



aerospace  
climate control  
**electromechanical**  
filtration  
fluid & gas handling  
hydraulics  
pneumatics  
process control  
sealing & shielding



# Parker Automation Controller

Integrated Machine Control, Multi-Axis Motion, and Visualization



ENGINEERING YOUR SUCCESS.

# Parker Hannifin

The global leader in motion and control technologies

A world class player on the local stage

## Global Product Design

Parker Hannifin has more than 40 years experience in the design and manufacturing of drives, controls, motors and mechanical products. With dedicated global product development teams, Parker draws on industry-leading technological leadership and experience from engineering teams in Europe, North America and Asia.

## Local Application Expertise

Parker has local engineering resources committed to adapting and applying our current products and technologies to best fit our customers' needs.

## Manufacturing to Meet Our Customers' Needs

Parker is committed to meeting the increasing service demands that our customers require to succeed in the global industrial market. Parker's manufacturing teams seek continuous improvement through the implementation of lean manufacturing methods throughout the process. We measure ourselves on meeting our customers' expectations of quality and delivery, not just our own. In order to meet these expectations, Parker operates and continues to invest in our manufacturing facilities in Europe, North America and Asia.

## Local Manufacturing and Support

Parker provides sales assistance and local technical support through a network of dedicated sales teams and authorized technical distributors throughout

Cleveland, OH - Corporate Headquarters



Rohnert Park, CA - Electronics Business Unit and Headquarters for Electromechanical NA.



## Parker Electromechanical's Worldwide Manufacturing Locations

### North America

- Rohnert Park, CA
- Irwin, PA
- New Ulm, MN
- Wadsworth, OH
- Charlotte, NC

### Europe

- Littlehampton, UK
- Dijon, France
- Offenburg, Germany
- Filderstadt, Germany
- Milan, Italy

### Asia

- Wuxi, China
- Hwaseong-si, Korea
- Chennai, India

Irwin, PA - Mechanics Business Unit and manufacturing.



New Ulm, MN - Motor and Gearhead Business Unit and manufacturing.



Wadsworth, OH - Industrial Profile Systems manufacturing.



North American and around the globe. For contact information, please refer to the sales offices on the back cover of this document or visit [www.parker.com](http://www.parker.com)

# Parker Automation Controller - PAC

Powerful, integrated, and designed for the global machine market, the Parker Automation Controller (PAC) provides OEMs with a standards-based automation solution designed to tackle the most demanding applications. The PAC consolidates advanced logic, multi-axis motion, signal handling, and web-published visualization into one performance driven solution, thus eliminating the need for unnecessary hardware and communication links, and increasing developer efficiency.

The PAC employs the industry-leading EtherCAT communication protocol for motion, I/O, and third-party device connectivity, and combined with the Parker Automation Manager IDE for application development, the PAC provides OEMs with an engineered solution for the most demanding applications; a single, intuitive environment for application development; industry standard programming; machine-to-machine communication; network separation; and even Intellectual Property (IP) protection methods among other features.

With the standard dual LAN capability for network separation,



built-in OPC Server, Modbus TCP functionality, and the ability to integrate directly into Ethernet/IP and Profinet networks, the PAC provides unprecedented connectivity for complimentary devices *and* network isolation for IT professionals.

The solid state design is precisely engineered for demanding industrial environments. The powerful, yet energy efficient Intel® Atom™ processor allows for fanless operation while supporting

dual-cores, 64-bit instructions, and Hyperthreading technology. Coupled with the removable, solid state SD storage media, all moving parts have been eliminated for a robust, industrial grade control solution.

## Hardware

- Intel Atom Dual-core, 1.60GHz, 64-bit
- 1GB DDR3 SDRAM
- Fan-less
- SD Application Memory
- Local & Remote I/O
- DIN Rail Mounting

## Software

- IEC61131-3 Programming
- PLCopen Motion Control
- DIN 66025 CNC G-code
- Simulation Runtime Engine
- Web-configuration Tool
- Custom Libraries
- Extensible, Reusable Code

## Communications

- EtherCAT
- Ethernet/IP
- Profinet
- Profibus
- OPC Server
- Modbus TCP
- Dual LANs



