

590PR Series

DC Drives from 20 to 165A



ENGINEERING YOUR SUCCESS.

Parker Hannifin

The global leader in motion and control technologies

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.

Electromechanical Worldwide Manufacturing Locations

Europe

Littlehampton, United Kingdom
Dijon, France
Offenburg, Germany
Filderstadt, Germany
Milan, Italy

Asia

Wuxi, China
Jangan, Korea
Chennai, India

North America

Rohnert Park, California
Irwin, Pennsylvania
Charlotte, North Carolina
New Ulm, Minnesota



Offenburg, Germany

Local Manufacturing and Support in Europe

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

For contact information, please refer to the Sales Offices on the back cover of this document or visit www.parker.com



Milan, Italy



Littlehampton, UK



Filderstadt, Germany



Dijon, France

Global solution provider for DC motor with best flexibility and performance

Description

DC590PR is newly developed compact DC motor drive. With its state-of-the-art advanced 32-bit control architecture, the DC590PR drive delivers highly functional and flexible control suited to a whole host of industrial applications. It has a range of interface options which are compatible with the most common feedback devices enabling simple motor control through to the most sophisticated multi-motor system. Armature voltage feedback is standard without the need for any interface option.

The best flexibility for application development

The best flexibility for application development DC590PR inherits from over 40 years DC motor application knowledge and motor control experience, simplify the operation by typical application block and offers more flexible program blocks.

Latest technology & algorithm

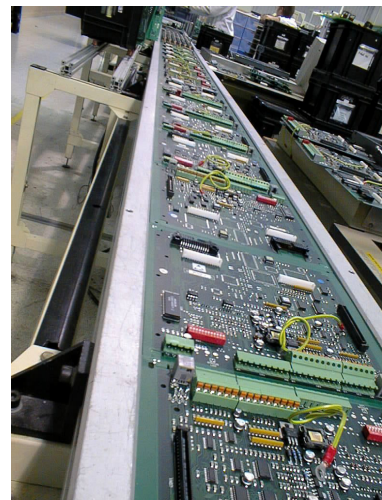
New introduced USB interface offers more friendly connection.

With its self-tuning algorithm, the DC590PR can be configured Q/4Q and frame size within minutes.

590PR higher performance

High resolution current feedback(0.06%) supplies more stable control performance.

The operator interface allows easy monitoring of machine operation and simplifies maintenance.



Standardize with DC590P the same powerful function block programming software DSElite and the same feedback options and communication fieldbus:

Profibus-DP, CANopen, Modbus+, Ethernet and DeviceNet.

- Keep I/O same as DC590P
- Input voltage is upto 500V
- Provide internal field current
- Keep external field current connectors



Certification

590PR is certified as being compliant with the regulated market requirements in:

Europe

Drives are CE certified as being compliant with

- The Low Voltage Directive 2014/35/EU
- The Low voltage Directive 2014/35/EU
- The EMC Directive 2014/30/EU
- The RoHS Directive 2011/65/EU

USA

- Underwrites Laboratory Standard UL508c for Power Conversion Equipment

Overview

New Generation Technology

Building upon the highly successful DC590PR drive used in thousands of applications world-wide, With its state-of-the-art advanced 32-bit control architecture, the DC590PR drive delivers highly functional and flexible control suited to a whole host of industrial applications.

Typical Applications

- Converting machinery
- Plastics and rubber processing machinery
- Wire and cable
- Material handling systems
- Automotive

Function Block Programming Software - DSELite

DSELite is a tremendously flexible control structure that allows an almost infinite combination of user functions to be realised with ease. Each control function (an input, output, process PID for example) is represented as a software block that can be freely interconnected to all other blocks to provide any desired action.

The drive is despatched with the function blocks pre-configured as a standard DC drive so you can operate it straight from the box without further adjustments. Alternatively you can pick pre-defined Macros or even create your own control strategy with DSELite, often alleviating the need for an external PLC and therefore reducing cost.

Feedback Options

The DC590PR has a range of interface options which are compatible with the most common feedback devices enabling simple motor control through to the most sophisticated multi-motor system. Armature voltage feedback is standard without the need for any interface option.

- Analogue tachogenerator
- Encoder – 5, 12, 15, or 24V

Interface Options

Designed with connectivity in mind, the DC590PR has a number of communications and I/O options that allow the drive to take control of the application, or be integrated into a larger system. When combined with function programming, custom functions and control can be easily created offering the user a highly flexible and versatile platform for DC motor control.

Programming/Operator Controls

Featuring an intuitive menu structure, the ergonomically designed operator

panel allows quick and easy access to all parameters and functions of the drive via a bright, easy to read backlit display and tactile keypad. Additionally, it provides local control of start/stop, speed demand and rotation direction to greatly assist with machine commissioning.

