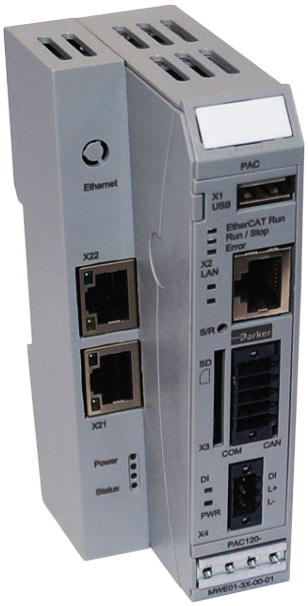











# Parker Motion Controller

## Intelligent Multi-Axis Motion Controller



Parker

ENGINEERING YOUR SUCCESS.

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## Parker Motion Controller - PAC


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# Parker Motion Controller - PAC

## Overview

### Description

The Parker motion Controller PAC is a PLC basing on ARM with integrated CODESYS. This programmable motion controller combines machine logic, real-time motion control and visualization into a standard based, performance driven, fan-less and easily mountable din rail solution.
The controller matches the PACIO modules, which can be attached directly to form a mechanically and electrically homogenous unit. In combination with these modules, it can take over complete machine control.
Equipped with a native, real-time EtherCAT bus, a modular interface slot, standard Ethernet and USB ports plus a built-in SD-card slot and the supported fieldbus options Profinet Slave, EtherCAT or EtherNet/IP the controller can be easily integrated and is suitable for a wide range of applications.

Programmed with CODESYS, efficient and powerful control systems can be designed based on IEC61131-3 and PLCopen motion standards. Offering the OPC UA server the controller is the perfect device for industry 4.0 communication.

Our PAC motion controller is available in two different versions:
PA120 and PAC340.
PAC120 is suitable for many motion applications.
For higher demands on performance and memory the PAC340 is available. With its four processor cores, it also supports the CODESYS multicore feature.



| General | PAC120 |
|---|---|
| Function | Mini-IPC with integrated CODESYS SPS and EtherCAT master function for I/O modules systems PACHC and PACIO |
| Housing | Aluminium strap, plastic |
| Protection class | IP20 |
| Mounting | 35 mm DIN rail |
| Operation temperature | 0 °C...+55 °C |




| General | PAC340 |
|---|---|
| Function | CODESYS PLC Motion Controller with a wide range of data interfaces |
| Housing | Aluminium strap |
| Protection class | IP20 |
| Mounting | 53 mm DIN rail |
| Operation temperature | Ambient operation temperature: (0 to +40) °C |

Common Features

- **Fan-less ARM processor technology**
- **Ethernet and EtherCAT**
- **Fieldbus options: EtherCAT, Profinet, EtherNet/IP, Modbus**
- **OPC UA server**
- **CODESYS V3.5**
- **CODESYS WebVisu**
- **CODESYS SoftMotion**
- **IEC61131-3 programming**
- **PLCopen motion control**
- **Web configuration tool**
- **SD card slot and USB interface**
- **Expandable with Parker PACIO modules**
- **DIN rail mounted**