# Parker Automation Controller - PAC

## Hardware Features





# Parker Automation Controller - PAC

## PAC Specifications

<b>Processor</b>	Intel® Atom CPU, 1.6 GHz, Dual Core, 64bit, 1 MB L2 Cache
<b>Memory</b>	Up to 1GB DDR3 SDRAM, 1066 MHz, PC3-8500, 204-pin SODIMM Socket
<b>Storage</b>	2GB Secure Digital Card (SD)
<b>Retentive Memory</b>	256kB, 512kB
<b>BIOS</b>	Insyde H <sub>2</sub> O
<b>Input Voltage</b>	24 VDC (-15 %/+25 %), SELV, 1.2A, 29W, Req. Class 2 Power Source, Overvoltage Cat. 1
<b>Fuse</b>	Littelfuse Nano SMF Slow Blow Type -- Littelfuse Part Number R454002
<b>Shock Rating</b>	10g peak, 11ms (operating); 30g peak, 11ms (non-operating)
<b>Operating Vibration</b>	10-500Hz: 2grms random
<b>Altitude</b>	10,000 ft. (3048m)
<b>Relative Humidity</b>	0% to 95% non-condensing
<b>Operating Temperature</b>	32 to 122 °F (0-50 °C) Ambient
<b>Storage Temperature</b>	-13 to 158 °F (-25 to 70 °C)
<b>Environmental</b>	IP20, RoHS Compliant
<b>Heat Dissipation</b>	5.0 W max. w/o optional communications module, 5.8 W maximum w/ optional module
<b>Weight</b>	1.45 lbs (0.66kgs) w/o optional comm. module; 1.65 lbs (0.75kgs) w/ optional module
<b>Dimensions</b>	3.27"H x 4.93"W x 8.02"L w/o optional comm. module; 3.53"H w/ optional module
<b>Mounting</b>	35 mm DIN rail (top-hat rail)
<b>Ports</b>	2x RJ-45 10/100/1000BaseT Ethernet; 1x RJ45 100Mbit/s EtherCAT supporting IEEE1588 distributed clocks; 2 x USB 2.0 Host Type A

## PAC Standards and Conformance

Tests	Specification
<b>Harmonic Current Emissions</b>	EN 61000-3-2:2006 + A2:2009, IEC 61000-3-2:2009
<b>Voltage Fluctuations and Flicker</b>	EN 61000-3-3:2008, IEC 61000-3-3:2008
<b>Electrostatic Discharge Immunity</b>	IEC 61000-4-2:2008
<b>Radiated Electromagnetic Field Immunity</b>	IEC 61000-4-3:2010
<b>Electrical Fast Transient Burst Immunity</b>	IEC 61000-4-4:2012
<b>Surge Immunity</b>	IEC 61000-4-5:2005
<b>Radio Frequency Common Mode Immunity</b>	IEC 61000-4-6:2008
<b>Power Frequency Magnetic Field Immunity</b>	IEC 61000-4-8:2009
<b>Voltage Interrupts Immunity</b>	IEC 61000-4-11:2004
<b>Radiated &amp; Conducted Emissions</b>	EN 55011:2009 + A1:2010
<b>CISPR 11 Group 1, Class A</b>	CISPR 11:2009 + A1:2010
<b>†‡ Part 1 General Requirements</b>	EN61010-1:2010
<b>†‡ Part 2-201 Particular Requirements for Control Equipment</b>	EN61010-2-201:2013
<b>‡Part 1: General Requirements</b>	UL 61010-1, 3rd Edition, 2012-04-17
<b>‡Part 1: General Requirements</b>	CAN/CSA-C22.2 No. 61010-1, 3rd Ed, 2012-04
<b>†‡ Part 2-201: Particular requirements for control equipment</b>	UL 61010-2-201
<b>Protection Degree IP20</b>	IEC 60529, Ed 2.1+CORRs. 1:2003, 2:2007, 3:2009

†Safety Requirements ‡Electrical Equipment for Measurement, Control and Laboratory use.

# Parker Automation Controller - PAC

## PAC I/O

The PAC I/O System comprises a variety of modules for digital, analog and temperature signals as well as communication interfaces. The modules connect directly to the controller via the built-in EtherCAT bus for local architectures and are extended to remote locations via the extender and bus coupler modules, thus supporting both local and distributed I/O architectures.

PAC I/O modules feature a removable cage-clamp terminal design which provides for easy wiring and assembly and allows for the removal and insertion of modules without interfering with

wiring; LED status indicators for the EtherCAT bus, I/O, power and each signal channel; front-face shield-grounding to the din-rail; removable label inserts; easy access front mounted module disconnects; and laser-etched identification and schematic information.

PAC I/O communicates natively on the EtherCAT bus and is unencumbered by protocol converters; therefore it provides the full functionality and throughput of high-speed EtherCAT to meet the most demanding I/O requirements.