- Multi-Lingual alpha-numeric display
- Customised parameter values and legends
- On drive or remote mounting
- Local control of start/stop, speed and direction
- Quick set-up menu

Connectivity

Whatever the complexity of your control scheme, the DC590PR has the interface to suit. As standard there's enough analogue and digital I/O for the most complex applications.

Alternatively, add the relevant 'technology box' for immediate access to serial communications and Fieldbus networks. The DC590PR has been designed to fit seamlessly, and without compromise, into any control environment.

Analogue/Digital Control

- 5 Analogue Inputs (12bit + sign)
- 3 Analogue Outputs
- 9 Digital Inputs
- 3 Digital Outputs

Serial Communications and Fieldbus Options

- Profibus
- Canopen
- Modbus+
- RS422/RS485
- Ethernet
- LINKnet
- Devicenet

All DC590PR supply 2Q or 4Q options



Standard 6901 MMI/programming operator is easy to use and compatible with all SSD Drives.

Features and Benefits

Easy to use operator controls

- Detailed diagnostics
- Multi-language display

Smaller size

Standard open fieldbuses

Product ID identify automatically

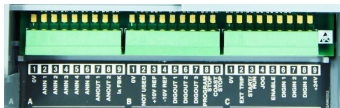
2Q/4Q and 200V/500V stack identify automatically

More reliable

PCB is despatched coating

Configurable input-output terminal blocks

- 5 analogue inputs
- 3 analogue outputs
- 9 digital inputs
- 3 digital outputs



Macro function blocks

- Open-loop winder control
- Winder control - loadcell/dancer
- Section control
- Maths functions
- Logic process
- Embedded controller functions
- Customized software function

Worldwide product support

The DC590PR DC Drive is available with full application and service support in over fifty countries worldwide. So wherever you are, you can be confident of full back up and support.

Rapid Commissioning, optimal control performance and easy maintenance

With its self-tuning algorithm, the DC590PR can be configured and commissioned within minutes, without turning the motor and without the need for high levels of engineering know-how.

High resolution current feedback(0.06%) supplies more stable control performance. The operator interface allows easy monitoring of machine operation and simplifies maintenance.

Easy integration into existing control networks

The DC590PR has a wide choice of common industry fieldbus communication options allowing seamless integration into existing factory control networks.

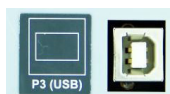
Interfacing with existing external control equipment (Dancer, gauge, etc...)

A number of input / output options gives the DC590PR the flexibility needed for integration into any variable speed system. Combined with its embedded automation functions, its input- output configurations can in many instances remove the need for an external PLC.

Years of applications expertise at your service

The DC590PR macro function blocks are the result of over 30 years of experience gained by Parker SSD of installing drives in variable speed and sectional drive systems. This unique application experience is included in the drive in the form of dedicated function blocks at no extra cost, thereby reducing the design costs of your machinery.