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# Product Overview

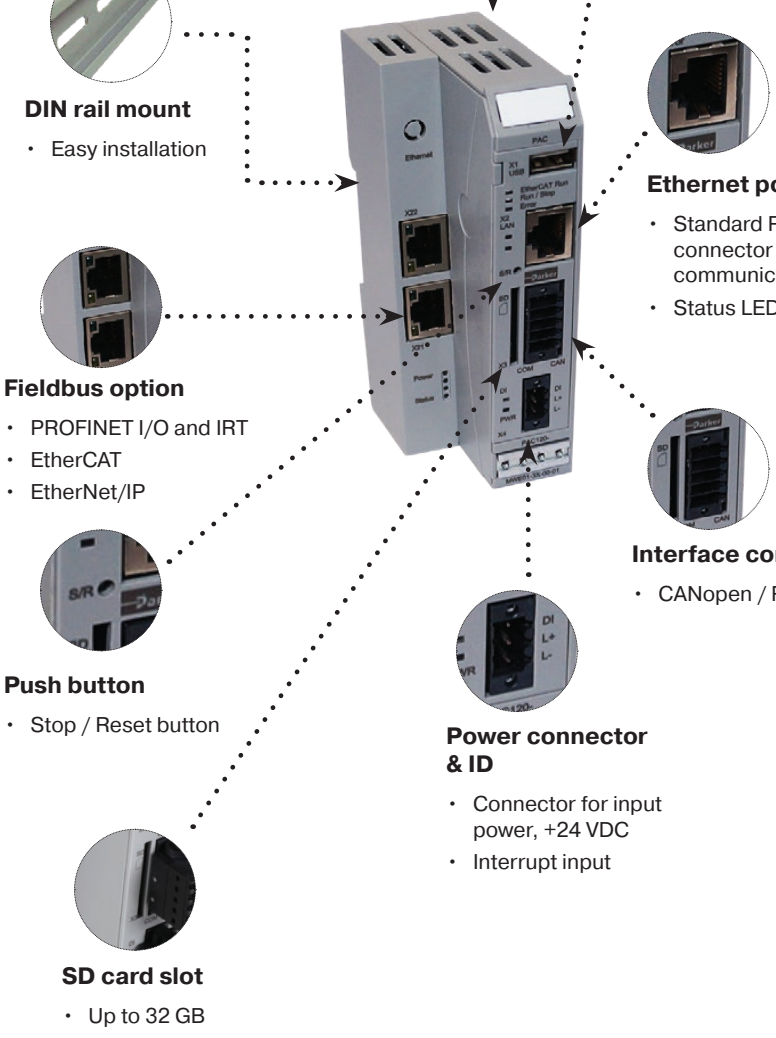
Designed to maximize efficiency while exceeding performance expectations, the Parker Automation Controller (PAC) is programmed with the well-established CODESYS, an Integrated Development Environment (IDE) and comprises the PAC I/O System. Together these elements provide a powerful, standards-based programmable package designed to tackle the most demanding applications. The PAC system consolidates machine logic, signal handling, advanced motion, and visualization.

## I/O Modules



The PAC I/O System comprises a variety of modules for digital, analog, temperature signals, high-speed counters, and communication interfaces.