## PAC I/O Modules

Module Type	Part Number	PACIO Description
Bus Coupler	PACIO-400-00	PACIO EtherCAT Bus coupler, 3 A
Digital I/O Modules	PACIO-450-02	PACIO DI16/DO8 (16 inputs/8 outputs), 1 A
	PACIO-450-03	PACIO DI16/DO16 (16 inputs/16 outputs), 1 ms delay, 0.5 A
	PACIO-450-13	PACIO DI16/DO16 (16 inputs/16 outputs), 1 ms delay, 0.5 A Low-side
	PACIO-451-02	PACIO DI32 (32 inputs), 1 ms delay
	PACIO-451-03	PACIO DI16 (16 inputs), 1 ms delay
	PACIO-450-05	PACIO DI8/DO8 (8 inputs/8 outputs), 1 ms delay, 0.5 A
	PACIO-452-01	PACIO DO16 (16 outputs), 0.5 A
	PACIO-452-02	PACIO DO8 (8 outputs) 1 A
	PACIO-441-01	PACIO AI4-mA (4 single-ended analog input module), 12 Bit resolution
Analog	PACIO-441-02	PACIO AI4/8-VDC (4 differential/8 single-ended analog input module), 13 Bit
	PACIO-442-02	PACIO AO4-VDC/mA (4 analog output module), 12 Bit resolution
	PACIO-443-01	PACIO AI4-Pt/Ni100 (4 analog inputs, 70 to 300 ohm resistance), 16 Bit
Temperature	PACIO-443-03	PACIO AI4-Pt/Ni1000 (4 analog inputs, 70 to 3000 ohm resistance), 16 Bit
	PACIO-454-01	PACIO Counter/Enc (encoder counter module)
Counter	PACIO-455-03	PACIO Profibus DP Slave Module
Interfaces	PACIO-400-02	PACIO Extender 2 Port (EtherCAT I/O extender)
	PACIO-412-01	PACIO Shield 2x8 mm
Accessories	PACIO-412-02	PACIO Shield 14 mm
	PACIO-411-00	Power Distribution Module (distributes 0 VDC or 24 VDC)



# Parker Automation Controller - PAC

## PAC I/O Specifications

<b>Fieldbus</b>	EtherCAT 100Mb/s
<b>Dimensions</b>	25mm x 120mm x 90mm (W x H x D)
<b>Housing Mount</b>	Aluminum
<b>Shield</b>	Front face of module housing thru to DIN rail
<b>Installation</b>	35mm DIN rail (top-hat rail)
<b>I/O Connection</b>	Spring-assisted combi-plug terminal w/ mechanical ejector, 4...36-pin
<b>Signal Indication</b>	LEDs: located next to the signal's terminal connection
<b>Diagnosis</b>	LEDs: bus state, module state, broken wire/excessive current
<b>Number of Channels</b>	Up to 32 digital I/Os on every module, up to 8 analog channels per module
<b>Supply Voltage</b>	24 VDC -20%/+25%
<b>Number of I/O Modules</b>	20 local and then 20 per bus coupler (total max. power consumption per station: 3A)
<b>Density</b>	Up to 32 digital I/Os per module; up to 8 analog channels per module
<b>Electrical installation</b>	Modules electrically insulated from one another and from the bus
<b>Storage Temperature</b>	-25°C ... + 70°C
<b>Operating Temperature</b>	0°C ... +50°C
<b>Relative Humidity</b>	5% ... 95% non-condensing
<b>Protection</b>	IP20
<b>Noise Immunity</b>	Zone B, EN 61131-2, earth grounded DIN rail in earth grounded cabinet
<b>CE Compliance</b>	2004/108/EC Electromagnetic Compatibility
<b>UL</b>	UL508
<b>RoHS</b>	RoHS Compliant

## Accessories and Options

### Communication Options

The Parker Automation Controller (PAC) employs the industry leading EtherCAT communication protocol for motion, I/O, and 3rd party device connectivity. Along with EtherCAT, each unit also comes standard with Modbus TCP, an OPC Server, and dual LANs for network separation.

To compliment the standard protocols, the PAC provides options for Ethernet/IP, Profinet, and Profibus, and therefore the PAC can integrate directly into Ethernet/IP and Profinet

networks for machine-to-machine communication.



PROFINET communication module

- **EtherCAT**
- **Ethernet/IP**
- **Profinet**
- **Profibus**
- **Modbus TCP**
- **OPC Server**
- **Dual LANs**

# Parker Automation Controller - PAC

## Parker Automation Manager IDE

Smart and powerful, Parker Automation Manager is the single integrated development environment for programming complex logic, multi-axis motion, signal handling, and web-published visualizations.

With Automation Manager, engineers can leverage their existing knowledge and work smarter, more efficient and more effective than ever with the full suite of IEC 61131-3 programming languages, PLCopen Motion Control, Parts I and II, and g-code conforming to the DIN66025 standard. This standards-based approach provides a common platform for control engineers and flattens the learning curve, thus saving OEMs time and money.

### IEC61131-3 Programming

- Ladder Diagram
- Structured Text
- Continuous Function Chart
- Function Block Diagram
- Sequential Function Chart
- Instruction List

PLCopen Motion Control I & II  
DIN 66025 G-code

The common platform approach is complemented by a powerful simulation engine for logic and motion that allows for faster development and by a complete suite of debugging tools, including powerflow; inline variable forcing, watch, and trending; system logging; and breakpoints for logic analysis.