USB interface

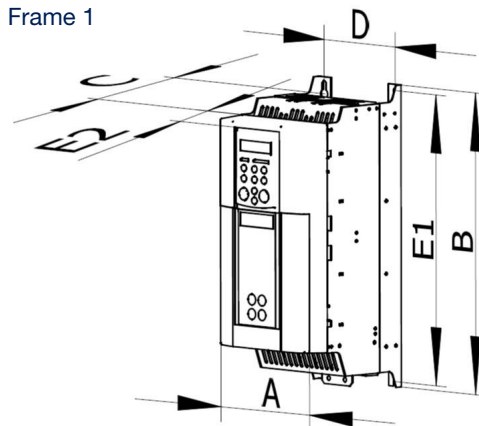


Technical Specifications

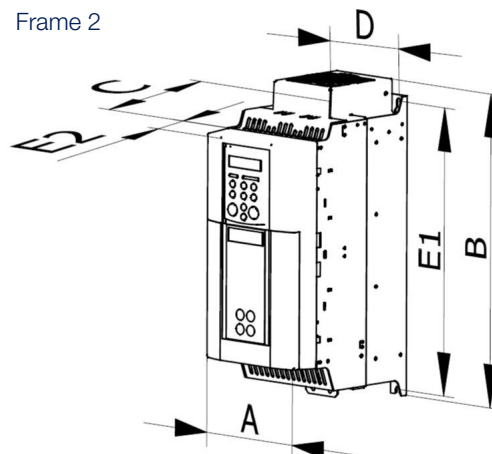
Power Supply and Environment	
Supply Voltage	3 phase 110-220V $\pm 10\%$, 3 phase 220-500V $\pm 10\%$, 50/60Hz
Overload	150% 30 s; 200% 10 s
Armature Current Rating	Frame 1 - 20A, 35A, 45A Frame 2 - 75A, 110A, 165A
Field Current	Frame 1 - 5A / 10A, Extern Field 15A Frame 2 - 5A / 20A, Extern Field 20A
Armature Voltage	Vac $\times 1.15$
Field Voltage	Vac $\times 0.9$
Operating Temp.	Frame 1: 0°C to +45°C. Frame 2: 0°C to +40°C Output current values should be derated at 1% per degree Centigrade above rated temperature up to a maximum of 55°C.
Enclosure Rating	IP20
Altitude Rating	If >500 metres above sea level, derate Motor Power rating by 1% per 200 metres to a maximum of 2,000 metres
Humidity	Maximum 85% relative humidity at 45% non-condensing
Atmosphere	Non %ammable, non-corrosive and dust free
Vibration	Keep the drive being isolated from any vibration source
Pollution Degree	Pollution Degree 2
Protective Earth	Permanent earthing is mandatory on all units because the earth leakage current exceeds 3.5mA ac/10mA dc under normal operating conditions.
Protection	
	Overload Overspeed Thyristor Trigger Failure Field Overcurrent Heatsink Overtemperature Motor Overtemperature Over Voltage Speed Feedback Failure Encoder Error Field Failure 3-Phase Failure Phase Lock Failure Stall Protection Instantaneous Overcurrent ACCT Failure
Input & Output	
Analog Input	(5 Total - 12 bit plus sign) 1 – Speed input (-10/0/+10V) 4 – Configurable
Analog Output	(3 Total - 12 bit plus sign) 1 – Armature current output (-10/0/+10V or 0-10V) 2 – Configurable
Digital Input	(9 Total - 24V, max 15mA) 1 – Program stop 1 – Coast stop 1 – Enable 1 – Start/Run 5 – Configurable
Digital Output	(3 Total - 24V (max 30V) 100mA) 3 – Configurable

Order code (Standard)	Armature Current	Frame	H(B)	W(A)	D(C+E2)
4Q					
590PR-53220010-P00-U4	20A	1	415mm	170mm	175mm
590PR-53235010-P00-U4	35A	1	415mm	170mm	202mm
590PR-53245010-P00-U4	45A	1	415mm	170mm	202mm
590PR-53275020-P00-U4	75A	2	439mm	170mm	202mm
590PR-53311020-P00-U4	110A	2	439mm	170mm	240mm
590PR-53316520-P00-U4	165A	2	439mm	170mm	240mm
2Q					
591PR-53220010-P00-U4	20A	1	415mm	170mm	175mm
591PR-53235010-P00-U4	35A	1	415mm	170mm	202mm
591PR-53245010-P00-U4	45A	1	415mm	170mm	202mm
591PR-53275020-P00-U4	75A	2	439mm	170mm	202mm
591PR-53311020-P00-U4	110A	2	439mm	170mm	240mm
591PR-53316520-P00-U4	165A	2	439mm	170mm	240mm

Frame 1



Frame 2



Operator Keypad

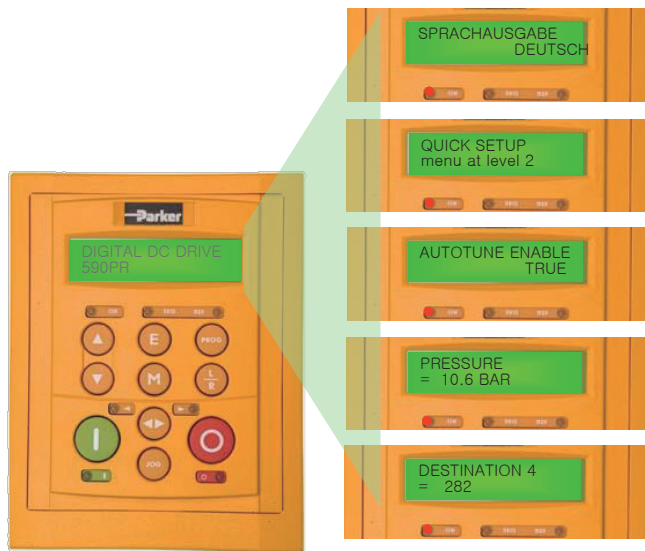
Standard operator keypad

Order Code	Description	Apply to
6901/00/G	Standard operator	DC590PR Series

Features

- Local motor control: start, speed, direction, diagnostics
- Operator menus and parameter configuration
- Quick setup menu
- Password protection for parameter configuration