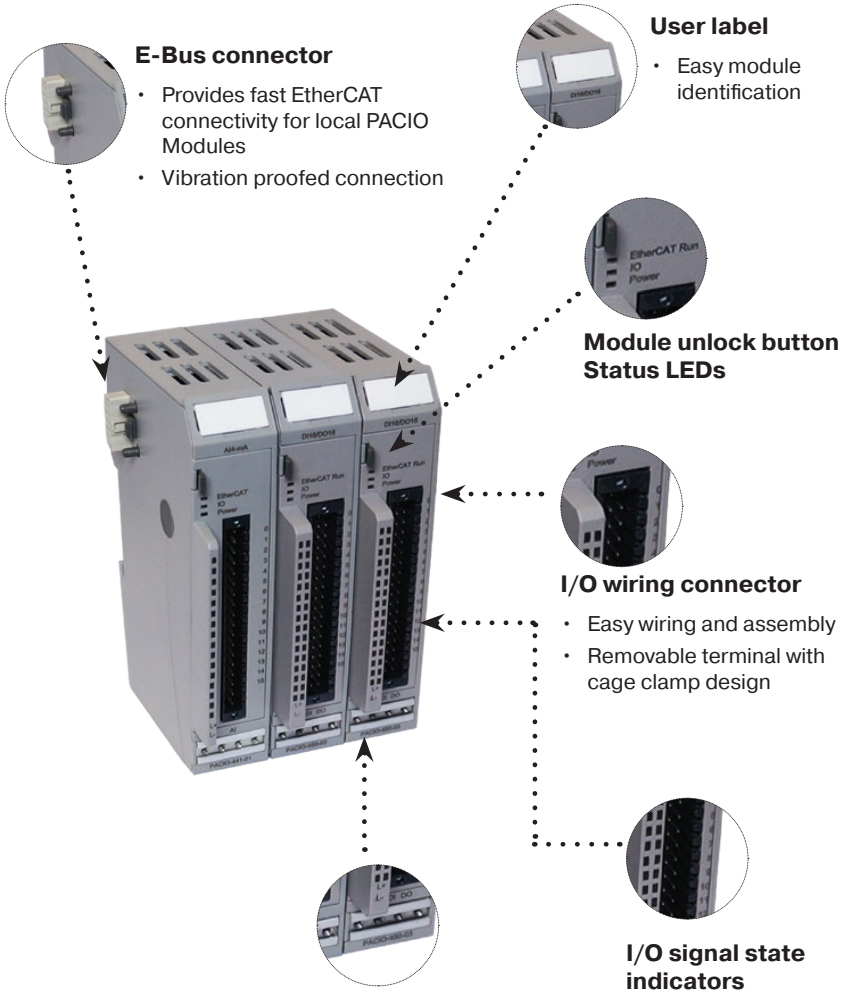
**PAC120 overview:**





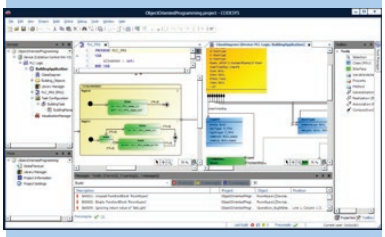

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**I/O Modules overview:**

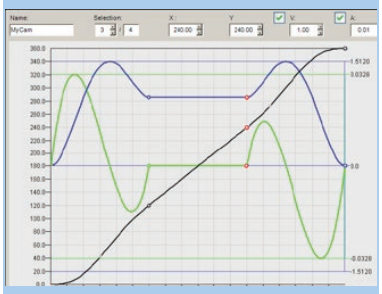



## Software

CODESYS is the leading manufacturer-independent IEC 61131-3 automation software for engineering control systems. It's a software platform for industrial automation technology. The core of the platform is the IEC-61131-3 programming tool "CODESYS Development System". It offers practice-oriented, integrated solutions for the convenient configuration of automation applications. Everything is integrated in a single user interface