Automation Manager supports reusable, extensible software; object-oriented programming techniques; and even custom library creation for libraries that

can be deployed as compiled—and optionally licensed—code and deployed to protect the

### Simulation Runtime Debugging

- Variable Forcing and/or Setting
- Multiple Watch Windows
- Trending
- Powerflow
- Breakpoints

### System Logger

### Extensible Software

### Object-oriented Programming

### Custom Libraries

Intellectual Property (IP) of OEMs.

Engineers can now manage an entire product line in one project by including multiple hardware configurations and deploying the appropriate reusable software packages to specific application containers. This method allows OEMs to maintain their program files in one project and make code changes in one place to affect all versions of a particular machine. Thus machine builders now have a development platform specifically designed to support modular machines and valuable add-on software modules.

### Customizable Interface

Cam Editor (Graphical & Tabular)

G-code Editor (Graphical & Tabular)

Auto Declaration & Completion

Recipe Manager

Alarm Configuration

Unit Conversions

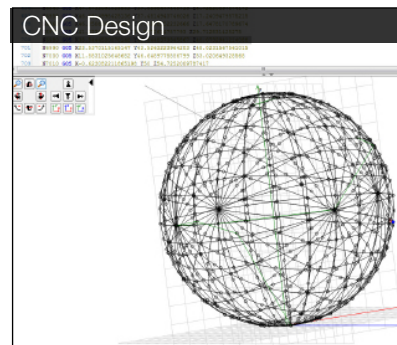
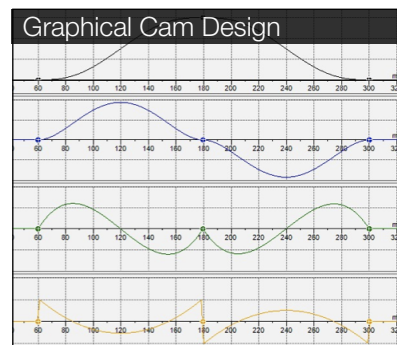
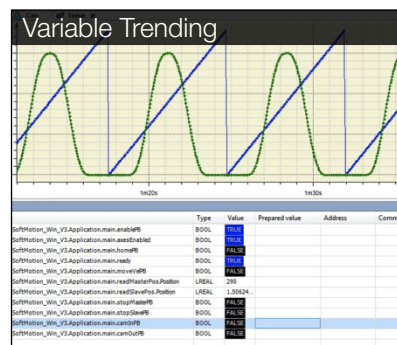
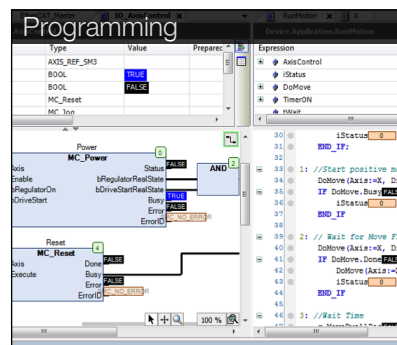
Web-published Visualization

Custom Functions/FBs

CNC Development

DXF Import to Dev. Env.

