out timing selectable 1-255 seconds			
	HSL (StepTechnica)	One port, supports 12/6/3 Mbps, full duplex			
	Motionnet (NPM)	One port, supports 20 Mbps (maximum)			
	Keyboard/ Mouse	Combined PS/2 type mini-DIN connectors			
Communication	USB	2 USB ports, rev 1.1 compliant		2 USB ports, rev 2.0 compliant	
	Ethernet	Dual LAN, 10/100 Base-T RJ-45 ports			
	COM Port	COM1 supports RS-232; COM2 supports RS-232/422/485 with DB-9 connectors; RS-485 with auto data flow control			
Environment	Humidity	95% @ 50°C		95% @ 50°C	
	Operating Temperature	0-50°C @ 5-85% RH		0-50°C @ 5-85% RH	
	Vibration Protection (In operation Test)	IEC 68 2-64 (Random 3 axes, 30 min/axis) CompactFlash: 5 Grms @ 5-500 Hz			
	Shock Protection (In operation Test)	IEC 68 2-27 CompactFlash: 100 G @ wall mount, half sine, 11 ms			
General	Certification	CE/FCC Class A, UL, CCC, TUV			
	Mounting	Wall mounting, vertical placement			
	Power Input	10 V _{DC} to 30 V _{DC} with 3-pin connector			
	Power Consumption	30 W (typical), Isolation			
	Dimensions	162 mm (H) x 150 mm (D) x 50 mm (W) (vertical placement)			
	Embedded OS	Windows XP Embedded (English version, factory default)			
	CoDeSys (SoftPLC) Run Time	No	Yes	No	Yes

- 1 DAD
- 2 PXI
- 3 Modular Instruments
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- 8 Serial Comm
- 9 Vision
- 10 Software & Utilities
- 11 CPU & Industrial Systems
- 12 Accessories