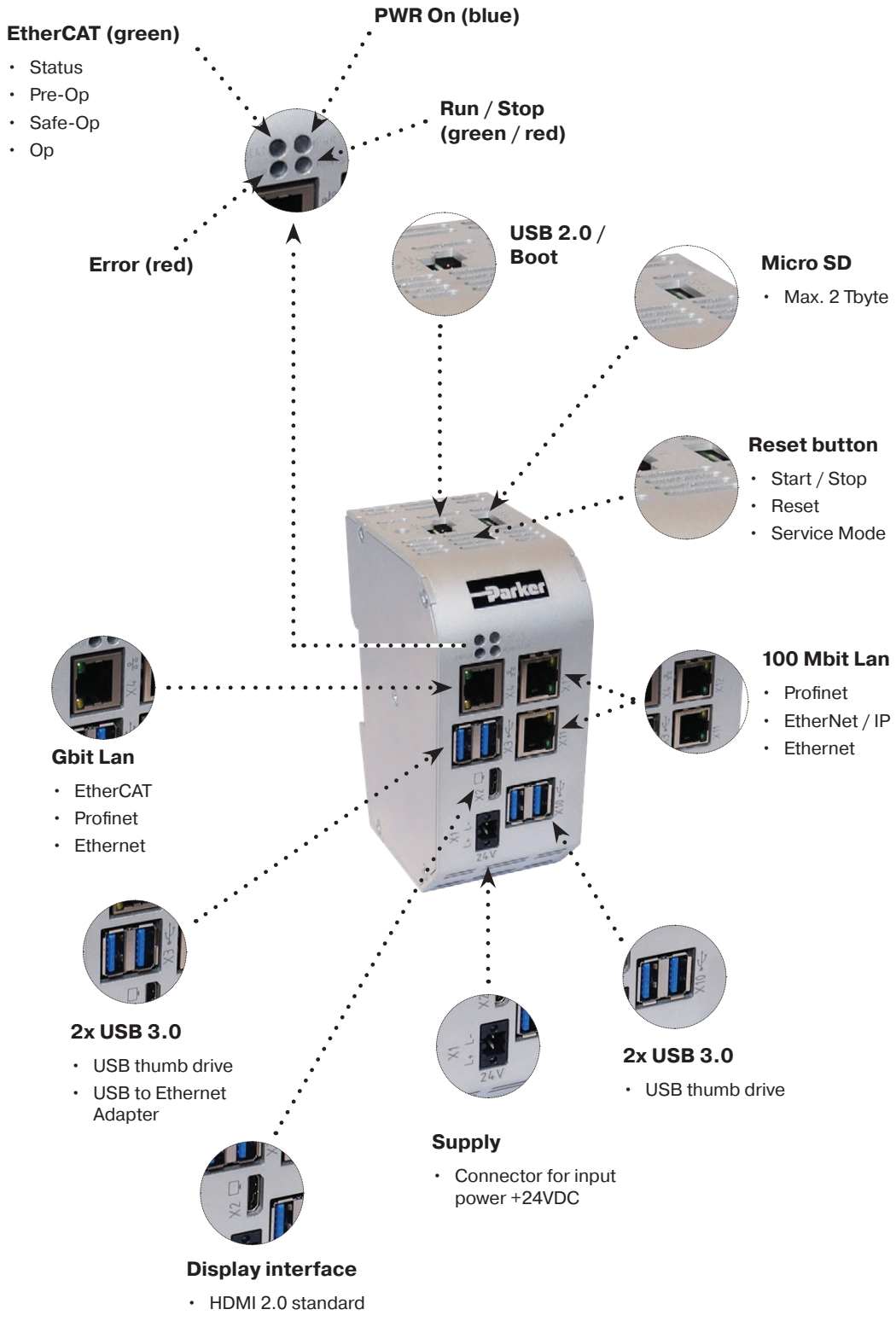


Engineers can work smarter, more efficiently and more effectively by choosing from the five IEC standard programming languages to optimize for an application, by using industry standard PLCopen Motion for motion control programming, deploying to the powerful simulation runtime for faster development and using online variable watch and trending for logic analysis.



- IEC61131-3 programming system
- PLCopen motion control
- Simulation runtime
- Visualization
- CNC / robotics
- Industry 4.0 platform

**PAC340 overview:**



# Technical Characteristics

| Electrical | PAC120 | PAC340 |
|---|---|---|
| **CPU** | i.MX6 SoloX Freescale 1 GHz | BCM2711, 1.5GHz Quad Core |
| **RAM / Flash** | 256 MB / 256 MB | 2 GB / 8GB |
| **Retain Memory** | 128 MB | 200 MB |
| **Operating system** | Linux RT | Linux RT |
| **Software** | CODESYS V3 runtime softmotion | CODESYS V3 runtime softmotion |
| **Network** | 1 x Ethernet 10/100 MBit | 1 x Ethernet 10/1000 Base, RJ45<br>1 x Ethernet 10/100 Base 2-Port Switch |
| **interfaces** | 1 x digital input, 1ms<br>1 x USB 2.0<br>1 x SD (HC) card slot | 1 x digital display Interface<br>3x USB 3.0<br>1 x µSD (SDXC) |
| **Digital and analog interfaces** | Parker PACIO extension modules | Parker PACIO extension modules |
| **Field bus interfaces** | EtherCAT master via Extender Module<br>CANopen, galvanic isolated<br>ProfiNet IO and IRT (PAC120-*P),<br>EtherCAT Slave (PAC120-*T),<br>EtherNet/IP Adapter (PAC120-*E)<br>OPC UA server | EtherCAT Master<br>Profinet-Device-IEC<br>Ethernet/IP-Scanner,<br>Ethernet/IP-Adapter<br>OPC UA server |
| **Clock** | Real-time clock with battery buffering | Real-time clock, 72h buffer |
| **Power supply** | 24 V DC (19.2... 28.8) | 24 V DC (19.2... 28.8) |
| **Potential separation** | Modules are potential separated against each other and bus | Modules are potential separated against each other and bus |
| **Industrial requirements** | Protection class III according to EN 601131-2 | Protection class III according to EN 601131-2 |
| **EMC** | 2004/108/EC | 2014/30/EU emitted interference: EN 61000-6-4, industrial zone |
| **Environmental conditions** | Relative humidity 5 % ... 95 % w/o dew | Relative humidity max. 85%, non-condensing |
| **CE conformity** | 2004/108/EC | CE (EN 61131-2) |
| **UL certification** | Certified: E-File-No. E506274 | Available April 2022 |