NC File Import to Runtime



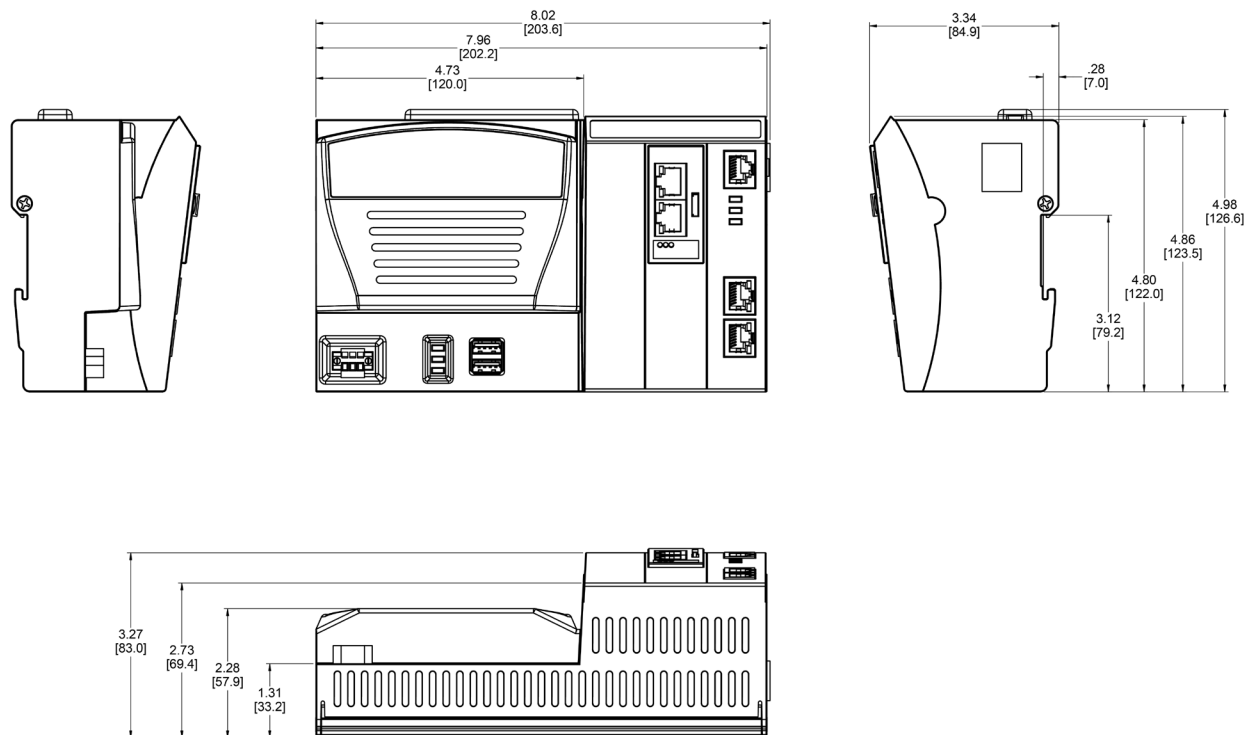


# Parker Automation Controller - PAC

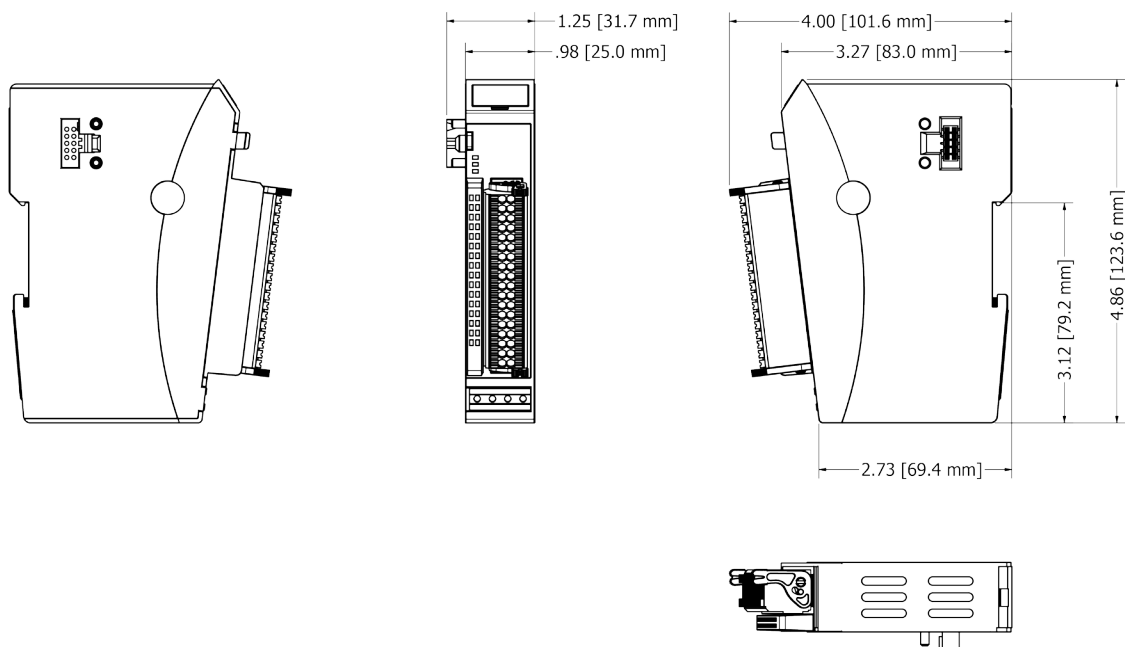
## Dimensions

### PAC Controller

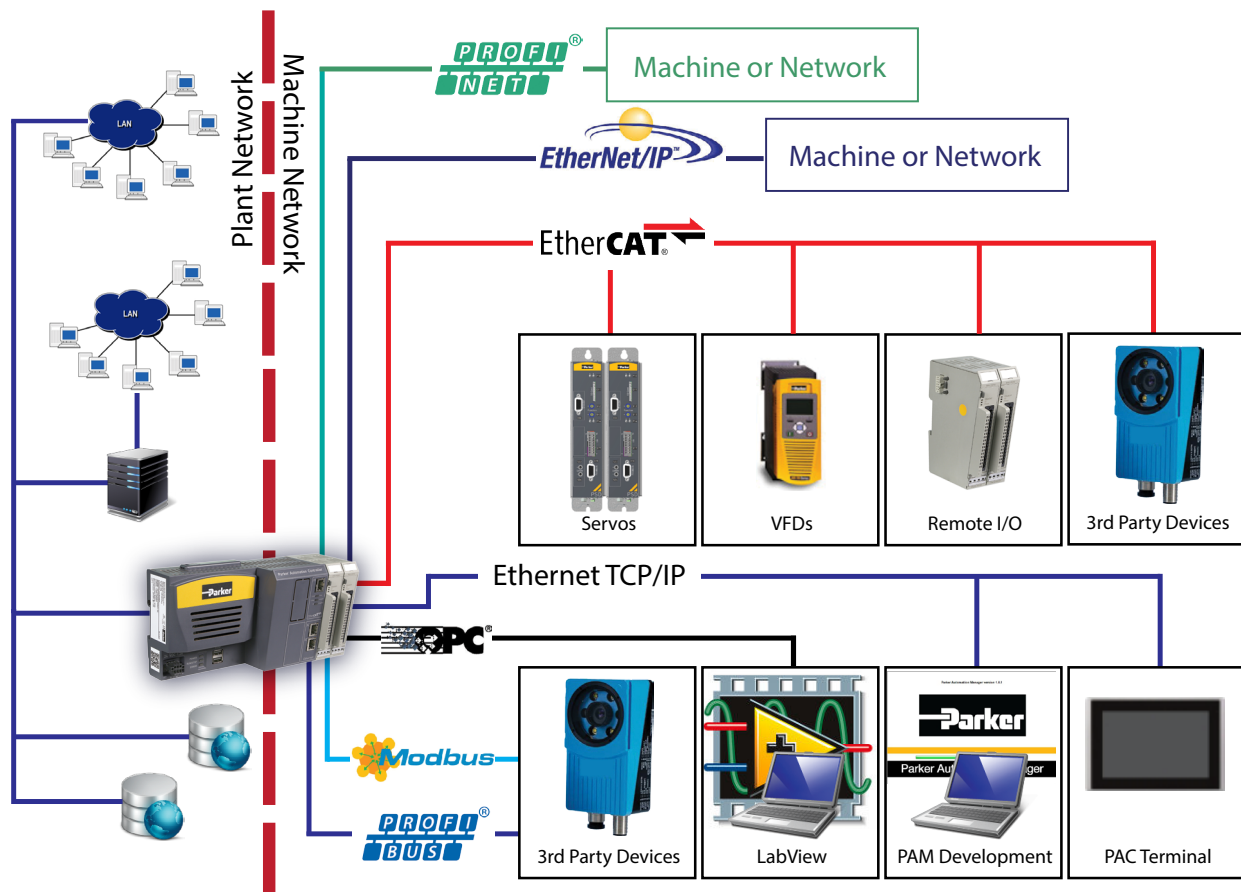
Inches (mm)



### I/O Modules



# Network Architecture





# Ordering Information

	①		②	③	④	⑤	⑥		⑦	⑧
<b>Order Example:</b>	PAC320	–	M	W	N	2	1	–	3	A

Select an option from each numbered field to create a complete model order code.

① <b>Series</b> <b>PAC320</b> Controller	⑤ <b>Retentive Memory</b> <b>2</b> 256k Bytes
② <b>Software</b> <b>P</b> IEC only <b>M</b> IEC, PLCopen Motion <b>C</b> IEC, PLCopen Motion, CNC	⑥ <b>Processor</b> <b>1</b> 1.60 GHz Dual Core Intel® N2600
③ <b>Visualization</b> <b>X</b> Embedded Xpress Web-visualization <b>W</b> Web-visualization for CNC	⑦ <b>Agency Approvals</b> <b>3</b> UL/cUL/CE
④ <b>Communication Options</b> <b>N</b> No Interface <b>E</b> Ethernet/IP <b>P</b> Profinet Device <b>B</b> Ethernet/IP, PROFINET Device	⑧ <b>Reserved</b> <b>A</b> Reserved

# Other Parker Automation Solutions

## ETT - Electric Tubular Motors

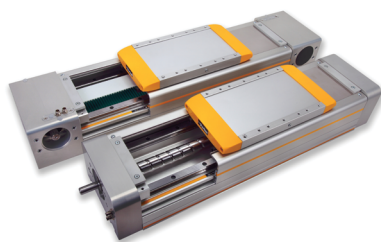
Parker's rod style linear actuators are offered with either a screw or tubular linear motor drive train, and are available in a variety of strokes. Having the flexibility between these two drive trains



give OEM's the flexibility to either select an actuator which will deliver high speed and acceleration or an actuator that will deliver thrust which rivals that of traditional fluid power actuators. Given this versatility Parker's rod style actuators can be found in applications ranging from semi-conductor, food processing, entertainment, and traditional machine tool.