Multilingual

- English • French • German
- Italian • Spanish

Quick setup menu

Intuitive menus allowing easy and quick setup of the drive

Auto-tuning

Automatic tuning of motor parameters ensures maximum dynamic motor performance

Diagnostics messages

Display input and output parameters as well as drive operating units

Drive configuration

Advanced operator keypad - optional

Features

- 128 x 64 pixels semi-graphical resolution
- RS232 and RS485 ports
- Recording of parameters to keypad and restore to drive (Memory card 256Mb to 2Gb)

Order Code	Description	Apply to
6911/01/00/G	Advanced operator	DC590PR Series



Remote mount suite - optional

Description

Remote mount suite includes panel and guide.

Order Code	Description	Apply to
6052/00/G	Remote mount suite	DC590PR Series

Accessories and Options

Communication Cards

Description

The communication cards allow the DC590PR to be connected to the most common industry standard fieldbuses.

Features

- Communication cards can be factory fitted or purchased separately for fitting on-site
- Dimensions HxWxD:127"mmx76.2"mmx25.4"mm
- LED indication of network and card status



EtherNet Communications Interface	
Order Code: 6055/ENET/00	
Supported Protocols	Modbus/TCP and EtherNet IP
Communication	10/100M bits/s
Station Address	Selectable via switch or Internet Explorer

DeviceNet Communications Interface	
Order Code: 6055-DNET-00	
Supported Protocols	DeviceNet Drive Profile – Group 2 slave only
Station Address	DeviceNet Drive Profile – Group 2 slave only

CANopen Communications Interface	
Order Code: 6055-CAN-00	
Profile	DS402
Supported Messages	SDO, PDO, NMT, SYNC
Communication Speed	20K, 50K, 125K, 250K, 500K, 1M bits/s
Station Address	Selectable via Switch

RS485/Modbus Communications Interface	
Order Code: 6055-EI-00	
Supported Protocols	Modbus RTU, EI Bisynch ASCII
Cabling	RS485 2 or 4 wire
Communication Speed	300 - 115200 bits/s
Station Address	Selectable via software

ControlNet Communications Interface	
Order Code: 6055-CNET-00	
Supported Messages	Polled I/O
Station Address	Selectable via software

Modbus Plus Communications Interface	
Order Code: 6055/MBP/00	
Supported Protocols	Modbus Plus
Cabling	RS485 2 or 4 wire
Communication Speed	1 M bits/s
Station Address	Selectable via software

PROFIBUS-DP Communications Interface	
Order Code: 6055-PROF-00	
Supported Protocols	Profibus-DP
Communication Speed	Automatically detected
Station Address	Selectable via software

SSD Linknet Communications Interface	
*Order Code: 6055/LNET/00	
Supported Protocols	Modbus UDP/IP Master Modbus/TCP/ IP Slave

Accessories and Options

Speed Feedback Card

Encoder feedback card

The encoder feedback card allows an incremental encoder to be fitted to the drive to provide accurate measurement of motor speed. The card also provides the encoder power supply.

Order Codes	Description
AH387775U005-1	Encoder Card, Output +5VDC
AH387775U012-1	Encoder Card, Output +12VDC
AH387775U015-1	Encoder Card, Output +15VDC
AH387775U024-1	Encoder Card, Output +24VDC

Specifications	
Maximum input frequency	100KHz
Receiver current consumption	10mA per channel
Input format	2 channel differential and quadrature
Differential input voltage	Minimum 3.5V
Encoder power output	+5V to 24V
Power supply rating	2W maximum
Power supply load	1.4 x output power
Terminal size	16 AWG maximum
Tightening torque	0.4Nm

Analog feedback card

Order Codes	Description
AH500935U001-1	Analog tachogenerator

Product Code

Example		590PR	-	23	2200	1	0	-	P	00	-	U	0
Family	590PR 4Q 591PR 2Q	590PR 591PR											
	Supply Voltage	Output Current(A)	Frame										
Current/Power Ratings	110-220V 3ph			23									
		20	1		2200	1							
		35	1		2350	1							
		45	1		2450	1							
		75	2		2750	2							
		110	2		3110	2							
		165	2		3165	2							
	220-500V 3ph			53									
		20	1		2200	1							
		35	1		2350	1							
		45	1		2450	1							
		75	2		2750	2							
		110	2		3110	2							
		165	2		3165	2							
Auxiliary supply	Universal 110V-240V 50-60Hz												0
Mechanical Type	Panel Mounting												P
Special Options	None												00
Language	Universal												U
Keypad	None												0
	6901 keypad fitted												4



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:

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(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
CO₂ 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 & driers
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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