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## Parker Remote I/O System PACIO

The PACIO 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. PACIO communicates natively on the EtherCAT bus, therefore it provides the full functionality and throughput of high-speed Ether- CAT to meet the most demanding real-time requirements. For further information see Parker catalogue file for the PACIOs.



| Module Type | Part Number | PACIO Description |
|---|---|---|
| Interfaces | PACIO-400-00 | PACIO EtherCAT Bus coupler, 3 A |
| | PACIO-400-02 | PACIO Extender 2 Port (EtherCAT I/O extender) |
| Accessories | PACIO-411-00 | Power Distribution Module (distributes 0 VDC or 24 VDC attached at pins L1 or L2) |
| | PACIO-412-01 | PACIO Shield 2x8 mm |
| | PACIO-412-02 | PACIO Shield 14 mm |
| Analog | PACIO-441-01 | PACIO AI4-mA (4 single-ended analog input module), 12 Bit resolution |
| | PACIO-441-02 | PACIO AI4/8-VDC (4 differential/8 single-ended analog input module), 13 Bit |
| | PACIO-441-51 | PACIO AI4-mA (4 single-ended analog input module), 12 Bit CoE |
| | PACIO-441-52 | PACIO AI4/8-VDC (4 differential/8 single-ended analog input module), 13 Bit CoE |
| | PACIO-442-02 | PACIO AO4-VDC/mA (4 analog output module), 12 Bit resolution |
| | PACIO-442-52 | PACIO AO4-VDC/mA (4 analog output module), 12 Bit resolution CoE |
| Temperature | PACIO-443-01 | PACIO AI4-Pt/Ni100 (4 analog inputs, 70 to 300 ohm resistance), 16 Bit |
| | PACIO-443-03 | PACIO AI4-Pt/Ni1000 (4 analog inputs, 70 to 3000 ohm resistance), 16 Bit |
| | PACIO-443-06 | PACIO AI8-Thermocouple, 16 Bit |
| | PACIO-443-57 | PACIO AI4-Pt/Ni/Thermo, 16 Bit CoE |
| | PACIO-443-58 | PACIO AI8-Pt/Ni/Thermo, 16 Bit CoE |
| 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-450-05 | PACIO DI8/DO8 (8 inputs/8 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-452-01 | PACIO DO16 (16 outputs), 0.5 A |
| | PACIO-452-02 | PACIO DO8 (8 outputs)1 A |
| Counter | PACIO-454-01 | PACIO Counter/Enc (encoder counter module) |

## Safety Controller

Safety PLC is a module intended to be integrated in EtherCAT® networks with Parker Motion Controller. Acting as the FSoE master, it is able to address any FSoE slave including safety I/Os, motion controllers and other FSoE equipment. The Safety PLC meets the requirements of IEC 61508 SIL3 and DIN EN ISO 13849 PLe. The main controller's CODESYS environment and the EtherCAT link are used for programming.



| Part Number | Description |
|---|---|
| 694.330.00 | Safety PLC |
| 694.430.00 | Safety SDI4/SDO2 (4 safe inputs, 2 safe outputs) |
| 694.430.10 | Safety IO Module SDI8/SDO2 |
| 694.430.20 | Safety IO Module SDI16/SDO4 |