## HMR - High Moment Rodless

Parker Hannifin offers a wide breadth of high moment rodless linear actuators which are driven with a screw, belt or linear motor. In addition to a wide variety of drive train technologies, these

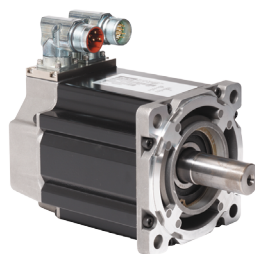


actuators are also offered with a vast array of bearing technologies to suit the needs of the application. Any of these actuator's can be

configured into a multi-axis robotic system, which provides for cost effective automation across industries, including life sciences, semi-conductor, electronics assembly, and automated test or assembly.

## MPP/MPE Servo Motors

The MPP Series of brushless servo motors features a segmented lamination design that provides for a very high torque-to-inertia ratio resulting in the highest acceleration rates of any Parker



motor. MPPs also include high-performance Neodymium magnets, a potted stator design for thermal efficiency, and multiple feedback options. MPP motor s are available in 92, 100, 115, 142, 190, and 270 mm frame sizes with peak torque ratings up to 402 Nm.

## Xpress HMI

Xpress HMI is Parker's award winning web-published HMI



product for interfacing not only Parker's Automation Controller, but also third-party controllers

to the world. With it's intuitive design interface, numerous drag-and-drop objects, and dozens of built-in drivers, Xpress is combines a powerful graphics interface with an intuitive design environment for quick development and an award winning machine front-end.

## Compax3 EtherCAT Servo Drives

Compax3 servo drives combine a high-performance, digital design with industrial ruggedness and



expansive power capabilities. Designed specifically for industrial applications with heavy duty features such as built-in regeneration capabilities and AC input line filtering, the wide variety of power levels--up to 155 A RMS--ensures that no application is too large for the Compax3 family.

## IPS Structural Aluminum

IPS is a complete line of structural aluminum and linear motion



extrusions created to build innovative solutions in machine building, safety guarding, workstations, and other unlimited industrial applications.





## Motion & Control Technologies...

At Parker, we're guided by a relentless drive to help our customers become more productive and achieve higher levels of profitability by engineering the best systems for their requirements. It means looking at customer applications from many angles to find new ways to create value. Whatever the motion and control technology need, Parker has the experience, breadth of product and global reach to consistently deliver. No company knows more about motion and control technology than Parker. For further information call:

1 800 C-Parker  
(1 800 272 7537)



### Aerospace

#### Key Markets

Aftermarket services  
Commercial transports  
Engines  
General & business aviation  
Helicopters  
Launch vehicles  
Military aircraft  
Missiles  
Power generation  
Regional transports  
Unmanned aerial vehicles

#### Key Products

Control systems & actuation products  
Engine systems & components  
Fluid conveyance systems & components  
Fluid metering, delivery & atomization devices  
Fuel systems & components  
Fuel tank inerting systems  
Hydraulic systems & components  
Thermal management  
Wheels & brakes



### Climate Control

#### Key Markets

Agriculture  
Air conditioning  
Construction Machinery  
Food & beverage  
Industrial machinery  
Life sciences  
Oil & gas  
Precision cooling  
Process  
Refrigeration  
Transportation

#### Key Products

Accumulators  
Advanced actuators  
CO<sub>2</sub> controls  
Electronic controllers  
Filter driers  
Hand shut-off valves  
Heat exchangers  
Hose & fittings  
Pressure regulating valves  
Refrigerant distributors  
Safety relief valves  
Smart pumps  
Solenoid valves  
Thermostatic expansion valves



### Electromechanical

#### Key Markets

Aerospace  
Factory automation  
Life science & medical  
Machine tools  
Packaging machinery  
Paper machinery  
Plastics machinery & converting  
Primary metals  
Semiconductor & electronics  
Textile  
Wire & cable

#### Key Products

AC/DC drives & systems  
Electric actuators, gantry robots & slides  
Electrohydraulic actuation systems  
Electromechanical actuation systems  
Human machine interface  
Linear motors  
Stepper motors, servo motors, drives & controls  
Structural extrusions



### Filtration

#### Key Markets

Aerospace  
Food & beverage  
Industrial plant & equipment  
Life sciences  
Marine  
Mobile equipment  
Oil & gas  
Power generation & renewable energy  
Process  
Transportation  
Water Purification

#### Key Products

Analytical gas generators  
Compressed air filters & dryers  
Engine air, coolant, fuel & oil filtration systems  
Fluid condition monitoring systems  
Hydraulic & lubrication filters  
Hydrogen, nitrogen & zero air generators  
Instrumentation filters  
Membrane & fiber filters  
Microfiltration  
Sterile air filtration  
Water desalination & purification filters & systems