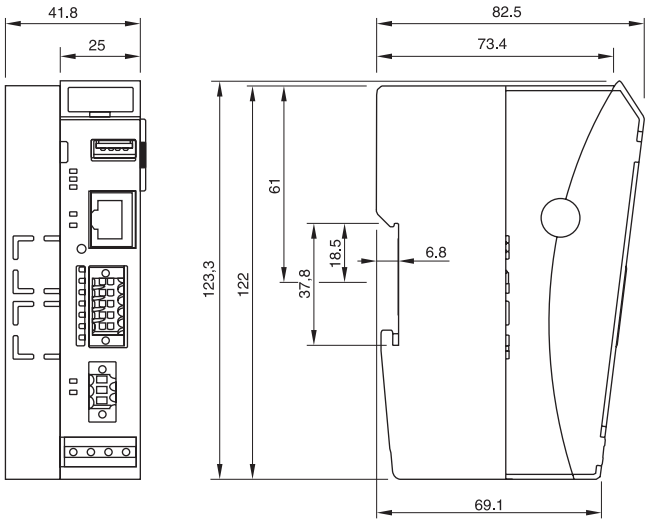


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## Dimensions

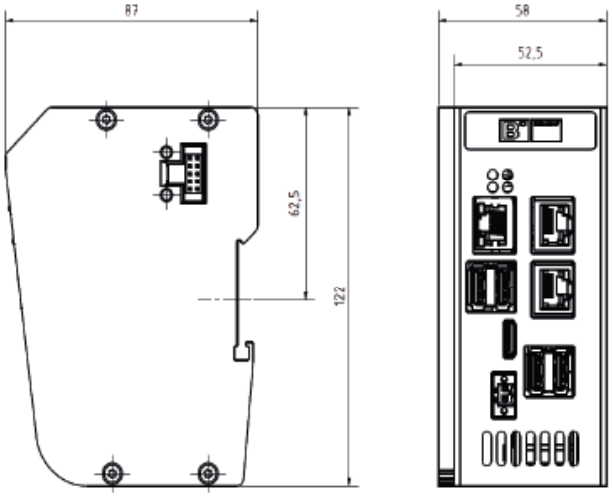
### PAC120 Dimensions

Dimensions [mm]



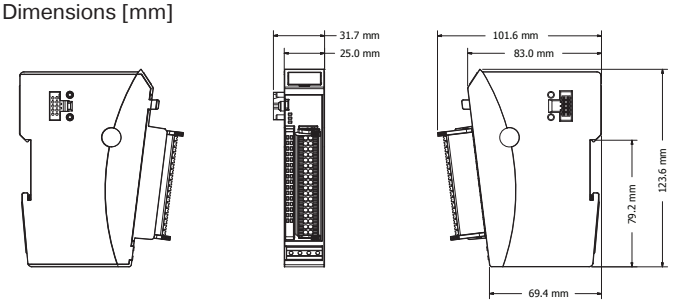

### PAC340 Dimensions

Dimensions [mm]




### I/O Dimensions

Dimensions [mm]



# Order Code

## Parker Motion Controller

| | 1 | 2 | | 3 | 4 | 5 | 6 | 7 | | 8 | 9 | | 10 | | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Order example | **PAC** | **120** | **-** | **M** | **W** | **E** | **0** | **1** | **-** | **3** | **X** | **-** | **00** | **-** | **01** |

| | | |
|---|---|---|
| **1** | **Series** | |
| | **PAC** | Parker Motion controller |
| **2** | **Type** | |
| | **120** | |
| | **340** | |
| **3** | **Software** | |
| | **M** | IEC, PLCopen Motion |
| | **C** | IEC, PLCopen Motion, CNC (PAC340 only) |
| **4** | **Visualization** | |
| | **W** | Web Visualization |
| **5** | **Communication** | |
| | **E** | EtherNet/IP (PAC120 only) |
| | **P** | PROFINET IRT slave (PAC120 only) |
| | **B** | EtherNet/IP + PROFINET (PAC340 only) |
| **6** | **Retentive Memory** | |
| | **0** | 128 kB (PAC120 only) |
| | **1** | 200 kB (PAC340 only) |
| **7** | **Processor** | |
| | **1** | i.MX6 SoloX Freescale 1 GHz (PAC120) |
| | **1** | BCM2711, 1.5GHz Quad Core (PAC340) |
| **8** | **Certification** | |
| | **3** | UL / cUL / CE Certification |
| **9** | **Reserved** | |
| | **X** | Standard |
| **10** | **Extended Software** | |
| | **00** | Extended Software |
| **11** | **Extended communication** | |
| | **01** | Enhanced communication OPC UA |



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# Parker's 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 info call 00800 27 27 5374**



## 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
$CO_2$ 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
Electrohydrostatic 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

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