### Fluid & Gas Handling

#### Key Markets

Aerial lift  
Agriculture  
Bulk chemical handling  
Construction machinery  
Food & beverage  
Fuel & gas delivery  
Industrial machinery  
Life sciences  
Marine  
Mining  
Mobile  
Oil & gas  
Renewable energy  
Transportation

#### Key Products

Check valves  
Connectors for low pressure fluid conveyance  
Deep sea umbilicals  
Diagnostic equipment  
Hose couplings  
Industrial hose  
Mooring systems & power cables  
PTFE hose & tubing  
Quick couplings  
Rubber & thermoplastic hose  
Tube fittings & adapters  
Tubing & plastic fittings



### Hydraulics

#### Key Markets

Aerial lift  
Agriculture  
Alternative energy  
Construction machinery  
Forestry  
Industrial machinery  
Machine tools  
Marine  
Material handling  
Mining  
Oil & gas  
Power generation  
Refuse vehicles  
Renewable energy  
Truck hydraulics  
Turf equipment

#### Key Products

Accumulators  
Cartridge valves  
Electrohydraulic actuators  
Human machine interfaces  
Hybrid drives  
Hydraulic cylinders  
Hydraulic motors & pumps  
Hydraulic systems  
Hydraulic valves & controls  
Hydrostatic steering  
Integrated hydraulic circuits  
Power take-offs  
Power units  
Rotary actuators  
Sensors



### Pneumatics

#### Key Markets

Aerospace  
Conveyor & material handling  
Factory automation  
Life science & medical  
Machine tools  
Packaging machinery  
Transportation & automotive

#### Key Products

Air preparation  
Brass fittings & valves  
Manifolds  
Pneumatic accessories  
Pneumatic actuators & grippers  
Pneumatic valves & controls  
Quick disconnects  
Rotary actuators  
Rubber & thermoplastic hose & couplings  
Structural extrusions  
Thermoplastic tubing & fittings  
Vacuum generators, cups & sensors



### Process Control

#### Key Markets

Alternative fuels  
Biopharmaceuticals  
Chemical & refining  
Food & beverage  
Marine & shipbuilding  
Medical & dental  
Microelectronics  
Nuclear Power  
Offshore oil exploration  
Oil & gas  
Pharmaceuticals  
Power generation  
Pulp & paper  
Steel  
Water/wastewater

#### Key Products

Analytical Instruments  
Analytical sample conditioning products & systems  
Chemical injection fittings & valves  
Fluoropolymer chemical delivery fittings, valves & pumps  
High purity gas delivery fittings, valves, regulators & digital flow controllers  
Industrial mass flow meters/controllers  
Permanent no-weld tube fittings  
Precision industrial regulators & flow controllers  
Process control double block & bleeds  
Process control fittings, valves, regulators & manifold valves



### Sealing & Shielding

#### Key Markets

Aerospace  
Chemical processing  
Consumer  
Fluid power  
General industrial  
Information technology  
Life sciences  
Microelectronics  
Military  
Oil & gas  
Power generation  
Renewable energy  
Telecommunications  
Transportation

#### Key Products

Dynamic seals  
Elastomeric o-rings  
Electro-medical instrument design & assembly  
EMI shielding  
Extruded & precision-cut, fabricated elastomeric seals  
High temperature metal seals  
Homogeneous & inserted elastomeric shapes  
Medical device fabrication & assembly  
Metal & plastic retained composite seals  
Shielded optical windows  
Silicone tubing & extrusions  
Thermal management  
Vibration dampening

# EM Sales Offices

## Australia

### **Parker Hannifin (Australia) Pty Ltd.**

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Castle Hill NSW 2154  
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Tel: +61 (0) 2 9634-7777  
Fax: +61 (0) 2 9634 3749

## Brazil

### **Parker Hannifin Ind. Com Ltda.**

Av. Lucas Nogueira Garcez 2181  
Esperança  
12325-900 Jacareí, SP  
Tel: 12 3954 5100  
Fax: 12 3954 5262  
Email: automation.brazil@parker.com

## Canada

### **Parker Hannifin (Canada) Inc.**

160 Chisholm Dr  
Milton, Ontario L9T 3G9  
Tel: 905-693-3000  
Fax: 905-876-1958  
Email: miltoncustservice@parker.com

## China

### **Parker Hannifin Motion & Control**

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280 Yunchiao Rd. Jin Qiao Export  
Processing Zone  
Shanghai 201206, China  
Tel: (86-21) 50312525  
Fax: (86-21) 64459717

## France

### **Parker SSD Parvex**

8 avenue du Lac  
B.P. 249  
F-21007 Dijon Cedex  
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